



Fitness Check Evaluation of the Water Framework Directive and the Floods Directive

Final evaluation report

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Executive Summary- English

This Executive summary presents the methodology and main conclusions of the study supporting the Fitness Check of the following Directives:

- Directive 2000/60/EC establishing a framework for Community action in the field of water policy¹;
- Directive 2006/118/EC on the protection of groundwater against pollution and deterioration²;
- Directive 2008/105/EC on environmental quality standards in the field of water policy³; and
- Directive 2007/60/EC on the assessment and management of flood risks⁴.

The study has been delivered by Wood together with Trinomics B.V., Wageningen Environmental Research (WENR) part of Wageningen University & Research, and Deltares.

Purpose of the report

The aim of the report is to present our conclusions on the analysis of the effectiveness, efficiency, relevance, coherence and EU added value of the Directives considered as part of the Fitness Check.

Methodology

EU policy evaluation takes place against standard criteria and following a well-defined methodology, which needs to respect the principles outlined in the latest Better Regulation Guidelines⁵. These guidelines provide a common EU framework for conducting all retrospective evaluations and state that evaluations must assess the following criteria:

- Effectiveness: considers how successful the action has been in achieving or progressing towards its objectives;
- Efficiency: considers the relationship between the resources used by an intervention and the changes generated by the intervention (which may be positive or negative);
- Coherence: involves the review of the intervention within the existing legislative framework to consider how well or not different actions work together;
- Relevance: looks at the relationship between the needs and problems in society and the objectives of the intervention and hence touches on aspects of design; and
- EU added value: reviews changes which it can reasonably be argued are due to the EU intervention over and above what could reasonably have been expected from national actions by Member States.

The Fitness Check Roadmap concerning the Fitness Check of the Water Framework Directive and the Floods Directive⁶ identified the need to carry out a Fitness Check to look at the functioning of and relationship between the Water Framework Directive, the Groundwater Directive (GD), the Environmental Quality Standards Directive (EQSD) and the Floods Directive (FD).

The evidence for this Fitness Check was gathered from a wide range of qualitative and quantitative sources including:

¹ OJ L 327, 22.12.2000, p.1

² OJ L 372, 27.12.2006, p.19

³ OJ L 348, 24.12.2008, p.84

⁴ OJ L 288, 6.11.2007, p.27

⁵ European Commission, SWD(2017) 350, Better Regulation Guidelines https://ec.europa.eu/info/better-regulation-guidelines-and-toolbox_en

⁶ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5128184_en

- **Review of literature:** Numerous literature sources were studied, the majority of which were classified as academic studies, implementation reports, position papers and other Evaluations/Fitness Checks/Impact Assessments. Additional sources included: publications from the European Environment Agency (EEA), Joint Research Centre (JRC) and independent studies, WISE datasets, policy documents, CIS Technical Reports, infringement cases, and, projects funded by the EU. The majority of sources reviewed were released between 2015 and 2018.
- **Open public consultation** through an online questionnaire, including expert consultation as part of the same exercise, using the Commission consultation's website. The questionnaire was made available in 23 EU languages through the EU Survey tool⁷. The OPC was live on the EU Survey portal between September 2018 and March 2019. The consultation received a total of 385,088 responses;
- **Targeted consultations** including:
 - **Targeted online survey:** a survey was made available online for expert stakeholders. The survey was split into ten short questionnaires focusing on the Floods Directive, water body status, environmental objectives, Groundwater Directive, costs and benefits of the Directives, cost recovery and pricing, monitoring, public participation, coherence and EU added value. A total of 205 stakeholders provided a response.
 - **Focus Groups:** a series of focus group workshops were organised to explore in detail topics for which information gaps were identified - this included the Floods Directive and Groundwater Directive and written exchanges on costs and benefits.
 - **Stakeholders' workshops:** three workshops were organised to update stakeholders with progress on the Fitness Check and provide options for inputs and gathering feedback. The workshops involved more than 120 participants including representatives from Member States' competent authorities, industry, NGOs, EU services, academia and international organisations.
 - **Interviews:** a total of 40 interviews were conducted with Member State competent authorities, International River Basin District authorities, NGOs, industry representatives, research organisations and Commission services.

An evaluation is only as strong as the evidence upon which it relies. As such, it is important for our analysis to be transparent and clear on the evidence upon which it is based and its limitations. One important limitation is based on the lack of ex-ante impact assessment for the WFD, which did not allow for a clear counterfactual scenario to be developed. The starting points for each Member State were different, and the level of efforts needed to meet the objectives of the legislation also varied based on the state of water at time of adoption of the Directives. Data on costs and benefits were largely missing and, therefore, only 'case studies' could be presented in our analysis.

⁷ <https://ec.europa.eu/eusurvey/home/welcome>

Main findings

Effectiveness

Effectiveness considers the extent to which the objectives have been achieved and the factors that have contributed to the achievement (or not) of the objectives.

WFD and Daughter Directives

Our analysis concluded that the implementation of the Directives has improved over time (i.e. based on implementation reports, overview of the 2nd River Basin Management Plans (RBMPs) and the EEA State of Waters report) and that the non-deterioration requirements of the Water Framework Directive seem to have been well implemented. However, it is also apparent that the objectives pertaining to the achievement of good status under that Directive have not been reached. The delays in meeting the requirements of the Directives are explained in part by an under-estimate of the level of efforts needed and a lack of knowledge on aquatic ecosystems. The reliance of Member States on EU financing mechanisms, and the lack of other funding sources for the implementation of measures needed for the WFD are also contributory factors.

The implementation of the WFD has facilitated the prioritisation of water quality through successive planning cycles, has facilitated transboundary cooperation mechanisms and enhanced those international networks that were in place before. The WFD is noted as a global model for water governance, as outlined by the UN in their analysis of water governance in Eastern Europe.

On the implementation of specific provisions, there were some marked divergence of stakeholders' opinions on the one-out-all-out principle. Whilst it is generally seen as an important element of the WFD and based on scientific principles, there are concerns on the way the principle is used as an indicator to communicate progress, in particular when based only on overall status. Similarly, concerns regarding the use of exemptions have been raised by stakeholders. With nearly 50% of water bodies covered by an exemption, it is questionable that this is a reflection of the expectations of the legislator when drafting the Directive. Additionally, it remains unclear whether full implementation of Article 9, regarding the cost recovery principle, has been achieved.

The analysis considered unintended effects and noted a range of positive unintended effects of the WFD e.g. the raise in hydrological skills within non-water competent authorities, and the 'flagship' role of the WFD in establishing a European governance model. The implementation of the legislation has led to an increase in knowledge that would not have happened in the absence of the Directives. Overall a limited number of unintended negative effects have been identified.

Floods Directive

Overall the implementation of the FD is satisfactory and progressing. The implementation of the FD has been found to support a shift from policies based on flood defence, towards flood risk assessment and is a potential template for best practice disaster management.

The reliance of Member States on EU financing mechanisms, and the lack of other funding sources for the implementation of measures needed for the FD were noted.

It was found that Member States are not evenly considering climate change as part of their implementation of the FD. Similarly, the use of Cost Benefit Analysis to inform the selection of measures in Flood Risk Management Plans (FRMPs) was found to be variable. Private insurance coverage to protect against flood damage is identified as low in the EU, and is identified as a missed opportunity for the Floods Directive by some parties.⁸ Literature suggests that challenges in land use planning could be reducing the effectiveness of FD implementation in some MS. Furthermore, challenges remain regarding the incorporation of green infrastructure/nature based solutions within FRMPs.

Efficiency

Efficiency considers whether the resources required to create the actions triggered by the WFD, its daughter Directives and the FD are proportionate to the results achieved. Additionally, the aim of the efficiency assessment is to understand the relationship between the costs and benefits of the legislation and how they accrue to different stakeholders (i.e. water companies, European citizens, regional administrations and Member State competent authorities), to identify what factors drive these costs/benefits and to assess how these factors relate to the legislation.

WFD and Daughter Directives

Overall, the 2nd cycle RBMPs and compliance check assessment reports provided valuable evidence with regard to costs of WFD measures (at least €116 billion in investment costs and €14 billion/year annual O&M costs). However this is based on incomplete data reported in RBMPs. A number of countries did not report cost information, and when reported, in many instances the cost information is aggregated which makes it challenging to draw firm conclusions on cost and cost effectiveness levels.

There has been little evidence identified on the quantified benefits from the adoption and implementation of the legislation. The RBMPs reported qualitative benefit information mostly. Only a few comprehensive CBA studies on water management (assessing benefits of improved water body status) are available including studies in the Netherlands, Belgium, France and the UK. Little evidence was identified from the academic literature which monetised benefits of the WFD. The lack of benefit data has precluded the derivation of cost-benefit ratios.

Despite the above shortcomings in data, it is apparent that the implementation of the WFD has resulted in reduced emissions to the aquatic environment and improved ecological, chemical and quantitative status of water bodies (Effectiveness) leading to wider ecosystem service benefits. The implementation has also resulted in better knowledge of water environments, improved cooperation and better public information. The consultation results supports the conclusion that the costs involved in implementation of the Directives are justified given the benefits that have been and will continue to be achieved in the long term.

Reporting and monitoring are essential in implementing the vision and ambitions of the Directives, although the reporting systems in place appears to be complex (e.g. requiring resources and skills to implement). Consultation results suggest that the majority of the respondents believe that there is no evidence the WFD has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other

⁸ Specifically, the European Court of Auditors, and insurance industry participants themselves.

parties. From those who disagree with this (19% - 31% depending on the Directive), the majority of respondents are individual companies and business associations.

Floods Directive

The information reported in the FRMPs provided valuable evidence with regard to costs of flood prevention and mitigation measures which has been estimated to be at least €14 billion (2016-2021).

The same challenges for the quantification of the benefits of the WFD are applicable for the FD. The FD has instilled a different way of thinking about flooding, looking to identify and mitigate risk rather than reacting to flooding after it has occurred which is a clear benefit. It has positively contributed to coordination and development of a framework for managing flood risks, raising public awareness about flooding and flood risk management and to climate change adaptation.

The consultation results indicate that the costs involved in implementation of the Directives are justified given the benefits that have been and will be achieved in the long term. Furthermore, the consultation results indicates that the majority of the respondents (including Member States competent authorities) believe that there is no evidence the FD has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties.

Relevance

The assessment of relevance of the WFD and the FD concerns testing the relationship between the needs of EU society in the field of water and flooding and the objectives and scope of the Directives.

The need for public intervention in the field of water remains high due to economic importance of water to EU industry as well as its importance to ecosystems and citizen support for legislation in the field of water and floods remains strong. Not all waters in the EU are in good condition yet and pressures from various sources presently remain and are unlikely to disappear in the near future.

The objectives of the WFD and FD are comprehensively and ambitiously phrased, while neither of them define specific or time-bound indicators, thus remaining relevant. There is uncertainty among stakeholders about how climate change is dealt with in the WFD and the FD. Water scarcity and quantity issues remain ill-covered in the WFD and stakeholders have stated that all issues relating to water quantity are not fully addressed. This is particularly pertinent in relation to water abstraction and water use, where unclarities regarding the use of exemptions can impact the achievement of reaching good quantitative status. Pluvial flooding in the FD, though officially covered by the FD, is generally underrepresented in FRMPs due to its complexity.

The WFD and FD are legally able to deal with emerging contemporary issues, such as emerging substances and climate change. This is due mostly to their flexible nature and the provisions contained therein for dealing with these emerging issues. However, stakeholders are divided about how the WFD is relevant to deal in practice with emerging substances (for example it was raised that the changes in Priority Substances list are slow). New issues, such as invasive alien species, challenge water status indicators in a way that was not foreseen before. Finally, efficiency in monitoring plans could be achieved with more modern monitoring techniques.

Coherence

Coherence analysis aims to understand the extent to which the WFD and its daughter Directives and the FD are in line with wider EU policy and international obligations and to what extent those policies reinforce each other in achieving common goals.

The Directives are mostly seen as coherent internally. The combined action of the WFD and daughter Directives, and the WFD and the FD is seen as coherent and effective.

The WISE system is considered to be providing coherence by being applicable to the WFD and daughter Directives and allowing a more efficient approach to environment reporting. The difference in timing for the reporting of the WFD and the EQSD was raised as a potential issue. However, it was also noted that this allow for the identification of new substances to occur mid-cycle. While unclarity with regard to terminology and definitions were raised, these are largely implementation issues for which the role of CIS has been highlighted as particularly important in their resolution.

The evidence gathered suggests that the interactions of the WFD, EQSD, GWD and FD are positive and lead to synergies. However, more cooperation between the WFD and FD was encouraged in their implementation in order to avoid counter-productive measures (e.g. grey infrastructure measures).

The combined action of the Directives with wider water legislation was also underlined as leading to synergies with many of the legislative instruments (e.g. UWWTD, Bathing Water etc) being basic measures under the WFD.

The areas seen as least coherent include: agricultural policies, transport policies, chemicals policy and climate change.

- On agriculture, the evidence gathered show some challenges to integrate water protection in agricultural practices, including in the use of pesticides and other plant protection products.
- On transport policies, it is noted that most of the EQS failures observed are related to mercury and PAHs which are emitted from the combustion of fossil fuels. Transport emissions are likely to be an important source for these emissions. The evidence gathered show that impacts from inland navigation, including disturbance due to shipping (including dredging of sediments), pollution from shipping, and morphological disturbances are, in some instances, reflected in river basin management plans, but there are opportunities for more consideration, for example on sediments as part of implementation. The inland and wider transport legislation appear to be coherent.
- On chemicals policy, there is a lack of coordination observed between the implementation of the WFD and source control legislation (e.g. REACH). While not an incoherence per se, the difficulty of making use of the information generated as part of the implementation stream limits the effectiveness of the legislative framework.

The action of the Directives is seen as supporting the EU international obligations including the UN Sustainable Development Goals, the regional seas convention and the Sendai disaster risk reduction framework. Doubts were raised on the effectiveness of the Minamata Convention on limiting the impacts from mercury pollution considering the high number of water bodies failing due to mercury pollution.

EU added value

The final evaluation criterion concerns the added value of the EU level intervention, as opposed to intervention by Member States at national level.

The (legal) design of the WFD and the FD exploits a number of significant potential sources of EU value added and thus the potential for EU value added from the Directives is large, in particular through further facilitating transboundary cooperation in international waters, setting a common best practice framework across the EU (catchment-based and lifting standards in a number of European countries) and introducing a number of other innovative policy instruments (in particular the WFD).

Evidence points at significant effects from enforcement actions by EU institutions and the service provided by EU institutions for (potential) dispute settlement between Member States. The need for EU intervention continues to be strong, with the international nature of waters not changing, the pressures on water quality and flood risk not decreasing (if not increasing) due to climate change, economic and population growth and projected concomitant evolvement of 'competing' policy areas also governed by EU policy (energy, agriculture, chemicals and transport policies).

The potential for EU added value through innovative policy instruments and transboundary cooperation was found to not be delivered in practice to a full extent. There has been limited progress in the implementation of iRBDs between the first and second cycles of RBMPs, yet the extent of transboundary cooperation in shared waters has increased since the adoption of the WFD.

Executive Summary- French

Résumé

Ce résumé présente la méthodologie et les principales conclusions de l'étude à l'appui du Fitness Check des directives suivantes:

- Directive 2000/60/CE établissant un cadre pour une politique communautaire dans le domaine de l'eau⁹ (ci-après, 'DCE')
- Directive 2006/118/CE sur la protection des eaux souterraines contre la pollution et la détérioration¹⁰;
- Directive 2008/105/CE relative aux normes de qualité environnementale dans le domaine de la politique de l'eau¹¹; et
- Directive 2007/60/CE sur l'évaluation et la gestion des risques d'inondation¹².

L'étude a été réalisée par Wood en collaboration avec Trinomics BV, WENR (Wageningen Environmental Research) de Wageningen University & Research, et Deltares .

Objectif du rapport

L'objectif de ce rapport est de présenter nos conclusions sur l'analyse de l'efficacité, de l'efficience, de la pertinence, de la cohérence et de la valeur ajoutée européenne des directives considérées dans le cadre du Fitness Check.

Méthodologie

L'évaluation des politiques de l'UE recourt à des critères standard et selon une méthodologie bien définie, qui doit respecter les principes énoncés dans les dernières « lignes directrices pour l'amélioration de la réglementation »¹³. Ces lignes directrices fournissent un cadre européen commun pour la conduite de toutes les évaluations rétrospectives et précisent que les évaluations doivent évaluer les critères suivants:

- Efficacité: détermine dans quelle mesure l'action a atteint ou progressé dans la réalisation de ses objectifs;
- Efficacité: considère le rapport entre les ressources utilisées par une intervention et les changements générés par l'intervention (qui peuvent être positifs ou négatifs);
- Cohérence: implique l'analyse du cadre législatif existant pour examiner comment différentes actions interviennent ensemble;
- Relevance: examine la relation entre les besoins et les problèmes de la société et les objectifs de l'intervention; et
- Valeur ajoutée de l'UE : vérifier que l'on peut raisonnablement soutenir que les changements observés sont dus à l'intervention de l'UE et que ceux-ci vont au-delà de ce que l'on pourrait raisonnablement attendre des actions nationales des États membres.

⁹ OJ L 327, 22.12.2000, p.1

¹⁰ OJ L 372, 27.12.2006, p.19

¹¹ OJ L 348, 24.12.2008, p.84

¹² OJ L 288, 6.11.2007, p.27

¹³ European Commission, SWD(2017) 350, Better Regulation Guidelines https://ec.europa.eu/info/better-regulation-guidelines-and-toolbox_en

La feuille de route du Fitness Check concernant le bilan de santé de la directive-cadre sur l'eau et de la directive relative aux inondations¹⁴ ont identifié la nécessité de procéder à un Fitness Check pour examiner le fonctionnement et les relations entre la directive-cadre sur l'eau, la directive sur les eaux souterraines, la directive sur les normes de qualité de l'environnement (EQSD) et la directive sur les inondations (FD).

Les données soutenant l'analyse ont été recueillies auprès d'un large éventail de sources, qualitatives et quantitatives, notamment:

- **Une revue de la littérature** : De nombreuses sources de littérature ont été étudiées, la majorité d'entre elles étant classées comme des études universitaires, des rapports de mise en œuvre, des exposés de position d'organisations professionnelles et d'autres évaluations/Fitness Check/évaluations d'impact. Parmi les autres sources disponibles: des publications de l'Agence européenne pour l'environnement (EEA), du Centre commun de recherche (JRC) et d'études indépendantes, des bases de données WISE, des documents de politique générale, des rapports techniques émanant de la stratégie commune de mise en œuvre de la DCE (CIS), des cas d'infraction et des projets financés par l'UE. La majorité des sources examinées ont été publiées entre 2015 et 2018.
- **Une consultation publique ouverte** via un questionnaire en ligne, qui comprenait une série de questions adressées aux experts dans le cadre du même exercice, et publiée le site Web des consultations de la Commission. Le questionnaire était disponible dans 23 langues de l'UE¹⁵. La consultation publique ouverte était accessible via le portail de EU Survey entre Septembre 2018 et Mars 2019. La consultation a reçu un total de 385,088 réponses ;
- **Des consultations ciblées** comprenant:
 - Une enquête en ligne ciblée : une enquête a été mise en ligne pour les experts. L'enquête a été scindée en dix courts questionnaires portant sur la directive sur les inondations, le statut des masses d'eau, les objectifs environnementaux, la directive sur les eaux souterraines, les coûts et avantages des directives, le recouvrement des coûts et la tarification, la surveillance, la participation du public, la cohérence et la valeur ajoutée de l'UE. Au total, 205 intervenants ont fourni une réponse à au moins un des questionnaires.
 - Des groupes de discussion : une série de workshops ont été organisés pour explorer en détail les sujets pour lesquels des lacunes en matière d'information ont été identifiées, notamment la directive sur les inondations et la directive sur les eaux souterraines et sur les coûts et les avantages des interventions considérées dans l'étude.
 - Workshops : trois workshops ont été organisés pour informer les parties prenantes de l'état d'avancement du Fitness Check et fournissant ainsi des options supplémentaires pour les contributions et la collecte de commentaires. Les workshops ont réuni plus de 120 participants, parmi lesquels des représentants des autorités compétentes des États membres, du secteur privé, des ONG, des services de l'UE, du milieu académique et universitaire et des organisations internationales.
 - Interviews : un total de 40 entrevues ont été menées auprès des autorités compétentes des États membres, des autorités de district hydrographique internationaux, des ONG, des représentants de l'industrie, des organismes de recherche et les services de la Commission.

Il est essentiel que l'analyse soit transparente et claire en ce qui concerne les données sur lesquelles elle est fondée et leurs limites. Une limitation importante consiste en l'absence d'évaluation d'impact ex ante pour la directive-cadre de l'eau, ce qui n'a pas permis d'élaborer un scénario contrefactuel clair. Les points de départ

¹⁴ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5128184_en

¹⁵ <https://ec.europa.eu/eusurvey/home/welcome>

variaient pour chaque État membre ainsi que les efforts nécessaires pour atteindre les objectifs de la législation, en effet l'état de l'eau au moment de l'adoption des directives varient au cas par cas. Les données sur les coûts et les avantages ont manqué en grande partie et, par conséquent, seules des "études de cas" ont pu être présentées dans notre analyse.

Principales conclusions

Effacité

L'analyse de l'efficacité considère la mesure dans laquelle les objectifs ont été atteints et les facteurs qui ont contribué à la réalisation (ou non) des objectifs.

DCE et ses directives filles

Notre analyse a conclu que la mise en œuvre des directives a amélioré au fil du temps (à partir des rapports de mise en œuvre, vue d'ensemble des 2^{ème} plan de gestion de district hydrographique ('PGDH') et le rapport publié par EEA sur l'état des eaux) et que les critères de non-détérioration de la directive-cadre sur l'eau semblent avoir été bien mise en œuvre. Toutefois, il apparaît également que les objectifs relatifs à la réalisation de 'bon état' sous cette directive n'ont pas été atteints. Ces retards dans l'atteinte des objectifs de la directive s'expliquent en partie par une sous-estimation du niveau d'effort requis et par un manque de connaissances sur les écosystèmes aquatiques. La dépendance des États membres au niveau des mécanismes de financement de l'UE et l'absence d'autres sources de financement pour la mise en œuvre des mesures nécessaires à la DCE sont également des facteurs qui ont contribué.

La mise en œuvre de la DCE a facilité la hiérarchisation des priorités en matière de qualité de l'eau à travers des cycles de planification successifs, a facilité les mécanismes de coopération transfrontalière et renforcé les réseaux internationaux qui existaient auparavant. La DCE est considérée comme un modèle mondial de gouvernance de l'eau, comme l'a souligné l'ONU dans son analyse de la gouvernance de l'eau en Europe de l'Est.

Sur la mise en œuvre spécifiques dispositions, les opinions des parties prenantes divergent sur le principe de l'élément le plus déclassant ('one-out-all-out'). Bien qu'il soit généralement considéré comme un élément important de la DCE et fondé sur des principes scientifiques, son utilisation en tant qu'indicateur permettant de communiquer les progrès réalisés soulève des préoccupations, en particulier lorsqu'elle ne repose que sur le statut général. De la même manière, les parties prenantes ont exprimé des préoccupations concernant l'utilisation des exemptions. Avec près de 50% des masses d'eau couvertes par une dérogation, il est douteux que cela reflète les attentes du législateur lors de l'élaboration de la directive. En outre, il n'est pas clair si l'application de l'article 9, concernant le principe de recouvrement des coûts, a été pleinement appliquée.

L'analyse a considéré les effets non intentionnels et a mis en évidence une série d'effets positifs non-intentionnels de la DCE, par exemple l'augmentation des compétences hydrologiques au sein des autorités compétentes en matière d'eau, et le rôle «phare» de la DCE dans l'établissement d'un modèle de gouvernance européen. La mise en œuvre de la législation a conduit à une augmentation des connaissances qui n'aurait pas eu lieu en l'absence de cette directive et de ses directives filles. Dans l'ensemble, peu d'effets négatifs non intentionnels ont été identifiés.

Directive Inondations

Dans l'ensemble, la mise en œuvre de la directive est satisfaisante et progresse. Il a été constaté que la mise en œuvre de la directive évoluait d'une politique de défense contre les inondations à une évaluation des risques d'inondation et constituait un modèle potentiel pour la meilleure pratique de gestion des catastrophes.

La dépendance des États membres vis-à-vis des mécanismes de financement de l'UE et l'absence d'autres sources de financement pour la mise en œuvre des mesures nécessaires à la directive ont été reportées.

Il a été constaté que les États membres ne considèrent pas le changement climatique de manière égale dans le cadre de la mise en œuvre de la directive. De même, l'utilisation de l'analyse coûts-avantages pour éclairer le choix des mesures dans les plans de gestion des risques d'inondation (PGRI) s'est avérée variable. La couverture d'assurance privée pour protéger contre les inondations est identifiée comme faible dans l'UE, et représente une occasion manquée pour la directive sur les inondations par certaines parties¹⁶ La littérature suggère que les défis en matière d'aménagement du territoire pourraient être de réduire l'efficacité de la mise en œuvre de la directive dans certains États membres. En outre, des problèmes subsistent en ce qui concerne l'incorporation de solutions basées sur l'infrastructure verte / la nature dans les PGRI.

Efficiences

L'efficacité vise à comparer les ressources requises pour créer les actions déclenchées par la DCE, ses directives filles et la directive des inondations avec les résultats obtenus. De plus, le but de l'évaluation de l'efficacité est de comprendre la relation entre les coûts et les avantages de la législation et la façon dont ils s'appliquent aux différentes parties prenantes (par exemple les compagnies d'eau, les citoyens européens, les administrations régionales et les autorités compétentes des États membres), d'identifier les facteurs influençant ces coûts/avantages et d'évaluer leur lien avec la législation.

DCE et directives filles

Globalement, les rapports d'évaluation des PGDH et des contrôles de conformité du deuxième cycle informent sur les coûts des mesures de la DCE (minimum 116 milliards d'euros de coûts d'investissement et 14 milliards d'euros par an). Cependant, ceci est basé sur des données incomplètes rapportées dans les PGDH. Un certain nombre de pays n'ont pas communiqué d'informations sur les coûts et, lorsqu'ils sont signalés, les informations relatives aux coûts sont agrégées, ce qui rend difficile de tirer des conclusions définitives sur les niveaux de coût et de rentabilité.

Peu d'information est disponible concernant les avantages quantifiés de l'adoption et de la mise en œuvre de la législation. Les PGDH ont principalement fourni des informations qualitatives sur les avantages. Seules quelques études complètes sur les coûts et bénéfices de la gestion de l'eau (l'évaluation des avantages de l'état des masses d'eau amélioré) sont disponibles, y compris des études aux Pays-Bas, en Belgique, en France et au Royaume-Uni. Peu de données sur la monétisation des avantages de la DCE ont été identifiées dans la littérature académique. L'absence de données sur les avantages a empêché l'établissement de rapports coûts-avantages.

Malgré ces lacunes, il est évident que la mise en œuvre de la DCE a entraîné une réduction des émissions dans le milieu aquatique et une amélioration de l'état écologique, chimique et quantitatif des masses d'eau

¹⁶ En particulier, la Cour des Comptes Européenne, et les acteurs de l'industrie de l'assurance.

(efficacité), générant ainsi des avantages plus importants pour les services écosystémiques. La mise en œuvre de la DCE a également permis une meilleure connaissance des milieux aquatiques, une coopération améliorée entre bassin hydraulique et une meilleure information du public. Les résultats de la consultation soutiennent la conclusion que les coûts liés à la mise en œuvre des directives sont justifiés compte tenu des avantages qui ont été et seront atteints à long terme.

Les obligations de rapportage et le suivi sont essentiels dans la mise en œuvre de la vision et les ambitions des directives, même si le système de rapports en place semble être complexe (par exemple, nécessitant des ressources et les compétences à mettre en œuvre). Les résultats de la consultation suggèrent que la majorité des répondants estiment que rien n'indique que la DCE ait imposé un fardeau administratif disproportionné aux autorités (nationales, régionales ou locales), aux opérateurs économiques (industries, sociétés de distribution d'eau, par exemple), aux citoyens ou à d'autres parties. Parmi ceux qui sont en désaccord avec cette proposition (19% à 31% selon la directive), la majorité des répondants sont des entreprises individuelles et des associations professionnelles.

Directive Inondations

Les informations communiquées dans les PGRI couvrent les coûts des mesures de prévention et d'atténuation inondations qui ont été estimés à être au moins 14 milliards € (2016-2021).

Les mêmes défis pour la quantification des avantages de la DCE sont applicables à cette directive. La directive a inculqué une façon différente de considérer les inondations, cherchant à identifier et à atténuer les risques plutôt que de réagir aux inondations a posteriori, ce qui constitue un avantage évident. La directive a contribué de manière positive à la coordination et à l'élaboration d'un cadre de gestion des risques d'inondation, sensibilisant le public à la gestion des inondations et des risques d'inondation et à l'adaptation au changement climatique.

Les résultats de la consultation indiquent que les coûts liés à la mise en œuvre des directives sont justifiés compte tenu des avantages qui ont été et seront réalisés à long terme. De plus, les résultats de la consultation indiquent que la majorité des répondants (y compris les autorités compétentes des États membres) estiment qu'il n'y a aucune preuve que la directive ait imposé un fardeau administratif disproportionné aux autorités (nationales, régionales ou locales), aux opérateurs économiques (industries, sociétés de distribution d'eau), aux citoyens ou à d'autres parties.

Pertinence

L'évaluation de la pertinence de la DCE et de la directive sur les inondations couvre l'analyse de la relation entre les besoins de la société de l'Union européenne dans le domaine de l'eau et des inondations et des objectifs et du champ d'application des directives.

La nécessité d'une intervention publique dans le domaine de l'eau reste essentielle en raison de son importance économique pour l'industrie européenne, de son importance pour les écosystèmes et de la volonté des citoyens de soutenir la législation dans le domaine de l'eau et des inondations. Toutes les eaux de l'UE ne sont pas encore en bon état et des pressions de différentes sources subsistent actuellement et disparaîtront probablement dans un proche avenir.

Les objectifs de la DCE et directive sur les inondations sont formulés de manière complète et ambitieuse, et les indicateurs utilisés ne sont pas spécifiques ou limités et ainsi restent d'actualité. Il existe une incertitude

parmi les parties prenantes quant à la manière dont le changement climatique est traité dans la DCE et la directive sur les inondations. Les problèmes de rareté de l'eau et de quantité d'eau restent insuffisamment couverts dans la DCE et les parties prenantes ont indiqué que les questions relatives à la quantité d'eau ne sont pas entièrement résolues. Cela est particulièrement pertinent en ce qui concerne les prélèvements d'eau et l'utilisation de l'eau, où des lacunes en ce qui concerne l'utilisation des exemptions peuvent avoir une incidence sur la réalisation du bon état quantitatif. Les inondations pluviales dans la directive sur les inondations, bien qu'elles soient officiellement couvertes par la directive, sont généralement sous-représentées dans les PGRI en raison de leur complexité.

La DCE et la directive sur les inondations sont légalement en mesure de traiter des problèmes d'actualité émergents, tels que les substances émergentes et le changement climatique. Cela est dû principalement à leur nature flexible et aux dispositions qui y sont contenues pour traiter ces problèmes émergents. Cependant, les parties prenantes sont divisées sur la pertinence de la DCE pour traiter concrètement des substances émergentes (par exemple, il a été signalé que les changements dans la liste des substances prioritaires sont lents). Ces nouveaux problèmes, tels que les espèces exotiques envahissantes, compliquent l'utilisation des indicateurs de l'état de l'eau comme jamais précédemment. Enfin, l'efficacité des plans de surveillance pourrait être obtenue avec des techniques de surveillance plus modernes.

La cohérence

Cette analyse vise à comprendre la mesure dans laquelle la DCE, ses directives filles et la directive sur les inondations sont conformes à d'autres politiques européennes et les obligations internationales en général, et dans quelle mesure ces politiques se renforcent mutuellement dans la réalisation des objectifs communs.

Les directives sont généralement considérées comme cohérentes au niveau interne. L'action combinée de la DCE et des directives filles, de la DCE et de la directive sur les inondations est considérée comme cohérente et efficace.

Le système WISE est considéré comme offrant une cohérence en étant applicable aux directives DCE et ses directives filles et en permettant une approche plus efficace des rapports sur l'environnement. La différence de calendrier pour la notification de la DCE et de la NQE a été soulevée comme un problème potentiel. Cependant, il a également été noté que cela permettait l'identification de nouvelles substances à mi-cycle. Bien que le manque de clarté concernant la terminologie et les définitions ait été soulevé, il s'agit en grande partie de problèmes de mise en œuvre pour lesquels le rôle du CIS a été souligné comme étant particulièrement important dans leur résolution.

Les données recueillies suggèrent que les interactions de la DCE, NQE, la directive eaux souterraines et la directive sur les inondations sont positives et conduisent à des synergies. Cependant, une plus grande coopération entre la DCE et la directive sur les inondations a été encouragée dans leur mise en œuvre et afin d'éviter les mesures contre-productives (telles que les mesures d'infrastructures grises).

L'action combinée des directives avec la législation de l'eau en général a également été soulignée comme conduisant à des synergies avec un grand nombre des d'instruments législatifs (par exemple directive sur le traitement des eaux urbaines résiduaires, la législation relative aux eaux de baignade, etc.) étant des mesures de base sous la DCE.

Les domaines considérés comme les moins cohérents incluent: les politiques agricoles, les politiques de transport, la politique des produits chimiques et le changement climatique.

- En ce qui concerne l'agriculture, les informations rassemblées montrent qu'il est difficile d'intégrer la protection de l'eau dans les pratiques agricoles (comprenant par exemple l'utilisation de pesticides et d'autres produits phytopharmaceutiques).
- En ce qui concerne les politiques de transport, il est à noter que la plupart des défaillances des normes de qualité de l'environnement observées sont liées au mercure et aux HAP émis par la combustion de combustibles fossiles. Les émissions dues au transport sont probablement une source importante pour ces émissions. L'information recueillie montre que les impacts de la navigation dans les eaux fluviales, la pollution par les navires, et les perturbations morphologiques (y compris le dragage des sédiments) sont, dans certains cas, reflétés dans les plans de gestion des bassins hydrographiques. Cependant il semblerait possible de considérer davantage ces questions, par exemple sur les sédiments lors de l'implémentation. La législation sur les transports intérieurs et sur les transports en général semble être cohérente.
- En ce qui concerne la politique relative aux produits chimiques, il existe un manque de coordination entre la mise en œuvre de la DCE et la législation sur le contrôle à la source (REACH, par exemple). Bien qu'il ne s'agisse pas d'une incohérence en soi, la difficulté d'utiliser les informations générées dans le cadre de la mise en œuvre de la législation sur les substances chimiques lors de la mise en œuvre de la DCE limite l'efficacité du cadre législatif.

L'action des directives est perçue comme un soutien aux obligations internationales de l'UE, y compris les objectifs de développement durable des Nations Unies, la convention sur les mers régionales et le cadre de réduction des risques de catastrophe de Sendai. Des doutes ont été exprimés sur l'efficacité de la Convention de Minamata sur la limitation des impacts de la pollution par le mercure, compte tenu du nombre élevé de masses d'eau défaillantes en raison de la pollution par le mercure.

Valeur ajoutée de l'UE

Le dernier critère d'évaluation concerne la valeur ajoutée de l'intervention au niveau de l'UE, par opposition à l'intervention des États membres au niveau national.

La conception (légale) de la DCE et de la FD présente certaines sources de valeur ajoutée de l'UE. Le potentiel de valeur ajoutée de l'UE issue des directives est donc important, notamment pour faciliter davantage la coopération transfrontalière dans les eaux internationales, et pour établir un cadre commun de meilleures pratiques dans l'UE (normes basées sur les bassins versants dans un certain nombre de pays européens) et introduction d'un certain nombre d'autres instruments politiques novateurs (notamment la DCE).

L'étude indique des effets importants quant à la mise en vigueur par les institutions européennes et les services fournis par les institutions européennes pour le règlement des différends (potentiel) entre les États membres. La nécessité d'une intervention de l'UE continue d'être forte, en particulier au vu de la nature internationale des eaux. De plus l'augmentation des pressions sur la qualité de l'eau et les risques d'inondation due au changement climatique, et les projections de l'évolution de domaines d'action 'concurrents' également régies par la politique de l'UE (énergie, l'agriculture, les produits chimiques et le transport des politiques) sont d'autant plus d'arguments en faveur de l'intervention de l'UE.

En pratique, ce potentiel de valeur ajoutée de l'UE grâce à des instruments politiques innovants et à la coopération transfrontalière n'a pas été suffisamment concrétisé. La mise en œuvre des PGDH internationaux entre les deux cycles a peu progressé, mais l'ampleur de la coopération transfrontalière dans les eaux partagées a augmenté depuis l'adoption de la DCE.

1 Introduction

1.1 Purpose of the report

This report is the final report for the project “Fitness Check (Evaluation) of the Water Framework Directive and the Floods Directive” Specific Contract Number 07/0201/2018/SFRA/779945/ENV.C.1 of the European Commission DG Environment under Framework contract ENV.F.1/FRA/2014/0063.

This project is led by Wood and is delivered together with Trinomics B.V., Wageningen Environmental Research (WENR), part of Wageningen University & Research, and Deltares.

Our findings are based on an extensive collection of evidence, which is detailed in the report. Our approach to the analysis of the evidence gathered is in accordance with the requirements of the Better Regulation guidelines.

1.2 Scope of the report

The Evaluation and Fitness Check Roadmap concerning the Fitness Check of the Water Framework Directive and the Floods Directive¹⁷ identifies the need to carry out a Fitness Check to look at functioning of and relationship between the Water Framework Directive (WFD), the Floods Directive (FD), the Groundwater Directive (GD) and the Environmental Quality Standard Directive (EQSD).

The aim of the report is to present our conclusions on the analysis of the effectiveness, efficiency, relevance, coherence and EU added value of the following Directives considered as part of the Fitness Check:

- Directive 2000/60/EC establishing a framework for Community action in the field of water policy¹⁸;
- Directive 2006/118/EC on the protection of groundwater against pollution and deterioration¹⁹;
- Directive 2008/105/EC on environmental quality standards in the field of water policy²⁰; and
- Directive 2007/60/EC on the assessment and management of flood risks²¹.

1.3 Structure of the report

This report is structured as follows:

- Section 2 presents an introduction to the methodological aspects of the Fitness Check;
- Section 3 presents the state of play with regard to current level of implementation;
- Section 4 presents the baseline for the analysis;
- Section 5 presents our findings from the effectiveness analysis;
- Section 6 presents our findings from the efficiency analysis;
- Section 7 presents our findings from the relevance analysis;
- Section 8 presents our findings from the coherence analysis;
- Section 9 presents our findings from the EU added value analysis;
- Section 10 presents our conclusions;
- Appendix A presents a glossary of common abbreviations used in the report;
- Appendix B presents our evaluation matrix;
- Appendix C presents our literature log; and
- Appendix D presents the summary of the consultation activities in the form of a synopsis report.

¹⁷ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5128184_en

¹⁸ OJ L 327, 22.12.2000, p.1

¹⁹ OJ L 372, 27.12.2006, p.19

²⁰ OJ L 348, 24.12.2008, p.84

²¹ OJ L 288, 6.11.2007, p.27

2 Introduction to the Fitness Check

2.1 Overview of the methodology implemented

2.1.1 Scope of the evaluation

This study has a clearly defined scope in the Fitness Check Roadmap which is the review of the four Directives since:

- the adoption of the WFD in 2000 for the WFD, the GWD and the EQSD; and
- the adoption of the FD in 2007.

The review of the WFD is required by Article 19(2) of the Directive and the evaluation of Directive 2007/60/EC on the Assessment and Management of Flood Risks was announced in the European Commission REFIT programme for 2017²². In addition, the Groundwater Directive and the EQS Directive are included in the scope of the Fitness Check due to their strong links with the WFD, both being directly relevant to the determination of the environmental objectives and standards included in the WFD.

The Fitness Check was conducted in close cooperation with the evaluation of the UWWTD as evidenced by the common consultation strategy.

2.1.2 Intervention logic

An intervention logic presents the rationale behind a policy intervention. We have developed the intervention logic the WFD (and its daughter Directives) and FD as a whole, rather than for each Directive separately which is presented in Figure 2.1. The main elements of the intervention logic are shortly elaborated below.

Needs

The start of the intervention logic is the “needs” of EU society for which an intervention was considered to be needed. In the context of the WFD and the FD, this need is defined as addressing threats that prevent waters in the EU to reach a good status and mitigate the adverse consequences of floods as well as avoiding further deterioration. These waters are under pressure from various sources, including over abstraction, hydromorphological changes, nutrient pollution, chemical pollution and flooding.

Objectives

The objective of the broader freshwater policy intervention is most accurately captured by the purpose of the WFD (Article 1, bullets a-e). The daughter Directives (GWD & EQSD) contribute to fulfilling the five key objectives from the WFD as presented in Figure 2.1. The FD has a separate, standalone objective, which is however rather in line with the fifth objective of the WFD: mitigating the effects of floods. Therefore, jointly the five WFD key objectives should contribute to addressing the needs as described above.

Inputs and Outputs

These objectives are translated into “outputs”, which are direct actions taken to implement the Directives. These actions most notably include developing River Basin Management Plans (RBMPs), Flood Risk Management plans (FRMPs) and Programmes of Measures (PoMs) as defined in Articles 2-4 in the WFD and Annex II-IV in the FD. Using the “inputs” of financial means and manpower made available by the European Commission, Member

²²

https://ec.europa.eu/info/sites/info/files/cwp_2017_refit_scoreboard_2016_en.pdf#%5B%7B%22num%22%3A153%2C%22gen%22%3A0%7D%2C%7B%22name%22%3A%22XYZ%22%7D%2C208%2C726%2C0%5D

States' (MS) competent authorities and the private sector realise the aforementioned outputs and execute the actions defined in the PoMs and the RBMPs and FRMPs (which create the results of these measures).

Results and impacts (effects)

The direct consequences of taking the actions defined in the RBMPs, the PoMs and the FRMPs, are the “results” of these actions (such as the measures taken to improve ecological, chemical and quantitative status of groundwater and surface waters and the improved (international) coordination between river basin districts). The effects of these results are the “impacts” of the WFD and the FD. The effects are defined beforehand as expectations as to what the Directives are supposed to lead to, namely better quality and quantity of surface and groundwater in Europe, an improved management framework, but also a better management of risks presented by floods (Article 1 of the WFD).

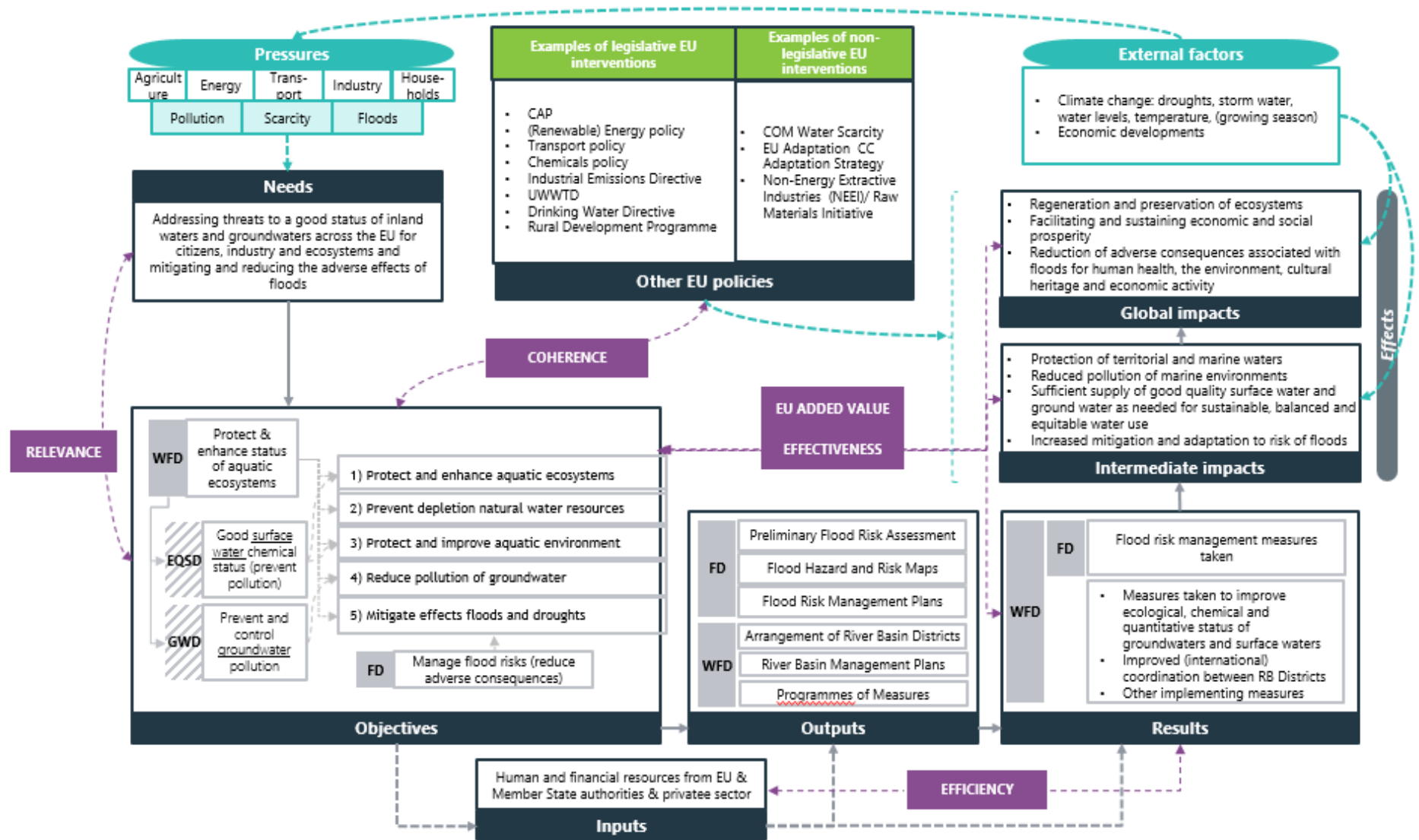
Other EU policies

The desired and foreseen effects of the WFD & FD intervention can be influenced by activities covered under other EU legislation or policy actions. For example, renewable energy policy stimulating the use of hydropower can have adverse consequences on the aims of freshwater policy in the EU. The cross-compliance instrument in the Common Agricultural Policy (CAP) makes payments conditional on recipients meeting several EU laws and the Rural Development Programmes. These are an important funding source for agriculture related water measures. These interactions must be considered in the analysis of the intervention.

External factors

The effects of the Directives can be influenced by factors that are beyond their scope. For example, increased global emissions of greenhouse gas emissions (GHGs) will exacerbate the consequences and likelihood of floods in the EU, reducing these emissions of GHGs is not the primary aim of the FD or the WFD and they are therefore considered a relevant external factor that can influence the desired results of both Directives.

Figure 2-1 Intervention logic



2.1.3 Evaluation questions

Table 2-1 presents the final evaluation questions, part of the overall evaluation framework. Note that for readability of this report we include the remaining aspects of the evaluation framework (i.e. judgment criteria, indicators, suggested approach and sources of data) in Appendix B.

Table 2-1 Overview of evaluation questions and sub questions

Number	Overall evaluation questions	#	Evaluation sub-question
Effectiveness			
1	To what extent are the Directives performing as expected?	1.1	What progress have Member States made over time in implementing the WFD and achieving the objectives set out in the Directive?
		1.2	What progress have Member States made over time in implementing the EQSD and achieving the objectives set out in the Directive?
		1.3	What progress have Member States made over time in implementing the GWD and achieving the objectives set out in the Directive?
		1.4	What progress have Member States made over time in implementing the Floods Directive and achieving the objectives set out in the Directive?
		1.5	How have the Directives facilitated transboundary cooperation?
2	Which main factors have contributed to or stood in the way of achieving the Directives' objectives (including flexibility of the Directives)?	2.1	Which main factors have contributed to or stood in the way of achieving the Directives' objectives?
3	Have the Directives led to any unexpected significant changes, either positive or negative?	3.1	To what unexpected significant changes, either positive or negative, have the Directives led?
Efficiency			
4	What are the costs and benefits of the legislation and to what extent are the costs of the legislation justified, given the benefits achieved?	4.1	What are the costs incurred (monetary and non-monetary) since the adoption of the Directives in the Member States and in the EU? How do these actual costs compare to those which were estimated in the Impact Assessment for the FD, GWD and the EQSD? What are the reasons for differences between foreseen and actual impacts? What are the benefits arising since the adoption of the Directives in the Member States and in the EU? How do these compare to those which were estimated in the Impact Assessment for the FD, GWD and the EQSD? What are the reasons for differences between foreseen and actual benefits?
		4.2	Can any costs be identified that are out of proportion with the benefits achieved and vice versa? In particular, are the costs of compliance proportionate to the benefits brought by the Directives?
		4.3	Taking account of the objectives and costs/ benefits of the Directives is there evidence that they have caused unnecessary administrative burden to authorities or operators?
5	To what extent do the costs and benefits vary between Member States or regions?	5.1	If there are significant costs or benefit differences between Member States and regions, what is causing them?
6	What factors have influenced the efficiency, and can good practices be identified?	6.1	What factors have influenced the efficiency (flexible legislation, CIS process clarifying and harmonising certain issues), and can good practices particularly in terms of cost-efficient implementation of the Directives in Member States and regions, be identified?
7	To what extent are there opportunities to simplify the legislation or reduce unnecessary regulatory cost without undermining the objectives of the Directives?	7.1	Are there opportunities to simplify legislation or create synergies between the four Directives, thereby reducing regulatory cost without undermining the objectives of the Directives?
8	To what extent are monitoring and	8.1	To what extent are monitoring and reporting requirements fit for purpose? How timely and efficient is the Directives' process for reporting and

Number	Overall evaluation questions	#	Evaluation sub-question
	reporting requirements fit for purpose?		monitoring? Is it clear, flexible and simple enough to support timely decision making?
Relevance			
9	How well adapted are the Directives to take into account technical and scientific progress? Have they been adapted based on this progress?	9.1	What has been the most significant technical and scientific progress (since the design of the Directives) in the areas covered by the Directives, in particular better knowledge of the dynamics, or services, of aquatic ecosystems and new pressures (including climate change), recent knowledge related to risk assessment, and on the effectiveness of the applied measures? Which elements of this progress are relevant for the implementation of the Directives?
		9.2	How well adapted are the Directives to take into account technical and scientific progress?
10	To what extent are the objectives still relevant and properly addressing the key problem that ecosystems and society presently face? (the adverse consequences of floods & insufficient water status of (selected) water bodies in the EU as needed for sustainable, balanced and equitable water use)?	10.1	How relevant is EU water legislation to EU citizens and what is their level of support for it?
		10.2	What are the key pressures threatening the good status of water bodies in the EU and the frequency and severity of floods that ecosystems and the EU society currently face and how have these pressures become stronger or weaker?
		10.3	What defines sustainable management of water resources in the EU, what is the need for it and how do the four Directives contribute to it?
		10.4	What are the needs of EU society in relation to the quantity of available water (water scarcity) and to what extent do the objectives of the Directives address these needs?
Coherence			
11	To what extent is the legislation coherent internally?	11.1	Are the Directives coherent internally?
		11.2	Are the GWD and the EQSD coherent with the WFD?
		11.3	Are the WFD and daughter Directives coherent with the Floods Directive?
12	To what extent is the legislation coherent with wider EU policy?	12.1	To what extent are the objectives specified by the Directives coherent with other pieces of EU legislation addressing the management of water resources?
		12.2	To what extent are the Directives satisfactorily integrated and coherent with other parts of EU environmental law / policy, including as regard environmental impact assessment and strategic environmental assessment and fundamental principles such as the Polluter Pays Principle?
		12.3	To what extent do the WFD and FD complement or interact with other EU sectoral policies affecting land and water use/management at EU and Member State level (i.e. (i.e. agriculture and pesticides, nature, industry, chemicals (including biocides and cosmetics), regional and cohesion, urban/land use, energy, transport and climate change, regional and cohesion, urban/land use, energy, transport and climate change).
13	To what extent is the legislation coherent with international obligations?	13.1	How coherent are the Directives with international and global commitments on water management and flood risk management (e.g. UN SDGs, UNECE, Paris agreement on climate, Sendai framework, OSPAR)?
EU added value			
14	What is the additional value resulting from these Directives compared to what could have reasonably been expected from Member States acting at national, regional and/or international level?	14.1	What is the additional value resulting from these Directives compared to what could reasonably have been expected from Member States acting at national and/or regional level?
		14.2	What would have been the effect of non-implementation of the Directives and what are the costs/ foregone benefits of only partial implementation of the Directives, if this is the case?
15	To what extent do the issues covered by the Directives still require action at EU level?	15.1	To what extent do the issues covered by the Directives still require action at EU level?

2.1.4 Consultation strategy

The consultation strategy published in May 2018 covered both the Fitness Check and the parallel evaluation of the Urban Waste Water Treatment Directive²³. We have described below the elements of the consultation strategy with relevance specifically for the Fitness Check process.

Objectives

The objectives of the consultation were:

- To complement conclusions based on existing and already known data and literature review to the Fitness Check, among other things, and to understand to what extent the Directives have been successfully implemented, to what extent their objectives have been met, what the challenges were and whether there have been trade-offs in the implementation;
- To gather further evidence to substantiate the analysis of relevance, effectiveness, efficiency, coherence and EU added value. Of particular relevance, the coherence and links with other European legislation were emphasized;
- To gather additional information, going beyond pure implementation information and helping to assess the functioning of the Directives, and the benefits and costs that different stakeholders attach to them;
- Summaries of statements made by respondents to the OPC are included in bullet points throughout this document. The bullet lists bring together statements made in the consultations, but it should be noted that these lists don't necessarily reflect a majority opinion amongst the respondents. Their purpose is to illustrate the variety of responses received.

Stakeholders

Relevant stakeholders to be involved in the Fitness Check process were:

- Member States and their public authorities responsible for the environment, water management, health, infrastructure and urban planning, disasters, and economic uses of water and International River Basin District Commissions;
- The Working Groups (WGs) under the Common Implementation Strategy (CIS);
- Industrial/economic actors, including small and medium sized enterprises, within sectors with an impact on water or impacted by the Directives;
- Non-Governmental Organisations (NGOs) and citizens' initiatives;
- International organisations relevant to the Directives, e.g. those providing funding, advice on health, technical or governance issues, local implementation aid;
- Academia, research and innovation organisations and institutes; and
- Citizens.

2.1.5 Evidence gathered

The findings from this report rely on facts and evidence gathered through a range of data collection techniques. The methods to be applied to gather these evidences were described in the consultation strategy. These were:

1. Open public consultation through an online questionnaire, including a general public and an expert part, using the Commission consultation's website;
2. Targeted consultations including:

²³ Fitness Check of the Water Framework Directive, its associated Directives and the Floods Directive, and Evaluation of the Urban Waste Water Treatment Directive, Consultation Strategy, http://ec.europa.eu/environment/water/water-urbanwaste/legislation/pdf/2018.04.20%20Consultation%20Strategy%20UWWTDD_WFD_FD.pdf

- Targeted online survey;
 - Focus Groups;
 - Stakeholders' workshops; and
 - Interviews.
3. Feedback received on the evaluation roadmap.

All of these methods were applied.

Literature review

An extensive literature review was conducted. The first step was to identify and screen a range of sources of information, which were then categorised for a targeted analysis. As shown in Appendix C, numerous sources were studied, the majority of which were classified as academic studies, implementation reports, position papers and other Evaluations/Fitness Checks/Impact Assessments. Additional sources included: publications from the European Environment Agency (EEA), Joint Research Centre (JRC) and independent studies, WISE datasets, policy documents, CIS Technical Reports, infringement cases, and, projects funded by the EU. The majority of sources reviewed were released between 2015 and 2018.

In addition, the project has made use of the following key recent publications and projects:

- The analysis of the implementation and compliance of the WFD and FD²⁴;
- Findings from the Blue2 project, Part A and Part B²⁵;
- Findings from the Integrated Assessment of the 2nd River Basin Management Plans²⁶;
- Review of the data reported in WISE supporting the EEA assessment of 'State of European Waters' and the review of chemical status in European waters²⁷.

Open public consultation (OPC)

The Open Public Consultation (OPC) aimed to gather the opinion of interested citizen and organisations, in particular stakeholders that would be unlikely to be involved in the other, more specialist, targeted strands of the consultation activities.

The questionnaire was drafted to be accessible to the public and, to this end, included two parts: a general part containing 28 questions with a limited amount of technical detail in relation to the Directives and an expert part containing 52 questions on specific details of the Directives and referring to the evaluation terminology (e.g. unintended effects, efficiency etc). All questions, except those identifying the respondent, were optional.

The questionnaire was made available in all EU languages through the EU Survey tool²⁸. The OPC was live on the EU Survey portal between September 2018 and March 2019. To maximise the response rate, a link to the questionnaire was placed on the Consultations page within the EUROPA Website²⁹, and a

²⁴ European Commission, 2019, COM(2019)95, Report from the Commission to the European Parliament and the Council on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River Basin Management Plans and First Flood Risk Management Plans. http://ec.europa.eu/environment/water/water-framework/impl_reports.htm

²⁵ BLUE2 Consortium (2019): "Summary Report". Deliverable of the BLUE2 project "Study on EU integrated policy assessment for the freshwater and marine environment, on the economic benefits of EU water policy and on the costs of its non- implementation". Report to DG ENV. http://ec.europa.eu/environment/blue2_en.htm

²⁶ Not published yet

²⁷ European Environment Agency, 2018, Report No7/2018, Assessment of status and pressures 2018, <https://www.eea.europa.eu/publications/state-of-water>

²⁸ <https://ec.europa.eu/eusurvey/home/welcome>

²⁹ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5128184_en

number of organisations were contacted directly and asked to help disseminate the link to the questionnaire.

The consultation received a total of 385,088 responses. The first step undertaken was to remove duplicated responses (i.e. multiple responses from the same respondent with identical responses). A total of 15,010 responses were subsequently removed leaving a total of 370,078 responses to analyse. Out of these, a total of 368,764 responses were identified as being responses from campaigns and 1,944 being non-campaign responses. Out of the non-campaign responses all provided at least one response to Part I of the questionnaire, while less than half provided at least one response to Part II of the consultation.

As requested by the Better Regulation guidelines, the campaign responses were analysed separately.

1. Campaign responses

A total of 3 campaigns were identified:

- The campaign with the greatest number of responses was the #ProtectWater campaign organised by WWF. This campaign supported a positive view of the Water Framework Directive and sought to ensure that the Water Framework Directive remains unchanged, is fully implemented by Member States and is enforced by the European Commission. The campaign guided respondents on how to reply to questions in both Part I and Part II of the questionnaire. The WWF indicates on its website that the campaign has generated 375,386 replies. According to our analysis, 368,303 respondents answered exactly as suggested by the WWF campaign.;
- Two more campaigns, in addition to the #ProtectWater campaign, were identified and named as Campaign 2 and Campaign 3. These campaigns were unidentified because it is unclear which interest groups are responsible for preparing them.

Out of the 368,303 responses retrieved from WWF's #ProtectWater campaign, 361,275 (98%) were from EU Member States. Of the responses from the EU Member States, 46% were from Germany; 6% from the Netherlands; 5% from Austria, Sweden, Spain, Belgium and Italy each; 4% from France and Hungary each; 3% from Finland and the UK each; and 2% from Bulgaria and Poland each. The remaining responses were spread relatively evenly among the other EU Member States.

All the responses received from Campaign 2 were from EU Member States. Out of the 409 responses, 69% were from Germany, 30% were from Austria, and the remaining five responses were split between Bulgaria, Estonia, Greece and Belgium.

For Campaign 3, out of the 52 responses, 51 were from Germany and 1 was from a Non-EU country.

2. Non-campaign responses

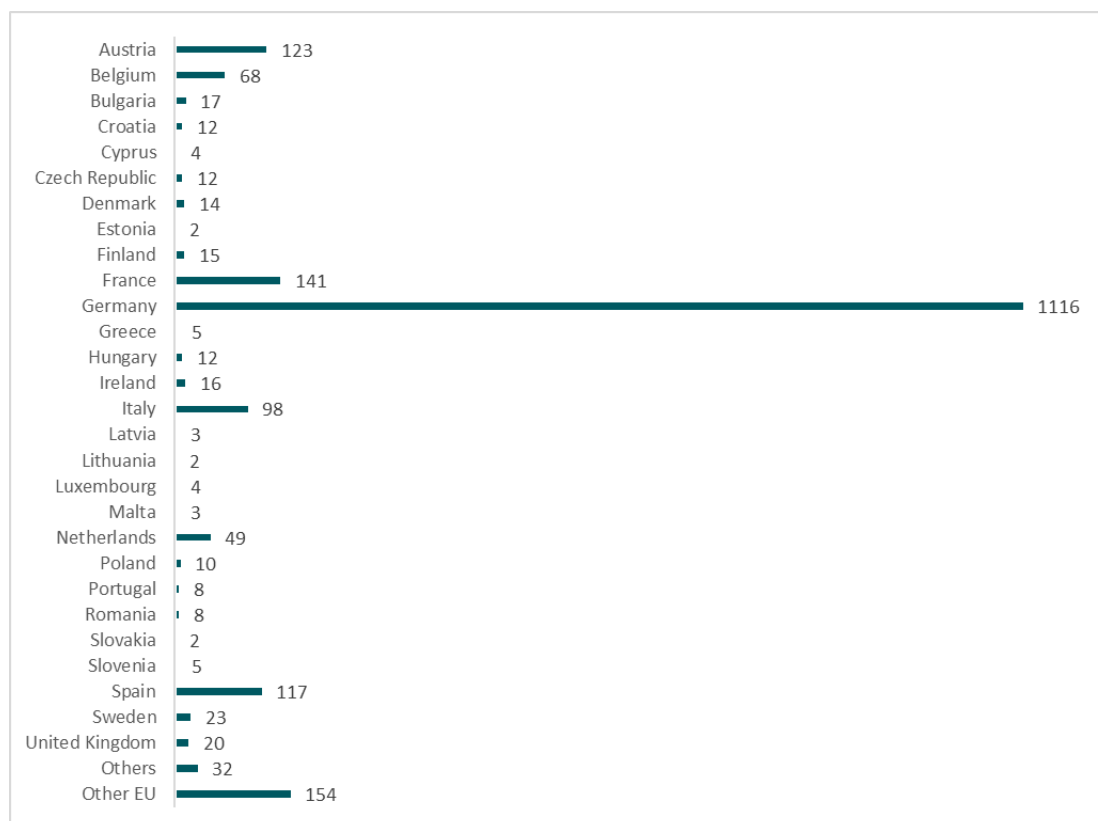
As it can be observed from Figure 2-2, the vast majority of respondents from non-campaign responses (69%) were EU citizens, which is to be expected for such an exercise particularly considering there was a high level of publicity of the consultation, with several organisation encouraging interested citizens to respond.

Figure 2-2 Overview of response number per category of respondents



The respondents were identified as from places in the EU and beyond. More than half were from Germany (1,116 respondents), followed by France, Austria and Spain. Non-EU respondents represent 2% (32) responses. A split of respondents is presented in the Figure 2-3.

Figure 2-3 Overview of respondents' country



3. Position papers

As part of the consultation process stakeholders were invited to submit additional information including position papers. The information submitted was reviewed to identify position papers. More than 100 separate submissions were received, some of these included documents that were submitted multiple

times by different stakeholders. When this situation arose, the position paper was logged and reviewed only once. In total, 90 unique position papers were submitted. An overview of the position papers received is presented in the synopsis report presented in Appendix D while a brief summary of each is presented in the report on the OPC.

Targeted consultation

Targeted consultation took the form of stakeholders' workshops (3), focus group workshops (2), targeted online survey and interviews. Details on each of these are presented below.

4. Targeted online survey

A targeted survey was held online during March 2019. Expert stakeholders including Member States, international organisations, Commission services, NGOs, industry representatives and academics, were invited to provide views on a range of topics. The survey was split into 10 short questionnaires on:

- The Floods Directive;
- Water body status: ecological, chemical and quantitative status;
- Environmental objectives and exemptions;
- Groundwater Directive;
- Costs and benefits of the Directives;
- Cost recovery and pricing;
- Monitoring;
- Public participation and opportunities for engagement;
- Coherence of the legislation; and
- EU added value.

The number of responses varied for each questionnaire but in total 205 respondents took part in the survey. Several respondents also took the opportunity to submit useful supporting information and evidence.

5. Focus Groups workshops

A series of focus groups workshops were organised by the project team. The aim of such gatherings was to explore in detail one specific topic selected because of gaps identified on the information available. The following focus groups were held:

- Floods Directive - held following the WG Floods meeting in Lisbon on 28th March and 29th March;
- Groundwater Directive - held in Brussels, on 29th April;
- Costs and benefits - interactions organised in writing (questions sent to expert).

Ahead of each focus group workshop, participants were sent a short background document with a series of questions / points to explore as part of the discussions.

Participants were selected based on their expertise and involvements with the topics considered. The distribution of participants considered the importance of ensuring some representativeness through spread of countries and identity of participants.

Following the focus group workshops, concise minutes of the day were sent to DG Environment for further sharing with participants and beyond³⁰. Some of the key points discussed are presented below.

Event	Key points discussed
Focus Group workshop on	<ul style="list-style-type: none"> • It is still too early to know whether the Directive has been entirely successful as it is somewhat dependent on the occurrence of flood events to test the modelling and measures employed.

³⁰ Minutes and documents are available on CIRCABC

Event	Key points discussed
Floods Directive	<ul style="list-style-type: none"> • The Directive has positively contributed to coordination and development of a framework for managing flood risks. • The Directive has positively contributed to raising public awareness about flooding and flood risk management. • It was identified that there are two main indicators of success 1) implementing measures and 2) risk reduction. The latter was considered difficult to be measured. Furthermore, flood risk reduction is difficult to monitor as a result of factors such as climate change and increases in population in certain areas. • The flexibility and framework of the Directive have helped Member States to work together, communicate with the public and understand risk concepts.
Focus Group workshop on Groundwater Directive	<ul style="list-style-type: none"> • It is up to date and many relevant scientific research streams were driven by the GWD. As a result, the knowledge of groundwater has increased immensely (both for groundwater quantitative and chemical status). • There are still important scientific gaps for the implementation of the GWD, especially on aspects for protected areas (risk assessment for drinking water, groundwater dependant terrestrial ecosystems (GWDTE), groundwater associated aquatic ecosystems (GWAAE)). For ecosystems targeted work, these gaps are around understanding the sensitivities of terrestrial and aquatic ecosystems to groundwater quality and quantity. • Effects of climate change are difficult to model / predict. Climate change can be seen as an additional pressure. • Groundwater quantity is tackled in the WFD not the GWD. Issues with regard to the monitoring and quantitative status assessment need clarification, for instance: on how to deal with karstic aquifers; on assessing risks for GWDTE; and on groundwater level and/or groundwater flow (note: Technical report 6, 2011-056 provides relevant guidance on these issues). • Overall it is difficult to compare costs and benefits, however there was a general view that the benefits were higher than the costs. • In some instances, the costs have been reduced by the GWD as it reduced the burden in comparison to other legislation (e.g. DK). Similarly, in the NL costs for monitoring for groundwater specifically have been reduced.

6. Stakeholders' workshops

A series of three workshops were organised in order to introduce the Fitness Check process in more detail to stakeholders, present the findings to date and gather feedback. The workshops have gathered more than 120 participants to date including representatives from Member States' competent authorities, industry, NGOs, EU services, academia and international organisations.

- Workshop 1 took place on 10 October in Brussels. The event had a strong emphasis on process as it was important at that early stage for stakeholders to understand their opportunities for interacting with the project and the overall Fitness Check process;
- Workshop 2 took place on 3 April in Brussels. The purpose was to present preliminary messages based on the analysis of the literature and the initial results from the public consultation. The emphasis was put on discussions with opportunities for stakeholders to share their views on the messages being presented;
- Workshop 3 took place on 3 June in Brussels. The aim of the workshop was to present the conclusions from the project, whilst also enabling stakeholders to raise questions and provide feedback. The workshop included an interactive element which allowed attendees to produce questions online and participate in live polling activities, as well as partaking in a live stream of the event. A total of 84 stakeholders attended in person, in addition to numerous online participants.

Ahead of each workshop, participants were provided with a short background document summarising key points that would be presented. As part of the workshops, participants were asked to provide their views on the information presented and provide additional thoughts and materials in relation to these topics.

All workshops were attended to full capacity, demonstrating the large interest from stakeholders with the Fitness Check process.

In addition, a specific expert workshop on pollutants of emerging concerns was held in coordination with the evaluation of the UWWTD³¹.

Interviews

In April and May 2019 interviews were organised with selected stakeholders. A total of 74 individuals were approached for interviews. These include Member States Competent Authorities, International River Basin District, NGOs, industry representatives, research organisations and Commission services. The selection of the interviewees was done in order to address remaining gaps in particular with regard to costs and benefits, transboundary cooperation and coherence of the legislation.

In addition, the Strategic Coordination Group of the Common Implementation Strategy was approached and offered interviews. Following this, an additional 11 stakeholders requested an opportunity to be interviewed.

2.1.6 Conclusions on robustness of the evidence gathered

An evaluation is only as strong as the evidence upon which it relies. As such, it is important for our analysis to be transparent and clear on the evidence upon which it is based. We have, therefore, indicated for each evaluation question an individual assessment of the completeness of evidence. Overall, the following limitations in the strength of evidence are relevant:

- The WFD sets a framework to achieve a series of objectives. The starting points for each Member State were different, and the level of efforts needed to meet the objectives also varies based on the state of water at time of adoption of the Directives;
- Many of the actions taken as part of the implementation of the WFD are linked to other legislations (e.g. drinking water Directive, UWWTD), so it is important to not double account these and distinguish the effects actually observed between those due the implementation of the Directives from those that would have happened without them. In order to address this, we have defined a baseline scenario which adds quantitative and qualitative elements and is used as part of our analysis;
- Constraints in the consultation: As part of the materials received it is apparent that some stakeholders based their answers on their subjective opinion without providing further explanations or data to support their statements, which increases the uncertainty and the risk of misleading/biased answers;
- Triangulation was not possible for all questions as a result of varying levels of evidence available from different sources. In some cases, therefore, we have had to rely to a large extent on consultation's responses rather than on published literature and vice versa;
- Data on costs and benefits were largely missing and only 'case studies' could be presented in our analysis.

Despite these difficulties, we have generally been able to gather a mostly robust evidence base. Where difficulties were encountered in relation to the robustness of the evidence upon which conclusions have been drawn, these are reflected against the relevant evaluation questions.

³¹ Information on this workshop is available on CIRCABC

3 State of play of water policy in the EU

3.1 Introduction to the WFD and daughter Directives

The Water Framework Directive (WFD) came into force on 22 December 2000. In the preceding years different policy instruments had been used to address different individual issues, leading to a fragmented approach. In 1995, the Commission accepted requests from the European Parliament, the Council of Environment Ministers and the outcome of a broad process of consultation which all highlighted the need for a single piece of framework legislation to address water in a more broad and comprehensive way. The WFD was the result of a process of many years of preparation and discussion to address the needs of such a comprehensive approach.

Many elements in the WFD were new at the time of adoption. First, the river basin approach was new for EU-policy, which had been until then based on national borders. The river basin approach acknowledges the transboundary character of water and was at the time accepted mostly in scientific circles.

Another new aspect was the introduction of ecological and hydromorphological requirements. Until then, there were only chemical requirements and microbiological requirements for bathing waters.

Ecological status

Ecological status is an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters, classified in accordance with Annex V. For all water bodies, ecological status is based on biological quality elements, hydromorphological quality elements, morphological conditions, chemical and physio-chemical elements which support the biological quality elements and general conditions like thermal conditions, oxygenation, salinity, acidification, nutrients etc.

The WFD is also the first really ‘integrated’ Directive in the field of water. This integration manifests itself with respect to three aspects:

- The WFD is ‘integrated’ in the sense that it combines (either fully or partially) several Directives that existed before the WFD came into force, with new elements. Those ‘older’ Directives include e.g. the Urban Waste Water Directive (UWWTD), the Nitrate Directive, the Bathing Water Directive;
- The WFD is built around an integrated approach of surface water (including fresh water, transitional waters and coastal waters), groundwaters, protected areas for drinking water, for economically significant aquatic species, for recreational waters, nutrient-sensitive areas and areas designated for protection of important habitats and/or species;
- Finally, in the Program of Measures (PoMs), the WFD integrates and optimises the measures for both water quality and water quantity.

3.1.1 Daughter Directives

Article 16(2) of the WFD required the Commission to develop and submit a proposal setting out a list of priority substances (defined as those substances which present a significant risk to or via the environment) requiring further action.

Directive 2008/105/EC established the first list of substances under the WFD, including the EQS standards to be met to control the risks and achieve good chemical status under the WFD. The EQSD requires that the list of priority substances is reviewed every four years to check it is still up to date. The latest review of substances was conducted in 2011³² with the aim of prioritising possible new PS, to set appropriate EQS and to review whether changes should be made to the EQS or status of existing priority substances. It also requires Member States to develop an inventory of emissions, discharges and losses for all PS/PHS and to report inventories alongside submitted River Basin Management Plans. The Member States were required to develop the first inventories during the 2007-2009 period and report these alongside the first River Basin Management Plans. Updated inventories have to be provided at the same frequency as the Plans. Finally, the EQSD provides a basis for monitoring. However, the latest review of the Directive acknowledged that unless a substance is already regulated it is unlikely to be widely monitored inhibiting the ability to reliably detect or model environmental concentrations of such substances in aquatic environment and to estimate the risk posed at EU level³³. For this purpose, the Watch List system has been adopted and its review published in 2018³⁴.

In 2006, the ‘Groundwater Directive’ (GWD) was published to complement the WFD for groundwater quality and protection. It spells out, the list of relevant pollutants, threshold values and contains provisions for assessing groundwater chemical status, trend assessment of concentrations of pollutants, and measures to prevent or limit inputs of pollutants into groundwater. Annexes I and II of the Groundwater Directive 2006/118/EC were reviewed in 2014³⁵ and are reflected under the Commission Directive 2014/80/EU of 20 June 2014. The review focussed on clarifying the following: the interpretation of chemical status, adding nitrite and P in Annex I, harmonisation threshold values and natural background levels, and development of a watch list.

3.1.2 Overview of the objectives of the legislation

The table below describes the objectives of the legislation considered.

Table 3-1 Overview of objectives of the legislation

Surface water	Groundwater	Protected areas
<p>i) MS shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water, subject to the application of paragraphs 6 & 7 and without prejudice to paragraph 8;</p> <p>ii) MS shall protect, enhance and restore all bodies of surface water, subject to the application of subparagraph iii for artificial and heavily modified bodies of water, the aim of achieving good surface water status at the latest 15 years after the</p>	<p>i) MS shall implement the measures necessary to prevent or limit the input of pollutants into groundwater and to prevent the deterioration of the status of all bodies of groundwater, subject to the application of paragraphs 6 & 7 and without prejudice to paragraph 8 of this Article and subject to the application of Article 11.3.</p> <p>ii) MS shall protect, enhance and restore all bodies of groundwater, ensure a balance between abstraction</p>	<p>MS shall achieve compliance with any standards and objectives at the latest 15 years after the date of entry into force of this Directive unless otherwise specified in the Community legislation under which the individual protected areas have been established.</p>

³² European Commission, SEC(2011)1544, Report from the Commission on the outcome of the review of Annex X to Directive 2000/60/EC on priority substances in the field of water policy

³³ European Commission, SEC(2011)1544, Report from the Commission on the outcome of the review of Annex X to Directive 2000/60/EC on priority substances in the field of water policy

³⁴ <https://ec.europa.eu/jrc/en/publication/review-1st-watch-list-under-water-framework-directive-and-recommendations-2nd-watch-list>

³⁵ [Commission Directive 2014/80/EC amending Annex II to GWD](#)

Surface water	Groundwater	Protected areas
<p>date of entry into force of this Directive, in accordance with the provisions laid down in Annex V, subject to the application of extensions determined in accordance with paragraphs 4 and the application of paragraphs 5,6 and 7 without prejudice to paragraph 8;</p> <p>iv) MS shall implement the necessary measures in accordance with Art 16.1 and 16.8 with the aim of progressively reducing pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances.</p>	<p>and recharge of groundwater with the aim of achieving good status at the latest 15 years after the date of entry in to force of this Directive, in accordance with the provisions laid down in Annex V, subject to the application of extensions determined in accordance with paragraph 4 and to the application of paragraphs 5, 6 and 7 without prejudice to paragraph 8 of this article and subject to Article 11.3.</p> <p>iii) MS shall implement the measures necessary to reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order to progressively reduce pollution of groundwater</p>	

3.1.3 General approach for surface water

The ultimate objective for surface water is ‘good status’; this consists of two parts: chemical status and ecological status. The overall good status is only achieved if both the chemical status and the ecological status are sufficient.

The WFD distinguishes four types of water bodies: lakes, rivers, transitional waters and coastal waters. Within these types, Member States can define sub-types. Member States can also distinguish ‘natural water bodies’, ‘heavily modified water bodies’ and ‘artificial water bodies. The default is that water bodies are designated as ‘natural’. Only if specific conditions are met water bodies can be designated ‘heavily modified’ or ‘artificial’. The WFD (article 4.3) sets out the designation criteria to identify heavily modified water bodies. In principle, the boundaries of heavily modified water bodies are primarily delineated by the extent of changes to the hydromorphological characteristics that (a) result from physical alterations by human activity and (b) prevent the achievement of good ecological status (European Commission CIS guidance 2 and 4).

The difference between natural and heavily modified or artificial water bodies only influences the ecological requirements; the requirements for chemical status are the same.

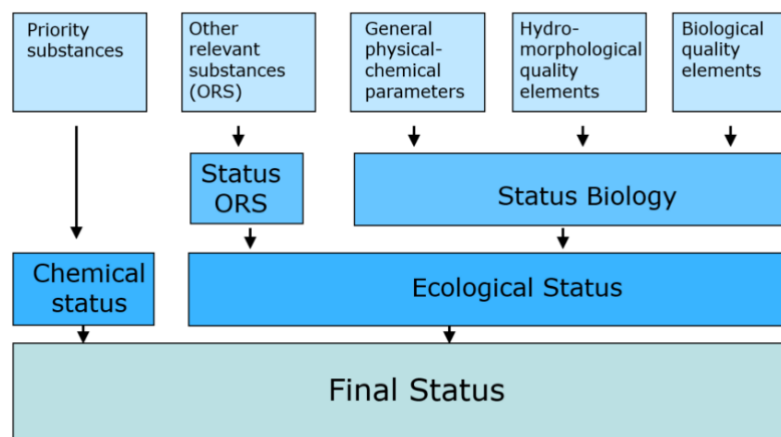
Good chemical status is conceptually relatively easy: it is achieved if the concentrations for all substances on the priority list remain below the EQS thresholds set for them.

The ecological status is more complex. In principle, the WFD aims to restore water bodies and to maintain/improve the aquatic environment in the Community unless there are good reasons not to do so. The ultimate aim of the Directive is to achieve the elimination of priority hazardous substances and contribute to achieving concentrations in the marine environment near background values for naturally occurring substances. The natural situation is first described in term of aquatic species (including abundance). Since a community of species can only occur when the conditions are favorable, and each community has its own ‘favorable conditions’, the step can be made from a description of species to hydromorphological and chemical conditions, where ‘chemical’ consists of general physico-chemical parameters like temperature, pH (acidity), oxygen concentration, salinity or nutrient concentrations. The WFD distinguishes between priority substances and hazardous priority substances, which are both part of the chemical status. Priority hazardous substances are phased out and in all surface waters have to fulfil the EQS. Priority substances have to fulfil the EQS. In all surface waters with the aim of

preventing ecological and human risks. The other relevant substances aim to guarantee Good Ecological Status and might differ per WFD water body.

(see Figure 3-1).

Figure 3-1 Scheme of status assessment



3.1.4 General approach for groundwater

Groundwater is an important natural resource which serves a range of purposes: it acts as a reservoir from which water can be abstracted for drinking, industry and agriculture, it also plays an important role in supporting ecosystem services.

The Groundwater Directive complements the WFD by spelling out, the list of relevant pollutants, how thresholds values should be set, and the conditions for the assessment of trends for chemical status.

The ultimate objective for groundwater is good quantitative status and good chemical status. Like surface water, overall good status is only achieved when the quantitative and chemical status are both met.

The approach for groundwater starts with the designation and subsequent characterisation of groundwater bodies.

Article 2 of the WFD provides further definitions for terminology and hierarchy within groundwater:

- Groundwater means all water, which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil;
- Aquifer means a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater;
- Body of groundwater means a distinct volume of ground water within an aquifer or aquifers. The body should be a coherent sub-unit in the river basin.

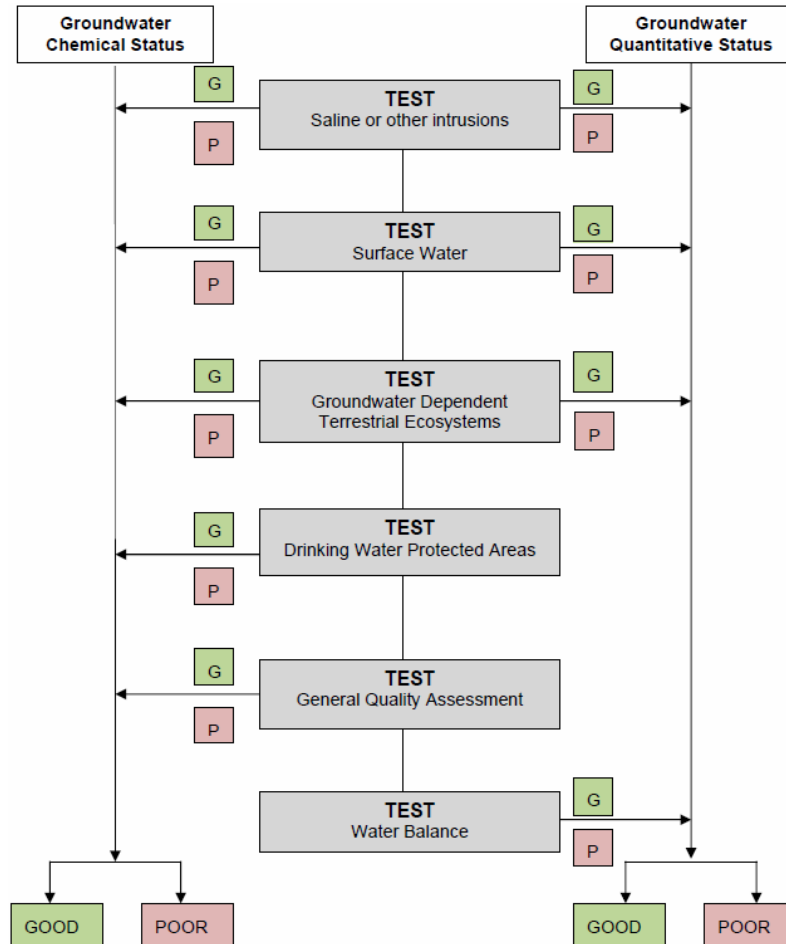
The environmental objectives of preventing deterioration of, and protecting, enhancing and restoring, good groundwater status apply only to bodies of groundwater. However, all groundwater is subject to the objectives of preventing or limiting inputs of pollutants and reversing any significant and sustained upward trend in the concentration of any pollutant.

In addition, it is required that objectives for protected areas established under Community Quantitative status is defined by the quantity of groundwater available as baseflow to watercourses and water dependent ecosystems, and as a 'resource' available for use as drinking water and other consumptive purposes.

Chemical status is defined by the concentrations of a range of key pollutants, by the quality of groundwater feeding into watercourses and water-dependent ecosystems, the quality of groundwater available for drinking water purposes and general quality of groundwater.

Both the quality and quantity status are defined as being either ‘Good’ or ‘Poor’ based on a test against a series of supporting elements. Like surface water, the overall status is only good if both quantitative and chemical status are good (one out all out principle).

Figure 3-2 Overall procedure of classification tests for assessing groundwater status



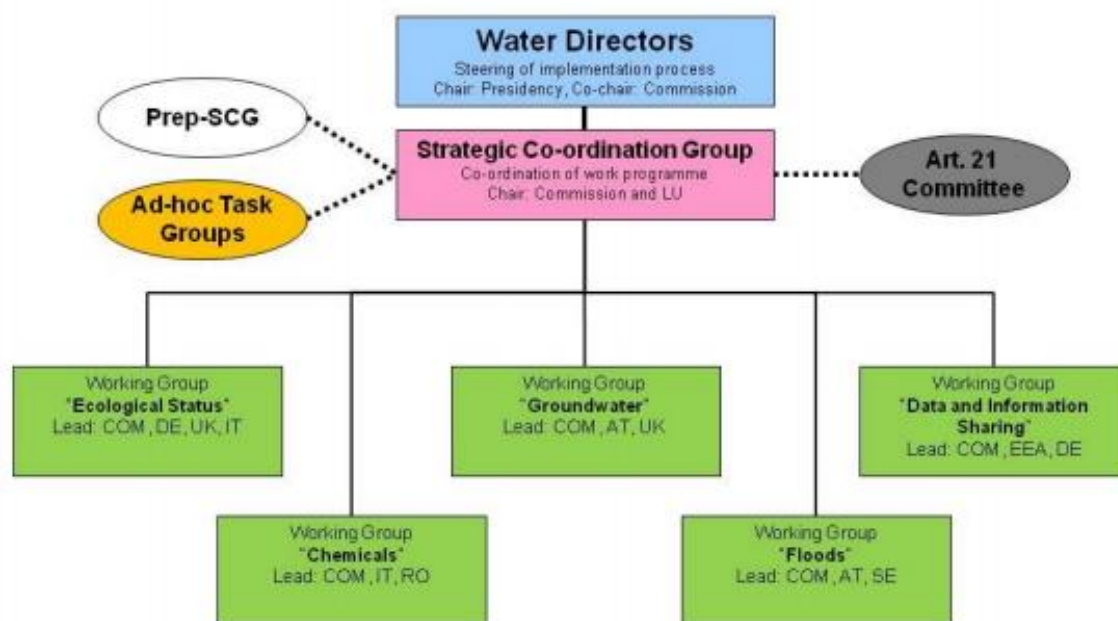
3.1.5 Steps in early implementation of the WFD

The WFD placed obligations upon the Member States to transpose the requirements of the WFD into national legislation within three years of entry into force. In the same time span, River Basin Districts and River Basin Authorities had to be identified. Transposition of the WFD therefore posed both legal and administrative requirements, to incorporate the legislation and identify River Basin Authorities. However, identification of River Basin Districts required further technical skills and hydrological knowledge.

In addition, the objectives of the Nitrates Directive (91/676/EEC) must also be met and Article 7 of WFD requires Member States to establish protected areas for all bodies of water providing more than 10 m³ drinking water a day as an average or serving more than 50 persons, or bodies intended for that use in the future. The objective for these areas to avoid deterioration in quality in order to reduce the level of purification treatment required.

To assist Member States in this endeavor, and to harmonise the approach across the EU where needed, the Common Implementation Strategy (CIS) was set up, including creation of several working groups. Figure 3-3 provides an example of the current structure for the CIS, including its overarching body the strategic co-ordination group (SCG) and group of Water Directors.

Figure 3-3 Overview of the CIS organisation from 2016-2018



One of the main roles for the working groups created was to support in the development of draft Guidance Documents. These Guidance Documents, although not legally binding, played an important role in the implementation of the WFD. For example, decisions for the identification and delineation of water bodies play an important role for the characterization, gap-analysis and program of measures. Guidance Document no. 2 (Identification of Water Bodies) developed a common (and general supported) understanding of the definition of water bodies and presents specific practical suggestions how Member States can identify and delineate the water bodies in their river basins.³⁶

3.2 Introduction to the Floods Directive

Following the floods in Central Europe and France in 2002, a concerted EU Action Programme on flood risk management was proposed. Further flood events during the summer of 2005 convinced decision makers that action was needed at EU level to improve the management and planning of floods which culminated in the Floods Directive (proposed) in 2006³⁷.

The Floods Directive aimed to reduce the risks to human health, the environment and economic activity through shifting the approach from flood defence to flood risk management and introduced the following obligations:

- Preliminary flood risk assessment, in order to support the identification of where action is needed. As such the preliminary assessment was intended to identify areas where significant flood risks exist or are foreseeable in the future;
- Flood risk mapping: presenting flood risks at basin and sub-basin levels. The aims were to increase awareness and support the prioritisation of investments and actions at the local level and support the development of flood risk management plans;

³⁶ <https://circabc.europa.eu/sd/a/655e3e31-3b5d-4053-be19-15bd22b15ba9/Guidance%20No%202%20-%20Identification%20of%20water%20bodies.pdf>

³⁷ European Commission, 2006, Proposal for a Directive of the European Parliament and of the Council on the assessment and management of floods COM(2006)15. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52006PC0015&from=EN>

- Flood risk management plans (FRMPs) that are intended to include the analysis and assessment of flood risk, the definition of objectives and deadlines, and identification and implementation of sustainable measures applying the principle of solidarity: not passing on problems to upstream or downstream regions and preferably contributing to reduction of flood risks in upstream and downstream regions.

3.3 Summary of implementation of the Water Framework Directive and daughter Directives

Implementation of the WFD involves adopting river basin management plans, reporting, monitoring, and implementation of the measures that are included in the established of PoMs. An overview of the progress in the implementation of the WFD (and FD) and status of water bodies is analysed and published by the European Commission (EC, 2019)³⁸. This (fifth) implementation report is based on the Commission's assessment of the second River Basin Management Plans (RBMPs) and first Flood Risk Management Plans (FRMPs) prepared and reported by Member States for the period 2015-2021³⁹.

3.3.1 Publication of RBMPs

The first official draft RBMP had to be presented by the end of 2008. To date, all Member States have approved their RBMPs and FRMPs, except from the FRMPs of the Canary Islands (Spain). Almost all MS reported their 2nd RBMPs for the period 2015-2021 to the European Commission under the WFD. In some cases, with significant delays (i.e. for Greece, Ireland and Lithuania). The information in the RBMPs and FRMPs was uploaded to the common digital repository WISE.⁴⁰

3.3.2 Governance

Prerequisites for successful water management are appropriate governance, technical and financial capacity and political commitment. For the 2nd RBMPs, many Member States have strengthened coordination among the responsible authorities, improved public consultation and supported active involvement of stakeholders.

All Member States have designated competent authorities and the importance of coordination across these has been repeatedly recognised.

Information and views provided by stakeholders as part of the consultation on draft RBMPs have led to changes to be reflected in the final documents in most Member States. Finally, some Member States have carried out joint public consultations for the RBMPs with FRMPs, but few have carried out joint consultations with the Marine Strategy Framework Directive.

International cooperation has overall improved during the implementation cycle.

3.3.3 Characterisation

The WFD requires Member States to analyse the characteristics of the river basin districts (RBD), with a review of the impact of human activity and an economic analysis of water use. This must be updated every six years. Progress has been made since the 1st RBMPs but significant gaps remain, in particular to establish the reference conditions for all water body types, to assess the significance and impact of pressures and to apportion the pressures to sectors and activities in order to design more targeted

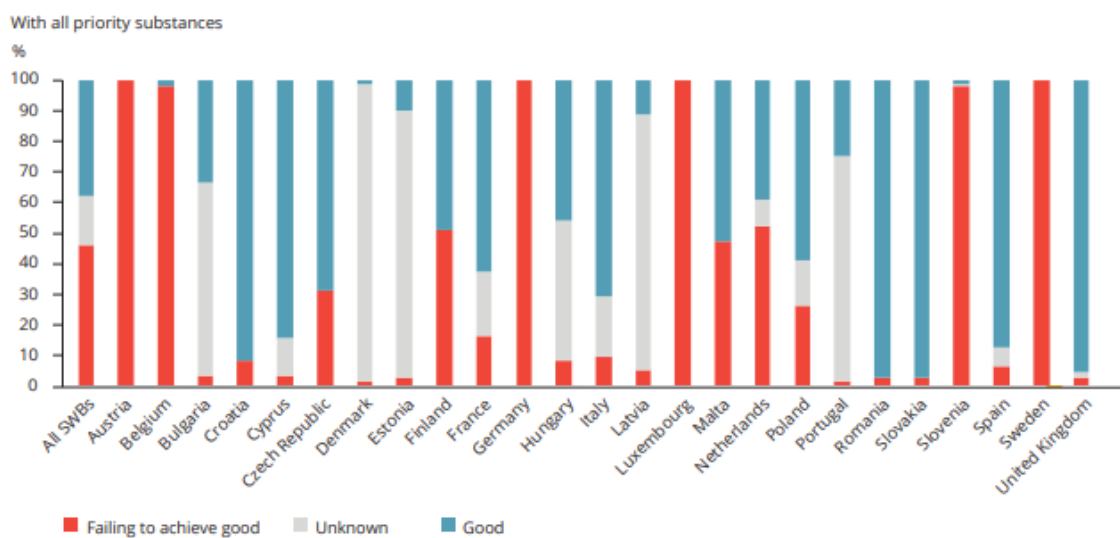
³⁸ [Report from the Commission on the implementation of the WFD and FD 2nd River Basin Management Plans and 1st Flood Risk Management Plans \(Brussels, 26-02-2019\)](#)

³⁹ This report is required by Article 18 of the WFD, Article 16 of the FD, and responds to Article 11 of the GWD.

⁴⁰ <https://www.eea.europa.eu/media/newsreleases/drought-and-water-overuse-in-europe/wise-water-information-system-for-europe>

measures. Reference conditions might include substances naturally occurring. As a result, for a large proportion of water bodies impacts of anthropogenic origin and pressures' drivers are unknown. In the 2nd RBMP, progress has been made on monitoring, allowing Member States to establish the chemical status of a greater number of water bodies. The EEA (2018) state of water report, highlights that across Europe 16% of water bodies remain in unknown status. In some Member States, the fraction of unknown status makes up a significant proportion. However, this proportion of water bodies is spread unevenly between Member States (in some cases exceeding 50%) as reflected in the EEA (2018) report.

Figure 3-4 Overview of chemical status for surface water bodies in the EU.



3.3.4 Monitoring and assessment of surface water bodies

The monitoring programs must provide a coherent and comprehensive overview of the surface water status within each River Basin District (RBD).

The overall confidence in the classification has also improved in the 2nd RBMPs compared to the first, mainly due to better designed monitoring networks and improved availability and quality of the information for the status assessment methods. However, grouping techniques and expert judgement have still been widely used to classify the water bodies, rather than on a more thorough assessment of each relevant water body under the specific WFD parameters. Furthermore, different approaches to assessment mean that comparability between MS can be more challenging.

Important gaps in ecological status monitoring remain, especially for the hydromorphological and biological quality elements. Because there was no common intercalibration system before 2018, comparison between the reported water bodies is challenging.

The WFD also requires Member States to monitor all discharged Priority Substances (PS) and priority hazardous substances. Across the EU, there is a variation in the monitoring of PS, both in term of the percentage of water bodies monitored.

The analysis of the 2nd RBMP's concluded that further efforts are needed to have appropriate monitoring networks reach sufficient spatial coverage and assessment reliability.

3.3.5 *Monitoring and assessment of groundwater bodies*

The groundwater quantitative monitoring must include enough representative monitoring points to estimate levels in each groundwater body considering short and long-term variations in recharge. Although groundwater quantitative monitoring has improved since the first RBMPs, a significant number of groundwater bodies (around 65 %) are still without quantitative monitoring sites and the partially reported grouping of groundwater bodies for monitoring purposes does not fully explain the absence of monitoring.

The monitoring for groundwater quality must provide adequate information to assess the status with respect to saline intrusion, exceedance of relevant chemical standards for groundwater and groundwater concentrations that can hamper good status for associated surface waters and terrestrial ecosystems which directly depend on groundwater.

Overall, the confidence in the status results is relatively high and for only very few groundwater bodies the chemical status is unknown. However, a significant number of groundwater bodies is still without chemical monitoring sites and the partially reported grouping of groundwater bodies for monitoring purposes does not fully justify the absence of monitoring. Not all groundwater bodies which were identified at risk for chemical status are subject to operational monitoring and not all substances causing risk are fully covered. Many Member States need to continue improving quantitative monitoring programme and working towards completing quantitative status assessment for all groundwater bodies. In some Member States additional efforts are required for harmonisation of status assessment methodologies (across regions and RBDs)

3.4 State of EU water bodies

The conclusions presented in this section are based on the assessment of the 2nd RBMPs⁴¹, the following conclusions were drawn.

3.4.1 *Groundwater*

Quantitative status

- Around 90 % of the area covered by groundwater bodies is reported to be in good quantitative status. However, in some southern Member States of the EU, there are significant problems with the quantitative status. Issues are also observed in some northern EU Member States due to abstraction being higher than available in the aquifer;
- The main pressures causing failure to achieve good quantitative status are water abstractions for public water supply, agriculture and industry;
- The EEA review of water pressures indicates that for some Member States obtaining reliable numbers of abstractions is challenging due to unknown and/or illegal abstractions.

Chemical status

For groundwater chemical status:

- Good chemical status has been achieved for 74 % of the area covered by groundwater. Nitrate is the main pollutant, affecting over 18 % of the area covered by groundwater bodies. In total, 160 pollutants resulted in failure to achieve good chemical status. In total, about 160 different synthetic and naturally occurring substances cause poor chemical status in EU Member States.

⁴¹ European Commission, 2019, 5th implementation report

One third of these substances are pesticides. The main pollutant causing poor chemical status is nitrate, the group of pesticides is the second. Most of these were reported in only a few Member States, and only 15 pollutants were reported by five or more Member States;

- The overall chemical status of groundwater bodies improved only very little since the first cycle. Also the reported expected achievement of good status for most of the groundwater bodies by 2027 or beyond 2027 demonstrates the long time-lag between the implementation of measures and their effectiveness in groundwater quality;
- In the EU, agriculture is the main cause of groundwater's failure to achieve good chemical status, as it leads to diffuse pollution from nitrates and pesticides. Other significant sources are waste water discharges that are not connected to a sewerage treatment system, and contaminated soil sites or abandoned industrial sites.

Other

In addition, the following key issues arise from the assessments of groundwater status:

- The implementation of water pricing provisions has improved but remains in some instances basic;
- Threshold values (TV's) for groundwater are implemented by the MS very differently. A wide range of substances have TV's, and for these the values set also differ a lot. While this difference can be explained for some naturally occurring substances to consider background levels, for others it is unclear why such variation is observed;
- For cost-benefits analysis, examples are available but underlying information to conduct such cost-benefits for groundwater protection in the MS is missing.

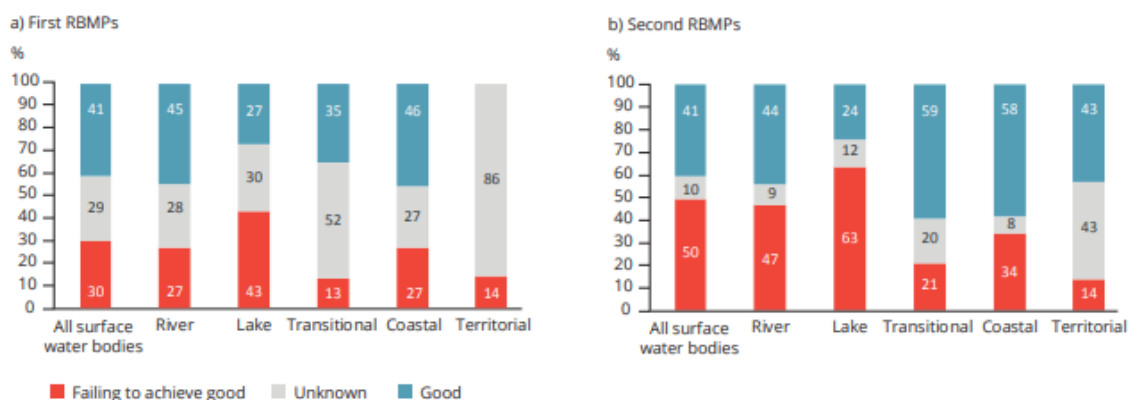
3.4.2 Surface waters

Chemical status

Overall 38% of the surface water bodies in the EU are in good chemical status. Poor chemical status is often caused by a few priority substances, most notably mercury. If the so-called ubiquitous priority substances are not taken into consideration, then 81% of the surface water bodies are in good status. Atmospheric deposition and emissions from urban waste water treatment plants form the largest pressures; for atmospheric deposition it is mainly mercury and polycyclic aromatic hydrocarbons (PAHs) while the range of substances from urban waste water treatment plants are more diverse including metals such as mercury, cadmium, lead and nickel, and persistent pollutants such as PAHs and polybrominated diphenyl ethers (PBDEs). TBT (a biocide used in public restrooms) was also a key reason failure to achieve good status.

Figure 3-5 illustrates that overall between the first and second RBMPs progress towards good chemical status has been achieved in some cases, particularly transitional and coastal waters. Although part of this improvement is the reduction in unknown status. Further comment on progress towards the aims of the WFD is not straightforward. For example, the "one out all out" principle means that with the addition of new priority substances direct comparison over different reporting cycles will be challenging.

Figure 3-5 Review of chemical status between first and second RBMPs.



Ecological status

Around 40% of the surface water bodies in the EU are in good ecological status (or higher). The main pressures for the ecological status are point source pollution (18% of the water bodies), diffuse source pollution (38% of the water bodies), hydromorphological pressures (40% of the water bodies) and water abstraction (7% of the water bodies). Considerable progress was made by the Member States with respect to water quality and hydromorphology. This progress often is only visible at the level of specific quality elements and, due to the ‘one out, all out’ principle, not in the overall ecological status.

3.5 Summary of implementation of the Floods Directive

The summary of the implementation is presented as part of the analysis of the effectiveness, considering that the implementation of the Directive is quite recent, many of the conclusions on the effectiveness of the FD are direct reflection on the status of implementation.

4 Baseline and counterfactual for the Fitness Check

A baseline is established in order to evaluate the functioning of a given Directive and to compare its performance against. In practical terms there may always be progress in a certain area (i.e. advances in science and technology, or particular practices of behaviour such as new agricultural techniques), but it is important to distinguish these progress from additional progress that can be associated with the implementation of a specific Directive. The effects of the Directive are the comparison between the current situation observed and the situation that would have been expected without the Directive. Baselines have been established for specific Directives as described below.

The baseline includes qualitative and quantitative elements in a pragmatic approach to support the description of the situation at the time where the legislation was proposed and adopted. For those legislations where an impact assessment was conducted⁴², the baseline reflects the assessment included in these documents.

4.1 Baseline for the Water Framework Directive and daughter Directives

The effects of the two cycles of RBMPs and PoMs and the other measures of the Directives can only be established by comparing the observed results to the situation where those measures were not taken by Member States, reflecting a world where water management in the EU would have progressed on the basis that Member States themselves initiated prior to the adoption of the WFD and the FD.

4.1.1 Water framework Directive - baseline

The Commission's Better Regulation guidelines note that 'it is particularly difficult to identify a robust counterfactual situation'⁴³. This is more so for the Water Framework Directive because it was adopted without an ex-ante impact assessment.

As such there is **no formal baseline** or statement of expected results from the time the proposal was published. Therefore, the basis for the baseline has been the established objectives of the Directive as stated in the legislation, in particular Article 1 and the recitals. The objectives are used as examples to reflect changes and evolution that can be assumed to have been triggered by the Directive and which would not have happened without it.

The **key objectives** of the WFD are presented in Section 3.1. The Directive's recitals note that the WFD was expected to provide an **institutional and conceptual shift** in the approach to water resources management aiming to address **ecological quality of water** (conclusions of the Community Water Policy Ministerial Seminar in Frankfurt in 1988) and to avoid long-term deterioration of freshwater quality and quantity. There was a strong need for a programme of actions aiming at sustainable management and protection of freshwater resources.

An important challenge when considering the baseline for the WFD is to distinguish the measures taken by Member States for the **management of water required by the pre-WFD legislation** and their impact from those required by the WFD. For this, we have used the WFD reporting that distinguishes between

⁴² This is the case for the GD, EQSD and FD.

⁴³ European Commission 2015, Better Regulation Guidelines, Commission Staff Working Document SWD(2015) 111 final, 19.5.2015

the basic measures required by the **legislation pre-dating WFD** (baseline) and **WFD specific basic measures**. Classification of basic measures used in the WFD reporting is presented in the Guidance on reporting under the WFD drafted by the CIS⁴⁴ (as illustrated in the box below).

Table 4-1 Classification of basic measures as per CIS guidance on WFD reporting

Basic measures pre-dating WFD (Art 11(3)a)	Basic measures under the WFD (Art 11(3)b-l)
The Urban Waste-water Treatment Directive (91/271/EEC).	b) Measures to implement Article 9 (cost recovery).
The Nitrates Directive (91/676/EEC).	c) Measures to promote efficient and sustainable water use.
The Sewage Sludge Directive (86/278/EEC).	d) Measures to protect drinking water quality and reduce level of treatment required.
The Drinking Water Directive (80/778/EEC) as amended by Directive (98/83/EC).	e) Measures to control abstraction from surface and groundwater.
The Bathing Water Directive (76/160/EEC).	f) Measures to control recharging of groundwater.
The Integrated Pollution Prevention Control Directive (96/61/EC).	g) Measures to control point source discharges.
The Major Accidents (Seveso) Directive (96/82/EC).	h) Measures to prevent or control inputs of diffuse pollutants.
The Birds Directive (79/409/EEC).	i) Measures to address any other significant impacts on status, in particular the hydromorphological condition.
The Habitats Directive (92/43/EEC).	j) Measures to prohibit direct discharges to groundwater.
The Environmental Impact Assessment Directive (85/337/EEC).	k) Measures to eliminate or reduce pollution by Priority Substances.
	l) Measures to prevent accidental pollution.
	m) Measures to protect the ecological quality of the water.

Note: Duplication in measures in both columns of the table reflects the boundaries of the basic measures, reproduced from CIS guidance document on reporting

In particular, data reported on WISE⁴⁵ allow distinguishing between these two sets of basic measures (pre-WFD, i.e. **baseline measures** such as UWWD, Nitrates Directive (Art 11(3)a)) and **WFD specific measures** (listed in the Art 11(3) b-l); Art 11(4) and Art 11 (5)).

Member States were required to develop reports on characterisation (2004) that provided an overview on the state of water bodies across Member States at that time. Furthermore, RBMPs developed by the Member States in the first river basin management cycle (2009-2015) were required to include the **assessment of the status of surface and groundwater bodies as of 2009** as well as the assessment of the expected status in 2015 (as a result of implementation of planned measures and development of different pressures). While noting that the availability and quality of the analysis by Member States strongly differ in quality, this dataset represents the **best available information on the state of aquatic environment across Europe at that time**.

The Water Blueprint (2012) highlighted that the quality of the information provided by Member States in their RBMPs was not sufficiently clear to set a baseline for 2009 and assess how the status of EU waters is likely to evolve in the medium and long term.

Based on this challenge, we had to make some pragmatic assumptions against the objectives/expected outputs of the WFD which are presented in the table below.

⁴⁴ Common Implementation Strategy for the Water Framework Directive and the Floods Directive, WFD Reporting Guidance 2016, <https://circabc.europa.eu/sd/a/5b969dc0-6863-4f75-b5d8-8561cec91693/Guidance%20No%2035%20-%20WFD%20Reporting%20Guidance.pdf>

⁴⁵ EC (2015). Commission Staff Working Document. Report on the progress in implementation of the WFD PoMs. SWD(2015) 50 final. Brussels, March 2015

Table 4-2 Overview of key features and sources for the baseline

Expected achievements of the WFD	Baseline assumptions
<p>Status of freshwater in Europe to improve</p>	<ul style="list-style-type: none"> • A range of data sources can provide insights in the status of freshwater bodies in Europe prior the adoption of the WFD. • Control of point source emissions have led to noticeable improvements in the quality of many water bodies across Europe, in particular a reduction of phosphorus and organic matter from sources such as urban waste water treatment works, as well as through the introduction of phosphate-free detergents in some countries (EEA, 2003)⁴⁶. For instance, the average nitrate concentration in European rivers has reduced by 11% between 1992 to 2010 (from 2.5 mg/L) as a result of the implementation of Nitrates Directive and Urban Waste Water Treatment Directive (EEA, 2012). However, over-abstraction of water remained a major concern in parts of Europe, such as the coast and islands of the Mediterranean (EEA, 2003). • Despite information on water quality and quantity from local data points in Member States⁴⁷ being available since 1998 (EEA data from Eurowaternet), it is impossible to obtain an overview of the pre-WFD ecological status of Europe’s waters as there are many significant shortfalls and gaps in countries’ information monitoring and assessment systems (EEA, 2003). • The WFD required Member States to submit Characterisation reports (2004) setting out key information on the key pressures and status of designated River Basin Districts. Furthermore, RBMPs developed by the Member States in the first cycle (2009-2015) were required to include the assessment of the status of surface and groundwater bodies as of 2009 as well as the assessment of the expected status in 2015 (as a result of implementation of planned measures and development of different pressures). While noting that the availability and quality of the analysis by Member States strongly differ in quality, this data set was meant to represent the best available quantitative and comparable information on the state of aquatic environment across Europe at that time. The availability of such data is in itself a benefit of the WFD. • However, the EEA (2018) report⁴⁸ highlighted the difficulties and challenges in comparing the water body status assessments in the first and the second RBMPs and associated data in WISE. The WFD reporting guidance was significantly revised and extended in 2016 to improve the level of information reported. There have also been many changes in how Member States implement the Directive, including re-delineation and assessment methods. Many measures reported in the 2nd RBMP’s were only in the process of being implemented so their effect would not yet have been seen, especially considering the lag-time of recovery from plant and animal communities, groundwater bodies, and leaching and runoff from (contaminated / phosphate saturated) soils to surface water bodies. • Member States have also invested in new or better ecological and chemical monitoring programmes, with a greater number of monitoring sites and the inclusion of more chemicals and quality elements. This has complicated water body status comparisons; for instances, in the case of chemical status of surface water bodies additional monitoring in the 2nd cycle has led to the proportion of water bodies with unknown chemical status dropping significantly (and proportion of failing water bodies increasing in some cases). For the ecological status, Member states have designed metrics for the required groups of organisms which enable a proper assessment of the ecological quality of a water body. For the chemical status of groundwater bodies there has been only limited improvement between the first and second RBMP’s because of sustained pressure from agriculture and long recovery time. Groundwater quantitative status has improved by about 5 % since the first RBMP’s were reported but distinguishing the beneficial impact, i.e. relative contribution of the pre-WFD measures and WFD specific measures to the improvement is not feasible. • Member States have made marked efforts to improve water quality and hydro morphology but while individual biological quality

⁴⁶ EEA, 2003, https://www.eea.europa.eu/publications/topic_report_2003_1

⁴⁷ Eurowaternet, <https://www.eea.europa.eu/publications/TECH07>. Note that the data is not available online but the EEA will be approach in order to determine whether any of this data is available.

⁴⁸ EEA 2018. European waters, Assessment of status and pressures 2018, <https://www.eea.europa.eu/publications/state-of-water>.

Expected achievements of the WFD	Baseline assumptions
	elements have improved, the overall ecological status reporting showed limited progress since the first RBMP (due to the application of the one out all out principle).
Prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems	<ul style="list-style-type: none"> While the focus during the 1980s and 1990s was placed on water quality, the WFD introduced into water legislation the concept of structural integrity of water bodies, and how this integrity affects the functioning of water bodies as a habitat. Consequently, the assessment of status and pressures was a new field of development for Member States with the adoption of the WFD. Under the baseline, Member States would continue to use the past approach.
Promotes sustainable water use based on a long-term protection of available water resources / The provision of the sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use	<ul style="list-style-type: none"> No similar provisions in legislation pre-dating the WFD
Aims at enhanced protection and improvement of the aquatic environment, <i>inter alia</i> , through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances	<ul style="list-style-type: none"> No holistic approach to ecological and chemical status (see EQS Directive below).
Ensures the progressive reduction of pollution of groundwater and prevents its further pollution	<ul style="list-style-type: none"> Separate action on groundwater (see Groundwater Directive below). Through pollution from nitrates and pesticides, agriculture is the main pressure causing failure to achieve good chemical status in groundwater.
Contributes to mitigating the effects of floods and droughts	<ul style="list-style-type: none"> No systematic consideration of floods and droughts in water quality management. Occurrence of droughts in Europe in 2000 assumed to be broadly similar 2002 level from which WEI data are available⁴⁹
A significant reduction in pollution of groundwater	<ul style="list-style-type: none"> Level of pollution of groundwater (nitrates and pesticides) as described in EEA State of the Environment report, 2003. Drinking water was/is protected; other groundwater bodies status follows the downward pre-2005 trend. Through pollution from nitrates and pesticides, agriculture is the main pressure causing failure to achieve good chemical status in groundwater.
The protection of territorial and marine waters	<ul style="list-style-type: none"> No systematic consideration of territorial and marine waters within broader water management. Assumption: no protection measures in these waters, status is determined by the trends in land-based pressures Inclusion of territorial and marine waters in the RBMPs.
Achieving the objectives of relevant international agreements, including those which aim to prevent and eliminate pollution of the marine environment, by Community action under Article 16(3) to cease or phase out discharges, emissions and losses of priority hazardous substances, with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances”	<ul style="list-style-type: none"> Based on the review conducted by EEA (2003), existing international cooperation on water management would continue. Some agreements exist, based on international conventions. Some basins already cooperate at a transboundary level. Further examples of baseline international agreements include the UNECE Water Convention⁵⁰. There is no systematic cooperation between Member States.
Catchment based approach to managing water resources bringing together surface and groundwater	<ul style="list-style-type: none"> Prior to 2000 the approach to water resources management was based on administrative boundaries. Assumption: Surface water and groundwater were dealt with separately.
Environmental objectives driven approach to water management covering ecological (biological, hydro-morphological, physico-chemical) and chemical status elements for surface water bodies etc.	<ul style="list-style-type: none"> No similar provisions in legislation pre-dating the WFD.

⁴⁹ European Environment Agency, Water Exploitation Index, <http://www.eea.europa.eu/data-and-maps/explore-interactive-maps/water-exploitation-index-for-river-1>

⁵⁰ <https://www.unece.org/env/water/text/text.html>

Expected achievements of the WFD	Baseline assumptions
Public consultation requirements on the RBMPs	<ul style="list-style-type: none"> No systematically incorporated public participation in water quality management and planning prior to WFD adoption.
Transboundary cooperation, through different countries but also cross-sectoral (power, agriculture, navigation, industry)	<ul style="list-style-type: none"> Inclusion of water emissions in the (then) IPPC Directive, going beyond standard requirements for discharges. Limited interactions between water and other sectors is highlighted by the EEA, 2003 report which highlights the need for human-related pressures to be controlled, including those from diffuse sources, such as agricultural use of fertilisers and pesticides.
Use of economic instruments and tools (incentive water pricing, cost recovery principle, cost-effectiveness analysis) - Art 9+ Annex III +Art 5 (characterisation of river basins including economic significance of water uses)	<ul style="list-style-type: none"> No similar provisions in legislation pre-dating the WFD.
Monitoring networks	<ul style="list-style-type: none"> Status of monitoring networks pre-2000 was uneven and coverage was incomplete. The 2012 EEA report highlights the lack of monitoring and data that supported the initial characterisation, based in some instances more on expert judgments and pressure consideration than actual monitoring. For chemical substances, monitoring was required only for derogation situation. Before the adoption of the WFD, information on characteristics, pressures and impacts on water bodies at basin level were not systematically available.
Streamlining and better regulation - The WFD creates synergies, increases protection and streamlines efforts.	<ul style="list-style-type: none"> The WFD and its daughter Directives repeal 12 Directives from the 1970s and 1980s which created a fragmented and burdensome regulatory system.

4.1.2 Groundwater Directive - baseline

At the time of adopting the Directive, groundwater was seen to be at risk from pollutants from agriculture, industry and other human activities⁵¹. The proposed Groundwater Directive was subject to an impact assessment⁵² supported by a specific study looking at conducting an economic assessment of groundwater protection⁵³.

The 1998 EEA assessment of Europe's environment⁵⁴ identified nitrates as an issue in many Member States. The figure below presents exceedance of the limit value in Member States, and the number of sampling sites in specific Member States.

⁵¹ Commission, 2003, Proposal

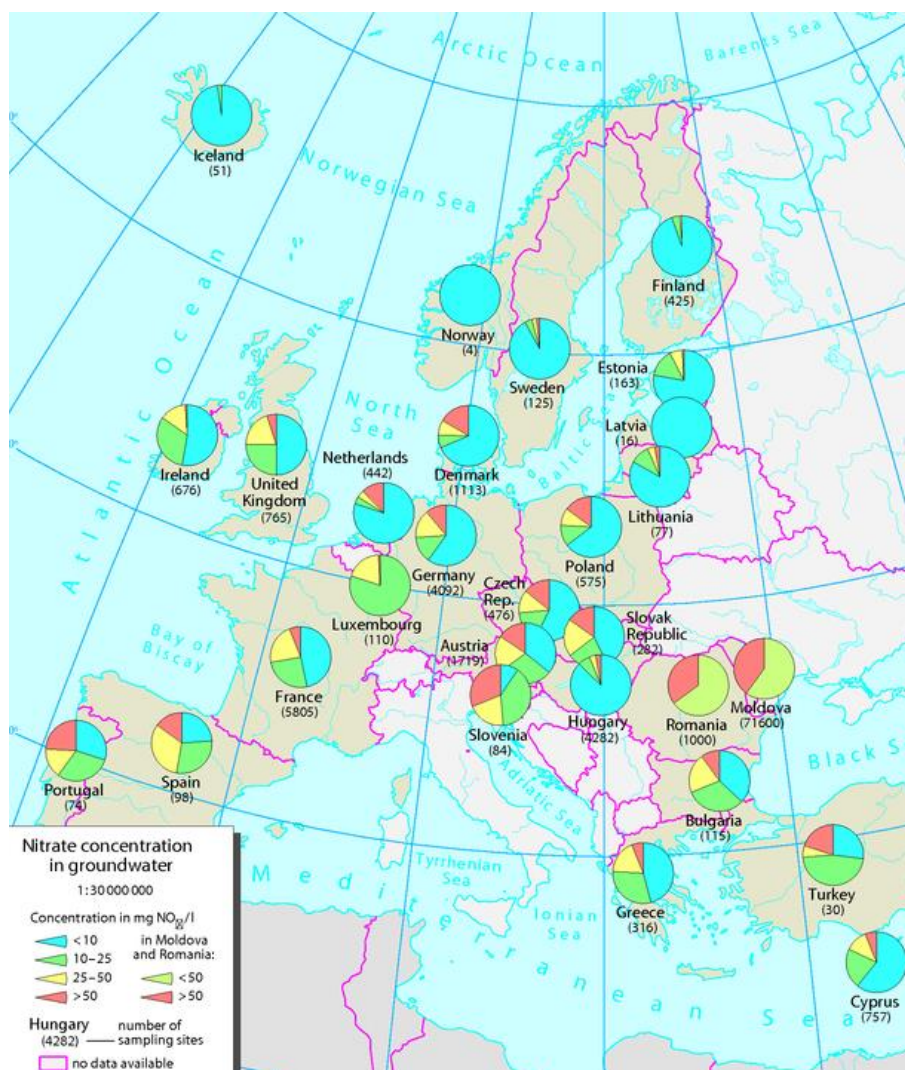
[http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/com/2003/0550/COM_C OM\(2003\)0550_EN.pdf](http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/com/2003/0550/COM_C OM(2003)0550_EN.pdf)

⁵² European Commission, SEC(2003)1086 Extended impact assessment, proposal for groundwater daughter Directive <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52003SC1086&from=EN>

⁵³ Ecologic, May 2003, Economic assessment of groundwater protection, http://ec.europa.eu/environment/water/water-framework/pdf/gwd_economic_study.pdf

⁵⁴ EEA, 1998, https://www.eea.europa.eu/data-and-maps/figures/nitrate-concentration-in-groundwater/map9_4.ai/image_large

Figure 4-1 Nitrate concentration in groundwater in 1998 report



Source: EEA, 1998

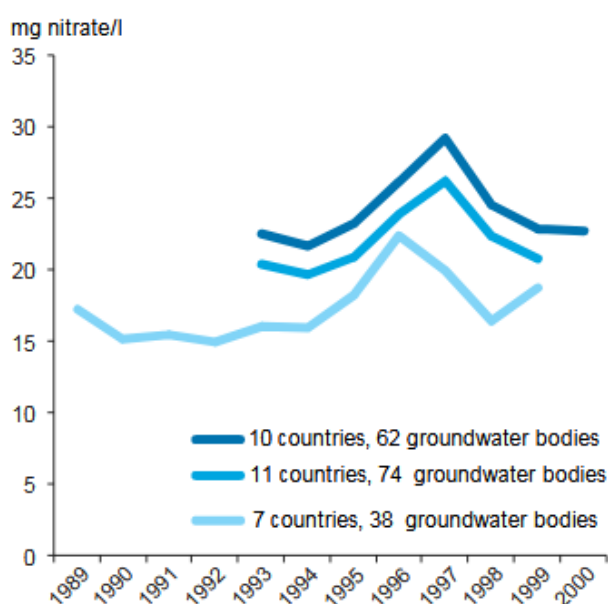
The 2003 EEA report⁵⁵ on the State of the Environment highlighted high mean values of nitrate without significant changes through the 1990s, with a third of the groundwater bodies for which information was available in exceedance of the 50 mg/l limit value. As such there were no substantial improvement in the nitrate situation in groundwater since 1990s and this despite the introduction of the Nitrates Directive (1991). Implementation of the ND was delayed for various reasons and related action programs in the Nitrate Vulnerable zones started to affect nutrient management of farmers only from the late nineties⁵⁶.

⁵⁵ EEA, 2003, State of the Environment report

https://www.eea.europa.eu/publications/environmental_assessment_report_2003_10/kiev_chapt_08.pdf/view

⁵⁶ Velthof, G.L., J.P.Lesschen, J.Webb, S.Pietrzak, Z.Miatkowski, M.Pinto, J.Kros, O.Oenema, 2014. The impact of the Nitrates Directive on nitrogen emissions from agriculture in the EU-27 during 2000-2008. Science of the Total Environment 468-469 (2014) 1225-1233.

Figure 4-2 Temporal development of nitrate mean values in groundwater bodies between 1989 - 2000



Source: EEA, 2003

The European Environment Agency, EEA (2003) report also indicated that pesticides from agriculture and other activities were a source of concerns for human health and protection of aquatic ecosystems. The EEA (2003) found that six EU countries, six accession countries and eight of the twelve EECCA (Eastern Europe, Caucasus and Central Asia) countries were reporting danger of pesticide pollution in their groundwater.

The original Groundwater Directive was **focused on point source pollution** and aimed to prevent and limit groundwater pollution. The identification of the point of **trend reversal** (at 75% of the criteria value) was not yet included in the legislation as it was brought in by the WFD.

The GWD was proposed in 2003 with the aim of completing the existing **legislative framework**⁵⁷, addressing uncertainties on the definition of good chemical status in relation to the water quality standards and trend reversal principle.

Monitoring networks were not extensively used. Aside from groundwater monitoring under the Nitrates Directive⁵⁸ (91/676/EEC) there was no requirement for the monitoring of the diffuse pollution of groundwater, a known issue since the 1960s, at the European level. In some Member States this groundwater monitoring would have been the widest ranging regularly sampled network.

For pollutants other than nutrients, the level of knowledge of groundwater was weak and patchy. For example, the Landfills Directive⁵⁹ required groundwater monitoring, but only local to sites and for specific parameters from this point source of pollution. In addition, there were no systematic monitoring techniques to analyse pollutants in groundwater.

The **lack of information and of high-quality data** were the cause for some decisions to be wrongly taken when considering pollution threats to groundwater bodies⁶⁰.

⁵⁷ Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances <https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:31980L0068>

⁵⁸ The Nitrate Directive adopted in 1991, required that monitoring was set up to support the action programmes for vulnerable zones in each Member States

⁵⁹ Directive 1999/31/EC

⁶⁰ According to the Impact Assessment accompanying the proposal for the Groundwater Directive

The proposed GWD aimed to⁶¹:

- Obtain better monitoring data in order to evaluate good chemical status, which changes from previous legislation that required monitoring only for specific cases;
- Provide clearer legal framework regarding assessing and monitoring groundwater quality, so that the protection regime established by the WFD is sufficiently efficient;
- Pre-empt derogation requests for historically polluted sites that would remove the incentive to improve the groundwater chemical status of affected bodies;
- Improve clarity of decision making on groundwater management issues and improve equal access to safe drinking water.

The baseline for the GWD thus considers that, in the absence of the Directive, the following would apply:

- The WFD sets a requirement to achieve good chemical status by 2015 but did not include indications on what constitute good chemical status for groundwater bodies. In the absence of the GWD, **no common methodology on establishing thresholds for chemical status** of groundwater would be developed and implemented;
- The WFD required that all environmentally and statistically significant and sustained upward trends in concentrations of pollutants of groundwater should be reversed but it did not include a precise definition of a significant upward trend. In the absence of the GWD, confusion would persist regarding the **interpretation of trend reversal principle** leading to the lack of harmonised interpretation in different Member States;
- Groundwater quality was monitored differently in Member States, resulting in the **lack of comparable monitoring data** and the lack of understanding of groundwater's contributions to other ecosystems;
- In the absence of the GWD, there would be numerous **derogation requests** regarding the application of WFD environmental objectives to "historically" polluted sites. This could have led to sites remaining unaddressed with no further measures required other than controls.

4.1.3 Environmental Quality Standards Directive

The EQS was proposed by the Commission in 2006⁶² aiming to replace existing environmental quality standards legislation that was set by five different Directives from the 1980s⁶³. The proposed Directive completed the WFD legislative framework and contributed to the streamlining of environmental legislation.

In particular, the EQSD aimed to address pollutants released into the aquatic environment from agriculture, industry and incineration⁶⁴ and to complete the provisions of the WFD on the prevention and control of chemical pollution of surface waters (ground waters were being addressed separately). It

⁶¹ European Commission, COM(2003)550, Proposal for the Directive on the protection of groundwater against pollution

[http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/com/2003/0550/COM_COM\(2003\)0550_EN.pdf](http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/com/2003/0550/COM_COM(2003)0550_EN.pdf)

⁶² European Commission, 2006, COM(2006)397, Proposal for a Directive on environmental quality standards in the field of water policy <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52006PC0397&from=EN>

⁶³ Directive 82/176/EEC on limit values and quality objectives for mercury discharges from the chlor-alkali electrolysis industry; Council Directive 83/513/EEC on limit values and quality objectives for cadmium discharges; Council Directive 84/156/EEC on limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry; Council Directive 84/491/EEC on limit values and quality objectives for discharges of hexachlorocyclohexane; and Council Directive 86/280/EEC

⁶⁴ Questions and answers on the proposed daughter directive on environmental quality standards in the field of water policy <https://circabc.europa.eu/sd/a/da809d8e-e067-4438-b4fc-9be256668b8a/Q%26A%20on%20Proposed%20Priority%20Substances%20Directive.pdf>

has achieved this by providing a set of Environment Quality Standards for specific that must be met by 2025 in order to reach ‘good chemical status’.

Initially, the EQSD included 33 priority substances (PS) and 8 other pollutants covering pesticides, biocides, heavy metals and other group of substances (e.g. flame retardants). The substances have been identified as posing significant risk to the aquatic environment due to their toxicity, use or concentrations in surface water.

Following the adoption of the WFD, **chemical pollution of water bodies remained an important issue** to be tackled. Key outstanding issues included:

- Lack of a consistent and harmonised approach by Member States to addressing chemicals in the aquatic environment with individual countries implementing own, national legislation and setting EQS values;
- Lack of availability of new information about risks to environment and human health from existing and new chemicals including and emerging pollutants posing yet unexplored risks;
- Challenges presented by ubiquitous persistent, bio-accumulative and toxic (PBT) substances as many of these substances persist in the environment for a long time and can be found in high concentrations in the environment decades after their use has been banned or restricted; and
- Lack of fit-for-purpose monitoring data to support the future reviews of the list of priority substances (PS).

The Impact Assessment⁶⁵ highlighted that without the Directive, all Member States would be obliged to develop their own national legislation leading to **significant variations in EQS values** set for the same substances as well as **considerable duplication of scientific, administrative and legislative efforts and costs**. In particular, the review of existing national standards suggests that EQS values for specific substances could differ by factors of 100 or even 1000⁶⁶. As a result, the approach to and the quality of environmental protection from chemical substances would vary from one country to another, leading to significant challenges in international river basins. Users and economic operators in different countries could also face wide fluctuations in the costs associated with implementation of the WFD.

The **Impact Assessment on the review of priority substances** through amending of the WFD and the EQSD⁶⁷, explored the problem and its evolution in the absence of additional policy action.

The baseline for the EQSD thus considers that, in the absence of the Directive:

- the lack of harmonised approach to addressing chemicals in the aquatic environment would persist. Under the baseline, production, use and emissions of substances would be subject to significant uncertainty as it is difficult to assess and quantify the impact of the legislation already in place such as WFD (PoMs), plant protection products legislation, REACH Regulation, the Industrial Emissions Directive and the legislation on pharmaceuticals, waste and POPs. In particular, in the absence of a proposal to list substances as priority substances, it would be up to Member States to act. The IA highlighted that in the few Member States where proposed PS have already been designated as RBSPs, there was **considerable variation in terms of the magnitude of the standard and the chosen matrix**, meaning that without the harmonised EQS

⁶⁵ European Commission (2006). Impact assessment for the proposal for a Directive on environmental quality standards. SEC(2006)947

⁶⁶ It is important to note that this is being observed for river basin specific pollutants that Member States are competent to identify and set EQS for

⁶⁷ European Commission (2012). Impact assessment for the proposal for a Directive amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy. SEC(2011) 1547 final. January 2012

derived for each substance as a PS, different EQS values would likely be seen in the different Member States;

- the lack of new information on risks to environment and human health would persist and the baseline scenario would include almost **no monitoring in the aquatic environment** covering possible new priority substances. There would be no coordinated efforts to increase knowledge on potential new PS/PHSs with Member States building knowledge and collating new information at national level based on national priorities. Furthermore, if no proposal were made to change the EQS of the existing PS where new information indicates that they should be more stringent, these **substances would pose an unrecognised ongoing risk**;
- the lack of fit-for-purpose monitoring data and knowledge base would persist. Despite the improved availability of **monitoring data on chemicals**, significant limitations would remain. The implementation of REACH and the PPP Regulation of 2009 was likely to provide additional data, but neither would have led to the provision of targeted, **EU-wide monitoring data relating to emerging pollutants**. Furthermore, while REACH was expected to act as a useful source of information, it would only cover substances under its scope and would not cover all emissions. Limited information would also become available as a result of the Member State **monitoring of RBSPs** (due to very limited number of designated specific pollutants) combined with the lack of a clear mechanism for reporting such data at EU level (voluntary). Overall, there will be a persistent lack of comparable monitoring data and matrixes in different Member States;
- specific challenges associated with ubiquitous persistent, bio accumulative and toxic chemicals would persist. The **current legislation does not provide incentive to improve the information base** by choosing the most appropriate matrix for substances such as ubiquitous PBTs. In the absence of a proposal, Member States could continue to monitor in water even when another matrix would be more suitable. Although for some chemicals, sediment or biota are preferred matrices to express the concentrations, in the EQS, the values are expressed as water concentrations. There would continue to be many false "good chemical status" reports, harmonisation would not be achieved, and there would be less scope for identifying and possibly remediating highly contaminated sites.

4.2 Baseline for the Floods Directive

4.2.1 Overview of the situation prior to the adoption of the Directive

Between 1998 and 2004 Europe suffered from over 100 major floods which caused close to 700 fatalities, the displacement of half a million people and insured losses from €25 billion⁶⁸. In addition to direct damage caused by floods, floods were giving rise to indirect damages such as clean-up costs, loss of clients and markets and loss due to disruption of production, leading in some instances to the closure of businesses or SMEs. There was also growing awareness of the indirect impact of flooding on physical and mental health associated with exposure to contaminants in floodwaters and disruption. Environmental consequences of flooding on wetlands, biodiversity and pollution levels were also severe. For example, in 2000, a failure of a tailings dam in Baia Mare, Romania resulted in the release of 100,000 m³ of cyanide-contaminated liquid killing fish in the rivers and affecting the drinking water of more than 2 million people in Hungary.

⁶⁸ Commission staff working document - Annex to the Proposal for a Directive of the European Parliament and of the Council on the assessment and management of floods - Impact Assessment {COM(2006) 15 final} /* SEC/2006/0066 */ Brussels, 18.01.2006 SEC(2006) 66 COMMISSION STAFF WORKING DOCUMENT] to add reference throughout the section

The assets and population at risk from flooding can be enormous. For example:

- more than 10 million people live in the areas at risk of extreme floods along the Rhine, and the potential damage from floods amounts to €165 billion (compared to the costs of the Rhine Flood Defence Action Plan (1998-2020) of €12.3 billion);
- The costs for the Oder Basin Flood Action Programme (2004-2029) calculated at €3.6 billion equal to the direct damage that occurred during one single flood disaster in 1997;
- The damages that would be caused by a once-in-a-thousand-years flood in the Loire river basin are estimated at €6 billion;
- In England and Wales, the average annual damage caused by river and coastal flooding is estimated at just over € 1.5 billion;
- Coastal areas are also at risk from flooding with the European coastline extending for more than 100 thousand kilometres and hosting €500- €1,000 billion of economic assets in 2000.

4.2.2 *Expected development of pressures and impacts from floods without legislation*

The risks of flooding to economic assets, human health and environment will also increase in the future as a result of increased magnitude and frequency of floods due to climate change (higher intensity of rainfall and rising sea levels) and increased number of people and economic assets located in flood risk zones.

In particular, under the baseline scenario the potential flood related damage is expected to continuously increase because of **climate change**:

- In Poland, a one-metre rise in sea level (by the year 2100) would increase by a factor of 10 the annual risk of flooding in the highly productive deltaic areas and would triple the rate of coastal erosion. This rise would cause an annual inundation of 1,500 km² of agricultural land with a value of € 2.5 billion, as well as highly valuable historic, cultural and industrial centres;
- In the UK, it was found that if current levels of expenditure and approaches to flood management over the next 100 years remain unchanged:
 - River and coastal flood risk could increase between two and 20 times;
 - Risk of flooding from rainfall could increase between three and six times;
 - Annual economic damage could increase from € 1.5 billion to between € 2.2 billion and € 31 billion by the 2080s, depending on the scenario; and
 - The number of people at high risk of river and coastal flooding could increase from 1.6 million today, to between 2.3 and 3.6 million by the 2080s.

Furthermore, continuous **growth in the number of people and economic assets** located in flood risk zones will also contribute to an increase in the population and assets at risk and potential flood related damage. The number of inhabitants living in European coastal municipalities has more than doubled between 1950s and 2000s reaching 70 million inhabitants in 2001. The damage caused by the flood in Paris in 1910 has affected about 200,000 people and led to a damage of about €1 billion; the same event a century later would result in a damage of €8 to €9 billion and affect 500,000 city dwellers.

4.2.3 *Baseline for the Floods Directive evaluation*

In the absence of the Floods Directive, it is fair to assume that Member States would have continued to use a **range of measures** to address flood related risks and damage available to them including:

- The Community Civil Protection Mechanism that allows the mobilisation of support and assistance in the event of major emergencies, including floods. While providing an adequate response to affected populations, the Mechanism does not address the root causes of floods or was able to prevent flood damage from happening;

- Financial instrument for emergency financial assistance in the event of a major disaster under the European Union Solidarity Fund (EUSF). The instrument does not compensate for private losses or damage covered by insurance and is not meant for long-term action;
- Eligibility of flood related measures as part of the (then) proposed Cohesion Policy Regulation for 2007-2013;
- Inclusion of flood related measures in the Rural Development Regulation EC No 1698/2005.

Furthermore, the European Commission has been supporting research on floods since the early 1980s, including into understanding of floods and their consequences, flood modelling and technologies. So, it is fair to assume that some knowledge and greater understanding of flood risks would have arisen at EU level without the support of the Floods Directive.

International river commissions were established for Rhine, Oder, Meuse, Danube, Saar, Moselle and Elbe⁶⁹ to ensure a co-ordinated approach to river basin management. These have resulted in varying degrees of cooperation and the focus on flood protection in different river basins.

National measures undertaken by Member States to assess and manage flood risks have led to a wide diversity in approaches to flood risk management. Some Member States have defined levels of protection whilst other Member States have not set statutory rights to a particular level of protection. Overall, there was no targeted, coordinated and concerted approach at EU level towards flood risk management despite significant potential risk to human health and life, the environment and economic assets. Under the baseline scenario, no actions would be taken to plan or act in an integrated and strategic manner resulting in little or no cooperation across boundaries of land ownership, administrative responsibility or national borders.

In the **absence of policy action** (i.e. Floods Directive), the baseline for the evaluation assumes the following:

- The response to flood risks would largely remain disaster-driven and focused on emergency response rather than on managing the risks before, during and after a flood due to a lack of a strategy;
- The implementation of pre-existing flood risk management plans could be postponed due to decreased awareness and sense of urgency over time as flood risks tend to be forgotten once the disaster has been addressed;
- There would be no integrated approach across the river basin to reduce and manage flood risks in an effective and coherent manner. Member States could just pass on problems from one region to another (upstream or downstream); and
- Implementation of flood risk management and disaster relief measures would not consider the objectives set under the Water Framework Directive with regard to ecological and chemical status of water bodies.

⁶⁹ It is important to note that some of these pre-dates the Flood Directive or even the WFD

5 Analysis of effectiveness

5.1 Introduction

The aim of the effectiveness analysis is to verify that the intended objectives have materialised and that no negative unintended effects have occurred.

In a simplified way, the objectives of the Directives are:

- No deterioration of status for surface and groundwater bodies and the protection, enhancement and restoration of all waterbodies;
- The achievement of good status for all waterbodies by 2015. This comprises the objectives of good ecological status and good chemical status for all natural surface water bodies; good ecological potential and good chemical status for all heavily modified or artificial waterbodies; and good quantitative status and good chemical status for all ground water bodies;
- The progressive reduction of pollution of priority substances and the phase-out of priority hazardous substances in surface water bodies, and the prevention and limitation of the input of pollutants in ground water bodies;
- The reversal of any significant, upward trend of pollutants in ground water bodies;
- The protection of the environment from the damage of flooding.

As part of this section we present the analysis of the evaluation questions separately for the Water Framework Directive, its daughter Directives, and the Floods Directive.

5.2 Water Framework Directive and daughter Directives

5.2.1 EQ 1 (EQ 1.1-1.3) What progress have Member States made over time in implementing the Directives and achieving the objectives set out in the Directives?

Conclusions on EQ.1 - What progress have Member States made over time in implementing the Directives and achieving the objectives set out in the Directives?	
What has worked well?	<ul style="list-style-type: none"> • The implementation of all Directives has improved over time, as illustrated by the results of the latest implementation report published by the European Commission, the analysis of the state of waters from the EEA and the reduction in the number of infringements related to adoption and transposition of the Directive at the European Court • The integrated water management framework of the WFD has allowed, in some instances, water to be more visible and considered in a more holistic way over successive planning cycles. It has also led to an undeniable improvement in the understanding of the status elements, as illustrated by the reduction in those water bodies with “unknown” status. This is particularly true for chemical status. • There has been improved transboundary cooperation thanks to the implementation of the WFD, reinforcing the action of existing international river basin committees and encouraging the development of international coordination mechanisms. The WFD has also been used as a model for water governance in other regions e.g. Eastern Europe and the Caucasus.
What has not worked well?	<ul style="list-style-type: none"> • Despite improvements to implementation, 54% of stakeholders in the OPC indicate that the requirements of the Directives are not effectively implemented and enforced within their country. • The objectives of the WFD regarding the achievement of good status have not been achieved. This is true for good chemical status and ecological status for surface water bodies and to a lesser extent for ground water bodies. • More harmonisation could be achieved on transboundary cooperation e.g. enhancement of joint monitoring programmes, EQS, monitoring of priority pollutants and developing methodologies for exemptions in iRBMPs.
Strength of evidence	<ul style="list-style-type: none"> • Good strength of evidence from implementation analysis corroborated by the feedback from stakeholders.
Indication of bias	<ul style="list-style-type: none"> • No bias has been identified in this section.

Implementation of structures and processes

When considering the implementation of the structures and processes associated with the WFD, progress has definitely been made across EU Member States. This includes water body characterisation, identification of appropriate competent authorities in Member States, the adoption of two cycles of RBMPs and the implementation of PoMs. Details on the implementation are presented in Section 3.3.

The academic literature (including Carvalho, Voulvoulis) highlights how the integrated water management framework of the WFD has allowed the prevention of deterioration of the aquatic environment to be prioritised over successive planning cycles. Furthermore, treatment of river basins as interconnected systems rather than political and jurisdictional areas and pursuing environmental objectives (outlined under Article 4 of the Directive) acknowledges the environmental variability of the European aquatic environment, treating it as a system.⁷⁰ Grizzetti (2017) highlighted that pursuing ecological status requirements introduced an expression of quality regarding both the structure and functioning of surface water bodies.⁷¹ The environmental objectives under Article 4 of the WFD are described in Section 3.1.2.

As part of the stakeholder consultation process for this study, the OPC asked respondents if, to the best of their knowledge all of the requirements of the Directives were effectively implemented and enforced within their country. out of which 118 (18%) responded “I don’t know”. Out of the respondents that knew the answer to this question (92%), It is interesting to see that the majority of the respondents (65%) consider that the Directives are not effectively enforced and implemented in their country.

Table 5-1 Views on whether all of the requirements of the Directives were effectively implemented and enforced within their country

	Yes	No	Total
Number of respondents	193	362	555
Percentage	35%	65%	100%

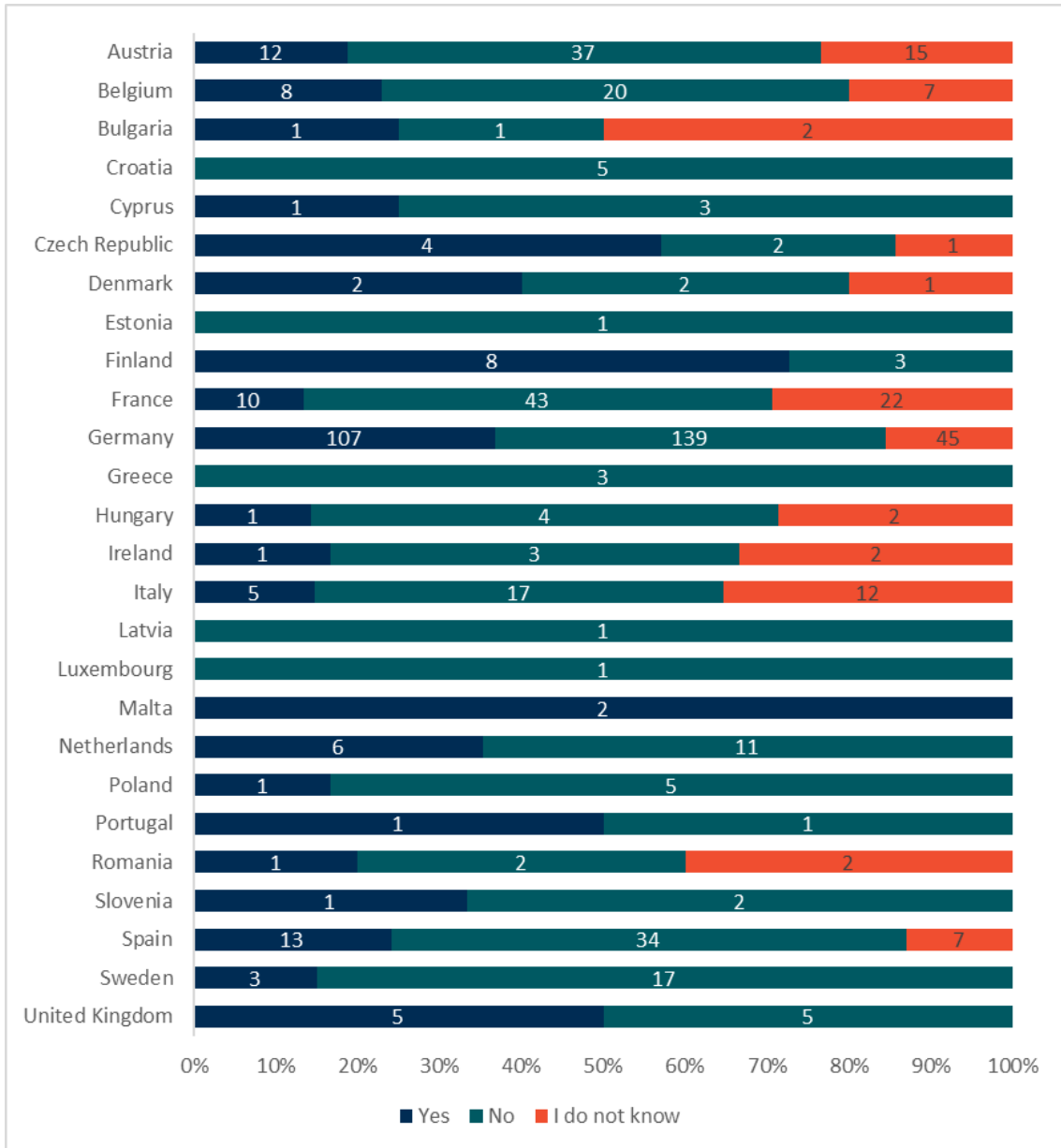
Note: the question asked was Question 3 - To the best of your knowledge, are all the requirements of the Directives effectively implemented and enforced in your country?

Figure 5-1 shows that the views are quite varied among MS. In some MS, the level of implementation is deemed to be worse, this is the case in particular for Austria, France, Germany, Italy, Sweden and Spain. In Czech Republic, Finland and the UK, the views are more positive with nearly 50% indicating ‘yes’.

⁷⁰ Laurence Carvalho and others, ‘Protecting and Restoring Europe’s Waters: An Analysis of the Future Development Needs of the Water Framework Directive’, *Science of the Total Environment*, 658 (2019), 1228-38 <<https://doi.org/10.1016/j.scitotenv.2018.12.255>>; Theodoros Giakoumis and Nikolaos Voulvoulis, ‘The Transition of EU Water Policy Towards the Water Framework Directive’s Integrated River Basin Management Paradigm’, *Environmental Management*, 62.5 (2018), 819-31 <<https://doi.org/10.1007/s00267-018-1080-z>>; Nikolaos Voulvoulis, Karl Dominic Arpon, and Theodoros Giakoumis, ‘The EU Water Framework Directive: From Great Expectations to Problems with Implementation-NC-ND License (<http://Creativecommons.Org/Licenses/by-Nc-Nd/4.0/>)’, 2016 <<https://doi.org/10.1016/j.scitotenv.2016.09.228>>.

⁷¹ Grizzetti B, Pistocchi A, Liqueste C, Udias A, Bouraoui F, van de Bund W (2017) Human pressures and ecological status of European rivers.

Figure 5-1 Views from the OPC on whether implementation and enforcement of the Directives is effective - results by MS



Overview of enforcement

The European Court of Justice (ECJ) PAH has issued several rulings based on the WFD. These cases have historically dealt with straightforward provisions of WFD implementation including non-communication of the transposing measures, late reporting, late adoption of monitoring programmes and PoMs. It should be noted that the majority of such cases have since been closed but a number of non-conformity cases are still pending.⁷² Relevant case law regarding implementation of the WFD include:

⁷² European Commission, ‘European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River’.

- Commission vs. Poland (Case C-648/13, judgment of 30 June 2016): the judgment held that Poland had incorrectly transposed numerous provisions of the WFD;⁷³
- Commission vs. Greece (Case C -297/11, ruling 19.4.2012.), vs. Belgium (Case C-366/11, ruling 24.5.2012), vs. Portugal (Case C-223/11, ruling 21.6.2012), and vs. Spain (case C-403/11, ruling 4.10.2012) - Non-reporting: On the failure to adopt and report RBMPs for all of their respective RBDs;⁷⁴
- Commission vs. Germany (Ref. Case C 67/05, ruling of 15.12.2005) - Non-Communication Transposition: The Court ruled that Germany had failed to transpose, or to notify such transposition of the Directive to the Commission within the deadline, since the law had not been transposed into the legislation of all Bundesländer. Germany has since complied, and the case is closed;⁷⁵
- Commission vs. Luxembourg (Case C 32/05, ruling 30.11.2006): The Court ruled that Luxembourg had failed to transpose, or to notify such transposition of the Directive to the Commission within the deadline, since the law had not been transposed into the legislation of all Bundesländer. Luxembourg has since complied, and the case is closed.⁷⁶

Reaching environmental objectives

Overall, the results of the implementation reporting from the Commission, the European overview of the RBMPs and the EEA assessment report highlight that while the WFD has been successful at implementing a framework which prevents deterioration of water bodies, the ecological and chemical status objectives of the Directive have not been fully met. These conclusions were supported by stakeholders' views as part of the final workshop.

Based on the latest implementation report, Member States have made marked efforts to improve water quality and hydromorphology. Some of the measures have immediate effect; others will result in improvement in the longer run. Effects are usually visible at the level of individual quality elements but often do not translate into an overall improved ecological status, an illustration of which is presented below. Figure 5.2 presents the views of the respondents (OPC) with regards to the achievements of the objectives of the water legislation.

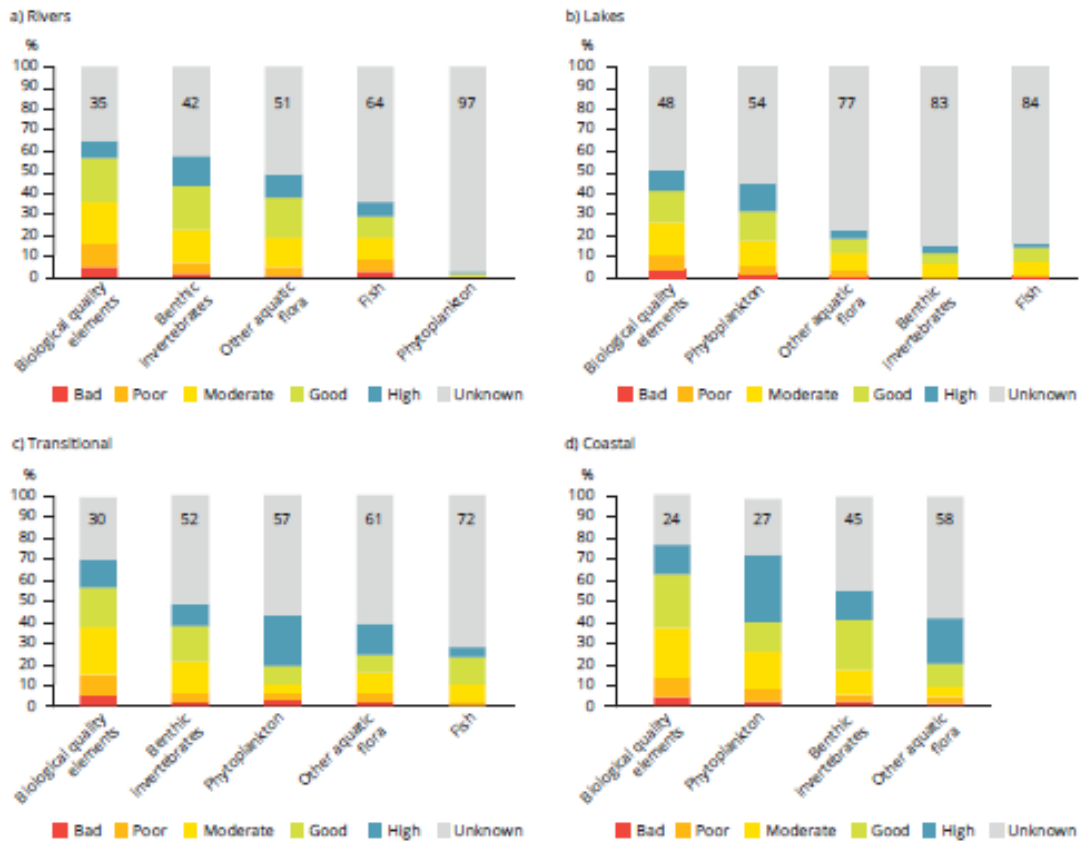
⁷³ <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-648/13>

⁷⁴ (C-297/11) [http://curia.europa.eu/juris/liste.jsf?num=C-297/11&language=EN](http://curia.europa.eu/juris/liste.jsf?num=C-297/11&language=EN;);
(C-366/11) [http://curia.europa.eu/juris/liste.jsf?num=C-366/11&language=EN](http://curia.europa.eu/juris/liste.jsf?num=C-366/11&language=EN;);
(C-223/11) [http://curia.europa.eu/juris/liste.jsf?num=C-223/11&language=EN](http://curia.europa.eu/juris/liste.jsf?num=C-223/11&language=EN;);
(C-403/11) <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-403/11>.

⁷⁵ <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-67/05>.

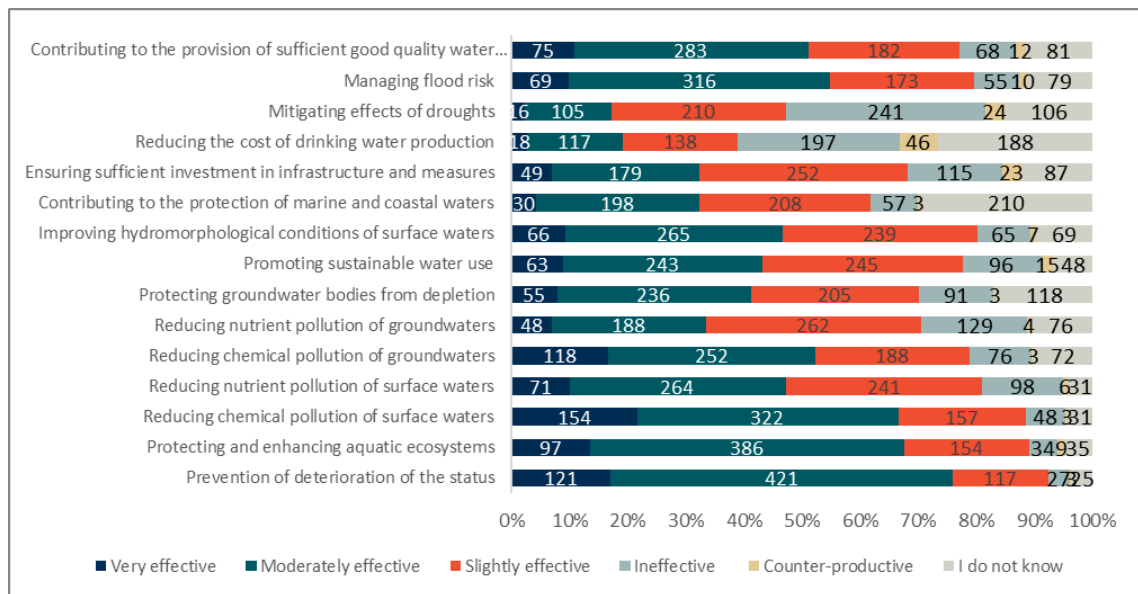
⁷⁶ <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-32/05>.

Figure 5-2 Ecological status/potential of biological and supporting quality elements in rivers, lakes, and transitional and coastal waters.



Source: EEA (2018) State of Waters report

Figure 5-3 Views on the effectiveness of the legislation in achieving its objectives



The Directives are seen as most effective for reducing chemical pollution in surface water and groundwater and preventing deterioration of the water status. The stakeholder groups that answered in the greatest numbers that the Directives have been most effective for reducing chemical pollution in

surface water include EU citizens (41%) and business associations (15%). The stakeholder groups that answered that answered in the greatest numbers that the Directives have been most effective for preventing deterioration of the water status include EU citizens (44%), business associations (15%) and company/business organisations (15%). The Directives are seen as ‘moderately effective’ against most of the objectives and in particular for managing flood risks, improving hydromorphological conditions of surface waters and protecting and enhancing aquatic ecosystems. In contrast, the two objectives against which the Directives are viewed as either being ineffective or counter-productive are: managing the effects of droughts, and reducing the cost of water production. These views reflect the challenge in introducing effective water costing policies. It should be noted that droughts are addressed in a specific guidance on the development of Drought Management Plans⁷⁷.

Respondents to the OPC were asked to indicate whether there was any other objectives that the implementation of the Directives had been effective in achieving. The responses received are summarised by stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The WFD is a very useful monitoring and planning instrument but still weak when it comes to translating the set objectives into actions and delivering results;
- Water scarcity and droughts have also been better managed across Europe since the implementation of the WFD;
- The EQS for surface water and groundwater together with the watch list are extremely useful to fight against micropollutants at source;
- The Urban Waste Water Treatment Directive has been very effective to tackle point source pollution;
- The Directives are moderately effective in increasing consideration for environmental aspects in planning and operation of water infrastructure;
- The Directives have been effective in raising awareness that water is an important societal resource, also raising awareness at company management level.

NGOs and environmental organisations:

- The WFD has been effective at boosting the water sector, for example, restoration projects and flood management projects are being implemented and awareness surrounding water use and public campaigns against water pollution is improving;
- The WFD and its daughter directives have been effective in establishing for the first time a comprehensive framework, a set of common rules at European level, aimed at restoring the good status of water bodies both in terms of quantity and in quality aspects associated to anthropogenic pressures.

Public authorities:

- The WFD has led to major water bodies have a visibility in the community planning and stronger protection.

Citizens:

- Promotion of water reuse;
- Preservation of existing flood measures.

⁷⁷ Water Scarcity and Droughts Expert Network, 2007, Drought Management Plan Report http://ec.europa.eu/environment/water/quantity/pdf/dmp_report.pdf

Legislation vs implementation

Feedback received regarding to the internal coherence of the legislation often referred to national implementation issues. These issues, which are described as gaps in the national implementation, are listed below.

- A gap was identified in the Finnish Water Act about updating old hydropower dam licences;
- A gap was identified with the Spanish legislation, in particular to consider cost recovery and the polluter pays principle. Current legislation rules make it challenging to apply such principles to some economic sectors, such as agriculture;
- A gap was identified in Hungary regarding achieving the deadline of the proposed objectives by 2027 and beyond in particular due to the absence of funding mechanisms for the implementation of the necessary measures;
- An incoherence was identified in Germany related to the storage of hazardous materials and requirement for the ports to upgrade their storage facilities. Another respondent raised the national implementation of Article 4.2 WFD, exceptions to the ban on the use of pesticides in waters edge strips;
- A gap was identified with the Dutch national legislation which is only applicable to larger bodies of surface water and the implementation of Article 7.3 of the WFD which is very important for a sustainable supply of safe and clean drinking water but not implemented to its full extent;
- One respondent to the OPC indicated that many requirements of the Directive are formulated too vaguely and not linked to concrete implementation targets. An example of this was provided with Article 7(3) that prohibits deterioration and protection of drinking water resources but does not explain how to understand deterioration.

EQ 1.2 What progress have Member States made over time in implementing the EQSD and achieving the objectives set out in the Directive?

The EQSD lays down environmental quality standards (EQS) for priority substances and certain other pollutants as provided for in Article 16 of the WFD. A smaller group of priority hazardous substances were identified in the EQSD as ubiquitous (uPBT) (persistent, bioaccumulative and toxic). uPBT substances persist in the environment, can be transported long distances and pose long-term risks to human health and ecosystems. The uPBTs are mercury, PBDEs, tributyltin and certain PAHs.⁷⁸ Examples of some priority substances and their uses are presented in the table below.

Table 5-2 Examples of priority substances and uses

Priority substance	Uses	Environmental/ Human health risk
Mercury	Thermometers, dentistry, batteries, paints, fluorescent lights	60% of mercury in Europe that is atmospherically deposited comes from natural sources (i.e. volcanic eruptions)
Cadmium	Batteries, pigments and stabilisers, phosphate fertilisers, metal production	
Brominated diphenyl ethers (Pboe)	Cushions, computers,	

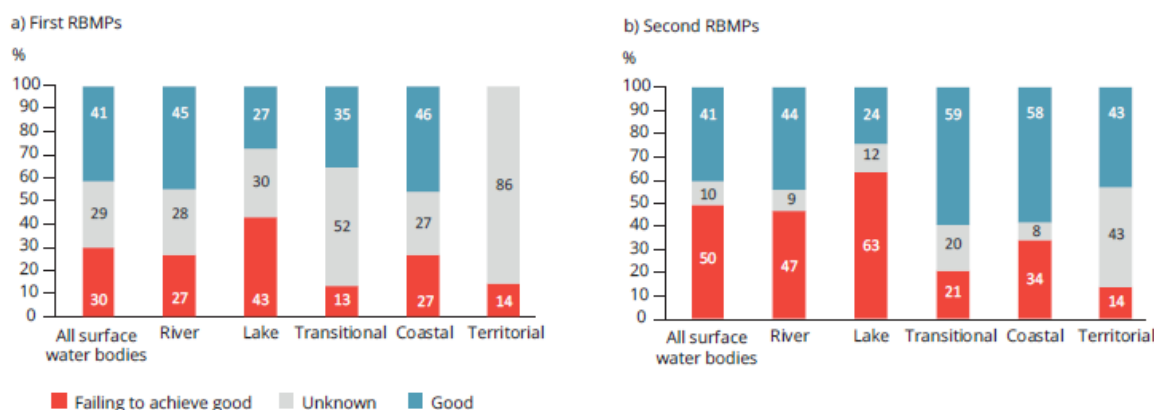
⁷⁸Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32013L0039>

Priority substance	Uses	Environmental/ Human health risk
PAHs	Carbon, petrol, diesel, coal, wood, plastic.	
Tributyltin (TBT)	Anti-fouling agent in ships and boats.	Although restricted on small boats it has proven to be harmful to shell fish and the aquatic environment

Source: Based on information from the EEA (2018) State of Waters Report

It is noted that during the first cycle of RBMPs, progress was made across MS in improving chemical status which indicates certain effective measures were implemented.⁷⁹ When the chemical status of surface water bodies is compared between the first and second set of RBMPs, it is clear that the number of water bodies registered as “unknown” status has dropped significantly. Generally, chemical status has declined in lakes, remained similar in rivers and improved in transitional/coastal waters. However, despite these improvements, as illustrated in Figure 5-4, there is still a significant number of surface waterbodies that are failing good chemical status.

Figure 5-4 Change in chemical status of surface water bodies, by water category



Source: EEA (2018) State of Waters Report

Gaps that have been apparent in the implementation of the EQSD include lack of monitoring of emissions trends in many Member States, and comparisons remain difficult as more sources are now being analysed. The EEA’s State of Water report notes that substances are emitted into the aquatic environment via pathways from a range of sources such as industry, agriculture, transport and waste disposal. The impact of pharmaceuticals on the aquatic environment has also recently come to light in the policy sphere. For example, scientific research has shown effects on male fish which have been exposed to the main ingredient of the contraceptive pill as a result of its endocrine effects (Kidd et al. 2007). Pharmaceutical residues including painkillers, antidepressants, anti-microbials and contraceptives are commonly found in surface and groundwater bodies. Article 8(c) of the EQSD requires the Commission to prepare a strategic approach to water pollution from pharmaceuticals, and as such a Communication outlining a strategic approach to tackling pharmaceuticals in the water was published in 2019.⁸⁰

⁷⁹ European Environment Agency.

⁸⁰ European Commission (2019) Communication on an EU Strategic approach to Pharmaceuticals in the Environment. http://www.ec.europa.eu/environment/water/water-dangersub/pdf/strategic_approach_pharmaceuticals_env.PDF

While progress has been made, the results of the targeted consultation indicate that more could be done. For example, Question 9 of Questionnaire 2 for the targeted consultation asked respondents how successful their MS/country has been at delivering the WFD objectives regarding long term trends for substances that tend to accumulate (EQSD Article 3.6). Of the 78 responses given, 56% indicated they had to some extent, while a further 27% indicating that they did not know. 9% of responses indicated not at all, while just 8% indicated they were delivered to a large extent.

In conclusion, while some progress has been made toward meeting the objectives of the Directive, these are not fully met. This conclusion was supported by stakeholders as part of the final workshop and from the targeted consultation responses.

EQ 1.3 What progress have Member States made over time in implementing the GWD and achieving the objectives set out in the Directive?

CIS Guidance no. 26 “Risk Assessment and the use of conceptual models for groundwater” was developed by the Commission in 2010 to help characterise groundwater body delineation in MS, as the need for better harmonisation across the EU was identified during the review of the first RBMPs. The review of the second RBMPs found that, MS have made further progress regarding geological formation and stratification of groundwaters, as well as further detail on those surface water systems linked to groundwater bodies. It is noted that so far, around 13,380 groundwater bodies are delineated, with an average size of around 320km². It was also noted that 29% of groundwater bodies were deleted and replaced with newer and better informed characterisations.⁸¹ Hence, the implementation of the GWD has successfully progressed with encouraging more informed monitoring and characterisation of groundwater bodies in Europe.

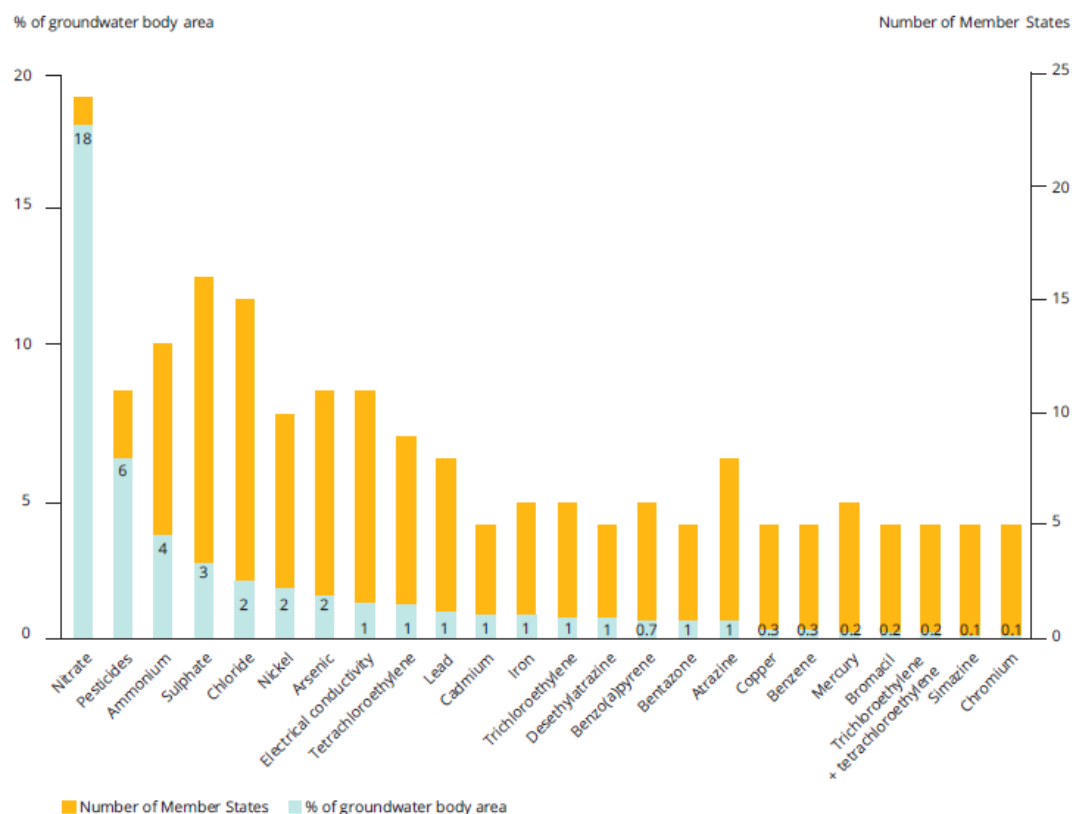
Achieving good chemical status of GWBs

Groundwater bodies are generally well understood but show virtually no change in status since the 1st RBMPs cycle. It was generally noted that those areas with lower groundwater quality corresponds to where intensive agricultural production or heavy industry occurs i.e. England, Northern-Ireland, Flanders (northern Belgium), western parts of Germany (on the border with the Netherlands). Based on analysis of WISE-SoW database, the EEA presented those pollutants which have been shown to have an upward trend in groundwater bodies in 19 Member States. The results indicate that nitrates are increasing in 5.7% groundwater body area. Furthermore, nitrates were the pollutants which most commonly caused poor chemical status and are the most widespread groundwater pollutant in Europe - reported in 24 Member States - causing failure in 18% of total groundwater body area. Such results clearly identify the link between agriculture and groundwater chemical status. Diffuse pollution from agriculture was noted as the most intense pressure affecting 29% of groundwater body area.⁸² Based on these results, it is likely that diffuse pollution from agriculture has hindered the achievement of good groundwater chemical status under the GWD. This conclusion was largely supported by stakeholders as part of the final workshop.

⁸¹ European Commission, ‘European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River’.

⁸² European Environment Agency.

Figure 5-5 Groundwater pollutants causing poor chemical status in at least 5 MS.



Source: EEA (2018)

Despite the variable reporting between Member States, such trends in pollutant concentrations have been identified - but they have not been reversed. One of the most likely cause is the ‘lag time’, that is to say the long time needed to observe changes in groundwater quality after pressure-reducing measures have been introduced. It could also be because effective measures have not yet been taken.⁸³

The Groundwater Watch List

Amendments to Annex II of the GWD (Commission Directive 2014/80/EU of 20 June 2014) require Member States to define a “watch list for pollutants of groundwater to increase the availability of monitoring data on substances posing a risk of potential risk to bodies of groundwater”. As outlined in the CIS Technical report on the voluntary groundwater watch list concept and methodology (2018), once the Groundwater Watch List (GWWL) is defined it will comprise a list of emerging pollutants to be added to MS monitoring programmes. It should be noted that the GWWL draws on the watch list mechanisms defined under the EQSD (2013/39/EU) for surface water where substance monitoring is obligatory. However the GWWL is a voluntary mechanism.⁸⁴ While it is too early to judge the effectiveness of such a measure, the feedback from stakeholders, in particular experts involved in the Groundwater expert group was that the GWWL is a positive development that will allow to increase the level of knowledge on groundwater in an efficient way.

5.2.2 EQ 1.5 How have the Directives facilitated transboundary cooperation?

The UN defines transboundary waters as those aquifers, lakes and river basins which are shared by two or more countries.⁸⁵ The WFD (Article 13) specifies that in a river basin where water use may have transboundary effects, the requirements for the environmental objectives and for the PoM shall be

⁸³ European Environment Agency.

⁸⁴ CIS Working Group - Groundwater (WG GW) (2018) CIS Technical report on the voluntary groundwater watch list concept and methodology based on final draft 12.3

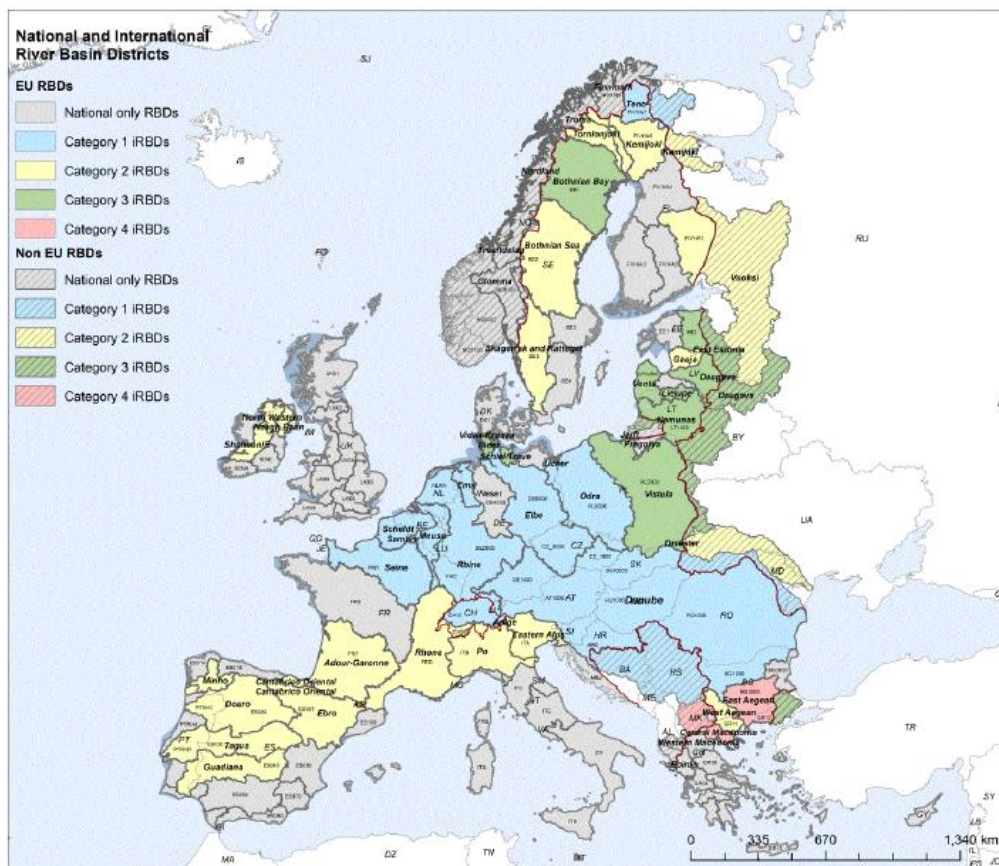
⁸⁵ <http://www.unwater.org/water-facts/transboundary-waters/>

coordinated for the entire RBD. It is also specified (Article 13.3) that for those river basins which extend beyond the boundaries of the European community, MS must ensure the appropriate coordination with the relevant non-Member States. Finally, the WFD contributes towards the implementation of obligations under international conventions on water management and protection, including the UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes⁸⁶.

International RBMPs

Transboundary cooperation was assessed as part of the 2nd RBMP cycle. Based on the latest data, there are 75 international RBDs (iRBDs) in the EU and it is noted that mechanisms of international coordination that are employed vary within these iRBDs. A map indicating the most up to date distribution of each category of iRBD was also produced as part of the 2019 RBMP assessment and is presented in Figure 5-6.⁸⁷

Figure 5-6 Overview map of the iRBB



The fifth implementation report updated the number of each iRBD category in Europe, based on those mechanisms developed as part of the international coordination assessment of the first RBMP cycle, conducted in 2012⁸⁸. These mechanisms can include agreements/conventions, permanent commissions or working groups, coordination of public consultation and basin-wide strategies or plans. As illustrated from Table 5-3, category 1 iRBDs are those which have established iRBMPs.

⁸⁶ Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 17 March 1992, <https://www.unec.org/fileadmin/DAM/env/water/pdf/watercon.pdf>

⁸⁷ European Commission, 'Part 1/2 International Cooperation under the Floods Directive (2007/60/EC) - Factsheets for International River Basins', 1, 2019, Contents1-Contents1 <<https://doi.org/10.3143/geriatrics.56.contents1>>.

⁸⁸ Vogel, B., et al. (2012): Transboundary Cooperation Fact Sheets. Comparative Study of Pressures and Measures in the Major River Basin Management Plans. available at: <http://ec.europa.eu/environment/archives/water/implrep2007/pdf/Governance-Transboundary%20Fact%20Sheets.pdf>

Table 5-3 International Coordination Mechanisms

International coordination mechanisms	
Agreements or conventions	<p>About 50% of C1 basins have agreements/conventions signed by sharing countries</p> <p>For the Danube, Elbe, Rhine and Sava they are signed by countries that dominate the share of each basin</p> <p>A new agreement between Sweden and Norway in 2014 now clearly sets out the coordination of Swedish and Norwegian river basins.</p> <p>A project in the Gauja/Koiva iRBD – shared between Estonia and Latvia - led to increase coordination on a number of WFD topics, such as delineation, typology, monitoring, assessment and classification.</p>
Permanent commissions or working groups	<p>All C1 and C2 basins have these</p> <p>Examples include: ICPDR (International Commission for the Protection of the Danube River) and IKSR (International Commission for the Protection of the Rhine).</p>
Coordination of public consultations	<p>All C1 basins were published online</p> <p>Elbe and Sava also held public events</p>
Basin-wide strategies or plans	<p>Developed in some, mainly C1 basins</p> <p>Joint climate change strategies were developed in 5 iRBDs</p> <p>The Danube has 4 joint statements</p> <p>Joint Statement Navigation & Environment</p> <p>Guiding principles on sustainable hydropower development in the Danube</p> <p>ICPDR Strategy on adaptation to climate change</p> <p>Ecological prioritisation approach for measures to restore river and habitats</p> <p>Programmes under the Rhine include:</p> <p>Habitat Connectivity along the Rhine</p> <p>Salmon 2020 programme</p> <p>Lake Constance lake trout programme</p> <p>Eel management plans</p> <p>Master Plan for Migratory Fish</p> <p>Rhine 2020</p>

Source: European Commission (2019) *European overview of RBMPs*

The results from the stakeholder consultation highlight that there is a generally positive perception of the WFD's contribution to transboundary and international cooperation in the context of integrated water management. For example, as part of the OPC, when stakeholders were asked to provide an overall rating of the Directive's benefits, 63% of stakeholders (n=622) indicated that improved cooperation at transboundary/transnational level was a moderate to very significant benefit of the WFD. 28% of the OPC respondents indicated that international cooperation to tackle pollution contributed towards a major improvement to water quality.

Furthermore, Living Rivers Europe highlighted in their position paper submission that the WFD has improved transboundary cooperation by stimulating the establishment of more recent transboundary basin organisations (e.g. International Sava River Basin Commission) and empowering the existing international river commissions (e.g. along the Rhine and Danube) by providing them with a common legal framework.

This was also supported by views from the Norwegian Environment Agency obtained via targeted interview. It was noted that given since the adoption of the WFD by Norway, agreements for transboundary cooperation were made based on the Directive's legal framework which greatly supported cooperation and catalysed meaningful action. For example, in 2014 Sweden and Norway set out coordination of river basins.

Room for harmonisation

Despite the overall positive perception regarding the effect of the WFD on transboundary and international cooperation, the 2019 review of the 2nd RBMPs recommended that some elements might require further harmonisation. For example, the enhancement of joint monitoring programmes, EQS, monitoring of priority pollutants and the development of methodologies for setting exemptions on transboundary waterbodies. The Commission also specified that more information is needed on international mechanisms for iPoMs rather than providing a summary of national actions within MS.⁸⁹ For example, it is specified in the Schelte iRBMP that different methodologies were used for the application of exemptions to the WFD for MS and regions while in the Rhine, exemptions were reported for surface water bodies of basin-wide importance and reasons for their application were outlined.

As such while some progress has been made toward meeting the objectives on transboundary cooperation, these are not fully met and there is potential for more cooperation. This conclusion was supported by stakeholders as part of the final workshop.

Defining an EU model for water governance

It should also be noted that the WFD is commonly quoted as a model for water legislation and water policies. It has provided a framework for water reform policies beyond Europe including in Eastern Europe, the Caucasus and Central Asian countries (EECCA). For example, in Armenia, pilot RBMPs have been developed for the Marmarik river basin. In conjunction with the UNECE Water Convention and the OECD’s GREEN Action Programme, the European Union Water Initiative (EUWI) has converged principles of the WFD and its daughter Directives to guide reform of water policies in the EECCA region.⁹⁰ Finally, the WFD principles are seen to be in line with the OECD principles on water governance and contribute to its implementation⁹¹.

5.2.3 EQ 2 Which main factors have contributed to or stood in the way of achieving the Directives’ objectives?

Conclusions on EQ.2 - Which main factors have contributed to or stood in the way of achieving the Directives’ objectives?	
What has worked well?	<ul style="list-style-type: none"> The CIS has successfully delivered a number of guidance documents, as well as encouraging implementation via the exchange of best practices and discussion on policy developments. The CIS has facilitated the involvement of stakeholders in the implementation of the WFD (e.g. CIS guidance no.36 on Article 4(7)). Stakeholders from the OPC, targeted consultation and interviews all reiterated that the CIS supports implementation to a large extent. Despite funding constraints being identified as a barrier to implementation of measures, EU financing has undoubtedly supported implementation. Some MS met their basic water service needs with EU funding support, while 65% of RBDs received a contribution from the EU during the first cycle PoMs. The significance of EU sources and the reliance of certain MS upon them has not changed since the first RBMPs.

⁸⁹ European Commission, ‘European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River Basin Management Plans’.

⁹⁰ EU, OECD, UNECE (2016) Water Policy Reforms in Eastern Europe, the Caucasus and Central Asia: Achievements of the EU Water Initiative, 2006-2016.

⁹¹ <https://www.oecd.org/governance/oecd-principles-on-water-governance.htm>

	<ul style="list-style-type: none"> • The compliance assurance activities undertaken by the European Commission, including legal infringements, have contributed to the achievements of the objectives of the Directives. • The ‘one-out-all-out principle’ is an important element of the WFD and is founded on sound scientific values. However, stakeholders have expressed that communication of the results based on the ‘one-out-all-out principle’ has resulted in challenges to show progress, giving a potentially worse impression of the current status than it actually is, and making discussions on the achievements of the efforts undertaken difficult to present.
What has not worked well?	<ul style="list-style-type: none"> • Lack of funding sources was identified as a barrier to implementation for many Member States. • With nearly 50% of water body covered by an exemption, it is questionable that this is a reflection of the true expectations of the legislator. This level of use of exemptions reflect the challenges that lie in the implementation of the Directive, due in part to its ambition, but also to an under-estimation of the efforts needed. • Regarding the cost recovery principle, it remains unclear whether the WFD has effectively encouraged water pricing based on the polluter pays principle.
Strength of evidence	<ul style="list-style-type: none"> • Good level of evidence, mostly from literature and feedback from stakeholders. • The conclusions were validated during the final workshop
Indication of bias	<ul style="list-style-type: none"> • Stakeholder’s opinions on the use of exemptions and the one-out-all-out principle were particularly polarised which has been considered and reflected in our analysis. Otherwise, no potential bias has been identified for this section.

There are several factors which have been identified as contributing to the achievements of the objectives that have been observed so far. These include the Common Implementation Strategy (CIS) process, the compliance assurance programme from the European Commission (enforcement and supporting activities), as well as the funding provided under the various support and research programmes. There are other factors which have been recognised (both in stakeholder consultations, interviews and in academic papers) as hindering the Directives’ achievements. In particular, lack of political prioritisation of water-related issues. The influence of other features of the Directive, such as the exemptions and the one out all out principle, have received more mixed feedback regarding their effects on the achievements of the objectives. Finally, the level of efforts needed to reach the objectives of the Directives, including the technical knowledge required, the costs linked to the implementation of the measures and the overall administrative support have been underestimated.

Factors that have supported the achievements of the objectives

1. The Common Implementation Strategy process

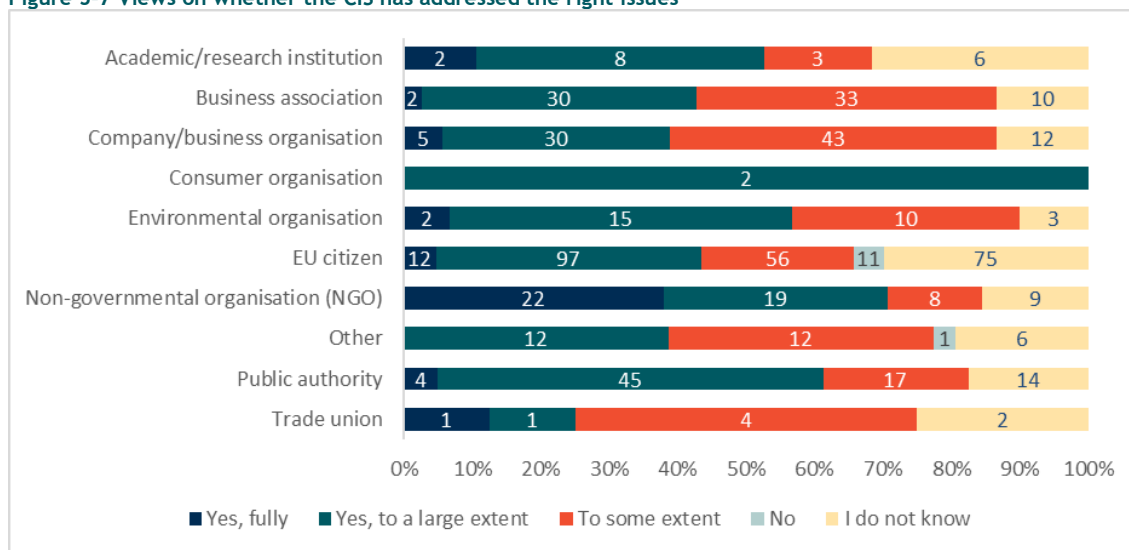
The CIS has successfully delivered a number of guidance documents, as well as encouraged the implementation of the Directives via the exchange of best practices and discussion of policy developments. While Member States are not legally required to follow the recommendations made within the CIS documentation, they are required to follow methods and approaches outlined in the WFD and daughter Directives, and the CIS documents constitute good practice and guidance to support this. Approximately 50 Guidance documents have been published so far covering methodological and technical elements of the WFD and its daughter Directives⁹² and thematic CIS documents are also

⁹² http://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm

available on CIRCABC.⁹³The European Commission has worked in cooperation with Member States and stakeholders to develop these documents, and this collaborative approach has contributed to supporting the WFD’s objectives.⁹⁴

The results of the stakeholders’ consultation reiterated the positive contribution of the CIS strategy. In the OPC, respondents were asked whether the Common Implementation Strategy has addressed the right issues. A total of 644 respondents provided a response to this question, out of which 137 (21%) responded “I don’t know”. Of the respondents that knew the answer to this question (79%), the majority (51%) of respondents consider that the CIS supports the implementation of the WFD to a large extent. It is noticeable that only a minority of respondents (2%) consider it is not supporting the implementation. A small share of respondents (108%) consider it is fully supported.

Figure 5-7 Views on whether the CIS has addressed the right issues



Note: Question asked was Question 11 - The Common Implementation Strategy (CIS) has supported the implementation of the Water Framework Directive and other related EU water policy. Has the Common Implementation Strategy addressed the right issues?

Similarly, when asked whether the CIS had been helpful in the practical implementation of EU water policy, the majority of respondents (OPC) considered that the documents produced were helpful with only a small share of respondents considering these as not helpful (4%). All of these respondents are from EU citizens.

Respondents were also asked if the non-mandatory nature of these guidance documents affects their effectiveness. A total of 636 respondents have provided their views to this question and overall, it does not appear that the non-mandatory nature of the CIS guidance limits their effectiveness. Excluding the respondents that answered “I don’t know” majority of respondents (74%) comprising of EU citizens (26%), business associations (18%), company/business organisations (18%), public authorities (15%), NGOs (12%) etc. indicated it was not the case. Furthermore, in the targeted consultation, respondents were asked if the CIS guidance on monitoring was sufficient to allow harmonised implementation at EU level. A total of 52 respondents provided their views on this question and the vast majority indicated that the CIS guidance was sufficient, either fully (38%) or partially (37%).

⁹³ <https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>

⁹⁴ European Commission, ‘European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River’.

2. Funding support for measures

The data available suggests that the availability of EU financial support (from cohesion funds, RDF and through LIFE/Horizon 2020) has undoubtedly supported the implementation of the WFD and the objectives achieved thus far. Despite nearly 25% of Member States failing to provide information on the costs of the first POMs, at EU level the total investment in PoMs was calculated at over € 92,350 million. Furthermore, several Member States met their basic water service needs with the help of EU funding and 65% of RBDs received a contribution from the EU during the first cycle PoMs, illustrating the reliance of some MS on EU funding- something which has not changed since the first RBMPs.⁹⁵ According to the 2019 overview of the RBMPs, €15 billion from EU cohesion policy is invested in the water sector. EU funding has been identified as a driver for many Member States to implement improvements in areas such as pricing policies and to adopt the second generation of River Basin Management Plans.⁹⁶

However, the EEA's (2018) State of Water report highlighted that due to funding constraints, some measures from the second RBMP cycle have been delayed or have not yet started. Furthermore, the overview of the RBMP published in 2019 stated that lack of financing was a key barrier to the effective implementation of the WFD. As such, the level of funding that is required for implementation the WFD is recognised as a factor which may potentially hinder implementation.⁹⁷ Carvalho et al. (2019) argue that financing measures in the RBMPs relies on the recovery of water service costs and that it is noticeable that the WFD does that have specific funding for its implementation. Rather, it is integrated into LIFE financing for environment and climate.

For the period 2014-2020, LIFE Financing amounted to a total value of just €3.4 billion, while other examples such as EU Regional Funds and EU CAP are €350 billion and €240 billion, respectively. The lack of funding opportunities was also brought up by stakeholders in the targeted interviews. For example, representatives from the UK indicated that the majority of EU funding relates to CAP which has helped, but in their experience, very little cohesion funding was available. It was also noted that in the past, funding availability was greater than now.

Carvalho argues that because of these vast differences, the EU water acquis is reliant on using financing from other sectoral polices and national funding.⁹⁸ However, it is also noted that the Commission are currently in the process of developing standards which aim to link financial investment and environmental protection in a more formal way, as outlined in the 2018 Action Plan for Financing Sustainable Growth.⁹⁹

EASME mapped 51 water-related LIFE projects from 2014-2016 based on the main policy they were linked to, illustrated in Figure. According to the LIFE WATER project mapping presentation provided by EASME, the total EU contribution to these projects amounted to €52 million, with the average

⁹⁵ European Commission, 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River'.

⁹⁶ European Commission, 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River'.

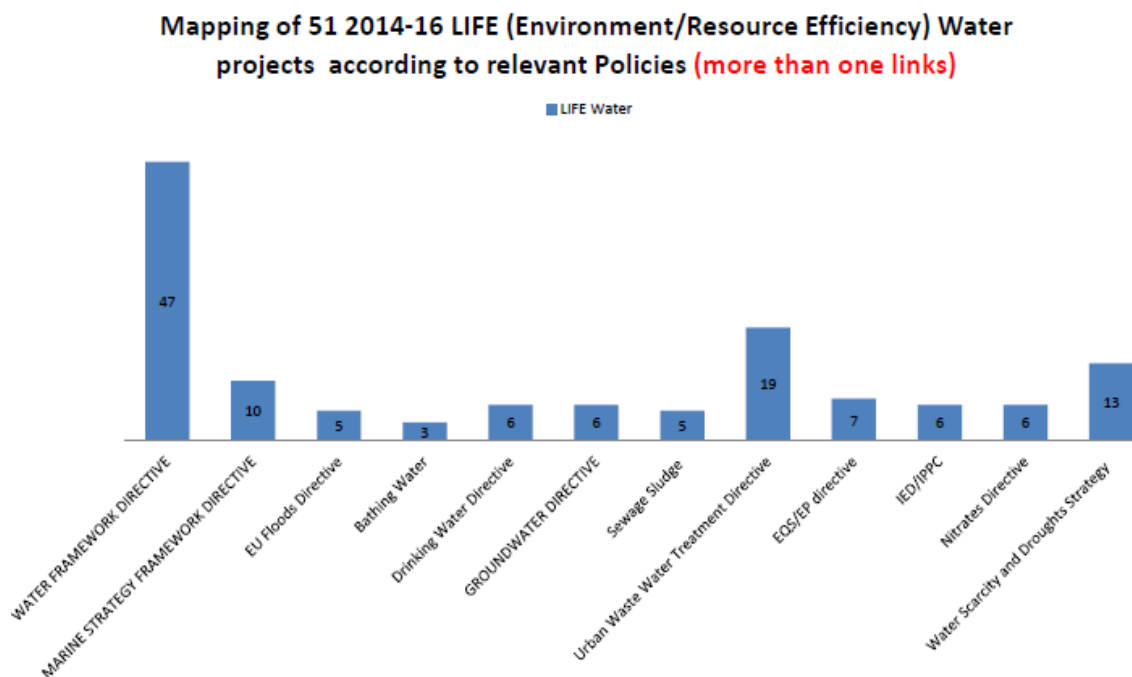
⁹⁷ European Commission, 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River'.

⁹⁸ Carvalho and others.

⁹⁹ European Commission, 2018. Communication from the Commission: action plan: financing sustainable growth. COM/2018/097 final. <https://eur-lex.europa.eu/legal-con- tent/EN/TXT/?uri=CELEX:52018DC0097>

contribution per project amounting to just over €1 million. As such, when water related LIFE financing is considered in isolation, the contribution is small relative to other policy areas, despite the high costs required for implementation. Examples of LIFE funded projects related to freshwater include project ISOBEL, which aims to reduce pollution and revitalise the free-flowing parts of the river and to reach the “good ecological potential”. Data on costs of this specific project were unavailable.¹⁰⁰

Figure 5-8 Results of EASME LIFE-WATER project mapping presentation



3. Enforcement and compliance assurance measures

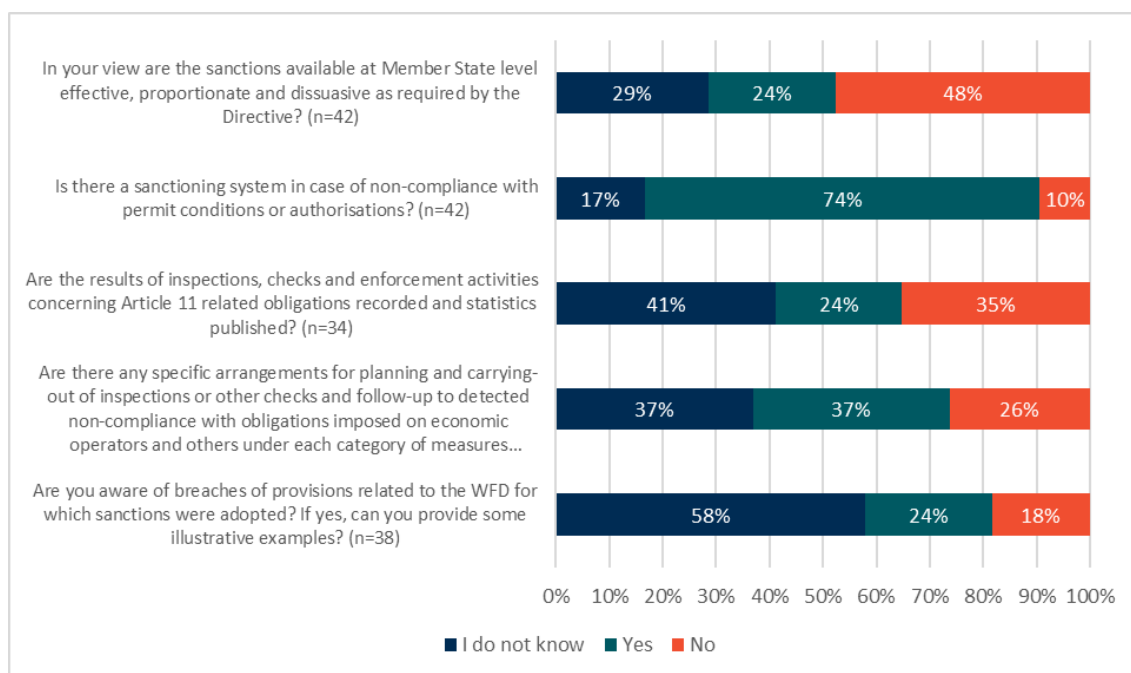
Information on enforcement is presented in section 4.2. It is considered that the compliance assurance activities undertaken by the European Commission, including legal infringement proceedings, have contributed to the achievements of the objectives of the Directives.

Respondents were asked in the OPC about the factors which have contributed achieving the objectives of the WFD and daughter Directives. The external factors that are the most highly rated are the EU support through funding and the enforcement at EU and national level. These three factors received similar ratings with almost 50% of respondents considering they either substantially or moderately instrumental in meeting the Directives’ objectives.

Respondents were asked for their views on various components of enforcement (e.g. dissuasiveness of sanctions and inspections/checking/enforcement activities in their MS) in detail as part of the targeted consultation. As illustrated in Figure 5-9, views among the stakeholders were very mixed. The results show that the majority of respondents indicate that for their MS, there is a sanctioning system in place for non-compliance with permit conditions or authorisations, but the majority also indicate that such sanctions are not effective, proportionate and dissuasive. As such, while EU enforcement may well encourage the Directives achievement of its objectives, the results from the targeted consultation reveal that it is likely more could be done regarding MS enforcement.

¹⁰⁰ EASME presentation given by S.Mias on LIFE-WATER project mapping for 2014-2016

Figure 5-9 Views from respondents to the targeted consultation on components of enforcement



Factors that have hindered the achievement of the objectives

Respondents were also asked to rank the significance of obstacles to full implementation of the WFD. The views from respondents (OPC) were generally mixed on some of the proposed obstacles but those most consistently rated as ‘very significant’ are:

- Competition for the use of water (e.g. agriculture, domestic use, industry, recreation, navigation and energy), and conflict with flood protection, drought management, etc;
- Lack of political will to prioritise water issues at national level;
- Lack of sanctioning mechanism at national/local level to implement the polluter pays principle;
- Lack of funding to implement the measures required to meet the objectives of the Directives.

The feedback from the targeted consultation confirmed these views. Further feedback was provided on some of these aspects which are developed further below.

1. Lack of funding and political will

Lack of funding as a barrier to implementation was emphasised in the position papers sent through by a number of stakeholders including: the Finnish Forest industry, Swedish Association of Local Authorities and Regions and the UK Environmental Law Association.

As part of the stakeholder consultation (OPC), the WWF’s #ProtectWater campaign outlined in their response to the OPC that Member States show little ambition in implementing the WFD and insufficient funding allocated to implementation of control measures and use (or misuse) of exemptions provided in the WFD are hindering progress.¹⁰¹

During the targeted consultation, respondents also indicated that lack of political was one of the obstacles that have prevented the implementation of cost recovery from the reaching the WFD’s objectives. This was asked under Questionnaire 6 (Q8) of the targeted consultation, where respondents

¹⁰¹ It should be noted that this was part of the WWF’s #ProtectWater campaign provided the for the final open question in Part I asking for comments on the legislation. This comment was provided by each of the 368,303 respondents, although at times in different languages.

were asked to select those obstacles which they believe to prevent cost recovery implementation. 69% of respondents selected both lack of political will and resistance from economic sectors (such as agriculture and industry) to pay for water as obstacles to cost recovery. Given that implementation of cost recovery feeds back into MS funding of the water sector on a national level, it is likely that lack of willingness to implement it at the MS may be compounding funding availability, which is also an obstacle. As discussed under the previous section on Funding support for measures, based on the results of the second RBMPs, academic literature and the stakeholder consultation (OPC), EU funding is a very important source of financial backing for WFD implementation, but still, lack of funding is reiterated by stakeholders as a barrier to achieving full implementation.

2. Use of exemptions provisions

Article 4 describes the environmental objectives for surface waters, groundwaters and protected areas, but also options for exemptions. Firstly, the deadlines which normally apply, may be extended when some conditions are met. In principle, the extension cannot take longer than 12 years, except when natural conditions are the reason for extending the deadline. An important reason to adapt the objectives, is new and improved knowledge about the functioning of the ecosystems. For example, background nutrient input to a system that was not known before. Based on this new information, more realistic objectives can be set. This is not part of article 4, but of technical improvements of the objectives. It is also possible to set less stringent objectives. This means that the objective of Good Ecological Potential does not apply any more. However, this needs a firm underpinning and again, this is only possible if certain conditions are met. Extensions and less stringent objectives need to be justified in the RBMP. The view of the European Commission is that less stringent objectives will be an exception in 2027. The measure is only intended to apply if the objectives cannot be reached in time. Economic reasons are not accepted as a reason for applying less stringent objectives.

Exemptions under Article 4 of the WFD are used extensively in all MS. Around 50% of Europe's water bodies are currently under an exemption, and this is more common for surface waters than for groundwaters. Justification of exemptions for surface waters are: technical feasibility, natural conditions and disproportionate costs. For groundwaters, natural conditions and more commonly, technical feasibility is used. While it is generally noted that more information was provided regarding justifications in the second RBMP cycle than the first, there are still many cases where justifications were very general and there was a lack of clarity regarding whether or not environmental objectives would be reached.¹⁰² According to Boeuf et al. (2019), the use of exemptions jeopardises the achievement of ambitious water policy goals in the EU (e.g. as outlined in the Water Blueprint for Europe¹⁰³) and the ambiguity of terms related to their justification resulted from uncertainty regarding the costs and benefits of the WFD during its early negotiations. Boeuf et al. (2019) reiterates the potential danger of the misuse of exemption clauses in the context of increased pressure on Europe's freshwater bodies.¹⁰⁴ The 2015 Weser ruling was argued to have introduced a more stringent interpretation of the "non-deterioration principle" in the context of exemptions, making it more difficult to be granted. The case ruling is discussed in detail in the textbox below. However, it should be noted that during the third workshop, it was highlighted that Member States have expressed that there is a potential risk of a general lowering of objectives after 2027 in the case that it will no longer

¹⁰² European Commission, 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River'.

¹⁰³ European Commission (2013) A water blueprint for Europe <https://publications.europa.eu/en/publication-detail/-/publication/4890db5a-ddc9-4181-9d39-8a277faef30b>

¹⁰⁴ Boeuf et al (2019) Undermining European Environmental Policy Goals? The EU Water Framework Directive and the Politics of Exemptions. <http://eprints.whiterose.ac.uk/104555/1/Undermining%20European%20Environmental%20Fritsch.pdf>

be possible to use extended deadlines that maintain ambitious objectives of good status. If extended deadlines can no longer be used, then the fallback solution will be for countries will be to use less stringent objectives. This would represent a real lowering of objectives for those water bodies where it has proven technically or financially impossible to implement the necessary measures to reach good status, or to see the full effect of such measures and is an important consideration to be made.

Note that a detailed review of the use of exemptions is presented in the European Commission's implementation report and is not duplicated here, however as a summary:

- The most commonly applied exemption under the WFD relates to time extensions (Article 4(4)) which have been applied by all MS in the second RBMP;
- Article 4(5) relates to exemptions for chemical status of surface water;
- Article 4(6) provides for an exemption for temporary deterioration of status of water bodies under certain circumstances;
- Article 4(7), relates to exemptions for development.

Textbox 5-1 The Weser ruling

In 2015, the Weser case judgement (C-461/13) arguably introduced a strict interpretation of the “non-deterioration principle”, which binds Member States to not allow decline in the quality of surface waters. The case relates to a dispute concerning the development of the river Weser in Germany. The dispute was between Bund für Umwelt und Naturschutz Deutschland (federation for the environment and the conservation of nature) and Bundesrepublik Deutschland (Federal Republic of Germany) in its capacity of developer for a project to deepen the Weser to enable larger container vessels to call at adjacent ports. The issue of the significant physical modifications and that of the harmful hydrological and morphological consequences which the project would entail for the Weser's ecosystem was raised.

The ECJ judgement stated that Article 4 must be interpreted as meaning that the Member States are required – unless a derogation is granted – to refuse authorisation for an individual project where it may cause a deterioration of the status of a body of surface water or where it jeopardises the attainment of good surface water status or of good ecological potential and good surface water chemical status by the date laid down by the Directive.¹⁰⁵

This ruling accentuates the pressure on Member States to use the exemption's clause under Art. 4(7) to grant permits for industrial activities and has affected permitting procedures across the EU. However, it should be noted that large-scale projects, including deepening the Weser River in Germany, would have posed severe risks to water quality and, as such, were not in line with maintaining the strong environmental objectives of the WFD. For example, hydromorphological changes were identified as a key pressure to surface waters in the EEA's 2018 State of Waters Report.¹⁰⁶

Stakeholders also expressed concern at the use of exemptions during the stakeholder consultation (OPC). For example, according to the position paper submitted by The Norwegian Biodiversity Network (Sabima), The Union of Outdoor Recreation Organisations in Norway, The Norwegian Hunters' and Anglers' Association, WWF Norway, The Norwegian Trekking Association and Friends of the Earth Norway, exemption and delays are used too frequently and when granted exemptions under Article 4(7) new modifications or damaging activities might degrade the status of many water courses.

¹⁰⁵ Case C-461/13 Bund für Umwelt und Naturschutz Deutschland V Bundesrepublik Deutschland <http://curia.europa.eu/juris/document/document.jsf?text=&docid=178918&pageIndex=0&doclang=EN&mode=req&ir=&occ=first&part=1&cid=7460551>

¹⁰⁶ European Environment Agency.

Furthermore, Wetlands International link the large number of waterbodies not in good status to the fact that exemptions are applied too often while EurEau state that the non-transparent use of exemptions must be avoided. In contrast to this, Swedenergy stresses that exemptions should be widened to allow emitting operations of large environmental and societal value.

The aim of this analysis is not to judge on whether the use of exemptions is legal, as the Directive clearly allows for their use and Member States are entitled to make use of this flexibility. However the use of exemptions is seen as an evidence that the objectives of the Directive are seen to be ambitious and that more time is needed for Member States to meet them. While the feedback from the third workshop supported this interpretation, stakeholders were nevertheless clear on making sure the use of exemption is not portrayed as an external factor as it is a key component of the WFD.

Stakeholders noted that the fact the most used exemptions are time exemption shows the need for more time to understand what the issues are, and the need to plan for necessary infrastructures¹⁰⁷.

3. One out all out principle

During the third workshop discussions it was made clear that the principle is part of the Directive and as such should not be described as an obstacle or a barrier but rather a factor that influences the achievement of the objective.

The ‘one-out-all-out principle’ is a key principle which reflects the integrated approach upon which the WFD is based. It embodies the precautionary principle, which takes a more considerate approach in the face of uncertainty regarding complex inter-connected ecological relationships. The overall status shall only be classified as “good” if all the elements it is comprised of are at least considered “good”, thus ensuring all pressures capable of causing degradation are addressed. It does this by ensuring that any negative impact of the dominating pressures exerted on the most sensitive quality element is not “averaged out” or obscured by more minor impacts. According to the 2019 RBMP overview, all 147 RBDs applied the one out all out principle.¹⁰⁸

The views on the principle have been very polarised, particularly among private industry and companies but also with some Member States competent authorities. This has been illustrated by the mixed results regarding the effectiveness of the one-out-all-out principle from the stakeholder consultation (OPC). For example, a large amount of private companies from agriculture, the energy & extractive sectors as well as industry associations who submitted position papers on the Fitness Check study highlighted their concerns with the principle, stating that it does not provide an accurate reflection of progress that has been made. For example, Eurochambres and the Federation of Swedish Farmers, stated that the one-out-all-out principle leads to a situation where time consuming and costly efforts of companies/farmers to limit impacts of their activities and to improve the water status are not visible nor is the progress made for the entire waterbody. The Swedish Association of Local Authorities and Regions highlights that improvements and deteriorations are not captured adequately as a result. This is also supported by Swedenergy, Businesspeople, EurEau and COPA COGECA.

In contrast, other environmentally engaged NGOs namely the UK Environmental Lawyers Association, Wetlands International and An Foram Uisce (The Irish Water Forum) note that it is an important scientific principle upon which the WFD is based. The importance of the principle was also reflected in WWFs #ProtectWater campaign, stating that it remains a critical means of describing ecosystem health. Living Rivers Europe is a coalition of NGOs comprising Wetlands International, European River Network, the European Environmental Bureau, European Anglers Alliance and WWF. The 2019 briefing published

¹⁰⁷ Interviews with UK competent authorities

¹⁰⁸ European Commission, ‘European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River’.

by this group emphasises the benefits of maintaining the one out all out principle and dangers of weakening the “non-deterioration” requirement which is outlined in Article 4(7). It is argued that these elements of the WFD were founded on principles of integrated ecosystem management which are fundamental elements to ensuring European water quality is protected.¹⁰⁹ Polarised views were also reiterated at the third workshop. One participant highlighted that the application of the one out all out principle is crucial and does not interfere the WFD-implementation while another reiterated the argument that it is outdated and hides improvements made.

According to the academic literature, (i.e. Caroni et al. 2013; Carvalho et al. 2019) the one-out-all-out principle is well-suited to the WFD objectives and justifiable if different stressors are responsible for the degradation of the individual biological quality elements being assessed. However, it may pose a problem in instances where biological quality elements are sensitive to the same stressors due to the fact that any uncertainty associated with the individual quality elements may be compounded. As such, results may be over-precautionary.¹¹⁰ However, it should be stressed that this will mainly occur if quality elements with a high uncertainty are included in the assessment and that those which include multiple quality elements sensitive to the same pressure may be necessary in the following cases: they have very different response times; they represent different habitats (e.g. littoral versus pelagic) or if other stressors mask the impact of the main stressor. Carvalho emphasises that there are a range of options available which would maintain the precautionary one-out-all-out principle, while also communicating progress. For example, quality elements with high uncertainty (low confidence) could be completely excluded from the overall assessment of ecological status.¹¹¹

As a conclusion it appears that one of the main issues presented by the one out all out principle is that what is essentially a compliance assessment indicator is being used as a progress indicator and the basis for communication with stakeholders. Most of the stakeholders present at the third workshop agreed with this interpretation, however some did highlight they see the principle as outdated and leading to wrong classification decisions. This was also reiterated during stakeholder comments in the targeted consultation, particularly by industry groups. For example, Question 5 (Questionnaire 2) of the targeted consultation asked respondents if the chemical status adequately reflects the impact of chemical pollution, for example, concerning the combination of chemicals and pollutants of emerging concern. Of the 107 respondents who answered this question, the majority stated to some extent (46%) while another 33% indicated to a great extent. Of the 9% who indicated not at all, the vast majority highlighted in the comments that the one-out-all-out principle was hindering the tracking of progress. For example, one comment from a Swedish industry group stated the following: “*One-out-all-out principle impedes to track progress of a particular water body because, in many cases, persistent substances that show little or no progress in terms of reduction, are in the present system given too much weight in the classification of the overall status of the body.*” It was also noted at the third workshop that target setting must be tailored to the actual water body, surroundings and potential for improvements when taking into account other activities (industry, infrastructure, agriculture etc.).

¹⁰⁹ Living Rivers Europe (2019) Weakening the EU water law: Industry’s wish list. http://d2ouvy59p0dg6k.cloudfront.net/downloads/industry_wish_list_w.pdf

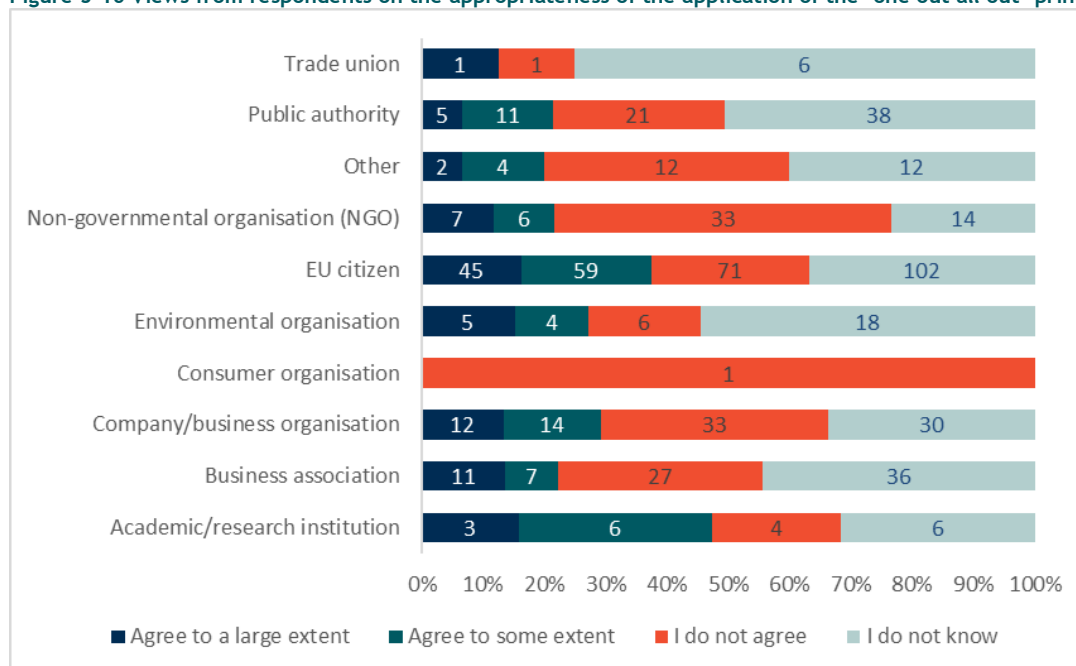
¹¹⁰ Caroni, R., van de Bund, W., Clarke, R., Johnson, R., 2013. Combination of multiple biological quality elements into waterbody assessment of surface waters. *Hydrobiologia* 704, 437-451. <https://doi.org/10.1007/s10750-012-1274-y>.

¹¹¹ Carvalho and others.

While the EEA’s report includes some charts presenting progress made on specific parameters, most of the literature, including from the European Commission, presents the overall good status. When considering compliance and progress in meeting the objectives this overall view is justified, however when presenting the progress made at a river basin level, the overall status approach does not bring much additional information and prevents the visualisation of results at individual parameter level.

As part of the OPC, respondents were asked to what extent they agree with the ‘one-out-all-out’ principle. A total of 673 respondents provided an answer to this question, out of which 262 respondents (39%) responded “I don’t know”. It is quite striking to note that 39% ‘do not know’ this seems to question the level of expertise of some of the respondents to these questions. Of the respondents that knew the answer to this question (61%), more than half (51%) did not agree. Figure 5-10 shows that the overall average views are replicated throughout the categories. It can be observed that the share of business organisations not agreeing with the principle being appropriate is higher than the EU average. Similarly, the share of citizens and academics considering it is at least to some extent appropriate is slightly higher than the EU average.

Figure 5-10 Views from respondents on the appropriateness of the application of the ‘one out all out’ principle



Note: Question 4 asked respondents to rank how strongly they agree with the following statement: According to the WFD, a water body is considered to be in good status only when all the relevant quality elements are in good status and the relevant quality standards for good status are met (the “one-out-all-out” principle).

4. Article 9 and cost recovery

According to Article 9 of the WFD, Member States shall take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to the economic analysis conducted as per Annex III, and in accordance with the polluter pays principle. Cost recovery is achieved via prices that water service consumers must pay to the provider directly and via taxes/charges/levies imposed on the service.¹¹² According to the latest implementation report, the incomplete implementation of the principle of cost recovery and the limited use of economic instruments put a strain on the potential for promoting efficient water management through this

¹¹² <https://academic.oup.com/jel/article-abstract/19/1/29/436615?redirectedFrom=fulltext>

instrument. In many cases methodologies to calculate costs are insufficiently documented and essential information is missing. While Member States have made progress regarding the definition of water services to ensure hydropower, flood protection etc are included, Article 9 has still not been implemented fully.¹¹³ According to the EEA's assessment report on cost recovery through water pricing, translation of Article 9 and the polluter pays principle into real water pricing policies in MS remains unclear. Furthermore, in the first RBMPs, differing assessment methodologies for water pricing policies made comparison difficult, and this has not improved in the 2nd RBMPs.¹¹⁴ As such, it remains unclear whether the Directive has brought about effective changes to water pricing policies.¹¹⁵

Questionnaire 6 of the targeted consultation focussed on cost recovery and pricing. Question 3 directly asked respondents if the requirements in Article 9 of the WFD were effectively and timely implemented in their country. The results indicate that while progress has been made, Of the 55 responses given, the vast majority (over 60%) indicated "partially", while a further 24% indicated "yes, fully". Just 5% indicated that cost recovery and pricing was not implemented in their MS. Comments given by stakeholders who indicated that cost recovery was partially implemented, that vast majority highlighted that there is still some way to go regarding the application of the polluter pays principle and considering water abstracted for agriculture (PO, SK, ES, AT, BE, HU, DE).

Question 5 asked respondents to which other water services/uses/activities is cost recovery applied or an adequate contribution ensured. The results indicate that of the 18 responses given for agriculture (diffuse pollution), 55% indicated no, reiterating the comments made in Question 3. The majority of responses indicate that cost recovery is applied to industrial water abstraction and industrial emission to water, but that it is almost never applied to navigation, recreation and flood protection. It was also highlighted by an NGO in the comments that "*full cost recovery is never applied to flood protection, recreational use and navigation measures. Only one third of MS have included impacts from these sectors within their operational definition of water services.*"

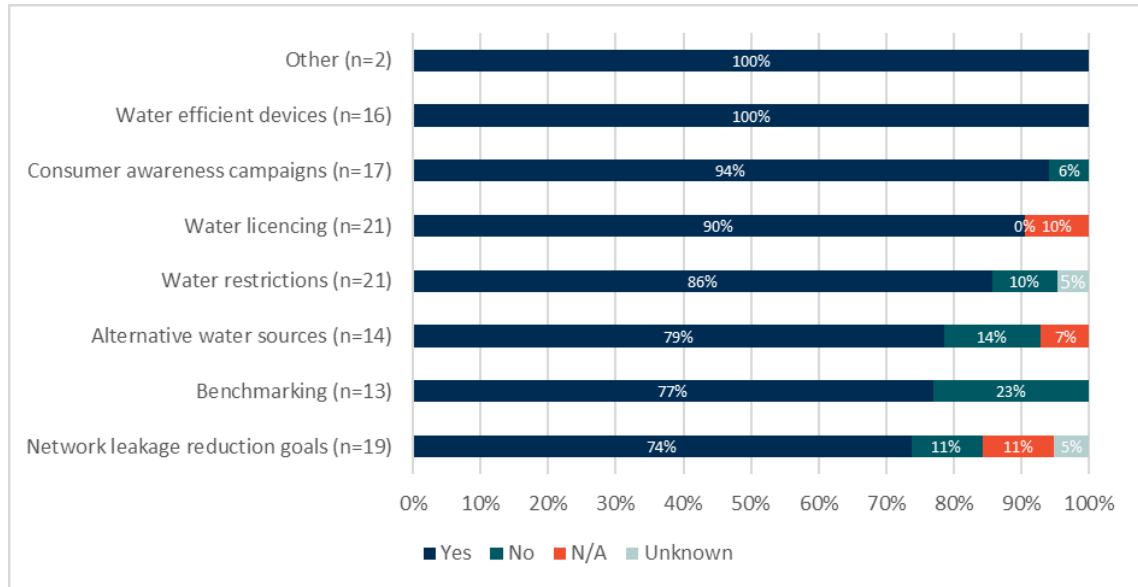
However, respondents were also asked in Question 6 of the same questionnaire from the targeted consultation whether there were any non-price measures in place in their RBD/country which aim to encourage efficient water use. The results are summarised in Figure 5-11. The results highlight that although cost recovery might have some way to go, a range of non-price measures are in place. For all measures listed, >74% of respondents indicate they are present in their MS/RBD in some way.

¹¹³ European Commission, 'Annex TO THE COUNCIL on the Implementation of the Water Framework Directive (2000/60/EC) and Floods Directive (2007/60/EC) Second River Basin Management Plans First Flood Risk Management Plans', 2019 <https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF>.

¹¹⁴ EEA (2013) Technical report no. 16/2013: Assessment of cost recovery through water pricing. <https://www.eea.europa.eu/publications/assessment-of-full-cost-recovery>

¹¹⁵ European Commission, 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River'.

Figure 5-11 Views from the targeted consultation on whether non-price measures are in place in their country/RBD that aim at efficient water use.



Note: This summarises results from Questionnaire 6 of the targeted consultation: Question 6 98 - Are there any non-price measures in place in your country/RBD that aim at efficient water use?

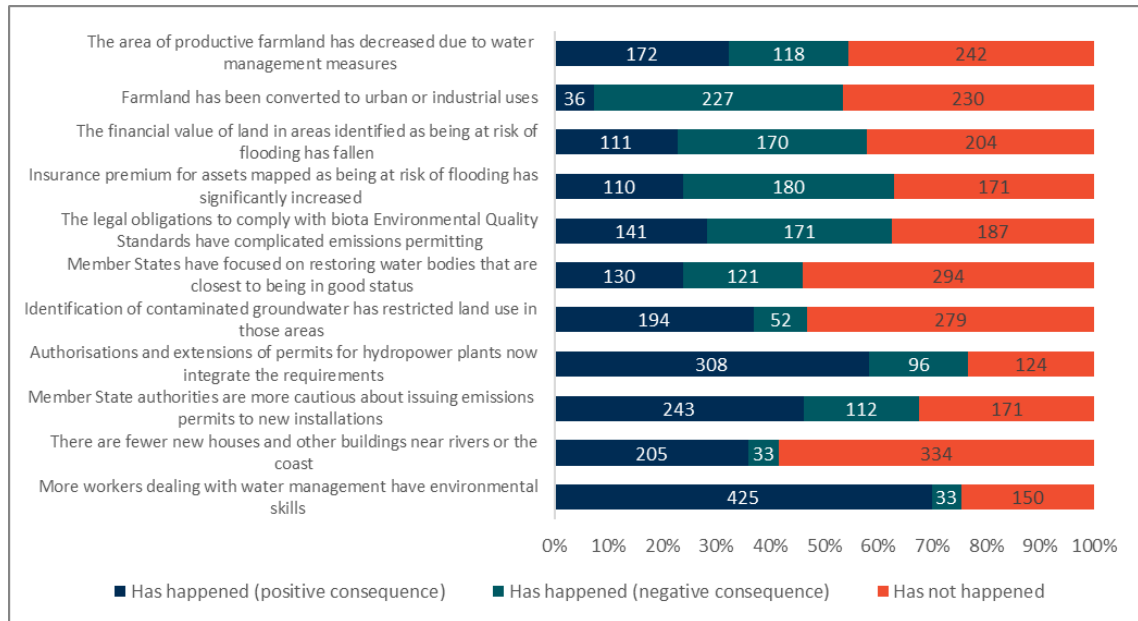
5.2.4 EQ 3 To what unexpected significant changes, either positive or negative, have the Directives led?

Conclusions on EQ.3 - To what unexpected significant changes, either positive or negative, have the Directives led?	
What has worked well?	<ul style="list-style-type: none"> A range of unintended effects have been identified by stakeholders some are seen as both equally negative and positive. The most reported positive unintended effects by respondents are: the increase of environmental skills in workers involved in the water sector and the review of authorisations and extensions of permits for hydropower. Overall a limited number of unintended negative effects have been identified which suggest that the legislation has been carefully drafted. The range of positive unintended effects is quite wide (e.g. the raise in hydrological skills within non-water competent authorities, and the ‘flagship’ role of the WFD in establishing a European governance model) which suggests that benefits from the legislation have been reaching further out than expected.
What has not worked well?	<ul style="list-style-type: none"> The most reported negative unintended effect is the conversion of farmland to urban or industrial use. The conversion of farmland to urban/industrial use is not covered extensively in the literature and is therefore an interesting finding from the stakeholder consultation.
Strength of evidence-	<ul style="list-style-type: none"> Good level of evidence but mostly based from feedback from stakeholders.
Indication of bias	<ul style="list-style-type: none"> Bias regarding differing stakeholder opinions on review of hydropower extensions and on the views of conversion of farmland.

This evaluation question has largely been informed by stakeholder consultation and in comparison to the baseline as defined in Section 4.

The OPC asked respondents whether the Directives have had unintended effects (positive or negative)? For each of the effects, they were asked to indicate: 1) whether they consider it has happened; 2) and, if yes, whether they consider it to be a positive or negative consequence of the implementation of EU water law. The results are presented in Figure 5-12. As an unintended positive effect of the Directives, some stakeholders comprising of EU citizens (37%), company/business organisations (14%), business associations (13%), public authorities (11%), NGOs (10%) etc. noted that water managers now tend to have environmental skills, and others comprising of EU citizens (42%), public authorities (16%), business associations (11%), company/business organisations (11%) etc. noted that the hydropower permitting procedures have come to integrate the environmental requirements set by the Directives

Figure 5-12 Views on unintended effects from the Directives



A range of unintended effects have been identified by stakeholders (OPC), either negative or positive. It is interesting to note that some are seen as both equally negative and positive. For example, the reduction in price of agricultural land was seen as a positive development for some, meaning more affordable land that can be bought by public authorities for environmental protection, but also as a negative effect as a potential loss of revenue for farmers, land owners and developers.

Question 10 of Questionnaire 2 from the targeted consultation also asked respondents to describe the most significant unintended changes (both positive and negative) of the Directives. This question was open-ended and a significant amount of variation was seen in the responses. As such, a qualitative summary of answers is described here and responses given from each stakeholder group is presented in Table 5-4 Summary of responses for Question 2, Questionnaire 10 of the targetted consultation. A total of 42 responses were received related to positive unintended outcomes, while 50 were given for negative outcomes. In the 42 responses which described positive outcomes, 50% were given by stakeholders who classified themselves and MSCA for water and the other 50% from NGOs. Of the 50 responses which described negative outcomes, 42% were given by industry groups with a further 28% from MSCA. The responses from the targeted consultation are highly variable and while there is some cross over with results of the OPC, they do not fully correlate with each other.

Table 5-4 Summary of responses for Question 2, Questionnaire 10 of the targetted consultation

Stakeholder	Positive outcomes	Negative outcomes	Both positive and negative
MSCA for water	<ul style="list-style-type: none"> Improved engagement with local communities and environmental NGOs, Increased attention to water management issues in society Better use of existing legislation, more public participation and sector integration, WFD CIS Guidance Intercalibration exercises, Hydromorphological assessment as part of ecological assessment, Lower value of land in areas with higher flood risks, less houses built in these areas, on general terms: more people involved in the water sector have a higher level of environmental skills, Increased knowledge and collaboration amongst stakeholders in the area., The focus on water ecology has increased greatly. 		
NGOs	<ul style="list-style-type: none"> Public support for river restoration; The collection, analysis and availability of information on water management has helped to address unrecognised problems and to improve the design and prioritisation of infrastructure investments (such as Irelands improved flood management programme), More and more data is collected, which makes it easier for further scientific research and technology improvement in water management, Shift in behaviours (going slowly but is inevitable), Integrated approach, Openness of water management sector to developing conversation regarding NWRMs and green infrastructure, taking into account needs of environment. 		<ul style="list-style-type: none"> Monitoring amount (sites, substances, frequency) increases, also costs are higher, more difficult to estimate quality Improvement of measurement techniques leads to more knowledge of the situation. Sometimes the improved measurements make more pollutants visible, which make it seem as if the situation deteriorates, but in reality the situation doesn't change, it is merely more precisely measured. Phosphorus reduction without nitrogen decrease
Industry groups		<ul style="list-style-type: none"> The one-out-all-out principle could mislead to unnecessary restrictions, hiding improvements, Ineffective and often disproportionately costly measures without clear idea how these measures would improve the water quality. (example, imposing measures on the ports to treat the contaminated sediments, while not taking any measures to limit the use of pesticides in the Agriculture); 	

Stakeholder	Positive outcomes	Negative outcomes	Both positive and negative
		<ul style="list-style-type: none"> • Negative effects on hydropower • Created additional barriers against project development in rivers and ports. The amount of effort and resource that goes into water body classification to the expense of other things that are relevant such broader risks to water quality. • Uncertainties regarding the relationship between EQS and BAT, • Time-consuming and labour-intensive reporting, • Significant administrative work to fulfil certain obligations (e.g. cost assessments), instead of focusing efforts on making a real difference 	

Overall a limited number of unintended negative effects have been identified which suggest that the legislation has been carefully drafted. The range of positive unintended effects is wide and include the increase in hydrological skills within non-water competent authorities, and the ‘flagship’ role of the WFD in establishing a European governance model. This suggests that benefits from the legislation have been reaching further out than expected. For negative outcomes, administrative burden was also reiterated at the third workshop. It was highlighted that the administrative steps for revision and adoption of plans, including consultations and participation, require a lot of time, attention and resources for every management cycle. If this happens too frequent, then attention and resources will be diverted away from implementation of measures and monitoring, and into mainly administrative tasks.

1. The review of permits for the hydropower sector

Hydromorphological pressures which alter aquatic habitats and hydrology are the most common pressure for surface waters, affecting 40%. As outlined by the EEA, barriers, obstacles and transverse structures are examples of hydromorphological pressures which disturb river continuity, change the flow and alter habitats. There are currently over 25,000 hydropower plants in Europe which are identified as a main driver effecting river status and altered flow. Increasing the efficiency of current hydropower sites and building new hydropower plants can contribute towards meeting the 2020 Renewable Energy Directive target of 20% energy from renewable sources. However, it remains important to ensure that policies which promote hydropower are compatible with the WFD and consider potential impacts to European waterbodies.¹¹⁶

The CIS guidance published in 2011 on water management, the WFD and hydropower states that ecosystem degradation and loss of biodiversity due to hydromorphological pressures from hydropower will continue in the future if infrastructure developments are implemented without taking full account of the requirements of the WFD, particularly those in Article 4.7.¹¹⁷

¹¹⁶ European Environment Agency.

¹¹⁷ CIS paper (2011) Water management, the WFD and Hydropower <https://circabc.europa.eu/sd/a/23d94d2d-6b9c-4f17-9e15-14045cd541f3/Issue.pdf>

As outlined in CIS Guidance no.36, If Article 4(7) is applied for a new modification to physicality of a surface water body, it may then be qualified as a Heavily Modified Water Body (HMWB) in the next RBMP cycle (in accordance with Article 4(3)). Water bodies are not designated as HMWB before the modification has taken place in anticipation of significant alteration.¹¹⁸ For HMWB the WFD objective of ‘good ecological potential’ applies (instead of good ecological status) if the requirements for less stringent objectives such as ‘moderate ecological potential’ are not applicable i.e. the best practicable ecological condition that is compatible with the legitimate use which was the basis for its designation as a heavily modified water body or artificial water body.

Hydropower industry inputs to the stakeholder consultation indicate that maintaining HMWB is integral for balanced WFD integration (e.g. Eurelectric Swedenergy). However, other inputs from hydropower industry suggest that the conditions for exemptions under Article 4.7 are not broad enough to allow also emitting operations of large environmental and societal value. In EU legislation, the public or general interest can serve as grounds for justifying derogations.

According to CIS Guidance 36, overriding public interest required as per Article 4(7) means that it must over-ride achieving the objectives of the WFD. It should be noted that, renewable energy production as such is not generally regarded as an overriding public interest. A hydropower project is not automatically of overriding public interest just because it will generate renewable energy and each case must be assessed on its own merits according to national legislation.¹¹⁹ For example, in Case C-346/14 - Commission v Austria in 2016, regarding authorisation to construct a hydropower plant on the Schwarze Slum River based on the overriding public interest in terms of sustainable energy development versus potential status impact of the project on the river.

2. Conversion of farmland

The most reported negative unintended effect is the conversion of farmland to urban or industrial use and the increase of the premium value for insurance of assets mapped as being at risk of flooding (this will be discussed in the context of the FD).

The conversion of farmland to urban/industrial use is not covered extensively in the literature and is therefore an interesting finding from the stakeholder consultation. However, no further inputs from stakeholders were made to substantiate their views on this aspect.

5.3 Floods Directive

5.3.1 EQ 1 (EQ 1.4) What progress have Member States made over time in implementing the Directives and achieving the objectives set out in the Directive?

Introduction

The assessment of the effectiveness of the Floods Directive is separated in the following part:

- **Outputs** relate to the implementation of the requirements of the Directive, which is a five-step process in three stages. This assessment analyses the extent to which Member States have successfully implemented these requirements;
- **Outcomes** relate to the effects of the Directive on flood management processes in Member States, including strategic planning, risk assessment and management, and legal systems; and

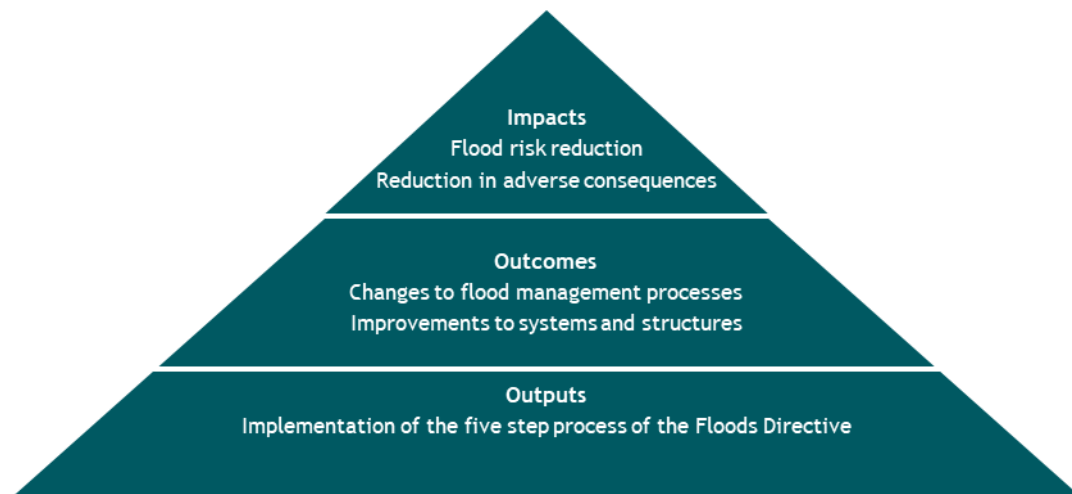
¹¹⁸ CIS Guidance No. 36 “New modifications to the physical characteristics of surface water bodies, alterations to the level of groundwater, or new sustainable human development activities”.

¹¹⁹ CIS Guidance No. 36 “New modifications to the physical characteristics of surface water bodies, alterations to the level of groundwater, or new sustainable human development activities”.

- **Impacts** relate to the ultimate purpose of the Directive, of reducing the adverse consequences of flooding for human health, the environment, cultural heritage and economic activity.

These components are explored for progress, followed by a section that considers key contributing factors, along with barriers and shortcomings to this progress. Lastly, unintended consequences of the Directive are explored.

Figure 5-13 Three aspects of progress in implementation of the Floods Directive



Source: Authors compilation.

An overview of key messages related to the three aspects of progress shown in Figure 5-13, are shown below.

Table 5-5 Floods Directive Effectiveness EQ.1 Summary

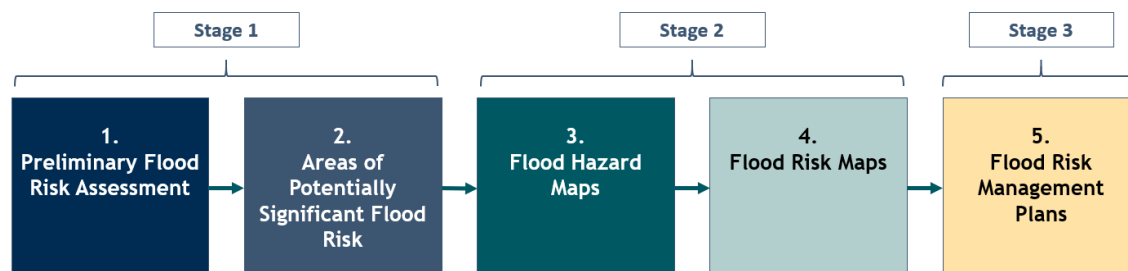
Conclusions on EQ.1 - To what extent are the Directives performing as expected?	
What has worked well?	<ul style="list-style-type: none"> • The framework for assessment and management of flood risk required by the FD has been successfully implemented by MS (with some minor caveats) • The process is highly supported by competent authorities and key stakeholders, who consider the process to be appropriate and implementation to be largely successful.
What has not worked well?	<ul style="list-style-type: none"> • Uneven consideration of climate change by MS • Knowledge of flood impact on cultural heritage and environmental assets • Objectives stated by MS in FRMPs are often not quantified or time-bound, with implications for selection of measures • Uneven reported use of CBA to inform selection of measures in FRMPs a weakness • Greater potential for cost-effective use of NBS in FRMPs than has been identified to date by MS
Strength of evidence	Good strength of evidence from implementation analysis corroborated by the feedback from stakeholders
Indication of bias	No bias or conflicting views found

Outputs of the Floods Directive

Outputs refer to the implementation of the steps required by the FD. The FD requires MS implement a five steps process undertaken in three stages within each cycle (Figure 5-14). The first cycle required

the first step (Preliminary Flood Risk Assessments or PFRAs) be completed by December 2011, and the fifth step (Flood Risk Management Plans or FRMPs) be completed and published by December 2015. In subsequent cycles, each step of the FD must be reviewed and if necessary updated, every six years, particularly for the likely impact of climate change on the occurrence of floods in the context of PFRAs and FRMPs.¹²⁰ Second cycle PFRAs were required to be reviewed and updated where appropriate in December 2018, however reporting on these were not yet available to the project team and do not form part of this assessment.

Figure 5-14 The three-stage approach to risk assessment and management of the Floods Directive



Source: Adapted from ECA (2018) *Floods Directive: progress in assessing risks, while planning and implementation need to improve*.

Stage 1

As a first step of implementation of the FD, preliminary governance arrangements are required to be established by MS in accordance to Article 3 (2). This involves appointing competent authorities (CAs) and units of management (UoMs) (the latter for certain coastal areas or individual river basins), which can be different to those appointed under the WFD. All MS have designated competent authorities or Units of Management, with MS designating a total of 209 UoMs for the FD.¹²¹

Article 4 of the Floods Directive requires MS to conduct Preliminary Flood Risk Assessments (PFRAs) for each river basin district or unit of management (UoM). PFRAs provide an overview of past and potential future floods within MS, and the associated adverse consequences. As such, MS will identify Areas of Potential Significant Flood Risk (APSFR), which will inform subsequent management plans produced within the FD. Under Articles 13.1 (a) and 13.1 (b), MS may decide not to conduct PFRAs if they have previously undertaken a risk assessment or prepared flood risk management plans prior to 2010. Current data shows that a total of 7,906 APSFRs have been identified by MS (BE, IT and NL have applied Article 13.1 (b)).

All MS have conducted a PFRA, which have aided in raising awareness of past and potential future floods events. However, the levels of detail of reporting PFRAs are diverse amongst MS.¹²² The types of flood that are considered within PFRAs varies amongst MS. For reported historical flood events, fluvial (66% of reported events), pluvial (20%) and seawater (16%) are the most commonly reported, whereas artificial water bearing infrastructure and groundwater (both 1%) are the least commonly reported. For

¹²⁰ For the first cycle, climate change is required to be considered in PFRAs, based on “available or readily derivable information” only (see Article 4 (2) of the FD).

¹²¹ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹²² WRc et al. 2015. European Overview Assessment of Member States’ reports on Preliminary Flood Risk Assessment and Identification of Areas of Potentially Significant Flood Risk, online at: http://ec.europa.eu/environment/water/flood_risk/pdf/pfra_reports/EU%20PFRA%20Overview%20Report.pdf

potential flood events, the pattern is similar, with fluvial flooding the most commonly reported source (76% of reported events), whilst groundwater and water bearing infrastructure are the least common reported event (both 2%).¹²³ Furthermore, the majority of MS gave an indication of the adverse impacts of floods on the 4 main categories of consequences listed in Article 4.^{124,125} Methods used for determining the risk from flooding to cultural heritage and to the environment are not currently well developed,¹²⁶ which could explain the lower coverage of such methods employed in PFRAs.

According to Article 4 of the FD, MS should include long-term developments within PFRAs. This has led to approximately 33% of MS explicitly considering long-term socio-economic changes within their flood risk assessments. The majority of MS not considering such changes could be seen as surprising, given that flood losses have continued to be significant in recent decades¹²⁷, as shown in section 8. Indeed, consideration of long-term developments within PFRAs seem to be inconsistent amongst MS. For example, five MS did not consider any long-term developments and four MS did not consider climate-change as a long-term development aspect.^{128,129} Stakeholders have noted that there is a need for guidelines to be published on how to ingrain climate change effects within flood frequency estimations.¹³⁰

Stage 2

The second stage of implementation involves preparing Flood Hazard Maps and Flood Risk Maps (FHRMs), as required under Article 6 of the Floods Directive. Such FHRMs indicate where a given flood type could incur adverse consequences. All MS have completed such mapping exercises, with fluvial flooding the most commonly mapped source. Groundwater flooding, pluvial flooding and flooding from artificial water-bearing infrastructures were not as commonly reported, as shown in the figure below.^{131,132} Competent Authorities present at the Floods Directive Focus Group¹³³ noted that mapping of pluvial flooding remains a challenge, predominantly due to the unpredictable and localised nature of such events.

¹²³ *ibid*

¹²⁴ Human health, the environment, cultural heritage and economic activity.

¹²⁵ WRc et al. 2015. European Overview Assessment of Member States' reports on Preliminary Flood Risk Assessment and Identification of Areas of Potentially Significant Flood Risk, online at:

http://ec.europa.eu/environment/water/flood_risk/pdf/pfra_reports/EU%20PFRA%20Overview%20Report.pdf

¹²⁶ Adamson, Mark. 2018. Flood Risk Management in Europe: the EU "Floods" directive and a case study of Ireland.

¹²⁷ European Commission COM. 2015. 120 final, The Water Framework Directive and the Floods Directive: Actions towards the 'good status' of EU water and to reduce flood risks, online at:

http://ec.europa.eu/environment/water/water-framework/pdf/4th_report/COM_2015_120_en.pdf

¹²⁸ *ibid*

¹²⁹ We note, however, that for the first cycle of FD implementation, climate change is to be considered based on '...available or readily derivable information' (see Article 4 (2) of the FD). A more comprehensive consideration of the potential impacts of climate change is a requirement in the second cycle.

¹³⁰ European Commission. 2016. The Floods Directive First Cycle Questionnaire Results Report. Online at:

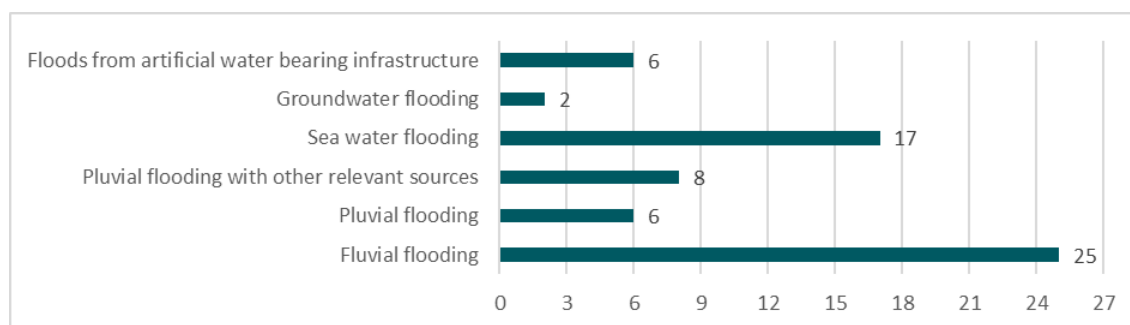
https://circabc.europa.eu/sd/a/0fbde723-0ec1-4232-b9fb-f21f32296564/Report_implementation%20Floods_Directive_15July2016_DRAFT-R1-00_for%20MS%20comments.pdf

¹³¹ European Commission COM. 2015. 120 final, The Water Framework Directive and the Floods Directive: Actions towards the 'good status' of EU water and to reduce flood risks, online at:

http://ec.europa.eu/environment/water/water-framework/pdf/4th_report/COM_2015_120_en.pdf

¹³² WRc et al. 2015. EU overview of methodologies used in preparation of Flood Hazard and Flood Risk Maps, online at: http://ec.europa.eu/environment/water/flood_risk/pdf/fhrm_reports/EU%20FHRM%20Overview%20Report.pdf

¹³³ The Floods Directive Focus Group was held in Lisbon on March 28th and 29th 2019

Figure 5-15 The sources of flooding mapped by 27 Member States within FHRMs

Source: Data taken from WRc et al., 2015, *EU overview of methodologies used in preparation of FHRMs*.

Note: 23 Member States have a coastline

Information sharing has been noted in 11 of the 12 MS sharing river basins, with International River Commissions playing a significant role in this exchange.¹³⁴ Despite the apparent information exchange taking place, it is unclear on the specificities of this exchange. As required in Article 6.4 of the FD, MS must map the extent of flood events, the water depths/level, and (where appropriate) the flow velocity. In an analysis of fluvial flooding maps, it was found that all MS who mapped fluvial events showed the extent of such flood events, 2 MS did not show water depth, and only 12 MS showed water flow velocity.

Stage 3

The final step of the Floods Directive requires MS to produce Flood Risk Management Plans (FRMPs). FRMPs include measures aimed at reducing the likelihood and/or negative impacts flooding events, therefore FRMPs represent the operational instrument for flood risk management. Nearly all MS have submitted a FRMP for all river basins,¹³⁵ with all but two MS reporting the conclusions of their PFRAs and FHRMs within FRMPs.¹³⁶ Numerous MS also taken advantage of the flexibility of the Floods Directive to follow and build upon previous plans they had in place to address flood risks.^{137, 138}

The use of consultation processes is prevalent amongst MS, yet relatively few MS report on how the results of consultation are incorporated within FRMPs¹³⁹. This can result in difficulties in estimating the impacts of consultation strategies on the development of FRMPs. In relation to this, the targeted consultation survey asked if “*the provisions of Article 10 on public participation allow for effective participation in the production, review and updating of the FRMPs?*”. The majority of respondents stated that effective participation has been enabled by the FD. The majority of those who stated ‘to some extent’ or ‘no’ reported concerns with a lack of public interest and the need for better communication to improve the consultation process. This was also expanded upon during the Floods Directive Focus Group, where a MS representative stated that it was difficult to communicate effectively to the general public the purpose of the consultation.

¹³⁴ *ibid*

¹³⁵ Spain has failed to submit a FRMP for the river basin districts of the canary islands, resulting in the Commission opening an infringement procedure in March 2018.

¹³⁶ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹³⁷ Article 13(3) of the Directive states that MS can make use of FRMPs finalized before 22 December 2010 provided they align with the requirements set out in the Floods Directive (Article 7).

¹³⁸ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹³⁹ *ibid*

Many FRMPs did not consider all conceivable sources of flooding, with a significant number of MS not providing any explanation as to why certain flood sources were not included.¹⁴⁰ This could prevent effective knowledge sharing amongst MS, or potentially inhibit the effective management of transboundary basin management.

Article 7.2 of the FD requires MS to “establish appropriate objectives for the management of flood risks”, which should focus on reducing the adverse consequences associated with flooding. 10 MS were found to specifically mention the four main risk areas¹⁴¹ mentioned in the Directive within their objectives. Methods used to identify quantitative objectives are wide-ranging across MS, including the use of GIS analysis and modelling techniques.¹⁴² Fewer objectives relating to cultural heritage were present¹⁴³, implying that a lack of data prohibits the formulation of such objectives. Figure 5-16 below highlights the evidence within objectives of MS FRMP to address the adverse consequences of flooding. In 14 MS, the objectives established are not measurable¹⁴⁴, which could imply that measuring the overall effectiveness of the objectives, and indeed the FD as a whole, is difficult to monitor.¹⁴⁵

Figure 5-16 Consideration of the four Flood Directive areas within Member States FRMP objectives



Source: Authors elaboration of data from EC SWD (2019) 31 Final, European Overview- Flood Risk Management Plans.

Note: Data was taken from analysis of 26 Member States FRMPs.

¹⁴⁰ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹⁴¹ The four main risk areas noted in the Floods Directive are human health, economic activity, environmental and cultural heritage.

¹⁴² European Commission. 2019. Final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹⁴³ ibid

¹⁴⁴ ibid

¹⁴⁵ EEA. 2016. Flood risks and environmental vulnerability – Exploring the synergies between floodplain restoration, water policies and thematic policies. EEA Report No. 1/2016.

With regard to measures listed by MS to reach objectives (as required under Article 7.3), approximately 40% are related to protection, 25% to prevention, 25% to preparedness and 10% to recovery. Furthermore, all MS prioritized such measures, with around 10% of measures reported to be of critical priority.¹⁴⁶ Due to the transboundary nature of some river basins, Article 8 of the FD requires MS to establish objectives and measures in a coordinated fashion where neighboring countries may be impacted. Because of this, transboundary objectives and measures have been established by nearly all transboundary basins.¹⁴⁷ The estimated costs of flood measures were assessed by around half of the MS, with funding sources identified in approximately 90% of MS.¹⁴⁸

Outcomes

Outcomes refer to intermediate changes produced by the Floods Directive, but not including on-ground changes such as reduction in flood risk (which are discussed below in ‘impacts’). As such, outcomes relate to changes in the processes and procedures for flood management in MS that may have changed as a result of the FD and may indicate progress toward meeting the purpose of the FD.

Intermediate outcomes reflecting progress in achieving objectives

Based on stakeholder engagement undertaken for this project¹⁴⁹, and review of relevant published literature, the Floods Directive is considered by MS competent authorities charged with its implementation, and expert observers, as innovative and extensive legislation focusing on the integrated management of floods.¹⁵⁰

Stakeholders were asked during a targeted survey to indicate what they thought the key benefits of implementing the FD were. Of the 35 respondents, the strongest support (‘very significant’) was directed towards **avoided damages**, followed by **improved information and knowledge** leading to better decision making, and **standardised terms and approaches**. Figure 5-17 below indicates the responses of participants.

¹⁴⁶ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

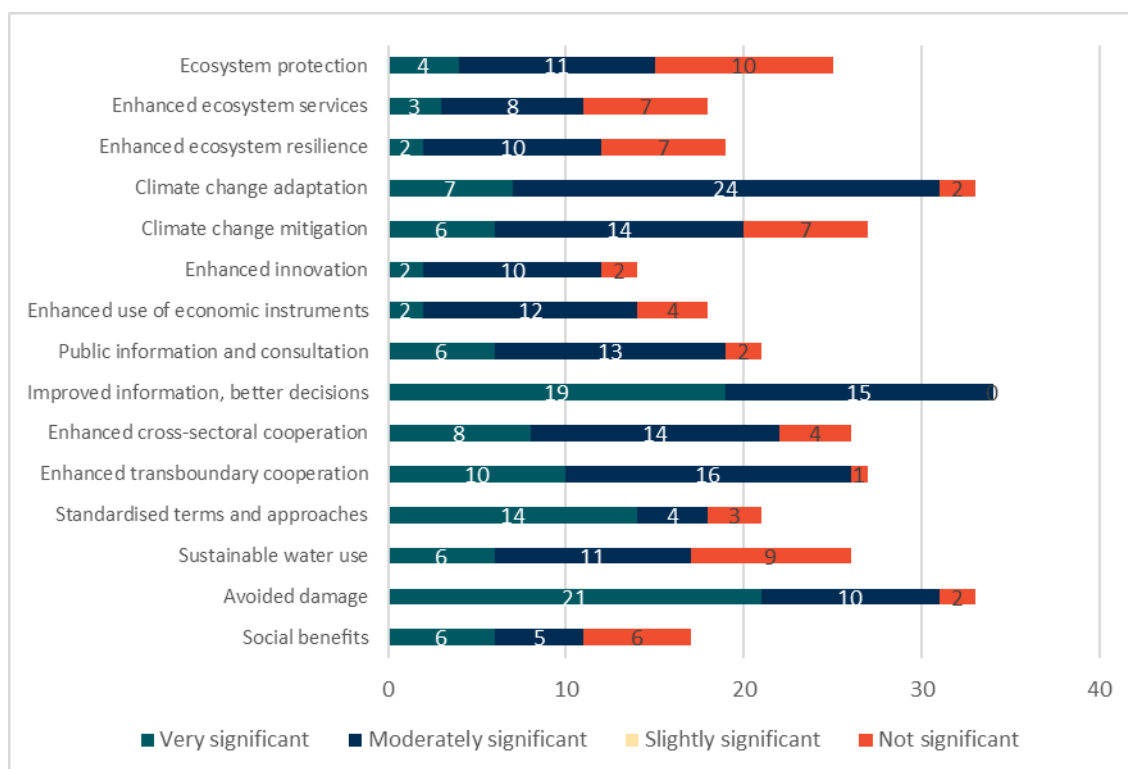
¹⁴⁷ *ibid*

¹⁴⁸ *ibid*

¹⁴⁹ Particularly the Floods Focus Group undertaken in Lisbon on 28-29 March, 2019, and follow-up interviews.

¹⁵⁰ See for example: Hedelin. 2017. The EU Floods Directive trickling down: tracing the ideas of integrated and participatory flood risk management in Sweden, in *Water Policy* 19 (2017) 286-303.

Figure 5-17 What do you think are the key benefits of implementing the Directive?



Source: Targeted survey

Stakeholders noted during targeted interviews that the FD has prompted a **standardisation of MS approaches to flood risk management**. In addition, it was noted that increasing transparency by ensuring that MS share flood maps publicly could further align approaches to flood risk management and hence improve the overall effectiveness of flood risk management approaches.

Furthermore, numerous MS in the focus group also stated that **coordination and cooperation between organisations** has improved due to the implementation of the FD processes. Indeed, some MS such as Denmark are currently in the process of enacting a national coordination group to coordinate actions of the FD and WFD, in addition to aligning actions with the outcomes of Fitness Checks.¹⁵¹

The FD has led to progress being made in the **legal and policy frameworks** amongst multiple MS. For MS which had preexisting flood risk management legal instruments and measures (such as the UK and Netherlands), the impact of the FD was considered minimal, yet led to a diversification of strategies in some cases. In MS where such frameworks are previously lacking, the Directive has had a strong effect on the creation of flood management strategies.¹⁵²

Stakeholders have stated during consultations that the FD has allowed MS to align themselves towards more **proactive approaches to flood risk management**, whereas prior to the implementation of the FD, MS could take on a reactive approach to flood events. A stakeholder in the targeted consultation stated that the implementation of the FD and its formalisation within national legislation has had a positive impact on the awareness of MS to flood risks. The stakeholder stated *“It is good practice to understand*

¹⁵¹ A MS representative present at the Floods Directive Focus Group informed the project team of this development

¹⁵² Priest et al. 2016. The European Union approach to flood risk management and improving societal resilience: lessons from the implementation of the Floods Directive in six European countries.

what is at risk from flooding and plan for action to reduce that risk. In my MS, it has given us an opportunity to formalise and publish our plans. Without the requirement through legislation, and many other competing flood risk needs, strategic planning might not become a high enough priority to be formally undertaken.” This gives the impression that the processes of the FD have provided a clear communication pathway to decision makers to highlight the risks of flood events. The fact that most MS have followed the step-approach of risk assessment and management required by the Floods Directive and have incorporated the conclusions of their PFRAs and FHRMs within their FRMPs¹⁵³ could prove to further elevate flood-related policy and measures within decision making spheres.

A reactive approach to flood management could result in funding streams being diminished if flood events do not occur frequently, due to a lower political will to fund perceived lower-ranking agenda priorities. It was noted by stakeholders that by formalizing floods risk management approaches through the FD, approaches to funding can now take on holistic, long-term perspectives. This is supported by evidence of the composition of measures in FRMPs, as noted above: 40% are related to protection, 25% to prevention, 25% to preparedness and 10% to recovery.

A case study of FD implementation in Sweden supported this perspective, finding that flood risk has clearly been elevated up the political agenda with new measures being planned for, while cross-sectoral organisational structures for water and flood risk issues at the local level were being formed or strengthened.¹⁵⁴ Despite this, it was been identified by numerous stakeholders within the focus group that funding the implementation of the FD remains a significant challenge (to be discussed further below).

Coordination and cooperation between relevant entities within MS has been identified as an outcome of the FD, as well as in transboundary contexts.¹⁵⁵ Focus group participants identified that the FD had increased the coordination of flood risk management across the EU, and in interviews stakeholders noted that the FD had led to greater coordination between MS, including the sharing of information and best practices. This was a view supported by focus group participants in relation to the CIS Working Group Floods, which has been active developing a community of practice across the EU. Similar findings have also been recorded in other studies.¹⁵⁶ In other literature reviewed for this project, it was identified that FD implementation at national and regional levels in Sweden for example, did reveal a strong potential for more integrated planning, and that spreading FD tasks across different national and regional authorities may indeed facilitate coordination. However, the same study found that coordination could significantly improve to better facilitate FD implementation.¹⁵⁷

Member States in the FD Focus Group noted that national coordination during the implementation of the FD could have been problematic initially (due to administrative rearrangements etc.), but improvements in coordination at all scales are expected during the second cycle. Furthermore, MS stated in the targeted questionnaire that overall, the FD has positively contributed to coordination and development of a framework for managing flood risks.

¹⁵³ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹⁵⁴ Hedelin. 2016. The EU Floods Directive trickling down: tracing the ideas of integrated and participatory flood risk management in Sweden.

¹⁵⁵ Please see the EU Added Value section for a fuller discussion of transboundary effects of the FD.

¹⁵⁶ European Commission. 2016. The Floods Directive first cycle questionnaire results reports, online at: https://circabc.europa.eu/sd/a/0fbde723-0ec1-4232-b9fb-f21f32296564/Report_implementation%20Floods_Directive_15July2016_DRAFT-R1-00_for%20MS%20comments.pdf

¹⁵⁷ Hedelin. 2015. The EU floods directive in Sweden: opportunities for integrated and participatory flood risk planning. Journal of Flood Risk Management.

From the targeted questionnaire, stakeholders were asked if the reporting requirements of the FD contributed to a **better availability of data** at national or regional level. The majority of the 39 respondents gave positive feedback, stating that the FD either fully (10 respondents) or partly (18 respondents) led to better data availability. During the Floods Directive Focus Group, it was also stated that the common framework approach established by MS due to the FD increases the opportunities for MS to transfer knowledge to each other.

However, there may be opportunities for MS to further disseminate the knowledge garnered through the FD processes. Private sector entities have stated in stakeholder interviews that access to the underlying data behind, for example, flood risk maps, is often lacking. Where this is deemed to be within the interest of the public, sharing this data may provide additional value from the FD.

It was also noted during interviews that increasing transparency by ensuring that MS share flood maps amongst each other could further align approaches to flood risk management and hence improve the overall effectiveness of flood risk management approaches. This could also improve the effectiveness of transboundary cooperation, where several stakeholders have noted that communication channels have expanded, with the FRMP process seen as a ‘blueprint for information exchange’.¹⁵⁸

When considering the consultation processes required under the FD, the most commonly involved stakeholder groups were local and regional authorities, and civil protection authorities. Consumer groups, academia and research institutions were rarely involved during consultation processes.¹⁵⁹ Many MS respondents noted that the stakeholder consultations required under the FD have led to a strengthening of coordination and collaboration amongst sectors and stakeholders¹⁶⁰. Such collaborations have occurred at various spatial scales, improving the awareness of flood risk amongst various actors.¹⁶¹ This view was echoed during the Floods Directive Focus Group, where numerous stakeholders noted that the FD has positively contributed to raising public awareness about flooding and flood risk management. However, despite the use of consultation processes being prevalent amongst MS, relatively few MS report on how the results of consultation are incorporated in FRMP.¹⁶² Limited evidence could be gathered on the outcomes of **transboundary cooperation** stemming from the implementation of the FD. However, consultation found strong support for the transboundary aspects of the Directive. The targeted survey implemented asked the question: “*The FD encourages international / transboundary cooperation. Can you provide example(s) of how it has facilitated transboundary and / or international cooperation?*” Several respondents pointed to the promotion of projects and discussions related to transboundary cooperation, including working groups, and noted that this cooperation tended to build on existing informal relationships between countries. It was noted throughout the targeted survey and literature that these structures have led to greater cooperation and exchange of scientific ideas.^{163,164}

¹⁵⁸ Priest et al. 2016. The European Union approach to flood risk management and improving societal resilience: lessons from the implementation of the Floods Directive in six European countries.

¹⁵⁹ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹⁶⁰ European Commission. 2016. The Floods Directive first cycle questionnaire results report, online at: https://circabc.europa.eu/sd/a/0fbde723-0ec1-4232-b9fb-f21f32296564/Report_implementation%20_Floods_Directive_15July2016_DRAFT-R1-00_for%20MS%20comments.pdf

¹⁶¹ *ibid*

¹⁶² European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

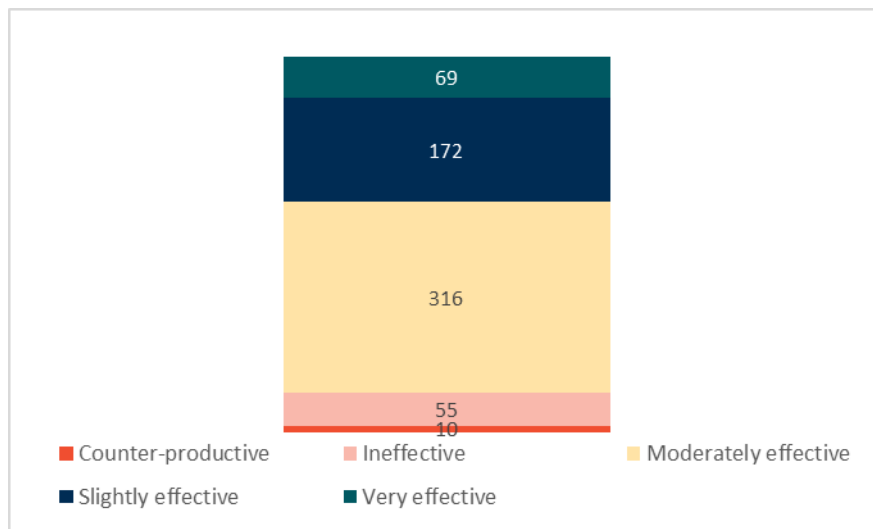
¹⁶³ European Court of Auditors. 2018. Floods Directive: progress in assessing risks, while planning and implementation need to improve, online at: https://www.eca.europa.eu/Lists/ECADocuments/SR18_25/SR_FLOODS_EN.pdf

¹⁶⁴ European Commission. 2018. The Floods Directive first cycle questionnaire results report, online at: https://circabc.europa.eu/sd/a/0fbde723-0ec1-4232-b9fb-f21f32296564/Report_implementation%20_Floods_Directive_15July2016_DRAFT-R1-00_for%20MS%20comments.pdf

During the Floods Directive Focus Group, MS emphasised that the majority of measures established during the first cycle of FRMPs are yet to be implemented, however MS representatives noted that models have shown that certain types of flood events have incurred less damage than expected. It is unclear if the measures put in place by the Floods Directive have resulted in this. It must also be noted that it remains a challenge to disentangle the impacts of climate change and land use change on the impacts of reducing the adverse consequences of flooding.

The OPC posed the question “To what extent has the implementation of the above Directives been effective in achieving the following objectives?: Managing flood risk”. The results below show a majority positive view towards the impact of the FD on managing flood risk. Although this does not give a direct indication of the perceived avoided damages from flood events due to the implementation of the FD, it does highlight that the majority of respondents have the impression that the FD has already begun to effectively manage flood risks.

Figure 5-18 "To what extent has the implementation of the above Directives been effective in achieving the following objectives?: Managing flood risk"



Source: Open Public Consultation.

Impacts

Impacts refer in this context to changes to the changes flood risk in MS, due to the implementation of the Floods Directive. These impacts directly correspond to the reduction of adverse consequences stated within the Directive, specifically to human health, the environment, cultural heritage and economic activity.

Progress in reducing flood risk and the adverse consequences of flooding

Usually within a Fitness Check or evaluation of this kind, significant effort would be applied to gather evidence in relation to the on-ground impacts of the Directive in relation to its stated purpose - in this case, the reduction of flood risk and the reduction of adverse consequences of flooding to human health, the environment, cultural heritage and economic activity.

Evidence for impacts would be found in quantitative data on damages to flood events compared to the incidence of flooding over time, to establish whether the scale of damages from flooding are reducing across MS for different types of flood event. This evidence base would require many years’ data on flood events following the implementation of measures in the FRMPs.

However, with the third stage of the first cycle concluding with the FRMPs published in December 2015, it is accepted by MS (engaged in the Focus Group Floods) and key stakeholders engaged in interviews, that it is too soon to judge the effectiveness of the FD in relation to impacts using any quantitative analysis of flood impact data. It is clear that many years and much analysis will be required before such evidence can be developed.

As such, our analysis draws on stakeholder views on their expectations of the likely effectiveness of the FD in meeting its stated purpose.

MS stated during Focus Group consultations that they anticipate that the Directive is working as intended, with the flexibility and framework of the Directive helping MS to work together, communicate with the public and understand risk concepts. As such, it can be estimated that by the continued increase in knowledge and awareness of flood risks, the FD provides a basis for alleviating the impacts of flood consequences in the future.

MS also stated that this could be anticipated for mitigating climate change-related flood impacts, with the implementation of the FD preparing MS for such impacts better than could be expected without such processes in place.¹⁶⁵ Various private sector stakeholders have also indicated that they believe that the Floods Directive has resulted in an improved preparedness to flood events in the future, specifically on risk awareness and risk reduction to floods. Such stakeholders also emphasised that in order for the effectiveness of future flood risk management to be maximised, it must be ingrained within broader adaptation strategies. This would assist in aligning land use planning and building code regulation within flood risk planning processes, potentially improving future flood risk mitigation measures. To add to this, private sector stakeholders have stated that open access to data which highlights areas susceptible to potential flooding could enhance risk management practices.

Land use change, climate change and various other external factors (urbanisation, GDP growth etc) will ensure that determining the impacts of flood risk management measures implemented under the Floods Directive will be challenging. Developing specific, measurable indicators to monitor the impacts of FD measures and objectives could combat this, yet few MS have linked indicators to their objective, whilst 12 MS have identified indicators to be used during monitoring the progress of implementation.¹⁶⁶ This however, does not overcome the issue that very long time periods of monitoring will be required to ensure that the measures are effective- for example, for 1:100 year flood events. To add to this, indicators may face challenges incorporating the role of land use change and climate change, which can exacerbate flood consequences. Therefore, measuring the progress of specific measures, separated from external factors will remain challenging. Furthermore, ensuring that measures implemented take on a holistic, long-term perspective will be of utmost importance to ensure that society is not simply 'keeping up with' climate change, but rather reducing flood risk under projected scenarios.

It is expected that the flood risk management approaches promoted by the FD have and will continue to improve the consistency in approaches to flood risk. Due to these processes, it could be predicted that further compatibility and standardisation of approaches will continue to align MS, ensuring that more effective measures are selected and implemented. The coordination amongst Competent Authorities is

¹⁶⁵ It should be noted here, that MS representatives present at the Floods Directive Focus Group indicated that this statement may not hold true for MS whose flood risk management processes were well developed prior to the implementation of the FD.

¹⁶⁶ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

expected to continue to improve during the 2nd cycle of the FD, which will assist such alignment, amongst MS, multiple sectors and various stakeholders. Indeed, it has been noted that the FD has already strengthened cooperation and coordination between multiple sectors and stakeholders at multiple scales, whilst also positively influencing policy areas outside of water (spatial and land use planning, disaster planning).¹⁶⁷ Such results were also echoed in the targeted survey.

5.3.2 EQ 2 Which main factors have contributed to or stood in the way of achieving the Directives’ objectives?

Table 5-6 Floods Directive Effectiveness EQ.2 Summary

Conclusions on EQ.2 - Which main factors have contributed to or stood in the way of achieving the Directives’ objectives (including flexibility of the Directives)?	
What has worked well?	<ul style="list-style-type: none"> Flexibility- the structure of the FD is noted as a flexible risk management process, whilst it does not place additional obligations on key actors for flood risk management Standardised approach- the FD processes have led to a proactive approach to flood risk management as opposed to reactive disaster response Information sharing- particularly the CIS Working Group Floods has developed a community of practice, allowing MS to share information and knowledge
What has not worked well?	<ul style="list-style-type: none"> Technical capacities and funding- financial resources and technical capacities were identified as key barriers Pluvial flooding- a relatively minor inclusion of pluvial-sourced floods in flood mapping was observed during the first cycle, despite such floods posing significant damages Quantitative and time-bound objectives- linkages between measures and objectives are often lacking Measure selection- few MS use CBAs to assess FRMPs, which can hinder the selection of cost efficient flood risk management procedures Green Infrastructure- challenges remain in incorporating GI within FRMPs Definitions- stakeholders have noted that in some instances definitions are unclear Private insurance- an insufficient use has been identified Land use planning- in some cases a lack of alignment between MS legislation and the objectives of the FD were encountered
Strength of evidence	Good strength of evidence from implementation analysis corroborated by the feedback from stakeholders
Indication of bias	No bias or conflicting views found

Factors contributing to the successful implementation

Several key factors have been identified in literature and consultation that have contributed to successful implementation of the FD. These are discussed below.

Flexibility

Flexibility was identified as a central component of the Directive in its impact assessment, which found that most cost effective and appropriate regulatory response to identified increasing flood risk was a package of “voluntary and cooperation measures linked to and underpinned by a flexible legislative instrument.”¹⁶⁸ The flexibility of the FD was praised by MS representatives and it is seen as being fit for the future. In addition, representatives stated that “flexibility and subsidiarity are essential” and

¹⁶⁸ European Commission SWD. 2006. 15 final, Annex to the Proposal for a Directive of the European Parliament and of the Council on the assessment and management of floods - Impact Assessment, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52006SC0066&from=EN>

that “the flexibility and framework help us work together, communicate with the public and understand risk concepts”. It was recognised in the focus group that MS had different legislative frameworks, capacities and resources, and the structure of the FD being a flexible risk management process was considered a key strength by attendees.

Flexibility in implementation of the FD has also been identified in academic literature. For example, in a case study in Sweden, it was identified that sufficient legislation for flood risk management was already in place prior to the FD, and as such its implementation did not place additional obligations on key actors for flood risk management.¹⁶⁹

A standardised approach to flood management across the EU

A central feature of the Flood Directive is the 5 -step principle of flood risk assessment upon which the Directive is built. As identified in the Commission Communication from 2004 that preceded the Directive, flood risk management programmes are considered the most effective structure for flood management, including elements of prevention, protection, preparedness, emergency response and recovery.¹⁷⁰

Participants at the Floods Focus Group were strongly positive about the implementation of a standardised (albeit flexibly implemented) approach of flood risk management across the EU. Some participants noted that prior to the implementation of the Directive, flood risk assessment did not feature in their flood management approach, and that the Directive had significantly changed their approach to flood management, particularly in relation to proactive risk-minimisation in contrast to the more traditional reactive disaster response. Other MS that had already implemented a similar approach noted that the FD had not significantly altered their management approach, and that reporting was the main impact of the Directive on them.

As noted in the focus group discussions, the standardised approach to Flood Risk Management resulted in a range of broadly consistent processes across MS, including:

- Formalised processes of strategic planning;
- Designation of flood prone areas;
- Development of flood management plans;
- consideration of proactive risk-minimisation.

Information-sharing through the CIS Working Group Floods

A third key factor contributing to FD implementation success was identified by Focus Group participants as the CIS Working Group Floods, which had an active role in developing a community of practice, sharing information and fostering collaboration between MS representatives. The CIS process was strongly supported by participants at the Focus Group.

Barriers and shortcomings to progress

A number of barriers and shortcomings to progress in implementing the FD have been identified in literature and in consultation. We discuss these in turn.

¹⁶⁹ Hedelin. 2015. The EU floods directive in Sweden: opportunities for integrated and participatory flood risk planning. Journal of Flood Risk Management.

¹⁷⁰ European Commission COM. 2004. 0472 final, Flood risk management - Flood prevention, protection and mitigation, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52004DC0472&from=EN>

Technical capacities and funding

At a focus group of MS competent authority representatives undertaken for this Fitness Check, representatives were asked to nominate and then vote for the most significant barriers to successful implementation of the FD. Financial resources and technical capacities were identified as key barriers by a majority of participants in the focus group. These two factors are linked, as the extent and depth of technical capacities are a reflection of funding. It is noted that EC (2018) identified a lack of or incomplete cost information in many MS, and that several lacked information on funding sources. The European Court of Auditors (2018) found that sources of financing in the FRMPs were only partially identified and secured, and that funding for cross-border investments was limited.

Incorporating pluvial flooding into FD implementation

Pluvial flooding is caused by rainfall events that do not necessarily occur in riverine environments, unlike fluvial flooding. Both are included within the scope of the FD, based on the definition of ‘flood’ provided in Article 2 (1): “the temporary covering by water of land not normally covered by water. This shall include floods from rivers, mountain torrents, Mediterranean ephemeral water courses, and floods from the sea in coastal areas, and may exclude floods from sewerage systems”.

The appropriate consideration of pluvial flooding into FD implementation has been identified as a key challenge to the successful implementation by MS competent authorities in the Floods Focus Group undertaken for this Fitness Check. This is evidenced by the relatively minor inclusion of pluvial-sourced floods in flood mapping in the first cycle. Stakeholders reinforced the importance of appropriate inclusion of pluvial flooding as part of the FD implementation in interviews, noting the significant share of flood damages caused by pluvial floods. For example, in the UK pluvial flooding is regarded as a greater threat than both fluvial and coastal flooding combined, with over 3 million properties at risk of pluvial flooding.¹⁷¹

At the Floods Focus Group and in follow-up interviews with attendees, differing opinions were offered by MS competent authority representatives about the nature and cause of the challenge provided by incorporating pluvial flooding into FD implementation, including the following perspectives on the challenge:

- Disproportionately high resources would be required to include pluvial sources of floods in flood risk mapping, particularly the first two steps (PFRAs and APSFRs);
- Data required for such purposes is unavailable;
- Too many variables would be required to meaningfully include pluvial floods in maps across a MS;
- Developing a high probability scenario is particularly challenging;
- Pluvial flooding does not fit with the FD and should be excluded of the scope of the legislation.

However, it was otherwise noted in interviews that:

- The FD allows Competent Authorities to identify the sources of flooding that are relevant to them;
- Tools are available to address pluvial flooding in FD implementation;
- Pluvial flooding appears to be a significant source of flood risk in many areas.

¹⁷¹ UK Environment Agency. 2018. Surface water: The biggest flood risk of all, online at: <https://www.gov.uk/government/news/surface-water-the-biggest-flood-risk-of-all>

Quantitative and time-bound objectives

It has been noted by both the European Court of Auditors¹⁷² and the European Commission¹⁷³ in recommendations to MS following the first round of FD implementation, that the actions selected by MS in FRMPs would benefit from:

- the development of quantitative and time-bound objectives, developed by MS to suit their local conditions, which can be used to help guide the selection of actions in their FRMPs; and
- the use of rigorous quantitative assessment such as cost-benefit analysis or cost-effectiveness assessment, to select actions in their FRMPs (discussed further below)

The purpose of defining objectives in FRMPs can guide the selection of appropriate measures in those plans. The European Court of Auditors notes that the “...principles of sound financial management require policy objectives to be formulated in a specific, measurable, achievable, relevant and timed manner” (page 25).

The current requirement of the FD relating to FRMP objectives is found in Article 7(2), which states that “Member States shall establish appropriate objectives for the management of flood risks...”. In the implementation guidance for the second cycle of the FD, it is noted that the requirement to link measures to objectives will be mandatory and that objectives may be set at a high (strategic) level or may be more focused. MS are requested to explain how the objectives relate to the purpose of the FD and explain how they were developed.

Quantitative assessment underpinning FRMP measure selection

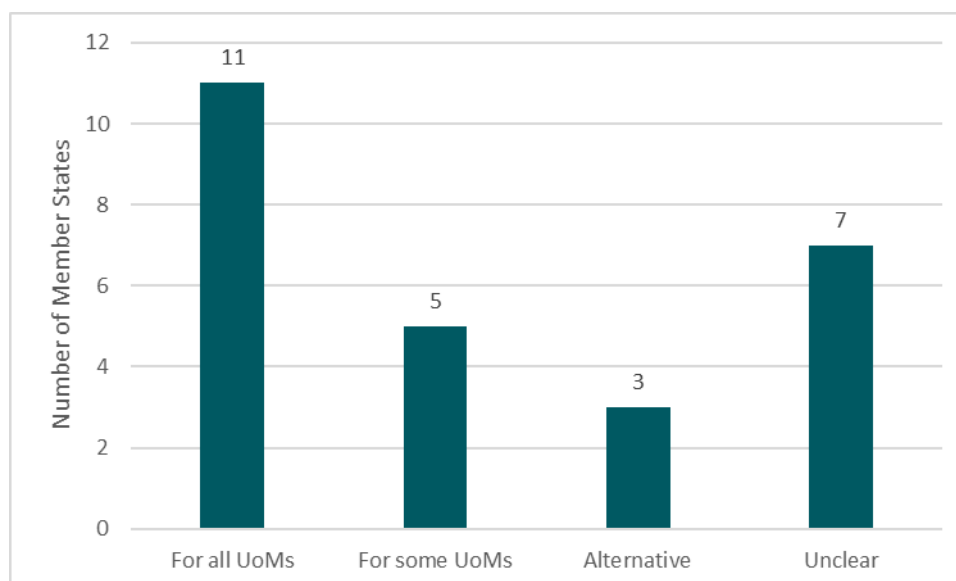
The FD contains some reference to the use of cost-benefit analysis to inform decision-making in the development of FRMPs, in Article 7 (3): “Flood risk management plans shall take into account relevant aspects such as costs and benefits...”. A more concrete requirement is included for transboundary measures, in Annex A(I)(5): “when available, for shared river basins or sub-basins, a description of the methodology, defined by the Member States concerned, of cost-benefit analysis used to assess measures with transnational effects.”

The European Commission reports that a minority of MS reported the use of CBA in the development of their FRMPs. As presented in Figure 5-19, only 11 of 28 MS reported use of CBA for all UoMs¹⁷⁴, with a further 5 using them for some UoMs. Across the 19 Member States that applied some form of CBA (or related analysis), twelve provided clear indications of the methodology used. Estimates of the costs of flood measures were made available by about half of the MS assessed by the European Commission, though in many cases this information does not cover all FRMPs or all measures. Only one example was identified of the use of CBA for a measure with transnational effects.

¹⁷² European Court of Auditors. 2018. Floods Directive: progress in assessing risks, while planning and implementation need to improve, online at: <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=47211>

¹⁷³ European Commission COM.2019. 95 final, The implementation of the Water Framework Directive and Floods Directive, online at: https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

¹⁷⁴ Unit of Measurement

Figure 5-19 Use of Cost-benefit analysis in FRMPs by Member State

Source: European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, pp 118.

Online at: [https://eur-lex.europa.eu/legal-](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN)

[content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN)

The European Commission recommended that MS “...consider a more systematic consideration of costs and benefits, where possible via the use of CBA. These methods should be integrated into the selection and prioritisation of measures, to promote cost-effective paths for efficient flood risk management.”¹⁷⁵

Furthermore, rigorous use of CBA has two other key benefits that can support the implementation of the FD:

1. It can help MS in overcoming a related key barrier identified by MS - that of lack of funding for implementation of measures identified in FRMPs. Rigorous CBA can be used to justify the funding of important measures to public and private funders;
2. The CBA framework provides a rigorous and defensible framework for incorporating multiple benefits of flood measures, which the European Commission reports have been rarely considered in FRMPs within the first round.¹⁷⁶

Green infrastructure

A barrier to progressing the successful implementation of the FD identified by in reporting is the appropriate incorporation of green infrastructure (GI) or ‘nature-based solutions’ (NBS) into FRMPs.¹⁷⁷ This is supported by feedback received as part of the targeted consultation, with several respondents identifying challenges integrating NBS in FD implementation.

There are several references to GI in the FD. For example, Article 7 requires that FRMPs consider relevant aspects such as “areas which have the potential to retain flood waters, such as natural flood plains”, and “soil and water management, as well as nature conservation”. Recital 17 of the FD also

¹⁷⁵ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, pp 124. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>

¹⁷⁶ European Commission SWD. 2019. 31 final, European Overview - Flood Risk Management Plans, pp 124. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:31:FIN&qid=1551205988853&from=EN>. Page 123.

¹⁷⁷ The European Court of Auditors (2018) noted this issue in their work. Additionally, many respondents to the targeted survey considered insufficient use of GI as an issue for FD implementation

note the potential for synergies with the WFD. These are supported in the reporting requirements by the European Commission. However, a requirement to demonstrate active consideration of NBS in FRMP measures is not a current requirement of the FD.

Several sources of literature identify the potential cost-effectiveness of GI to mitigate flood risk, as well as providing additional benefits such as biodiversity and heat mitigation.¹⁷⁸ This finding was supported in interviews with the insurance sector but cautioned by MS representatives who noted that GI is not inherently more cost-effective than grey infrastructure, nor is it always appropriate to every flood management context.

The European Court of Auditors noted that the plans of two thirds of MS do not focus on GI, while the European Commission noted that nearly all Member States included nature-based solutions, although to varying degrees. Analysis at MS level suggests that greater use of GI could be incorporated into FRMPs for several MS.¹⁷⁹

Standardised terms and definitions

Work to standardize terms and definitions is seen by MS as one of the successes of the FD. However, further advice on defining terms was identified as a challenge, for example the definition of ‘flood’, ‘significant’, and the concept of climate change and APSFRs.¹⁸⁰

During interviews, stakeholders gave varied feedback in regards to definitions and standardization. Some argued that further standardisation of terms in the FD would support implementation. For example, Article 6(3) defines three types of flood event probabilities (low, medium and high probability) that should be covered in flood hazard maps and flood risk maps. Medium probability events are defined (i.e. likely return period of 1 in 100 years), while both low and high probability events are left undefined. While defining these in more detail may provide clarity, MS competent authority interviewees have cautioned that the definition of low and high risk may differ for justifiable reasons between MS, and that these differences may be further linked to legal measures. As such, standardizing them across the EU may be undesirable.

Private insurance

Private insurance coverage to protect against flood damage is identified as low in the EU. Reportedly only 25 per cent of flood losses were covered by insurance between 1980 and 2017.¹⁸¹ Systems for insurance coverage differ by MS, with some countries such as the Netherlands having public management of flood risk, to blended systems of public and private risk management in other MS.

Insufficient use of private insurance was identified as a weakness of flood management in the EU, by the European Court of Auditors and by insurance industry participants themselves. This was seen as a wasted opportunity to better manage flood risk by those groups. We note that the FD does not require

¹⁷⁸ For example, the European Court of Auditors. 2018. Floods Directive: progress in assessing risks, while planning and implementation need to improve ; EEA. 2017. Green Infrastructure and Flood Management - Promoting cost-efficient flood risk reduction via green infrastructure solutions. EEA report 14/2017

¹⁷⁹ Both the European Court of Auditors (2018) and the EC (2019) provide examples from MS.

¹⁸⁰ European Commission. 2018. The Floods Directive first cycle questionnaire results report, online at:

https://circabc.europa.eu/sd/a/0fbde723-0ec1-4232-b9fb-f21f32296564/Report_implementation%20Floods_Directive_15July2016_DRAFT-R1-00_for%20MS%20comments.pdf

¹⁸¹ European Court of Auditors, 2018. Floods Directive: progress in assessing risks, while planning and implementation need to improve. p.40

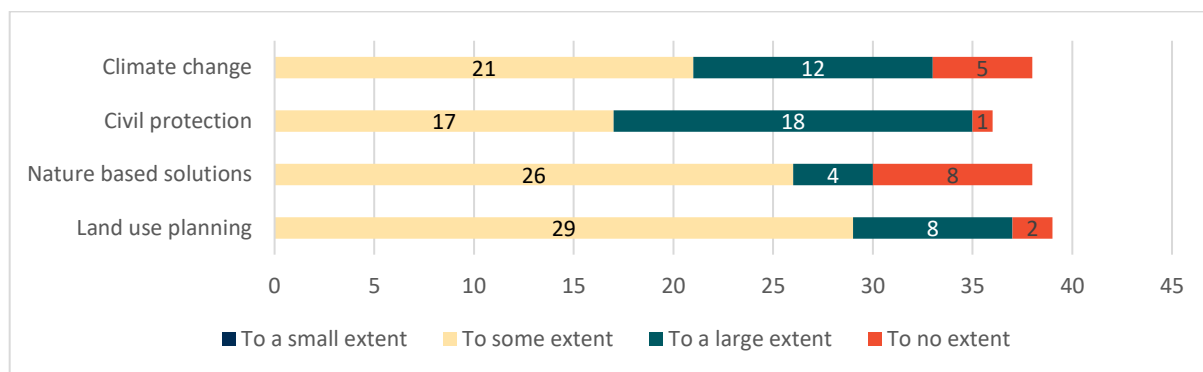
MS to include insurance in FRMPs or otherwise consider insurance in FD implementation, however it can be considered a non-structural initiative as described in Article 7(2).

Land use planning

Land use planning is the process of “...ensuring that land is used in the most efficient way to serve society in achieving its economic, social and environmental goals.”¹⁸² Clearly, effective implementation of the FD requires strong coordination with land use planning.

The European Court of Auditors¹⁸³ found that all MS visited had some land use planning rules restricting or prohibiting certain activities in flood-prone areas, but that a variety of challenges in several MS relating to land use planning that could reduce the effectiveness of FD implementation, such as unclear definitions and a lack of direct links between land use planning and flood hazard maps. During targeted consultations, stakeholders stated that certain MS had existing provisions in place which surpassed the level of ambition set by the FD, including: “*floodplain areas with restricts potential uses*” and “*prohibited building in flooded areas with a certain probability*” amongst others. Furthermore, the targeted survey found that the majority of stakeholders viewed the integration of land use planning with the FD to be only complete to some extent, which suggests the potential for some disconnect (see Figure 5-20. Further information is included in Section 6.3.3 on coherence.

Figure 5-20 Based on your experience, how well is the implementation of the FD integrated with other relevant policies (e.g. land use planning, nature based solutions, civil protection, climate change adaptation) at national, regional and local levels?



Source: Targeted survey consultation

¹⁸² World Meteorological Organization. 2007. The Role of Land-use Planning In Flood Management, online at: http://www.apfm.info/pdf/ifm_tools/Tools_The_Role_of_Land_Use_Planning_in_FM.pdf

¹⁸³ European Court of Auditors. 2018. Floods Directive: progress in assessing risks, while planning and implementation need to improve.

5.3.3 EQ 3 To what unexpected significant changes, either positive or negative, have the Directives led?

Table 5-7 Floods Directive Effectiveness EQ.3 Summary

Conclusions on EQ.3 - Have the Directives led to any unexpected significant changes, either positive or negative?	
What has worked well?	One positive unintended consequence identified: potential template for best practice disaster management
What has not worked well?	No identification of significant negative unintended consequences of the FD from MS, key stakeholders or public
Strength of evidence	Extensive literature review did not produce evidence in relation to this question. Stakeholders were engaged in targeted surveys and focus groups.
Indication of bias	No bias of evidence was identified

Throughout the review of literature and inputs from the consultations, few unintended consequences deriving from the implementation of the FD could be identified. During targeted consultations, a stakeholder stated that the FD has resulted in *'a new knowledge base to work from and to improve the systematic risk management work not only for floods and also for other risks with natural disasters.'* However it is unclear whether such outcome could be described as 'unintended'.

One response in the targeted questionnaire was that the approach of risk management adopted for the FD could serve as a template for other areas of disaster management. This was a view reflected in a previous survey of MS undertaken by the Commission.¹⁸⁴ No negative unintended consequences were identified.

¹⁸⁴ European Commission. 2016. The Floods Directive First Cycle Questionnaire Results Report. Online at: https://circabc.europa.eu/sd/a/0fbde723-0ec1-4232-b9fb-f21f32296564/Report_implementation%20Floods_Directive_15July2016_DRAFT-R1-00_for%20MS%20comments.pdf

6 Analysis of efficiency

6.1.1 Introduction

The Efficiency assessment considers whether the resources required to create the actions triggered by the WFD, its daughter Directives and the FD are proportionate to the results achieved. Additionally, the aim of the efficiency assessment is to understand the relationship between the costs and benefits of the legislation and how they accrue to different stakeholders (i.e. water companies, European citizens, regional administrations and MS competent authorities), to identify what factors drive these costs/benefits and to assess how these factors relate to the legislation.

A key element of the Efficiency assessment is the cost benefit analysis. For this, our analysis has referred to parallel studies which include relevant information such as:

- Blue2 study: The first part of this study (Task A2) aims to identify the economic benefits of EU water policy and the cost of its non-implementation while the Task A3 addresses the planned measures in 8 selected river basins and how their impacts, costs and benefits could be estimated.
- Member State assessment reports on the WFD and the FD that provide information on economic analysis carried out by different Member States including reported costs and benefits of RBMP and FRMP measures. This qualitative and quantitative information on costs and benefits represents key inputs to the efficiency assessment.

To evaluate the efficiency of the Directives, the assessment considers the costs to authorities (at Member State and, where feasible, RBD level) and different sectors including manufacturing industries, agriculture and water industry among others that are affected by provisions of these Directives. The costs associated with the inputs of the WFD and the FD are considered in different categories:

- Costs of implementing RBMPs and FRMPs (distinguishing between baseline and non-baseline measures as appropriate);
- Costs of complying with the administrative requirements of the Directive (administrative burden);
- Other costs.

The adoption and execution of the RBMPs and FRMPs resulted in the implementation of flood risk management measures as well as measures aiming to improve ecological, chemical and quantitative status of groundwater and surface water bodies and prevent their deterioration. These improvements, in turn, have led to direct benefits of improved wellbeing such as avoided health effects, avoided emissions to the environment, reduced contribution to climate change as well as direct financial/economic benefits. The assessment of benefits has been largely informed by the publication of the Blue2 study reports, (limited) information contained in published FRMPs and RBMPs, academic studies and stakeholder consultation, including the focus group on costs and benefits.

6.1.2 EQ 4 (EQ 4.1 - 4.2) What are the costs and benefits of the legislation and to what extent are the costs of the legislation justified in light of the benefits achieved?

Conclusions on EQ 4.2 - How do these costs compare to those which were estimated in the Impact Assessment for the FD, GWD and the EQSD? What are the reasons for differences between foreseen and actual costs?	
What has worked well?	<ul style="list-style-type: none"> • Overall, the 2nd cycle RBMPs and assessment reports provided valuable evidence with regard to costs of PoMs included in the RBMPs. Furthermore, distinction is made between baseline and WFD specific measures. However, data on costs is not available for all Member States.

Conclusions on EQ 4.2 - How do these costs compare to those which were estimated in the Impact Assessment for the FD, GWD and the EQSD? What are the reasons for differences between foreseen and actual costs?	
	<ul style="list-style-type: none"> Compliance check on the published FRMPs provided valuable evidence with regard to costs of flood prevention and mitigation measures. Reported investment costs from FRMPs (2016-2021) are at least 14 billion Euro.
What has not worked well?	<ul style="list-style-type: none"> WFD: <ul style="list-style-type: none"> RBMPs reported partial cost data. A number of Member States e.g. Germany, Italy, Poland did not report any cost data while other countries (e.g. France, Bulgaria) reported only capital cost. Cost information reported has not been annualised. There are a number of case studies regarding costs assessment, but they are in no way streamlined or consistent. E.g. the case study by Russi and Farmer in the Blue2 study had a different baseline definition than in the WFD evaluation. Regarding the comparison of costs with the Impact Assessment, the analysis found while Impact Assessment studies were developed for the GWD, EQSD and FD, the documents contained few monetary cost estimates which were largely case study-based or unitary. No Impact Assessment was developed prior to the adoption of the WFD making a comparison of proposed versus actual costs impossible. FD: <ul style="list-style-type: none"> About half of the Member States reported on costs in the FRMPs. In many cases cost information (when reported) did not cover all FRMPs in the country or all measures. Furthermore, no details were provided in the FRMPs on annual O&M costs with the exception of Finland¹⁸⁵. An impact assessment was conducted for the FD highlighting that the costs of developing preliminary flood risk assessment, flood risk maps and flood risk management plans (where required) would vary based on the size of RBDs.
Strength of evidence	All of the available evidence (i.e. compliance reports on RBMPs and FRMPs, Blue2 study, academic papers) were reviewed. Conclusions were generally corroborated at the third workshop.
Indication of bias	No potential bias was identified.

Question 4.1 What are the costs incurred (monetary and non-monetary) since the adoption of the Directives in the Member States and in the EU?

The analysis aimed to identify and collate available information on monetary and non-monetary costs associated with the WFD and the FD including capital investments, annual operation and maintenance costs.

The analysis of this evaluation question relies heavily on the recently published review of the 2nd cycle RBMPs and 1st cycle FRMPs as well as deliverables from the Blue2 study. The analysis has been further supplemented by the results from open public consultation, targeted consultation and focus groups.

1. Water Framework Directive

When considering costs associated with the WFD, it is important to distinguish the specific measures taken by Member States for the management of freshwaters required by the WFD and their impact, from the measures required by the pre-WFD legislation. Therefore, costs associated with implementation of baseline measures (legislation pre-dating WFD) need to be considered separately where feasible.

¹⁸⁵ It should, however, be noted that the FRMPs assessment has surveyed a representative sample of published FRMPs.

To help with such distinction, the WFD reporting distinguishes between the basic measures required by the legislation pre-dating WFD (baseline measures such as UWWD, DWD, Nitrates Directive (Art 11(3)a)) and WFD specific measures (listed in the Art 11(3) b-l, 11(4) and 11(5)) (see section on baseline for further details on our approach).

A summary extract of reported cost data for the WFD in the Member State compliance assessment reports is presented in the table 6-1 below. The costs of pre-WFD legislation such as UWWD, DWD, BWD, Nitrates Directive (Art 11(3)a) and of WFD specific measures (Articles 11(3) b-l, 11(4) and 11(5)) are presented separately (where reported). A distinction between capital and annual operation and maintenance (O&M) costs is also made where such data was reported in the RBMPs.

Table 6-1 Reported costs in RBMPs (as millions of Euros)

Member State	Costs, 2016-2021- capital costs	Costs, 2016-2021- O&M costs	Basic measures (Art 11(3)a) - capital costs	Basic measures (Art 11(3)a) - O&M costs	Measures (Art 11(3)b-l, 11(4) and 11(5) - capital costs	Measures (Art 11(3)b-l, 11(4) and 11(5) - O&M costs	Costs, 2009-2015 - capital
AT	990	18.5	680	12.3	310	6.2	3,325
BE	3,859	482	838	457	3,021	25	3,988
BG	2,648	Not reported	2,462	Not reported	186	Not reported	1,311
CY	247	0	56	0	191	0	19
CZ	4,226	Not reported	0	0	4,226	Not reported	4,192 ¹⁸⁶
DE	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
DK	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
EE	488	15	124	1	364	14	892
ES	13,487	1,190	5,311	785	8,176	405	9,733
FI	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report
FR	17,851	Not reported	2,805	Not reported	15,046	Not reported	22,979
HR	6,058	80	5,350	30	708	50	1,130
HU	4,004	104	2,119	25	1,885	79	4,748
IT	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report
LU	Not quoted in the report	Not reported	Not quoted in the report	Not reported	Not quoted in the report	Not reported	Not quoted in the report
LV	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report
MT	200	6	10	0	190	6	177
NL	767 [partial value]	Not reported/ quoted in the report	Not reported/ quoted in the report	Not reported/ quoted in the report	767	Not reported	2,200

¹⁸⁶ An estimate using reported share of EU funded investment costs (2,054 million Euro representing 49% of total investment costs)

Member State	Costs, 2016-2021- capital costs	Costs, 2016-2021- O&M costs	Basic measures (Art 11(3)a) - capital costs	Basic measures (Art 11(3)a) - O&M costs	Measures (Art 11(3)b-l), 11(4) and 11(5) - capital costs	Measures (Art 11(3)b-l), 11(4) and 11(5) - O&M costs	Costs, 2009-2015 - capital
PL	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	Not quoted in the report	10,958
PT	1,411	80 ¹⁸⁷	829	Not quoted in the report	177 ¹⁸⁸	Not quoted in the report	2,183
RO	14,010	765	13,622	711	388	54	8,980
SE	3,280	5	0	0	3,280	5	2,590
SI	1,608	172	864	14	744	157	Not reported
SK	2,055	343	1,685	281	370	62	1,086
UK	8,759	838	5,865	424	2,894	414	6,757
Total	85,948	4,099	42,621	2,740	42,922	1,278	87,247

Source: Compliance assessment reports for RBMPs. No compliance assessment reports were available for Ireland, Lithuania and Greece.

Capital costs of the 1st cycle PoM (2009-2015) were also reported where available distinguishing between baseline and WFD specific measures; but no details were available on annual O&M costs of the 1st cycle PoMs in the European Commission (2019) report¹⁸⁹. Overall, cost data reported by Member States in published RBMPs suggest that O&M costs are relatively low accounting for about 5% of total capital costs (2016-2021).

In order to consider reported capital and O&M costs in a context, these were compared to countries' GDP (see table below).

Table 6-2 Reported costs in RBMPs (share in GDP)

Member State	GDP, million Euro	Costs, 2016-2021 (capital costs) - share in GDP, %	Basic measures (Art 11(3)a-baseline, capital costs) - share in GDP, %	Measures (Art 11(3)b-l), 11(4) and 11(5), capital costs) - share in GDP, %
AT	386,094	0.3%	0.2%	0.1%
BE	450,506	0.9%	0.2%	0.7%
BG	55,182	4.8%	4.5%	0.3%
CY	20,731	1.2%	0.3%	0.9%
CZ	207,772	2.0%	0.0%	2.0%
EE	25,657	1.9%	0.5%	1.4%
ES	1,208,248	1.1%	0.4%	0.7%
FR	2,353,090	0.8%	0.1%	0.6%
HR	51,468	11.8%	10.4%	1.4%
HU	131,935	3.0%	1.6%	1.4%
MT	12,328	1.6%	0.1%	1.5%
NL	774,039	0.1%	NA	0.1%
PT	201,613	0.7%	0.4%	0.1%
RO	202,884	6.9%	6.7%	0.2%
SE	466,925	0.7%	0.0%	0.7%
SI	45,948	3.5%	1.9%	1.6%
SK	90,202	2.3%	1.9%	0.4%
UK	2,393,693	0.4%	0.2%	0.1%
Total (reported)	9,078,312	0.9%	0.5%	0.5%

Source: GDP data (2018) - Eurostat.

¹⁸⁷ Annual O&M costs are more than the number quoted (a sum of the ranges reported as no total costs were quoted in the compliance assessment report)

¹⁸⁸ Annual O&M costs are more than the number quoted (a sum of the ranges reported as no total costs were quoted in the compliance assessment report)

¹⁸⁹ European Commission (2019). European overview - River Basin Management Plans. SWD(2019) 30 final, Brussels, 26.2.2019

On average, reported capital costs of the 2nd RBMPs account for less than 1% of GDP of reporting countries; the share of capital costs of GDP, however, ranges from 0.1% (the Netherlands) up to 11.8% (Croatia).

The European Commission (2019) report¹⁹⁰ furthermore states that from the information reported by the Member States, it can be estimated that:

- the total capital investment needed for Article 11(3)(a) (Program of measures - baseline measures) from 2016-2021 will be at least €56 billion while annual O&M costs will be at least €10.2 billion/year;
- the total capital investment costs for measures required by Articles 11(3)(b-l), 11(4) and 11(5) (WFD specific program of measures) will be at least €59.6 billion while annual O&M costs will be at least €3.85 billion/year;
- the total capital investment costs for all WFD measures will be at least €115.6 billion and annual O&M costs will be at least €14.05 billion/year.

While the 2nd cycle RBMPs and compliance check assessment reports provided valuable evidence with regard to capital and annual O&M costs of RBMPs a number of important limitations should be noted. First of all, a number of Member States e.g. Germany, Italy, Poland did not report any cost data with other countries (e.g. France, Bulgaria) reporting capital cost data only¹⁹¹. Secondly, cost information reported has not been annualised.

Several examples of good practice¹⁹² in relation to carrying out **cost-effectiveness assessment of measures** included in the PoMs are available. For instance, in Finland, researchers in SYKE have developed a tool (KUTOVA model) that evaluates cost-effectiveness of phosphorus loading mitigation measures at the catchment scale. The tool includes 19 different measures from agriculture, forestry, scattered settlements and peat mining and focuses on phosphorus that is more common growth-limiting nutrient than nitrogen in fresh waters. The application of the tool in the 2nd cycle of the RBMPs resulted in identification of more cost-effective measures; In the case of Lake Vanajavesi the measures planned in the 1st RBMP at total annual costs of EUR 6 million would result in a 16% reduction in phosphorus loading. Cost-effective measures (identified using KUTOVA model) would achieve a reduction rate of 35% at the same costs of EUR 6 million per year.

In addition to the published RBMPs, the **Blue2 study** also assessed costs of RBMPs in a number of selected case study catchments. In particular, in the course of the study, Russi and Farmer (2019) tested a bottom-up multi-criteria methodology for assessing costs of RBMPs in 8 different RBD's with the aim of illustrating its effectiveness when applied in very different environmental contexts¹⁹³. They were chosen to represent RBDs across Europe based on wide geographical representation, different size, differing key pressures and differing levels of data availability in order to test the method. It was noted that for the 8 RBDs that were analysed, all RBMPs generally provided some degree of information

¹⁹⁰ European Commission (2019). European overview - River Basin Management Plans. SWD(2019) 30 final, Brussels, 26.2.2019

¹⁹¹ Italy, Germany, Poland, Denmark, Latvia, Lithuania, Finland and Luxembourg did not report cost information in their RBMPs; Bulgaria, Czech Republic, France and the Netherlands reported capital costs only.

¹⁹² Wood and Acteon, 2019 (to be published), Integrated Assessment of the 2nd RBMPs

¹⁹³ It should also be noted that the definition of the baseline in the Blue2 project was different from the baseline in the context of the WFD evaluation. In particular, in the Blue2 study, all measures included in the PoMs including pre-WFD and WFD specific measures were considered BAU for the purposes of the analysis. High level of effort (HI LoE) included implementation of measures required to achieve environmental objectives by 2027 regardless of their costs. In other words, the scenario includes costs of measures exempted under Article 4 of the WFD.

on costs but there was significant variation in the level of detail provided¹⁹⁴. A limited number of the most important measures from the 2nd RBMPs were selected in order to test the methodology and improve it for future use. It was found that the measures varied greatly in size and cost (partly due to data availability issues and different assessment scales as some case studies focused on a specific water body or region instead of the entire RBD).

The **Tilde-Elbe RBD in Germany** was one of the chosen case study RBDs, with an example of the cost estimates provided in the table below.¹⁹⁶ The RBD has a population of 18.5 million inhabitants and 3,146 surface water bodies¹⁹⁷ of which 95% of rivers and 80% of lakes do not achieve good ecological status.

Table 6-3 Most important measures and estimated related costs

Most important measures	Estimated costs of measures
Construction or upgrades of wastewater treatment plants	735-895 Mio€
Reduction of nutrient pollution from agriculture	211 Mio€
Improvement of longitudinal continuity	110 Mio€
Improvement of hydromorphological conditions	139 Mio€
Advisory services for agriculture	13 Mio€
Research, improvement of knowledge base reducing uncertainty	7 Mio€

Source: Bianca Baur and Jochen Stroebel, *Annex XIII Application of the Bottom-up Multicriteria Methodology in Eight European River Basin District. The Tide-Elbe RBD Task A3 of the BLUE 2 Project*

Total estimated costs of measures were ranging from 1,215 million to 1,375 million Euro. It was noted, however, that due to Germany being a federal state, data was very heterogeneous. Within Germany, the obligations of the WFD are managed at the state level, meaning that costs and approach can vary from state to state, especially the availability of data on costs.

During the process of data gathering for the Tilde-Elbe RBD, the data issues were highlighted by Baur and Stroebel¹⁹⁸. It was, therefore, concluded that applying the bottom-up multi criteria methodology developed by Blue2 study to the Tilde-Elbe RBD is not feasible.¹⁹⁹

Another case study concerned the **Helge RBD in Sweden**, where all measures listed in the PoMs were included in the BAU LoE of the Helge RBD²⁰⁰. The RBD has a population of 131 thousand inhabitants and 110 surface water bodies²⁰¹. Costs of the BAU level of effort (LoE) is presented in the table 6-4 below.

¹⁹⁴ Daniela Russi and Andrew Farmer, Task A3 of the BLUE 2 Project “Study on EU Integrated Policy Assessment for the Freshwater and Marine Environment, on the Economic Benefits of EU Water Policy and on the Costs of Its Non-Implementation” In Collaboration With, 2018 <www.ieep.eu> [accessed 6 March 2019].

¹⁹⁵ It should be noted that a differentiation between BAU and HI-Level scenario was not possible or reasonable in the required format at the current moment. Estimated costs of measures cover all measures in the PoMs without differentiation between BAU and HI.

¹⁹⁶ Bianca Baur and Jochen Stroebel, *Annex XIII Application of the Bottom-up Multicriteria Methodology in Eight European River Basin District The Tide-Elbe RBD Task A3 of the BLUE 2 Project “Study on EU Integrated Policy Assessment for the Freshwater and Marine Environment, on the Economic Benefits of EU Water Policy and on the Costs of Its Non-Implementation” In Collaboration With, 2018* <http://ec.europa.eu/environment/blue2_study/pdf/Task_A3_Annex_XIII_TIDE_ELBE_RBD_CLEAN.pdf> [accessed 6 March 2019].

¹⁹⁷ 2,779 rivers, 361 lakes, 5 coastal and 1 transitional water body

¹⁹⁸ Baur and Stroebel.

¹⁹⁹ Baur and Stroebel.

²⁰⁰ Russi and Farmer (2018). Testing a methodology to assess the costs and benefits of the implementation of the EU water acquis in selected river basins. Deliverable to Task A3 of the BLUE 2 project “Study on EU integrated policy assessment for the freshwater and marine environment, on the economic benefits of EU water policy and on the costs of its non- implementation”. Report to DG ENV

²⁰¹ 81 rivers and 29 lakes

Table 6-4 Costs of the BAU LoE in the Helge RBD (in thousands of Euros)

Measure	CCs per year	OMCs per year	Annual equivalent costs
KTM 1 Increased phosphorous separation in wastewater treatment plant in Haradsback	0.73	1.84	2.57
KTM 1 Update single household waste water treatment from poor to normal in Haradsback	11.00	0.00	11.00
KTM1 Update single household waste water treatment from normal to high standard in Haradsback	2.13	0.00	2.13
KTM 2 Structural liming in soil in Kristianstad	7.33	0.00	7.33
KTM 4 Remediation of a contaminated site in Kristianstad	75.00	0.00	75.00
KTM 5 Establishing fish pass bypassing power plant in Osby	58.33	0.00	58.33
KTM 13 Revision of a water protection area in Kristianstad	6.00	0.49	6.49
KTM 25 Liming with doseer in the south of Ljungby	305.50	0.00	305.50
KTM 25 Liming with boat in the south of Ljungby	1.30	0.00	1.30
KTM 25 Liming from air in the south of Ljungby	0.13	0.00	0.13
Total	468.95	2.46	471.41

Note: Costs are in thousands of Euro. Source: Russi and Farmer (2018). Testing a methodology to assess the costs and benefits of the implementation of the EU water acquis in selected river basins. Deliverable to Task A3 of the BLUE 2 project "Study on EU integrated policy assessment for the freshwater and marine environment, on the economic benefits of EU water policy and on the costs of its non- implementation". Report to DG ENV

Overall, the study highlighted a lack of data but noted that River Basin Authorities should be able to overcome this with time, by collecting more information on costs, outcomes and benefits of measures.

The WFD also introduced the requirement to apply cost recovery principle including financial, **environmental and resource costs** (Article 9) (see Section 5.2.4).

Key issues associated with environmental and resource costs included:

- The lack of a definition of environmental and resource costs in Article 9 and the lack of a standardised methodology regarding the quantification of such costs is consistently noted in the literature;
- The 2019 implementation report on RBMPs noted that steps were made in defining water services, calculating financial costs and assessing both environmental and resource costs when calculating cost recovery levels for water services. In particular, it is reported that environmental and resource costs are calculated for all reported water services in half of the Member States (in about one third of the Member States environmental and resource costs are not calculated, and in a few Member States only some water services);
- The European Commission (2019) highlights that the significance of environmental and resource costs is judged very differently among the Member States, from being highly important to not significant at all. The situation also differs significantly with regard to their (partial or full) internalisation, often even within Member States. As in the first RBMPs, an often-shared opinion is that the environmental and resource costs are already minimised through permit systems and internalised through charges and fees. In several Member States, in cases in which the good environmental status is not reached in a water body due to a specific water service, the environmental and resource costs of that service are assumed to be as high as the costs of the measures that would be needed to reach the good status (abatement cost approach);

- However, significant gaps remain in translating these improved elements of economic analysis into concrete measures and achieving more harmonised approaches to estimate and integrate environmental and resource costs.²⁰²

2. Floods Directive

Since the adoption of the Floods Directive, Member States have developed preliminary flood risk assessments (2012), flood hazard and flood risk maps (2014) and the 1st set of Flood Risk Management Plans (FRMPs) (2016).

The European Commission report²⁰³ providing an overview on the published Flood Risk Management Plans highlighted that cost estimates of flood prevention and mitigation measures were reported by about half of the Member States assessed (26 in total). Furthermore, in many cases this information did not cover all FRMPs or all measures. For the Member States that provided (largely partial) cost estimates, costs of measures varied significantly. A number of FRMPs also indicated that cost estimates would be reviewed during the implementation of the measures.

A summary extract of reported cost data for the FD in the Member State compliance assessment reports is presented in the table below. These costs have been put in a context by taking into account population size of each cost reporting country and calculating average capital costs per inhabitant.

Table 6-5 Reported costs in FRMPs

Member State	Costs (MEUR), 2016-2021- capital costs	Costs (MEUR), capital costs	Number of inhabitants	Costs per inhabitant (EUR)
AT	Not reported			
BE	BE Rhine: 0.15-0.4 million Euro BEL Escaut: 40 million (+/- 30%)	40	11,398,589	4
BG	Total costs: 320 million Euro (3 out of 4 FRMPs).	320	7,050,034	45
CY	Total investment costs of €19.2 million (20 measures). Further 18 measures have no cost estimate.	19.2	864,236	22
CZ	Estimated budget (2015-2021): 1,134 million. Danube FRMP: 559 million; Elbe: 280 million and Oder 295 million.	1,134	10,610,055	107
DE	No cost data reported in the FRMPs. Total investment costs for the Rhine Flood Defence Action Plan (1998-2020) are estimated at €12.3 billion (about 7% of the potential damage)	3,355*	82,792,351	41
DK	Total estimated budget (2015-2021) for Odense Fjord (DK1), was 6-7.1 million Euro. No data available for other 4 FRMPs.	6.55	5,781,190	1
EE	Costs reported in the 3 FRMPs included non-infrastructure measures only. The total budget is estimated at 0.29 million Euro. Cost estimates are provided for 40 out of 70 measures.	0.3	1,319,133	0.2
ES	Total estimated budget (2015-2021) for 4 FRMPs was 285 million	285	46,658,447	6
FI	Estimated investment costs were provided for 99 measures. Estimated budget (2015-2021) was 473 million	473	5,513,130	86

²⁰² European Commission, *Report on the Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC) Second River Basin Management Plans First Flood Risk Management Plans*, 2019 <https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_1&format=PDF> [accessed 28 February 2019].

²⁰³ European Commission (2019). European overview - Flood Risk Management Plans. SWD(2019) 31 final, Brussels, 26.2.2019

Member State	Costs (MEUR), 2016-2021- capital costs	Costs (MEUR), capital costs	Number of inhabitants	Costs per inhabitant (EUR)
	Euro of which one project accounted for 370 million Euro. Most measures were reported as having a cost between EUR 10,000 and EUR 50,000.			
FR	Not reported			
HR	Total costs of flood defence infrastructure reported at €598m (2013-2022)	598	4,105,493	146
HU	Total costs estimate provided (2014-2020) was €580 million (corresponding to 26 measures out of the total 46 measures).	580	9,778,371	59
IT	Cost information reported in 3 out of 5 FRMPs of which Sardinia FRMP estimates total cost of all structural measures at €1617 million; Puglia/Ofanto FRMP reports a total cost of €783.5 million. The cost estimates for these 3 FRMPs cover 450 measures. The reported costs ranged from less than €1 m to over €20 m, the majority of the measures (around 51 %) with costs in the range €1-5 m.	2,401	60,483,973	40
LT	Total estimated costs (2015-2021) are 60.7 million	60.7	2,808,901	22
LU	Not reported			
LV	The total budget (2015-2021) was estimated at €96 million. Costs were provided for 87 of the 96 measures reported. The highest cost measure (over €40 million) is planned in Riga to protect inhabitants in lower parts of the city that are affected from floods.	96	1,934,379	50
MT	Not reported			
NL	Not reported			
PL	Total estimated costs (2015-2021) are 2,707 million	2,707	37,976,687	71
PT	Total estimated budget (2015-2021) is reported at €176 million	176	10,291,027	17
RO	Not reported			
SE	Not reported			
SI	Total estimated budget for the implementation of structural and non-structural measures in the FRMP (2017-2021) was 540 million Euro.	540	2,066,880	261
SK	Total estimated costs reported in the FRMPs (2016-2021) were 400 million Euro.	400	5,443,120	73
UK	Costs of 6,110 measures (or around 62 % of all measures reported) was provided. The highest cost for a measure was between 402 million and 862 million Euro. The majority of the measures for which this information is provided cost less than 115,000 Euro or between 115,000 and 575,000 Euro. In Scotland total costs of reported measures were 164 million Euro.	796	66,273,576	12
Total		13,988	373,149,572	37

Source: Compliance assessment reports for FRMPs. No compliance assessment reports were available for Ireland and Greece. * 12.3 billion Euro costs pro-rata to 6-year cycle. Population data (2018) are sourced from Eurostat.

Reported investment costs of the published FRMPs (2016-2021) are at least **14 billion Euro**. No details were provided in the FRMPs on annual O&M costs with the exception of a single Member State (Finland). On average reported FRMPs costs were 37 Euro per inhabitant (taking into account reporting countries). At a country level per capita capital costs ranged from 0.2 Euro per person in Estonia up to 261 Euro per person in Slovenia.

Targeted stakeholder consultation also included questions on costs associated with implementation of the Floods Directive with the majority of respondents not providing compliance cost estimates. Three responses quoted the costs ranging between €30 million and €1.3 billion.

When considering costs associated with the implementation of the Floods Directive, it is important to distinguish between the measures taken and planned by Member States specifically as a result of the Floods Directive requirements and their impact from the flood resilience and protection measures taking place under the baseline. Unlike the reporting for the WFD that distinguishes between the baseline (basic measures required under Art 11(3)a) and all other, WFD specific measures, no such distinction exists in the Floods Directive.

The FRMPs overview report provide damage estimate under the no-adaptation scenario (i.e. assuming continuation of the current protection against river floods up to a current 100-year event), but no details were provided on the baseline level of costs (EC, 2019). In practice, a range of measures included in the FRMPs could have been taking place under the baseline (for further details see Section 4.2). This is illustrated by the example of the Rhine Flood Defence Action Plan (1998-2020) with a total cost of €12.3 billion that has been adopted in 1998 prior to the adoption of the Floods Directive.

Costs associated with the **development of preliminary flood risk assessments, flood hazard maps and FRMPs** were not reported by the Member States (with few exceptions). A summary extract of costs of developing maps and other non-infrastructure measures in the published FRMPs is presented in Table 6-6.

Table 6-6 Reported costs of developing maps and other non-structural measures in FRMPs

Member State	Costs
EE	Non-structural, administrative costs vary between 3,000 and 69,000 Euro with the majority of the measures being in the range €20,000 - 50,000
LV	Costs of assessing flood risk and the need for flood protection measures in a polder area were estimated at €5,000
LT	Costs of measures to increase publicity of flood hazard and risk maps, prepare flyers, posters, video and public information were estimated at €49,800.

Further cost estimates are available from published literature. For instance, the total costs of a coastal flood risk modelling and mapping study of all of England and Wales was €0.5 million²⁰⁴. The study used a broad scale-modelling tool linked to a digital terrain model in GIS and showed the areas that could be affected by flooding if there were no flood defences from a once in 200-year flood and a once in 1000-year flood.

The Fitness Check of monitoring and reporting obligations arising from EU environmental legislation²⁰⁵ considered reporting requirements of the Floods Directive. The Fitness Check:

- highlighted that the time required to develop the preliminary flood risk assessment depends on the size of the river basin district, as well as on the information that is already available for the

²⁰⁴ European Commission (2005). WFD Common Implementation Strategy - The impacts of coastal flooding, flood mapping and planning. Technical Report by WRC plc to European Action Programme on Flood Risk Management. December 2005.

²⁰⁵ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report

specific Member States. The time required to communicate the risk assessments is minor, especially if the reporting is facilitated by an electronic platform estimating it at 1 day on average per Member State per reporting cycle;

- assumed that the preparation of flood hazard and flood risk maps is required for risk assessment purposes and is not itself a reporting obligation. The time taken to share those maps with the Commission is expected to be up to 1 day per Member State per reporting cycle. The study quoted unit cost estimates presented in the Impact Assessment and highlighted Commission's view that even for smaller countries such as Ireland and Greece, the maps can cost tens of millions of euros to develop;
- estimated the time required to extract relevant information from FRMPs for the report to the Commission at around 10-15 days per Member State (on average) per reporting cycle.

Crucially, the Fitness Check distinguished the costs of developing preliminary flood risk assessments, flood risk maps and FRMPs that could be substantial from the costs of reporting. Manpower cost estimates provided, therefore, exclude the time and costs of developing the risk assessments, maps and FRMPs. The study highlights that the administrative costs of FRMPs depend on the objectives and on the measures defined by the Member States as well as measures already in place to manage flood risks²⁰⁶.

Question 4.2 - How do these costs compare to those which were estimated in the Impact Assessment for the FD, GWD and the EQSD? What are the reasons for differences between foreseen and actual costs?

Impact Assessment (IA) studies have been developed for the GWD, EQSD and FD and while the documents contained some monetary cost estimates these were largely case study based or unitary. Summary of available cost data reported in the Impact Assessments are presented below for the GWD, EQSD and FD separately. No Impact Assessment was developed prior to the adoption of the WFD making such comparison impossible.

1. Groundwater Directive

The impact assessment of the Groundwater Directive²⁰⁷ reported the following anticipated cost impacts:

- No additional costs from the classification of chemical status of groundwater bodies as this was already requested by the WFD;
- Costs from systematic monitoring to analyse pollutants in groundwater beyond the requirements of the WFD. Additional costs for monitoring and reporting to identify and reverse significant and sustained upward pollution trends.

The IA document presented two case studies demonstrating costs of groundwater restoration affected by point source and diffuse pollution including:

- Groundwater affected by a point source pollution (potash mining waste), leading to chloride concentrations exceeding quality objectives. By strictly managing the point source (some 4% of the total aquifer area) it was possible to restore some of it - at a cost of €67 million between 1976 and 2001 (€27 million on investment - e.g. pumping wells and infrastructure to artificially dissolve waste deposits - and €40 million on operation and maintenance). Another €43 million was planned to be spent between 2002 and 2010 on reducing pollution. Without any action, the

²⁰⁶ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report

²⁰⁷ European Commission, SEC(2003)1086 Extended impact assessment, proposal for groundwater daughter Directive <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52003SC1086&from=EN>

modelling estimated that waste discharges would continue to be a major source of pollution for more than 180 years. Good chemical status (except for the point source) was anticipated to be reached by 2015, while the polluted area controlled and restored was anticipated to reach good chemical status in the future;

- The example of the Alsace aquifer demonstrated that costs can be avoided with strict pollution control of nitrates and pesticides. Out of a total population of 1.7 million inhabitants in the region, 432,000 are affected by pollution of the aquifer by nitrates and pesticides. This has led to restoration costing €26 million over the period 1988-2002. Strict pollution control in identified risk areas could have prevented a substantial part of these costs, which are borne by all sectors of the economy. For farmers, the cost has been €2.5 million mainly in changes to farming practices. And a major beer manufacturer had to invest €10 million in a new treatment plan and the necessary connections. Households have paid about €14 million in extra costs.

Table 6-7 Examples of studies on the cost of groundwater protection and restoration (reported in the Impact Assessment)

Region studied	Factors assessed	Results
Austria	Drinking water purification costs for municipal water suppliers	€205 to 214 million as investment, and €22 to 39 million running costs
Austria (Danube floodplains)	Value of wetlands for groundwater (willingness to pay for protection costs)	€44 to 105 million
Belgium	Clean-up of contaminated sites	€600,000 per site as an average with 60% of costs below €100,000 and some costs up to €45 million per site
Italy	Valuation of reduced atrazine concentrations in groundwater	€425 to €559 household year
Finland	Valuation of groundwater as a source for drinking water (willingness to pay)	€54 household per year
France	Cost for nitrate treatment in 25 plants from various regions	€0.24 to 0.28/m ³ of abstracted groundwater €0.19 to 0.22 inhabitant / year
Sweden	Cost of groundwater protection measures from transport - related sources	€10,000 to €200,000 per km depending on the measures

Source: European Commission, SEC(2003)1086 Extended impact assessment, proposal for groundwater daughter Directive <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52003SC1086&from=EN>

No estimates of total costs of the proposed GWD to the EU28 were provided in the IA document.

2. EQS Directive

The proposal for the EQSD was supported by an impact assessment^{208,209} that identified the following costs:

- Additional monitoring costs to public authorities;

²⁰⁸ European Commission, SEC(2006)947, Impact assessment for the proposal for a Directive on environmental quality standards. http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2006/sec_2006_0947_en.pdf

²⁰⁹ European Commission, SEC(2011)1546, Executive summary of the impact assessment accompanying the proposal for a Directive amending Directives 200/60/EC and 2008/105/EC as regard priority substances in the field of water policy

- Costs of implementing measures aiming to reduce emissions, discharges and losses of substances to public authorities and private companies. Specific examples included:
 - costs of additional wastewater treatment to remove nickel and estradiol;
 - costs to livestock farmers to install fencing to keep animals away from water courses to reduce E2 emissions to water;
 - costs to industry to reduce point source industrial emissions of nickel;
 - costs on producers, formulators, farmers and/or consumers of substituting substances.
- Costs to operating the watch-list (not quantified).

An extract of quoted cost data in the EQSD impact assessment is summarised in the table below.

Table 6-8 Estimated cost impacts of the EQSD

Key impacts	Expected cost impacts
Costs of implementing measures aiming to reduce emissions, discharges and losses of substances	<p>Costs of additional wastewater treatment to remove E2 and nickel discharges: UK case study - whole-life costs estimates of €2 billion to meet a $2 \mu\text{g l}^{-1}$ EQS_{bioavailable} for Nickel by upgrading 2% of UWWTPs (fewer if EQS at $4 \mu\text{g l}^{-1}$) and about €19 billion to meet a $4 \cdot 10^{-4} \mu\text{g l}^{-1}$ EQS for E2 by upgrading fewer than 9% of UWWTPs (NPV over a 20-year lifetime). No separate estimate for annual O&M. It was noted that the costs for Nickel and E2 would not be fully additive as in some cases the same WWTPs would be affected.</p> <p>Providing an EU wide cost estimate for upgrading end-of-pipe treatment was not feasible as it would very much dependent on local conditions.</p> <p>The IA reported following unit costs:</p> <ul style="list-style-type: none"> • For England and Wales (UK), an estimate of €18 per inhabitant per year was derived based on a modelling exercise using an EQS stricter than the one proposed ($2.7 \cdot 10^{-4} \mu\text{g/l}$ instead of $4.0 \cdot 10^{-4} \mu\text{g/l}$). • For Switzerland, an increase of 5 to 25% in relation to conventional treatment costs depending upon the size of the plant has been estimated, resulting overall in €11-18 per inhabitant per year depending on the number of plants to be upgraded (Abegglen <i>et al</i>, 2009). <p>Unit costs of nickel abatement measures included:</p> <ul style="list-style-type: none"> • additional treatment of landfill leachate (25-40% removal) - cost per plant €90,000-180,000, plus annual running costs around €35-100; • measures to reduce atmospheric emissions of nickel (low-sulphur fuels, desulphurisation) - £100-1000 million/tonne decrease; • capital cost per reverse osmosis unit - €30,000 plus running costs • lime dosing of abandoned mines - £3.5 million capital cost per mine and £1 million per year in O&M costs <p>Costs to livestock farmers to install fencing: estimated at between 2 and 12 €/ha/year (to reduce E2 emissions to water). No aggregate cost data as total length of fencing in the EU could not be reasonably estimated.</p>
Costs of implementing measures in case study sectors (e.g. iron and steel, refineries etc.)	<p>Ecolas (2005) report²¹⁰ estimated total discounted costs, annualised costs and costs per tonne produced for EU-25 for selected sectors.</p>

²¹⁰ Ecolas (2005). Assessing economic impacts of the specific control measures for priority substances and priority hazardous substances regulated under Article 16 of the Water Framework Directive

Key impacts	Expected cost impacts					
	Scenario 1			Scenario 2		
	<i>-NPV (million €) (total discounted cost)</i>	<i>Annuity (million €) (annualised cost)</i>	<i>Cost €/tonne produced*</i>	<i>-NPV (million €) (total discounted cost)</i>	<i>Annuity (million €) (annualised cost)</i>	<i>Cost €/tonne produced*</i>
Chlorine [‡]	-	-	-	< 295 – 163	< 98 – 140	< 20 – 28
Iron & steel	< 461 – 1 911	< 59 – 122	< 0.32 – 0.67	< 6 460 – 22 228	< 824 – 1 423	< 4.49 – 7.75
Non ferrous	< 148 – 961	< 20 – 61	-	< 1 510	< 56 – 97	-
PVC EoP	< 58 – 247	< 7 – 16	< 1.2 – 2.7	< 340	< 12 – 22	< 2.0 – 3.7
PVC subst.	< 306 – 1 381	< 39 – 88	< 6.6 – 15.0	< 1 899	< 62 – 122	< 10.5 – 20.6
Refineries	< 1 084 – 4 872	< 138 – 312	< 0.19 – 0.43	< 14 138	< 502 – 905	< 0.70 – 1.26
SCCP	< 416 – 2 047	< 53 – 131	-	< 2 449	< 80 – 157	-
	The IA reports the overall estimate of the costs to these industries at 730 million Euro per year or 11.4 billion Euro over a 20-year period (at 4% discount rate).					
Additional costs for monitoring requirements including biota	Additional monitoring costs of €15-36 million per year for the whole EU. Costs €2-4 million per year for the EU for database Costs to develop technical specifications for monitoring (<€0.2 million per year for the whole EU).					

Additional details on costs and benefits of proposed EQSD were included in:

- Ecolas (2005). Assessing economic impacts of the specific control measures for priority substances and priority hazardous substances regulated under Article 16 of the Water Framework Directive.²¹¹
- WRc (2005). Proposed environmental quality standards for priority substances - current compliance and potential benefits.²¹²

No estimates of total costs of the proposed EQSD to the EU28 were provided in the IA document.

3. Floods Directive

An impact assessment was conducted on the proposed Floods Directive²¹³ highlighting that the costs of developing preliminary flood risk assessment, flood risk maps and flood risk management plans (where required) would vary based on the size of river basin districts. The costs arising from the flood maps and flood risk management plans development would be incurred only for those river basins or sub-basins where there are potential or reasonably predictable significant risks.

Furthermore, the administrative costs associated with flood risk management plans would depend on the objectives and measures defined by the Member States and existing approaches to flood risk management. Member States would also be supported by scenario modelling carried out by the European Commission's Joint Research Centre.

²¹¹ <https://circabc.europa.eu/sd/a/487dc58c-d0b8-4afb-b3ce-f2eb588f913d/ECOLAS%20-%20costs%20of%20measures%20-%20final%20report.pdf>

²¹² <https://circabc.europa.eu/sd/a/908f5ab3-b982-44ad-a2ae-95bfc60fc1ed/WRc%20-%20EQS%20compliance%20and%20benefits%20-%20Final%20Report%20-%20v5.pdf>

²¹³ European Commission, Impact Assessment of the proposed Floods Directive, http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2006/sec_2006_0066_en.pdf

However, no estimates of total costs of the proposed Floods Directive to the EU28 were provided in the Impact Assessment document. Instead, a range of case study-based cost estimates were reported (see the table below).

Table 6-9 Estimated cost impacts of the FD

Key impacts	Expected cost impacts
Floods mapping	<p>The costs of producing flood risk maps would depend on the decisions made by the Member States on scale, level of detail and presentation (paper, electronic, etc.).</p> <p>The European Commission Joint Research Centre will deliver flood risk maps for all Member States at a scale of 1:1000000 and 1:250000 (free of charge).</p> <p>Generally, the average cost of producing flood risk maps can be estimated at between €100 and €350 per km² of river basin. Selected examples included:</p> <ul style="list-style-type: none"> Germany: Costs of developing flood hazard maps for the whole of the Rhine were about €270,000 France: Development of flood hazard maps for one catchment (Loire) cost around €3 million. UK: In England and Wales the costs of developing advanced and multi-purpose flood maps (available online to all citizens by entering a post code) are estimated at €55 million. In Scotland, the costs are estimated at €2.4 million.
Flood risk management plans	<p>Costs of implementing measures would vary according to the river basin, examples are included in the IA:</p> <ul style="list-style-type: none"> Germany: Rhine Flood Defence Action Plan (1998-2020) are estimated at €12.3 billion. Oder River shared between Poland, the Czech Republic and Germany, costs for full implementation of the Oder Basin Flood Action Programme are calculated at €3.6 billion. France: Implementation costs of a 4-year plan in the Vidourle river basin are estimated at €29 million. The costs of the action plan for the Loire are calculated at €583 million. UK: In England and Wales, the total investment costs for Catchment Flood Management Plans are approximately €30-35 million and for the Shoreline Management Plans approximately €8.25 million. <p>The administrative costs of flood risk management plans depend on the objectives and measures defined by the Member States. The IA notes the role of the JRC in supporting modelling efforts for Member States which should support cost-efficient implementation.</p>

Source: European Commission, *Impact Assessment of the proposed Floods Directive*, http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2006/sec_2006_0066_en.pdf

6.1.3 EQ 4.3 - What are the benefits arising since the adoption of the Directives in the Member States and in the EU?

Conclusions on EQ. 4.3- What are the benefits arising since the adoption of the Directives in the Member States and in the EU?	
What has worked well?	<ul style="list-style-type: none"> WFD: Based on the OPC results, the most important benefits (corresponding to the “major” and “very significant” benefits) were better knowledge of water environments, reduced emissions to the environment, improved cooperation, better public information as well as improved chemical and ecological status. This, in turn, contributes to ecosystem services. FD: Based on the OPC results, the Directive had instilled a different way of thinking about flooding, looking to identify and mitigate risk rather than reacting to flooding after it has occurred. It has positively contributed to coordination and development of a framework for managing flood risks and to raising public awareness about flooding and flood risk management. The Directive is also contributing to climate change adaptation; while no specific benefit estimates are available for the FD, under the no-adaptation scenario EU damages from the combined effect of climate and socioeconomic changes are projected to rise from EUR 6.9 billion/year to EUR 20.4 billion/year by the 2020s, EUR 45.9 billion/year by the 2050s, and EUR 97.9 billion/year by the 2080s.

Conclusions on EQ. 4.3- What are the benefits arising since the adoption of the Directives in the Member States and in the EU?	
What has not worked well?	<ul style="list-style-type: none"> • WFD: • RBMPs reported largely qualitative benefit information. • Few comprehensive CBA studies on water management (assessing benefits of improved water body status) are available including by the Netherlands, Belgium, France and the UK that have carried out national studies on costs/benefits of WFD implementation. Little evidence was identified from the academic literature which monetised benefits of the WFD. • Ecosystem services assessment in the context of the WFD has been largely limited to the analysis of groundwater dependent terrestrial ecosystems. Some Member States such as France and the UK have carried out studies to value aquatic ecosystem services and/or used ecosystem services framework in developing RBMPs.
Strength of evidence	All of the available evidence (i.e. compliance reports on RBMPs and FRMPs Blue2 study, academic papers) were reviewed. Conclusions were generally corroborated at the third workshop.
Indication of bias	No potential bias was identified.

The analysis of this evaluation question relies on the recently published review of the 2nd cycle RBMPs and 1st cycle FRMPs as well as deliverables from the Blue2 study have been reviewed among other sources to obtain additional information on the benefits observed in different Member States in relation to the WFD and the FD. Overall, published RBMPs reported largely qualitative benefit information. Examples of benefits include direct benefits of improved wellbeing such as avoided health effects, avoided emissions to the environment, reduced contribution to climate change, and direct financial/economic benefits. The analysis has been further supplemented by the results from open public consultation, targeted consultation and focus groups.

Water Framework Directive

Implementation of the WFD is associated with a wide range of benefits including reduced emissions to aquatic environment and improved ecological, chemical and quantitative status of water bodies. This, in turn, contributes to ecosystem services such as provisioning of clean water, improved biodiversity, supporting nutrient cycles, recreational benefits including angling, water sports and improved wellbeing among others.

Furthermore, implementation of the WFD has significantly improved Member States’ knowledge base on water environment, cooperation and coordination at transboundary and national levels and contributed to improved public information and participation.

Implementation of the Directives also benefits other sectoral policies. For instance, successful implementation of the WFD and EQSD has significant capacity to benefit the marine environment ranging from reducing and phasing-out chemical contamination of EU seas to controlling eutrophication. A fully implemented Water Framework Directive is the main pre-requisite for the success of the Marine Strategy Framework Directive²¹⁴.

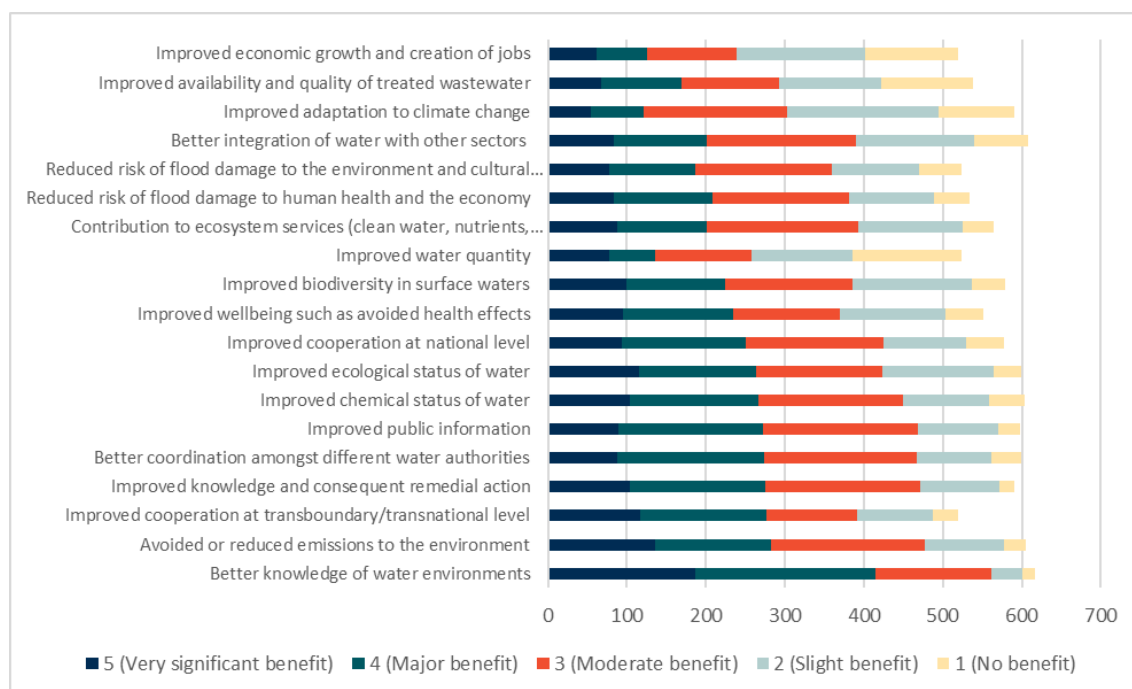
In the course of the OPC, respondents were asked about the benefits of the WFD, EQSD and GWD implementation²¹⁵. The most important benefits (corresponding to the “major” and “very significant” benefits)²¹⁶ were better knowledge of water environments, reduced emissions to the environment, improved cooperation and cooperation, better public information as well as improved chemical and ecological status (see Figure 6-1).

²¹⁴ Stakeholder consultation - Seas At Risk (2019)

²¹⁵ OPC: Question 19 - Please rate the extent to which implementation of the Directives has resulted in the following benefits

²¹⁶ Excluding the “do not know” answers

Figure 6-1 Views on benefits of the WFD, EQSD and GWD implementation



Note: Question asked was Question 19 - Please rate the extent to which implementation of the Directives has resulted in the following benefits.

Furthermore, the OPC results²¹⁷ highlighted that the WFD has introduced integrated river basin management approach throughout Europe. The Directive has been a breakthrough in the integration of the various water Directives and its main achievement was the introduction of coordination between various levels and bodies of governance in the implementation of the EU water policy. The Directive has also significantly improved water monitoring and status assessment and improved knowledge base.

Overall, few comprehensive CBA studies on water management (assessing **benefits of improved water body status**) are available. The Netherlands, Belgium, France and the UK have carried out national studies on costs and benefits of WFD implementation. Furthermore, little evidence was identified from the academic literature which provided the monetised benefits of the WFD. While it is clear that the effects from improvements from the WFD are significant in terms of environmental and socio-economic impacts - there are still relatively few attempts which comprehensively assess and value benefits in monetary terms due to the challenging nature of such assessments.

Furthermore, no attempts of quantification and monetary valuation of ecosystem services have been made by the Member States in the context of environmental costs. Ecosystem services assessment has been limited to the analysis of groundwater dependent terrestrial ecosystems (EC, 2019)²¹⁸.

European Commission (2019) overview report on the 2nd RBMPs and accompanying Member State reports have not provided any additional benefit assessment data, despite advancements made in this field in the academic literature and wider policy sphere. For example, Eftec (2010) noted that despite the ES

²¹⁷ OPC: Question 27 - EU water law is conceived in an integrated way: some of the requirements of the Water Framework Directive link closely with the requirements of other legislation. To what proportion of the overall benefits stemming from EU water law have the Water Framework Directive and its daughter Directives (Groundwater and Environmental Quality Standards Directives) contributed?

²¹⁸ European Commission (2019). European overview - River Basin Management Plans. SWD(2019) 30 final, Brussels, 26.2.2019

approach highlighting a range of non-market benefits that are provided by waterbodies, and the fact that examples of ES approaches have been included in the UN Millennium Ecosystem Assessment and the Economics of Ecosystems and Biodiversity, there has been little to no integration of these approaches in the economic analysis for WFD.²¹⁹ This is still very much the case, as illustrated from MS compliance reports from 2019.

The reports, however, presented detailed information on the latest classification results and significant pressures affecting surface and groundwater bodies in different Member States. While this information has informed the assessment of the Effectiveness evaluation questions it is also relevant for assessing benefits of the WFD as it reflects observed and anticipated improvements in ecological, chemical and quantitative status of surface and groundwater bodies across the EU (See Section 3.3)

The review of available evidence also included the **French approach to assessing costs and benefits of the WFD** (see Box 1).

Box 1: Case study: France

The aim of the document is to provide some reference values and methodologies for the local water agencies in order to conduct CBA in the context of disproportionality assessment. It also provides benefit unit values for use by practitioners.

Benefits considered include:

- Reduction in costs of treatment
- Increase in satisfaction of water users
- Increase in satisfaction of new water users
- Increase in satisfaction of water non-users

Other benefits for which no reference value could be identified include:

- Reduction of costs linked to health
- Diminution of costs linked to erosion and flooding
- Improvement of soil quality
- Ecosystems and biodiversity support
- Increase of activities (recreational) - not included in calculations

The document provides specific unit values including avoided treatment costs:

- Unit costs for treatment of nitrates - range between 0.41 and 0.61 €/m3 - 2012 costs
- Unit costs for treatment of pesticides - range between 0.06 - 0.20 €/m3 - 2012 costs

Other benefits, Euro	Fishing	Kayaking	Swimming	Walk / general enjoyment	Non-users
Hydromorphological changes Allowing more fish available for angling Reduction of algae	8.5 / fisherman / year Another value for visiting fisherman of 4.2 /fisherman/ year	No value		7.3 /person/year	6.1 / person/year
Move from risk of not reaching good status to good status	39.7 / fisherman/year 35.4 / fisherman/year	39.7 / kayakist/year - for regular user 8.7 / household/ year for occasional users	35.4 swimmer / year	39.74 / household/ year 35.4 household / year	27.4 / household / year

²¹⁹ Ece Ozdemiroglu Allan Provins Stephanie Hime and others, *Scoping Study on the Economic (or Non-Market) Valuation Issues and the Implementation of the Water Framework Directive Final Report for the European Commission Directorate-General Environment*, 2010 <<http://www.carbonbalanced.org>> [accessed 6 March 2019].

Box 1: Case study: France					
Restoration programme (10-15 km/year) and maintaining the water bodies	No value	No value		20.1/household / year	20.1/household / year
Wild fishes can live and reproduce in aquatic environment	8.8 / fisherman / year				
Reduction of eutrophication in lake and pond in touristic areas				41.4 / household / year	
Maintenance and protection of a lake for recreation and bird watching				35 / household / year	
Recreational use of large lake / reservoir				23.3 / visit / user	
Informal recreational use				31.8 / visit / user	
Recreational use of coastal areas				47.8 / visit / user	
Reduction of pollution of coastal areas and move from bad to good ecological status (WTP)	109.2	72.7	89.7	61.4	31.5
Navigation planning from bad to good status (WTP)	28.44	No value	44	44	37.4

Other values include:

- Potable water provision: 39.7 per household per year for water bodies that go from not meeting requirements to a sufficient quality to be a secondary reserve
- Groundwater - reduction of the overexploitation of groundwater sources: 41.7 per household
- Maintain water body to a constant level: 14.1 per household
- Protection of forests near rivers: 12.8 per household

Source: COMMISSARIAT GÉNÉRAL AU DÉVELOPPEMENT DURABLE, May 2014, *Évaluer les bénéfices issus d'un changement d'état des eaux*

Similarly, the UK is also using a Willingness to Pay (WTP) survey-based values expressed as GBP per km² per class improvement (e.g. improving from bad to good, moderate to good etc.). Unit values are catchment specific and cover six elements of good surface water body status including benefits to fish, invertebrates, plant communities, condition of the channel and flow, water clarity and safety for recreational contact (EA, 2016). The impact assessment on 2nd RBMPs in England²²⁰, estimated **total costs** of implementing PoMs at **£17.5 billion** (PV, 2012-2052) saving £9.3 billion from baseline option. Total annual average costs (undiscounted) were estimated at £800 million per year. The **total benefits** of implementing programs of measures were estimated at **£22.5 billion** (PV) representing a reduction in benefits from baseline option of £0.8 billion but an increase in **NPV of £8.6 billion**. The monetised benefits covered benefits to general public, including recreation (bathing, fishing, walking), aesthetic value and existence value (environment and wildlife). The assessment is further supplemented by the qualitative ecosystem services assessment aiming to identify significant impacts of WFD measures on ecosystem services and their magnitude.

²²⁰ <https://www.gov.uk/government/publications/update-to-the-river-basin-management-plans-impact-assessment>

Implementation of river restoration measures under the WFD measures also provide significant benefits including improvements in hydromorphological conditions, abundance and diversity of different species. A range of case studies highlighting benefits of river restoration measures in Belgium, Spain and the UK are available from the Wetlands International; one example for the Meuse RBD is presented in the table below²²¹.

Table 6-10 River restoration case study

Case study elements	Details
Catchment & Lead organisation	Meuse, Service Public de Wallonie
Budget & scope	€ 2,8 million, 20 obstacles on 46km removed, 22km lateral connectivity improved
Categories of restoration	Morphological, Hydrological connectivity
Significant & innovative elements	Improved governance
Pressures	Channelisation Floodplain disconnection Daming & embankment
WFD measures	<ul style="list-style-type: none"> • Habitat diversification • Possibility of barriers • Barrier removal • Re-meandering • Reconnection of backwater
Benefits	<ul style="list-style-type: none"> • Enhanced habitat heterogeneity • Improved fish mobility and population size • Restored sediment transport • Spawning places

Source: Wetlands International (unpublished). *Benefits of Water Framework Directive Implementation. Evidence of river restoration measures improving ecological conditions.*

Furthermore, recently published the **Blue2 reports** (Task A2 and Task A3) have been reviewed to identify any additional/ new evidence. As part of the Blue2 study, economic benefits of water policy have been assessed in selected river basins²²² while testing benefit assessment methodology developed by Russi and Farmer (2018). In particular, Russi and Farmer (2018) assessed benefits in 4 separate river basins - the East Aegean, Arges Vedeia, Jucar and Guadalquivir. The methodology developed used monetary, quantitative and qualitative units of measurement - which is relevant for the purposes of the CBA (see table below).

Table 6-11 Benefit typology - qualitative, quantitative and monetary benefits (Blue2 study)

Monetised benefits	Quantitative benefits	Qualitative benefits
Benefits that were assessed in monetary terms included: <ul style="list-style-type: none"> • Reduced expenditures for water • Reduced expenditures for fertilisers • Avoided costs for nitrogen and phosphorus removal • Improved availability of fish for professional divers 	Quantitative benefits included: <ul style="list-style-type: none"> • Improved water availability (given in m³/year) • Reduced health risks due to water pollution • Improved availability of fish for recreational fishers (percentage of rivers expected to have improved state as a result of measures) 	Qualitative benefits included: <ul style="list-style-type: none"> • improved recreational experience of visitors, such as recreational fisherman

²²¹ The case study has been provided by Wetland International and has not been verified.

²²² Russi and Farmer (2018).

Note: Duplication in measures in both columns of the table reflects the boundaries of the basic measures, reproduced from CIS guidance document on reporting

Example results from the Guadalquivir RBD in Spain are included in the Table 6-12 below. Further results are available in the East Aegean, Arges Vedea and Jucar.

Table 6-12 Benefits assessed from water policy in the Guadalquivir RBD, Spain

Benefit	Methodology	Unit of measurement	Actual situation	Expected value BAU LoE	Beneficiaries
Improved water availability for water users	Reduced water abstraction	m ³	149,900,000	76,722,000	Water users
Reduced expenditures due to fertilisers	Avoided costs	Thousand euros	2,085	1,880	Farmers
Decrease of diffuse water pollution	Removal of nitrogen and phosphorus	Thousand euros	7,085	4,281	Water utilities

Source: Daniela Russi and Andrew Farmer, Task A3 of the BLUE 2 Project; Study on EU Integrated Policy Assessment for the Freshwater and Marine Environment, on the Economic Benefits of EU Water Policy and on the Costs of Its Non-Implementation.

The study concluded that the methodology used allowed for quantification of benefits of water policy. However, the fact that there are multiple interactions between measures, outcomes and benefits makes apportioning benefits to a specific policy difficult representing an ongoing challenge. It is important to note that this is inherent in the complexity of water policy itself and does not take away from the fact that it delivers quantifiable benefits.

The review of available evidence also included a **case study for Denmark**.

Textbox 6-1 Case study: Denmark

Andersen et al. (2019) study is an example of a comprehensive benefits assessment for water policy in Denmark. This was conducted via a combination of impact pathway analysis and benefits transfer approach²²³.

It features four steps, each requiring substantial amounts of data and analysis for appropriate representation. The methodology enables spatially differentiated results, whereby damage costs vary by site and receptor. In relation to water bodies the four steps are as follows:

- 1) accounting for surplus nitrogen losses to the rootzone and resulting emissions to water bodies;
- 2) accounting for the transport, dispersion and resulting concentration changes in water bodies;
- 3) identifying adequate dose-response relations between nitrogen concentrations and water clarity and related impacts; and

- 4) applying monetary values to impacts, it was possible to estimate economic benefits for seaside recreation and waterfront property when reducing nitrogen leaching to coastal water bodies.

The methodology links total nitrogen concentration to water clarity (Secchi-depth). Ten catchments were analysed comparing results for 2010 to a policy scenario that complies with the EU Water Framework Directive. The scenario reduces leaching with 5,200 ton N, downstream discharges to estuaries by 35% and provide significant Secchi-depth improvements. The integrated assessment predicts an annual economic benefit for local residents of €35 million, and co-benefits of up to €57 million.

Benefits are catchment-specific and differ for downstream discharges from €1 to €32 per kg N, while for upstream discharge losses they range up to €10 per kg N. When expressed per unit of farmland the policy scenario

²²³ Mikael Skou Andersen, Gregor Levin, and Mette Vestergaard Odgaard, 'Economic Benefits of Reducing Agricultural N Losses to Coastal Waters for Seaside Recreation and Real Estate Value in Denmark', *Marine Pollution Bulletin*, 140 (2019), 146-56 <<https://doi.org/10.1016/j.marpolbul.2019.01.010>>.

displays economic benefits spanning €8-176/ha. The span reflects the different physical, biological and human circumstances of each catchment. However, this methodology, while providing a detailed and useful assessment of economic benefits, has high data requirements. It is important to note that the benefits transfer methodology employed involves applying values from other areas to the study site in question. Given the site-specific nature of localised benefits from water policy, this may not always be feasible - or allow for just comparison of benefits across MS.

The study on the **costs and benefits of WFD implementation** (Acteon, 2012) estimated that the benefits of achieving good status in 70% of EU water bodies would equate to 11 billion Euro per year.

In the academic literature, a large volume of research on monetary valuation has addressed improvements to water quality on the basis of contingent valuation surveys (CV). This kind of survey-based valuation results in highly localised estimates that are site-specific. Hence, it is difficult to identify any marginal benefits for specific pollutants. For example, Brouwer (2008) assessed the potential role of stated preference methodology, including CV, to assess disproportionate costs under the WFD.²²⁴ CV has also been used by Del Saz-Salazar et al. (2009) to assess WTP for improvements in water quality, while also assessing willingness to accept compensation if projected improvements were not carried out. The results found that the net present value of water quality policy was positive when both are considered.²²⁵ The review of available evidence suggests a significant gap in relation to (quantitative/ monetised) benefit estimates of improved status of water bodies across the EU.

Fundamentally the benefits of attaining Good Ecological Status (GES)/GEP in a water body will vary according to the extent and the nature of the improvement and other site-specific factors, limiting the ability to derive a national/EU total benefit estimate.

Floods Directive

The report²²⁶ providing overview on the published 1st cycle Flood Risk Management Plans (FRMPs) did not report any benefit estimates associated with forthcoming implementation of adopted FRMPs. The report presented some information on past and projected flood related damages across the EU. In particular, available estimates indicated that coastal and inland floods killed more than 2,000 people and affected 8.7 million in the period 1991-2015. Most noticeable were the catastrophic floods in the summer of 2002 in the Danube and Elbe RBs, but also the 2013 summer flooding in central and south east Europe.

The FRMPs overview report also highlighted that under the no-adaptation scenario (i.e. assuming continuation of the current protection against river floods up to a current 100-year event), EU damages from the combined effect of climate and socioeconomic changes are projected to rise from EUR 6.9 billion/year to EUR 20.4 billion/year by the 2020s, EUR 45.9 billion/year by the 2050s, and EUR 97.9 billion/year by the 2080s. But no details were provided on the baseline and the FD specific benefits (EC, 2019).

²²⁴ Roy Brouwer, 'The Potential Role of Stated Preference Methods in the Water Framework Directive to Assess Disproportionate Costs', *Journal of Environmental Planning and Management*, 51.5 (2008), 597-614 <<https://doi.org/10.1080/09640560802207860>>.

²²⁵ Salvador Del Saz-Salazar, Francesc Hernández-Sancho, and Ramón Sala-Garrido, 'The Social Benefits of Restoring Water Quality in the Context of the Water Framework Directive: A Comparison of Willingness to Pay and Willingness to Accept', *Science of The Total Environment*, 407.16 (2009), 4574-83 <<https://doi.org/10.1016/J.SCITOTENV.2009.05.010>>.

²²⁶ European Commission (2019). European overview - Flood Risk Management Plans. SWD(2019) 31 final, Brussels, 26.2.2019

In general terms, key benefits of the FD included:

- The Directive has positively contributed to coordination and development of a framework for managing flood risks;
- The Directive has positively contributed to raising public awareness about flooding and flood risk management;
- The exchange of information between different Member States through the likes of the Floods Expert Group were seen as important consequences of having action at the EU level, particularly for those Member States with more limited knowledge and resources to hand to implement the Directive;
- In some Member States the FD had instilled a different way of thinking about flooding, looking to identify and mitigate risk rather than reacting to flooding after it has occurred;
- The contribution of the Directive to adapting to climate change.

EQ 4.4 - How do these benefits compare to those which were estimated in the Impact Assessment for the FD, GWD and the EQSD? What are the reasons for differences between foreseen and actual benefits?

Impact Assessment studies have been developed for the GWD, EQSD and FD and while the documents contained some monetary benefit estimates these were largely case study based or unitary. Summary of available benefit data reported in the Impact Assessments is presented below for the FD, EQSD and GWD separately. No Impact Assessment was developed prior to the adoption of the WFD making such comparison impossible.

1. Groundwater Directive

The Impact Assessment on the proposed Groundwater Directive²²⁷ did not report any quantitative / monetised benefits other than selected examples of studies assessing the value of groundwater protection and restoration.

The IA document highlighted that bad quality groundwater affects how wetlands function (self-cleaning, water storage). Wetlands have a self-cleaning capacity which is often equivalent to the annual capacity of waste water treatment plants (e.g. one hectare (or 10,000 m²) of wetland has a sanitation capacity equivalent to the annual capacity of plant serving 4,000 inhabitants). Compared to the cost of a waste water treatment plant, the value of one hectare of wetland could be estimated at about €3,600. For the storage of freshwater, the value of a wetland has been estimated at about €1.5 /m³.

No estimates of total benefits of the proposed GWD to the EU28 were provided in the IA document.

2. EQS Directive

Impact Assessments on the EQSD^{228,229} highlighted a range of benefits to environment, human health, drinking water treatment, aquaculture and recreation among other sectors. The IAs did not, however,

²²⁷ European Commission, COM(2003)550, Proposal for the Directive on the protection of groundwater against pollution

[http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/com/2003/0550/COM_COM\(2003\)0550_EN.pdf](http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/com/2003/0550/COM_COM(2003)0550_EN.pdf)

²²⁸ European Commission, SEC(2006)947, Impact assessment for the proposal for a Directive on environmental quality standards. http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2006/sec_2006_0947_en.pdf

²²⁹ European Commission, SEC(2011)1546, Executive summary of the impact assessment accompanying the proposal for a Directive amending Directives 200/60/EC and 2008/105/EC as regard priority substances in the field of water policy

report any monetised benefits associated with the implementation of the EQSD and reported illustrative examples only.

Table 6-13 Benefits reported in the EQSD Impact Assessments

Key impacts	Expected benefit impacts								
Avoided costs of drinking water treatment	<p>Potential cost savings for drinking water treatment from reducing pesticides contamination of surface waters.</p> <p>The IA (2006) estimated unit costs for removal of pesticides at 0.028 €/m³ (Ecolas, 2005). Based on data from BE, DE, NL and UK, the study estimated that 74% of surface waters used for the production of drinking water exceeded regularly the standard of 0.1 µg/l. Latest data from EUREAU suggest that the value of 74% is probably overestimating the percentage of water bodies that show regular exceedances, but in any case the costs are considerable. According to Eurostat (2011, env_watq2_1), around 20,900 million cubic metres of surface water are abstracted in the EU for drinking water production. Using these figures, annual costs of treatment for three different scenarios were estimated:</p> <table border="1"> <thead> <tr> <th>Percentage of surface water bodies used for the abstraction of drinking water that exceed regularly the standard for pesticides</th> <th>30%</th> <th>50%</th> <th>70%</th> </tr> </thead> <tbody> <tr> <td>Estimated treatment cost (million € per year)</td> <td>175</td> <td>292</td> <td>409</td> </tr> </tbody> </table>	Percentage of surface water bodies used for the abstraction of drinking water that exceed regularly the standard for pesticides	30%	50%	70%	Estimated treatment cost (million € per year)	175	292	409
Percentage of surface water bodies used for the abstraction of drinking water that exceed regularly the standard for pesticides	30%	50%	70%						
Estimated treatment cost (million € per year)	175	292	409						
Avoided costs of dredged sediment management	<p>Cleaner sediment would entail cheaper management options for dredging wastes. Around 200 million cubic metres of sediment are dredged every year in the EU (SedNet, 2004). Management costs are heavily dependent on the sediment quality and vary from 1 to 45 €/m³. Assuming that 10% of the material is contaminated (value from the Port of Rotterdam) and hence requires higher disposal costs in the range of 10 to 30 €/m³, the annual expenditure in handling contaminated dredged material is in the order of €200 to 600 million per year. The potential cost savings in the long term are, therefore, significant.</p>								
Monitoring cost savings for ubiquitous PBTs	<p>Reductions in the monitoring costs for ubiquitous PBTs (4 substances) were estimated at €0.8 to 2.9 million per year</p>								
Environmental benefits	<p>Measures implemented to limit chemical emissions will lead to a more resilient aquatic ecosystem, enhancing its capacity to deliver ecosystem services such as the processing of excess nutrients (Cardinale 2011). Recent studies from the JRC have estimated the monetary value of the removal of nitrogen performed naturally by healthy river ecosystems in the EU as being of the order of €373 million per year (JRC, 2011).</p>								

3. Floods Directive

The Impact Assessment on the FD²³⁰ highlighted a range of benefits to properties and infrastructure, human health and environment among other sectors. The IA did not report any monetised benefits associated with the implementation of the FD but provided a range of illustrative examples covering evidence of flood related damage and anticipated benefits of flood defence measures (see Table 6-14 below).

²³⁰ European Commission, Impact Assessment of the proposed Floods Directive, http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2006/sec_2006_0066_en.pdf

Table 6-14 Flood related damage/ anticipated benefits quoted in the FD Impact Assessment

Key impacts	Expected impacts
EU	<p>In the period 1998-2002 floods comprised 43 % of all disaster events in Europe. During this period, Europe suffered about 100 major damaging floods, causing some 700 fatalities, the displacement of about half a million people, and at least €25 billion in insured economic losses (Source: FD Impact Assessment).</p> <p>Coastal areas are also at risk from flooding. The European Union's coastline extends for some 101,000 km across 20 Member States. Over the past 50 years the population living in European coastal municipalities has more than doubled to reach 70 million inhabitants in 2001. The total value of economic assets located within 500 metres of the European coastline, was estimated at between €500 and 1,000 billion in 2000. Without further protection, the one metre rise would cause an annual inundation of 1,500 km² of agricultural land with a value of €2.5 billion, as well as highly valuable historic, cultural and industrial centres. (Source: FD Impact Assessment)</p> <p>The cost of coastal erosion in Europe is estimated to average €5,400 million per year between 1990 and 2020. (Source: The impacts of coastal flooding, flood mapping and planning)</p>
BE	Example of 1995 Meuse flood that caused damages for €26.5m.
CZ	Direct damage that occurred during one single flood disaster in 1997 in the Oder river basin affecting Czech Republic, Germany and was estimated at €3.6 billion. (Source: FD Impact Assessment)
DE	<p>Along the Rhine more than 10 million people live in areas at risk of extreme floods. Flood damage potential was estimated at about €165 billion, of which 83% would be due to damage to settlements. In terms of spatial distribution, almost 80% of damage potential is located in the Rhine delta.</p> <p>One of the objectives of the Flood Defence Action Plan is to reduce the potential flood damage by 25% by 2020, this translates into a reduction of over €40 billion. Source: Evaluation of the impact of floods and associated protection policies; FD Impact Assessment)</p>
FR	<p>An example of a marked increase in the number of people and economic assets located in flood risk zones is the flood event that occurred in Paris in 1910. The damage at that time was 400 million francs which would correspond now to 1 billion euros and about 200,000 persons were affected. The same event would result nowadays in a damage of 8 to 9 billion euros and 500,000 persons affected.</p> <p>In the Loire river basin, the damages that would be caused by a once-in-a-thousand-years flood are estimated at €6 billion. Such flood event would affect 300,000 inhabitants, 14,000 companies, 1,500 farms, 4,100 power plants and 1,550 public properties in an area. In the action plan for the Loire, total capital costs are calculated at €583 million, which is about 10% of the potential damage in a worst-case scenario. The action plan will reduce potential damages by 10-15 %; which translates into a potential reduction in damage costs of around €600 to 900 million.</p> <p>For the Vidourle river basin, where flash floods occur, the estimated costs for the implementation of a four-year action plan are almost €29 million, which is equivalent to approximately 4% of the estimated damage that occurred in the river basin in 2002. The 2002 Vidourle flood caused damages for €816m. (Source: FD Impact Assessment).</p> <p>The 1993 and 1995 Meuse floods caused damages for €115m and €240m respectively.</p> <p>A CBA carried out in the Loire-Bretagne district suggested total potential damage of €2.5-3.6 billion under the “do nothing” scenario measures (a centennial flood) if development in flood-prone areas continues unchecked. (Source: Evaluation of the impact of floods and associated protection policies).</p>
NL	<p>The 1993 and 1995 Meuse floods caused damages for €106m-€122m (range) and €66m-€88m (range) respectively. (Source: Evaluation of the impact of floods and associated protection policies)</p> <p>The capital value at risk of floods in the Netherlands was estimated at 2,000 billion Euro in 1992. (Source: The impacts of coastal flooding, flood mapping and planning)</p>
UK	In England and Wales, DEFRA reported in 2001 that 1.1 million residencies, and 83,000 commercial properties were in coastal flood and erosion risk areas, equivalent to 3 to 4 million people, as well as 0.5 million hectares of agricultural land. The capital value of the property (major part) and agricultural assets at risk was estimated to be €203 billion. The potential annual average damages were calculated to be approximately €2.5 billion per year.

Key impacts	Expected impacts
	<p>In England and Wales, the average annual damage caused by river and coastal flooding is estimated at just over €1.5 billion. The capital value of assets at risk in England alone is estimated to be approximately €370 billion (at 2004 prices).</p> <p>In England and Wales, the total investment costs for Catchment Flood Management Plans are approximately €30-35 million and for the Shoreline Management Plans approximately €8.25 million (Source: FD Impact Assessment)</p> <p>In England and Wales, the present-day actual average annual damage from river and coastal flooding is estimated to be over Euro 1,450 million. NADNAC 16 states that the capital value of assets at risk of flooding and coastal erosion in England in 2004 was Euros 344 billion, including agricultural land, residential property (84%) and commercial property. (Source: The impacts of coastal flooding, flood mapping and planning)</p> <p>Over the next 100 years, if current levels of expenditure and approaches to flood management remain unchanged:</p> <ul style="list-style-type: none"> • River and coastal flood risk could increase between two and 20 times; • Risk of flooding from rainfall could increase between three and six times; • Annual economic damage could increase from € 1.5 billion to between € 2.2 billion and € 31 billion by the 2080s, depending on the scenario. This compares with growth of GDP of between two and 14 times over the same period; and • The number of people at high risk of river and coastal flooding could increase from 1.6 million today, to between 2.3 and 3.6 million by the 2080s.
Switzerland	<p>In the Engelberger Aa region, flood protection measures were undertaken after the floods in 1987. It was calculated that investment in preventive measures of about €17 million avoided estimated losses of €64 million.</p>

Sources: European Commission, Impact Assessment of the proposed Floods Directive, http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2006/sec_2006_0066_en.pdf; Evaluation of the impact of floods and associated protection policies; The impacts of coastal flooding, flood mapping and planning.

6.1.4 EQ 4.5 Can any costs be identified that are out of proportion with the benefits achieved and vice versa? In particular, are the costs of compliance proportionate to the benefits brought by the Directives?

Conclusions on EQ. 4.5 Can any costs be identified that are out of proportion with the benefits achieved and vice versa? In particular, are the costs of compliance proportionate to the benefits brought by the Directives	
What has worked well?	<ul style="list-style-type: none"> • In the OPC results, the vast majority of respondents consider that the costs involved in implementation of the WFD, GWD and EQSD are justified given the benefits that will be achieved in the long term (>70%). • The WFD and the FD include provisions that allow for the consideration of disproportionate costs (the WFD) and to consider costs and benefits when developing FRMPs (the FD). The structure of the Directives, therefore, is such that disproportionate costs should not be incurred as exemption will be applied.
What has not worked well?	<ul style="list-style-type: none"> • Overall, the lack of monetary cost and benefits estimates in the RBMPs limits the ability to derive a numerical cost-benefit ratio. • The WFD does not provide a legal definition of “disproportionate costs” and Member States have varying interpretations of disproportionality. CIS EU guidance document on economic analysis explains the key role the proportionality principle should play in the economic analysis, but provides no further guidance on how to judge whether costs are disproportionate or not.
Strength of evidence	Good level of evidence and conclusions were generally corroborated at the third workshop.
Indication of bias	No bias identified

The WFD and the FD include provisions that allow for the consideration of disproportionate costs (the WFD) and to consider costs and benefits and the level of significance of the risk when developing FRMPs (the FD). The structure of the Directives, therefore, is such that disproportionate costs should not be incurred as exemption will be applied in these situations.

1. Water Framework Directive

Overall, the lack of monetary cost and benefits estimates in the RBMPs limits the ability to derive a numerical cost-benefit ratio. At the same time the provisions stipulated in the Article 4(4) (deadline extension) and Article 4(5) (less stringent objectives) of the WFD allow Member States in certain circumstances to consider whether anticipated costs of reaching environmental objectives would be disproportionate.

The European Commission (2019) overview report on the 2nd RBMPs comments on the use of exemptions by different Member States. Overall, the exemptions foreseen in Article 4 are still extensively used, with around 50% of Europe's water bodies currently under an exemption. In general:

- For surface waters, technical feasibility, natural conditions and disproportionate costs are used as justifications.
- For groundwater bodies, mainly natural conditions and technical feasibility are used to justify these exemptions, with technical feasibility used more often than natural conditions.
- While the exemptions under the Article 4(4) (deadline extension) have been applied in the majority of cases, Article 4(5) exemptions (less stringent objectives) have been applied more often in the second cycle than in the first cycle.

The justification provided in the second RBMPs for exemptions under Article 4(4) and 4(5) is more detailed and more consistently reported on water body level compared to the first cycle. Most progress has been made in the justifications related to disproportionate costs. Generally, more detailed studies have been elaborated, although justifications are still often provided in a generic way and the criteria applied, distinguishing between Article 4(4) and 4(5), are not always clear.

It should be noted, however, that the WFD does not provide a legal definition of “disproportionate costs” and Member States have varying interpretations of disproportionality (both in terms of the benchmark and the threshold). CIS guidance document on economic analysis for the WFD developed by WATECO explains the key role the proportionality principle should play in the economic analysis required by the WFD but provides no further guidance on how to judge whether costs are disproportionate or not.²³¹²³² Further guidance has been developed on exemptions to the environmental objectives²³³.

In the **open public consultation**, respondents were asked whether the costs of the implementation of different Directives are justified given the benefits already achieved or that will be achieved in the short or longer term²³⁴. The majority of respondents²³⁵ consider that the costs involved in implementation of the WFD, GWD and EQSD are justified given the benefits that will be achieved in the long term corresponding to 73%, 71% and 66% (“strongly agree” and “agree”) (see Figure 6-2).

²³¹ European Commission (2003). ‘Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Economics and the Environment. The Implementation Challenge of the Water Framework Directive’.

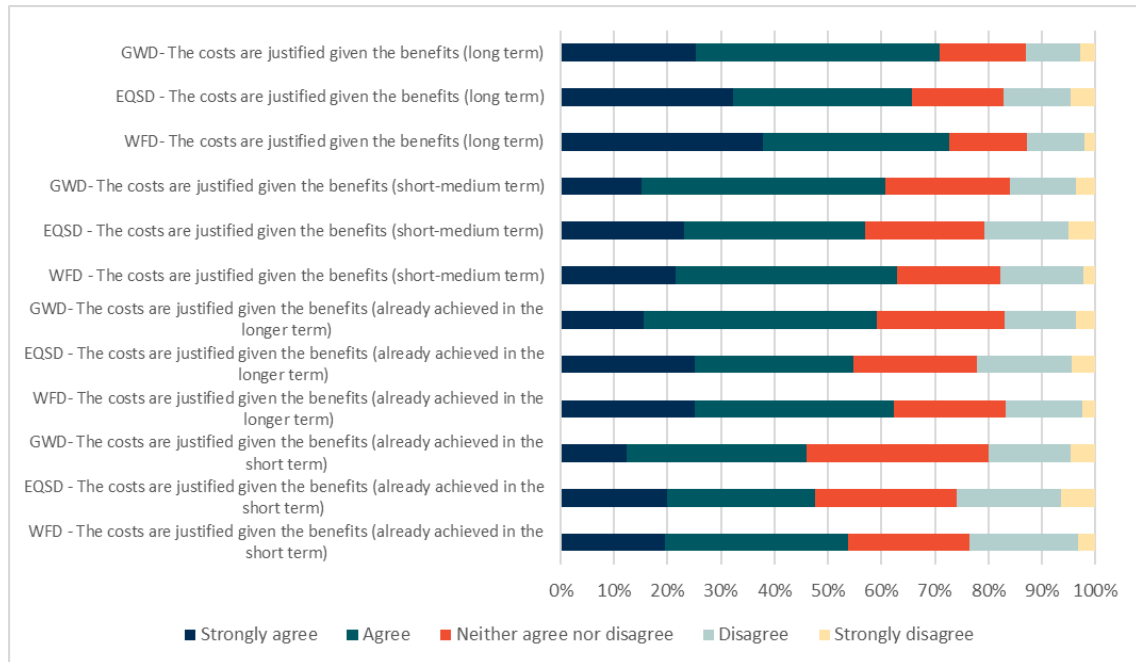
²³² Andersen, Levin, and Odgaard.

²³³ European Commission (2009). ‘Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Technical Report - 2009 - 027 Guidance Document No. 20 Guidance Document on Exemptions to the Environmental Objectives

²³⁴ Question 22 - The costs of implementation may be linked to the achievement of the most significant benefits. To what extent do you agree with the following statements on the justification of costs and benefits of the Floods Directive? Depending on the question, the number of responses (excluding “do not know” answers) ranged from 376 to 525.

²³⁵ Excluding the respondents who provided “do not know” answers

Figure 6-2 Views on whether the costs are justified given the benefits in the short and longer term



Note: Question asked was Question 22 - The costs of implementation may be linked to the achievement of the most significant benefits. To what extent do you agree with the following statements on the justification of costs and benefits of the Floods Directive?

It should be noted that only a minority of respondents (13% for WFD and GWD and 17% of the EQSD) believe that the costs are not justified given the benefits (“disagree” and “strongly disagree”).

Furthermore, **targeted stakeholder consultation** considered how do the costs in relation to the implementation of WFD, GWD and EQSD compare to the benefits they achieve. The vast majority of stakeholders (targeted consultation) believe that costs are lower than the benefits, while those who think costs are higher than benefits tend to be industry interest groups (see table 6-15). Similar results were observed from the response to the OPC.

Table 6-15 How do the costs of WFD, GWD and EQSD compare to the benefits they achieve

Response	Number of responses
The costs are higher than benefits	9 (majority industry interest groups (6))
The costs are lower than benefits	33 (majority are NGOs (24))
The costs and benefits are proportionate	8
I do not know	5

Source: targeted stakeholder consultation.

The low number of responses (50 responses excluding “I don’t know” answers) is due to the nature of the targeted consultation that was directed to expert stakeholders only and the results should be interpreted with caution. It should, however, be noted that the share of the responses that believe that the costs are higher than benefits (18%) is consistent with the results of the open public consultation (13%-17% depending on the Directive).

2. Floods Directive

The Floods Directive requires Member States to consider costs and benefits in the FRMPs (Article 7) and to provide a description of the methodology of cost-benefit analysis used to assess measures with transnational effects (in shared river basins or sub-basins).

Overall, floods are responsible for billions of euros of damages across Europe - investing in the implementation of different measures to mitigate the flood risk is beneficial. Average discounted returns on flood management investment reported by the UK NAO are commonly in the region of 10:1, so investment driven by the FD is unlikely to have incurred an economic loss in any Member State. The European Commission report providing overview on the published 1st cycle Flood Risk Management Plans (FRMPs)²³⁶ presented an assessment on the use of cost benefit analysis when selecting and prioritising FRMPs measures.

Overall, the assessment found that a majority of the Member States assessed (19 out of 26) have made some analysis of costs and benefits of their measures of which 11 Member States used a cost-benefit analysis (CBA) in all Units of Management (UoMs) assessed. A further five of the 19 Member States indicated the use of CBA for some of their FRMPs, in some cases referring to cost-effectiveness rather than cost-benefit analysis. When looking at the 19 Member States where a CBA (or an alternative method) was indicated, more than one third - seven Member States- reported that it was used for all measures in at least some UoMs. Five Member States indicated that a CBA was only used for structural measures. Further, across the 19 Member States that applied some form of analysis of costs and benefits, twelve provided clear information of the methodology used. In nearly all these cases, a national approach was developed.

Information on the use of cost-benefit analysis by Member States is presented in the table below.

Table 6-16 Use of Cost-Benefit Analysis in FRMPs

Member State	Cost- benefit analysis
AT	Cost- benefit is not used as a criterion for the establishment of priorities for the selection of measures. Qualitative assessment of cost-effectiveness/ costs & benefits of different measures (e.g. "very high" (++)), "high" (+) and "even" (-))
BE	Costs and benefits are used as criteria for the prioritisation of measures in different regions (e.g. Flanders and Walloon FRMPs).
BG	A CBA was used for the prioritisation and planning of all measures in all four of the FRMPs. Further, a national CBA methodology was applied in all four FRMPs. The costs of the planned measures for reducing the flood risk are compared to the economic benefits (avoided damage).
CY	Cost-effectiveness assessment (CEA) was carried out for all measures, whereas a CBA was undertaken for construction measures. The benefits were assessed in terms of the damage avoided/ reduced while the costs were assessed as the sum of the investment and operational/maintenance costs (over a 30-year period).
CZ	No full/explicit CBA performed. Expert assessment of costs and benefits involving calculation of the efficiency ratio using the expected flood damages and the costs of the measures.
DE	FRMPs contained no information on the use of CBA or any applied methodologies.
DK	Some indication that multiple benefits including flood risk reduction benefits (damage avoided) and recreation benefits were considered. But there is no information available to indicate if they considered such benefits when prioritizing their measures.

²³⁶ European Commission (2019). European overview - Flood Risk Management Plans. SWD(2019) 31 final, Brussels, 26.2.2019

Member State	Cost- benefit analysis
EE	CBA was used in the prioritisation process of actions, specifically for construction and engineering actions, including both grey infrastructure and green infrastructure (NWRMs). No details on the methodology or the results are presented in the FRMPs.
ES	The five FRMPs assessed refer to cost benefit as a criterion for the establishment of priorities for the selection of measures but no further details were provided.
FI	<p>A CBA was used in the prioritisation and planning of measures in all five of the FRMPs assessed. The cost estimates included the design and construction costs of the measure as well as the present value of service and maintenance costs. If it was possible to estimate the benefits of a measure in monetary terms, a corresponding expected value of annual benefit was estimated for flood risk management (e.g. avoided flood damage). The cost-benefit assessment was used for flood protection infrastructure projects (i.e. grey measures), for example construction of flood walls. The flood protection benefits were estimated in terms of avoided flood damage. Other benefits were not included in the cost benefit analysis, but the flood control benefits of each measure were assessed separately.</p> <p>Many measures have no budget allocated, as they are planned to be carried out as part of the normal work of municipal or regional authorities. This work may include planning, instructions, permitting processes and land use planning. The costs that are assumed to be carried by landowners as a part of their own regular activities or legal obligations are also not budgeted.</p>
FR	FRMPs do not indicate if CBA has been used for the preparation of the plans including the selection or prioritisation of measures.
HR	CBA was not used in the development of the FRMP, but it will be used in the next planning cycle (2022 to 2027). Until then, some CBA elements are going to be used at the level of projects undertaken under measures.
HU	A CBA was carried out to estimate the economic aspects of structural measures. The results of the analysis were provided in terms of the benefit-cost ratios for the measures. In determining this ratio, the extent of reductions in risks to assets over the planning timeframe (30 years) was considered as a benefit. The cost was considered as the sum of investment and operating costs calculated for the planning timeframe. The present value (at 2015 price levels) for both the reduction of the risk and the costs was determined. The total cost was made up of three elements: - capital costs; - depreciation costs; - maintenance costs. The CBA was used as a criterion for the establishment of priorities for the selection of measures (structural measures only).
IT	One of the five FRMPs assessed discussed costs and benefits.
LT	The selection and prioritisation of measures was based on CBA and multi criteria analysis. Costs and benefits were assessed for all measures. The most detailed CBA was carried out for protection measures (structural/grey infrastructure). The cost assessment of engineering measures covered investment costs (e.g. construction of new dykes, rising of existing dykes, protection of roads), land purchase costs, reconstruction and major repair costs, operation and maintenance costs. Benefits of the structural measures were calculated as avoided damage. A method to consider multi-benefits of measures was also applied, for example to consider environmental objectives, cultural heritage and public health.
LU	No CBA has been carried out. A semi-quantitative effectiveness analysis was carried out for each measure, considering the effort invested and the benefit of implementing measures. The results of the analysis for each measure use five categories on a scale of 'zero to ++++' for each of the effects on flood risk, river flow, and WFD relevance.
LV	A CBA was used in the assessment including considering protected population (number of inhabitants) and protected infrastructure and its value (but further research is needed to apply this indicator).
MT	It is unclear whether and how a CBA was used in selecting, prioritising and planning of flood protection measures in Malta.
NL	The four FRMPs referred to cost benefit as a criterion for the establishment of priorities for the selection of measures. It is not clear, however, if CBA was carried out specifically for the FRMPs: the plans in fact refer to the use of CBA of previous plans and programmes and details are lacking on the methodology and outcomes in the FRMP documents. It is also unclear from the FRMPs or the reporting sheets whether and for which types of measures CBA was used.

Member State	Cost- benefit analysis
PL	The 3 FRMPs refer to cost benefit results as a criterion for the establishment of priorities for the selection of measures. Estimates were made of social costs and benefits based on the difference between the projected average annual flood losses in the zero scenario and the lower average annual flood losses in other scenarios. The CBA was based on an analysis of investment and operational costs, together with an analysis of social costs and benefits. The social benefits included: flood losses avoided as a result of investments, avoided intangible losses approximated as 40 % of material losses, induced economic benefits. The reduction of flood losses was calculated as the difference between the losses without investment and with investment (after completion).
PT	No indication provided in the FRMPs that a CBA has been used for measures. While four of the five FRMPs refer to criteria for the selection and prioritisation of measures, cost-benefit considerations are not included.
RO	The five FRMPs refer to CBA as one of the criteria for the establishment of priorities for the selection of measures. Measures have been prioritised by assessing the benefit of each measure to the nine flood risk management objectives. The methodology is based on multi-criteria analysis with cost-benefit elements. The priority of each measure was quantified depending on the value of the benefit/cost ratio.
SE	Only one of the five FRMPs assessed (Älvsbyn) referred to a CBA but no further information was provided. This and other FRMPs indicate that certain measures are considered cost-effective but do not explain what analysis it is based on.
SI	In the FRMP, costs of measures were estimated. A CBA has not been used in the prioritisation and planning of the measures in the FRMP, but a methodology is set out to use CBA at the project or the sub-basin level. Costs include costs of new investments, operating, maintenance, administrative and other direct costs of planned flood protection measures; and benefits include reduction of damage to human health, the environment, cultural heritage and economic activity of the affected areas. The environment, ecosystem services, possible sources of greater pollution, as well as water services such as water supply and waste water collection and treatment are included in the assessment of reduced flood damage due to the implementation of flood protection measures. The method includes also proposed monetary values (per unit of endangered element) for both, estimated costs and benefits (resulting from the decrease in damage due to application of measures).
SK	All the FRMPs assessed refer to cost benefit as a criterion for the establishment of priorities for the selection of measures. CBA was used for all measures. The ranking of measures is based inter alia on their efficiency indices, which are calculated as the ratio between the estimated avoided potential flood damages and the estimated overall costs (for preparation, land purchase, implementation, operation and maintenance) of a given measure during its lifetime. The lifetime period of the flood protection measures/structures equals 100 years in Slovakia. Multi-benefits were considered in all the FRMPs. The efficiency index was used as one out of several criteria in the process of prioritisation of measures.
UK	Cost-benefit analysis (CBA) appears to have been used in the prioritisation and planning of measures for some of the FRMPs assessed, but only limited details are provided. It is unclear from the FRMPs assessed for which types of measures CBA has been used. Multiple benefits are mentioned as a concept in two of the FRMPs assessed, but there is no information on how it has been implemented or if it has been included in CBA.

Furthermore, 73% (27) of the respondents to the **targeted stakeholder consultation**²³⁷ considered the implementation costs of the FD to be lower or proportionate to the benefits achieved by it. Further 5% (2 respondents) believed that the costs are higher than the benefits and the remaining 22% (8 respondents) indicated that they do not know whether the benefits outweigh the costs.

²³⁷ In total 37 responses to the targeted consultation were received.

In the OPC, respondents were asked whether the costs of the implementation are linked to the achievement of the most significant benefits²³⁸. A total of 512 respondents provided a response to this question (353 excluding “do not know” answers). The majority of respondents²³⁹ consider that the costs involved in relation to the Floods Directive are justified given the benefits that will be achieved in the long term (73%, 258 responses (“strongly agree” and “agree”). Furthermore, 66% (232) of respondents consider that the costs of the Floods Directive are justified given the benefits that will be achieved in the short to medium term. It is noticeable that only a minority of respondents (8%, 27 responses (“disagree” and “strongly disagree”) consider that the costs of the Floods Directive are not justified in comparison to the benefits.

6.1.5 EQ 4.6 Is there evidence of unnecessary administrative burden to authorities or operators?

Conclusions on EQ 4.6 Is there evidence of unnecessary administrative burden to authorities or operators?	
What has worked well?	<ul style="list-style-type: none"> The OPC results suggest that apart from business associations, companies/business organisations and trade unions, the majority of the respondents believe that there is no evidence the WFD of the FD has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties.
What has not worked well?	<ul style="list-style-type: none"> Limited quantitative data exists in the literature and the RBMPs/FRMPs do not report on administrative burden. The Fitness Check report on environmental monitoring and reporting estimate administrative burden of the WFD as “fairly large” (i.e. between € 100,000 to 1 million per year) and administrative burden of the FD as “moderate” (i.e. € 30,000 - 100,000 per year). Stakeholders note that there is some evidence that administrative barriers caused implementation delays in RBMPs and FRMPs for some countries which may be linked to disparate capacity on a national level.
Strength of evidence-	Good level of evidence and conclusions were generally corroborated at the third workshop.
Indication of bias	No bias identified

Limited quantitative data exists in the literature and the RBMPs/FRMPs do not report on administrative burden and costs associated with developing the Plans and WISE reporting. Some estimates on monitoring costs of the WFD are available from the EQSD Impact Assessment documents; while wider assessment of environmental monitoring and reporting is covered in the Fitness Check report on environmental monitoring and reporting²⁴⁰. In particular, the Fitness Check estimated:

- administrative burden of the WFD as “fairly large” (i.e. between € 100,000 to 1 million per year);
- administrative burden of the FD as “moderate” (i.e. € 30,000 - 100,000 per year).

There is some evidence that administrative barriers caused implementation delays in RBMPs and FRMPs for some countries which may be linked to disparate capacity on a national level.

Water Framework Directive

Stakeholder consultation also highlighted that there is room for improvement regarding the synchronisation of reporting for water-related Directives, but no comprehensive data was presented.

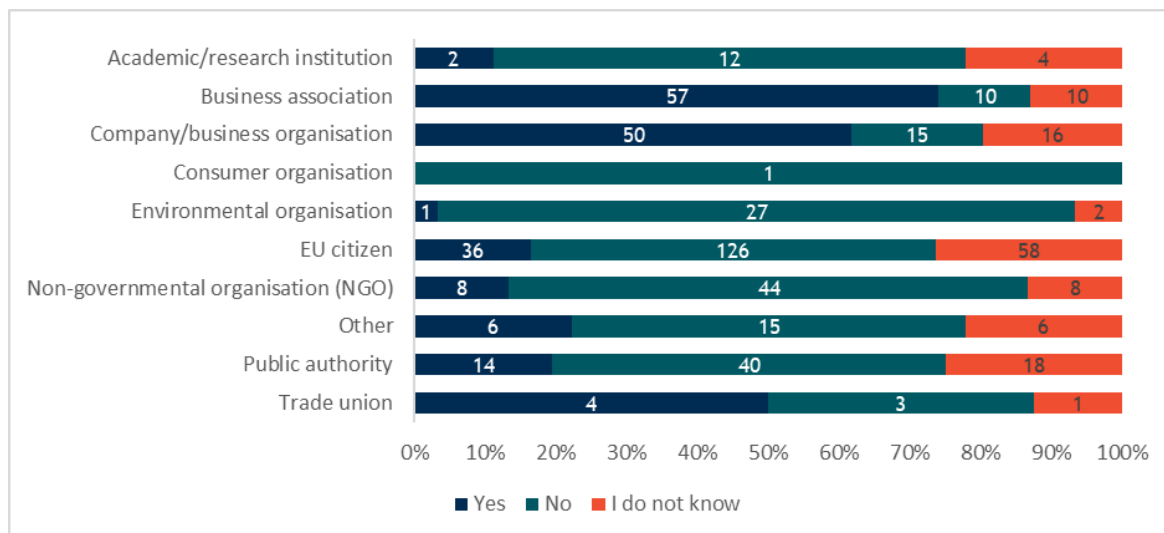
²³⁸ Question 22 - The costs of implementation may be linked to the achievement of the most significant benefits. To what extent do you agree with the following statements on the justification of costs and benefits of the Floods Directive?

²³⁹ Excluding the respondents who provided “do not know” answers

²⁴⁰ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report

Furthermore, the **open public consultation**²⁴¹ results suggest that apart from business associations, companies/business organisations and trade unions, the majority of the respondents believe that there is no evidence the WFD has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties (see Figure 6-3).

Figure 6-3 Views on disproportionate administrative burden on authorities, economic operators or others - WFD



Note: Question asked was Question 24 - Taking account of the objectives and benefits of the Water Framework Directive, is there evidence that the Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties?

The respondents who believed that the WFD has imposed a disproportionate administrative burden on authorities, economic operators or other parties were asked to identify specific administrative procedures which they deem to have been excessive or disproportionate, the estimated (additional) costs (burden) and who has been subject to them. The key administrative procedures associated with significant burden that were identified by stakeholders are presented per stakeholder category in the points below:

Academic/research institutions:

- The reporting requirements and large management plans pose an administrative burden but have little significance for the local implementation;

Industry/economic organisations/trade unions:

- Approval times for planning processes for major infrastructure projects;
- Requirements to monitor, analyse, study different contaminants in larger projects (involving high costs and, consultants, etc.) as a consequence of a classification, for example exceeding an EQS in sediments that at the end do not result in any measures taken. In content, it is the burden of proof required in excess because of a lack of prioritisation of measure;
- Disproportionate costs also because of lengthy permit procedures;

²⁴¹ OPC: Question 24 - Taking account of the objectives and benefits of the Water Framework Directive, is there evidence that the Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties?

- Extensive proof is requested to demonstrate that there is no deterioration to the water body. Sometimes these include long lasting studies, for example to assess biological components, and in some cases, operators are forced to do advanced research, e.g. to prove that proposed RBSP EQS are not scientifically appropriate;
- Poorly designed regulation of catchment level water risks, as well as the Weser Ruling have resulted in costly project delays;
- The strict application of the non-deterioration principle by the European Court of justice (switch from a broad vision of general condition of the water body to a detailed vision of individual elements or sub elements) is slowing economic initiatives, which wouldn't affect/deteriorate the overall quality of the water. And in any case, the situation has led and will continue to lead, if there is no change, to a more extensive need for request exemptions
- There has been a huge administrative burden at all administrative levels and among stakeholders. The WFD has a long list of systems and obligations which are very detailed, and the system is tending to be more important than the purpose and objectives of the WFD. Complicated guidance, lack of integrated policies, unclear responsibilities and low flexibility in requirements add to the burden. There has been a huge administrative burden at all administrative levels and among stakeholders. The WFD has a long list of systems and obligations which are very detailed, and the system is tending to be more important than the purpose and objectives of the WFD. Complicated guidance, lack of integrated policies, unclear responsibilities and low flexibility in requirements add to the burden

NGOs and environmental organisations:

- Planning processes are long and bureaucratic, and revisions are continuous;
- Due to the required time periods for administrative tasks such as planning, permits, land acquisition and also due to limited land availability, the pace of implementation has reduced.

Public authorities:

- Planning processes are long and bureaucratic, and revisions are continuous;

Citizens:

- Reporting requirements are too formalised and require considerable staff resources;
- Extensive proof is requested to demonstrate that there is no deterioration to the water body. Sometimes these include long lasting studies, for example to assess biological components;
- The reporting obligations require considerable staff resources;
- Extensive proof is requested to demonstrate that there is no deterioration to the water body. Sometimes these include long lasting studies, for example to assess biological components, and in some cases, operators are forced to do advanced research, e.g. to prove that proposed RBSP EQS are not scientifically appropriate;
- Very high costs associated with the design, administration and implementation.

In the document "The future of the Water Framework Directive"²⁴², countries suggest that the six years management cycle of the Directive might not represent the optimal length and argue that longer management cycles might increase the efficiency of implementing the Directive. The administrative steps for revision and adoption of plans, including consultations and participation require a lot of time,

²⁴² https://circabc.europa.eu/sd/a/6d96ebfe-a04e-4b2a-b112-b00a8ef47e97/WD2018-2_Session%202_Consultation%20Group.pdf

attention and resources. Furthermore, the minimum requirement of three consultations of six month each represents an administrative burden that detracts attention and resources from the actual water management. The document argues that fewer and shorter consultation periods might increase the efficiency of implementing the WFD.

The respondents were also asked to provide their opinion on whether the administrative costs linked to the implementation of the WFD, GWD and EQSD are justified compared to the benefits achieved²⁴³ (see table below).

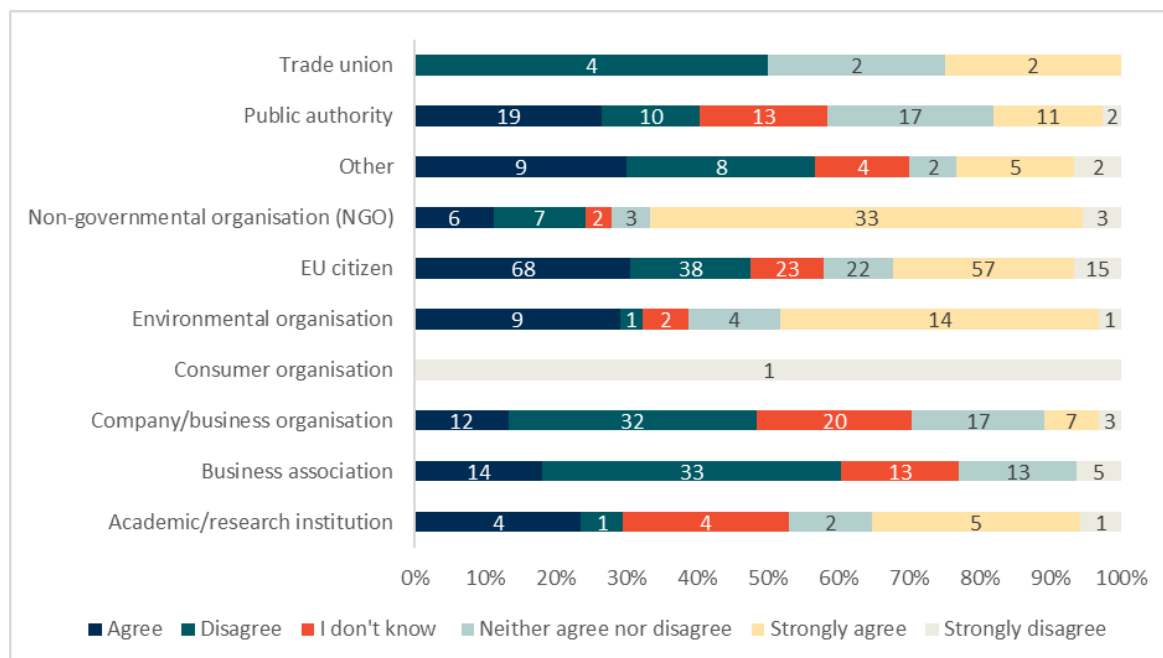
Table 6-17 Views on whether administrative costs are justified compared to the benefits achieved

When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
WFD	26%	27%	16%	25%	6%	510
EQSD	26%	25%	23%	18%	8%	357
GWD	21%	29%	30%	15%	4%	358

Note: Question asked was Question 20- To what extent do you agree with the following statements on the justification of costs and benefits of the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive? - When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved.

The figures below provides a breakdown of the respondent opinions per stakeholder category for each of the Directives.

Figure 6-4 Views on whether administrative costs are justified compared to the benefits achieved- WFD



²⁴³ OPC: Question 20- To what extent do you agree with the following statements on the justification of costs and benefits of the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive? - When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved

Figure 6-5 Views on whether administrative costs are justified compared to the benefits achieved- EQSD

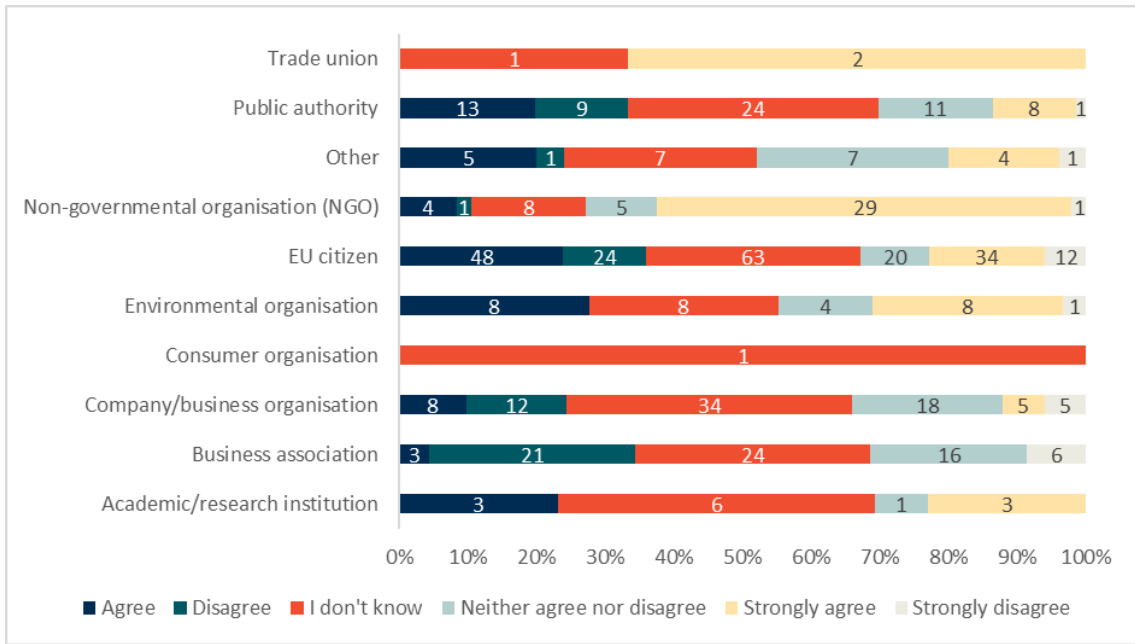
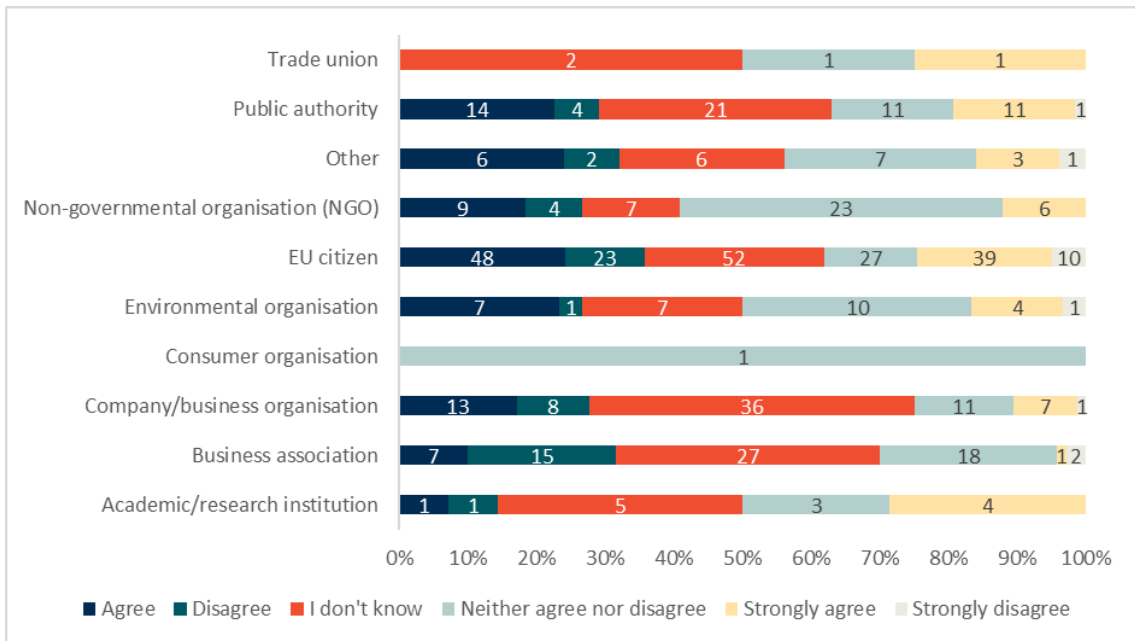


Figure 6-6 Views on whether administrative costs are justified compared to the benefits achieved- GD



Overall:

- 31% of respondents²⁴⁴ consider that the administrative costs of the WFD are not justified given the benefits achieved;
- 26% of respondents²⁴⁵ consider that the administrative costs of the EQSD are not justified given the benefits achieved;

²⁴⁴ This number excludes “do not know” answers. 159 responses out of 510 choosing “disagree” and “strongly disagree”

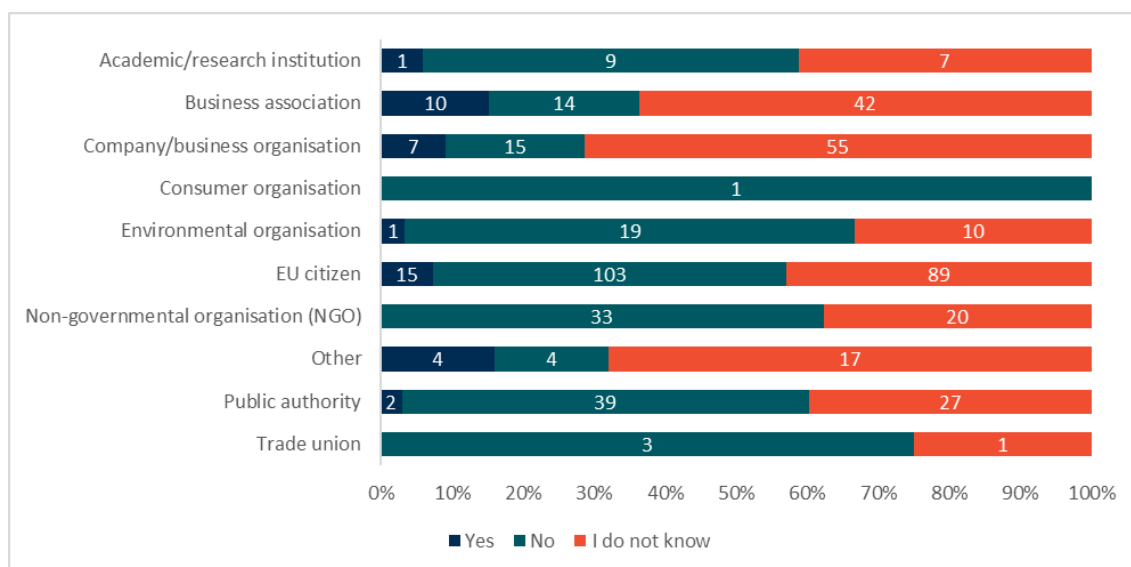
²⁴⁵ This number excludes “do not know” answers. 93 responses out of 357 choosing “disagree” and “strongly disagree”

- 19% of respondents²⁴⁶ consider that the administrative costs of the GWD are not justified given the benefits achieved.

Floods Directive

The open public consultation²⁴⁷ also explored administrative burden associated with the Floods Directive. The results suggest that apart from business associations, companies/business organisations and “other”, the majority of the respondents believe that there is no evidence the FD has imposed a disproportionate administrative burden on authorities, economic operators, individual citizens or other parties (see Figure 6-7).

Figure 6-7 Views on disproportionate administrative burden on authorities, economic operators or others - FD



Note: Question asked was Question 25 - Taking account of the objectives and benefits of the Floods Directive is there evidence that the Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties?

The respondents who believed that the Floods Directive has imposed a disproportionate administrative burden on authorities, economic operators or other parties were asked to identify specific administrative procedures which they deem to have been excessive or disproportionate, the estimated (additional) costs (burden) and who has been subject to them. Key administrative procedures associated with significant burden and costs include:

- Mapping flood hazards at municipal level resulting in high costs employing consultants/ external experts/ engineering firms as no such expertise is available in-house at the municipal level²⁴⁸.
- Demanding reporting requirements.

According to the respondents, the FD administrative burden is borne by public authorities, industry and households.

²⁴⁶ This number excludes “do not know” answers. 68 responses out of 358 choosing “disagree” and “strongly disagree”

²⁴⁷ OPC: Question 25 - Taking account of the objectives and benefits of the Floods Directive is there evidence that the Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties?

²⁴⁸ It should be noted that the FD does not require this to be done at a municipal level. This is a decision taken nationally.

The respondents were also asked to provide their opinion on whether the administrative costs linked to the implementation of the FD are justified compared to the benefits achieved²⁴⁹. A total of 510 respondents provided a response to this question (336 excluding “do not know” answers). Overall, 15% of respondents (50 responses choosing “disagree” and “strongly disagree”) consider that the administrative costs of the Floods Directive are not justified given the benefits achieved. The majority (52%, 26 responses) were from EU citizens, followed by business associations (18%, 9 responses), companies and public authorities (10%, 5 responses each). Consumer, environmental organisations and other accounted for the remaining 10% (5 responses).

6.1.6 EQ 5 To what extent do the costs and benefits vary between Member States or regions? If there are differences, what is causing them?

Conclusions on EQ 5 To what extent do the costs and benefits vary between Member States or regions? If there are differences, what is causing them?	
What has worked well?	<ul style="list-style-type: none"> The variability between RBDs results in significant variation in costs of RBMPs making a direct meaningful comparison between Member States impossible. The costs depend on the number and size of water bodies failing good status, types and number of pressures to be tackled and selection of measures among other factors. Similarly, costs and benefits of FRMPs depend on the differences in flood risk between Member States, value of assets at risk and population living in flood risk areas among other factors.
What has not worked well?	<ul style="list-style-type: none"> N/A
Strength of evidence	Moderate. Conclusions were generally corroborated at the third workshop.
Indication of bias	No bias was identified for this question.

The analysis explored to what extent do the costs and benefits vary between Member States or regions and what is causing such differences.

It should be noted that each River Basin District represents a unique combination of water uses and pressures leading to highly variable patterns of failure. Consequently, RBMPs and PoMs developed reflect a wide range of measures aiming to address catchment specific pressures and significant water management issues. This variability results in significant variation in costs of RBMPs making a direct meaningful comparison between Member States impossible. The costs depend on the number and size of water bodies failing good status, types and number of pressures to be tackled and selection of measures among other factors.

Similarly, in the context of the FD, costs and benefits of FRMPs depend on the differences in flood risk between Member States, value of assets at risk and population living in flood risk areas among other factors.

Differences in costs and benefits between Member States are, therefore, not necessarily a sign of more or less efficient implementation.

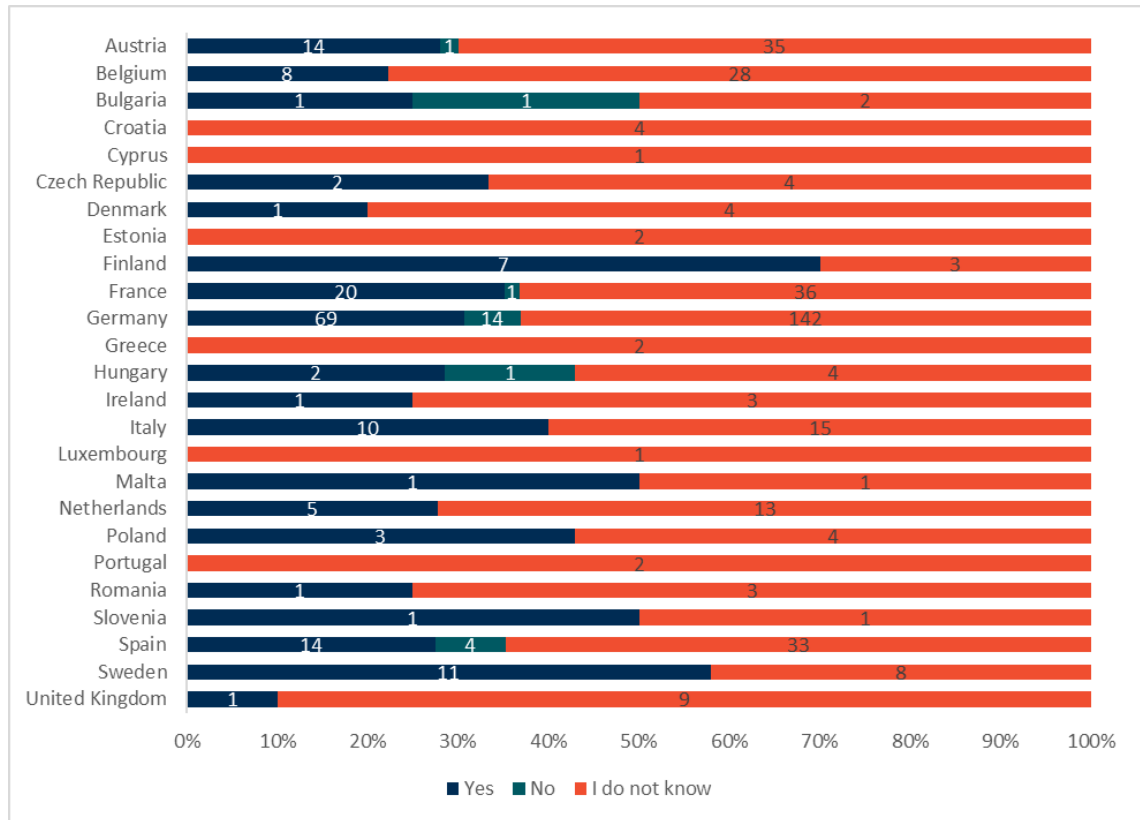
Respondents to the **open public consultation** were asked to provide their views on whether the cost-benefit ratio associated with implementing the directives differ between Member States²⁵⁰. Most of the respondents from most countries did not know if the cost-benefit ratio associated with implementing

²⁴⁹ OPC: Question 22- The costs of implementation may be linked to the achievement of the most significant benefits. To what extent do you agree with the following statements on the justification of costs and benefits of the Floods Directive? - When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved.

²⁵⁰ OPC: Question 21 - To your knowledge, does the cost-benefit ratio associated with implementing the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive differ between Member States, or between different regions in your or other countries? And Question 23 - To your knowledge, does the cost-benefit ratio associated with implementing the Floods Directive, differ between Member States, or between different regions in your or other countries?

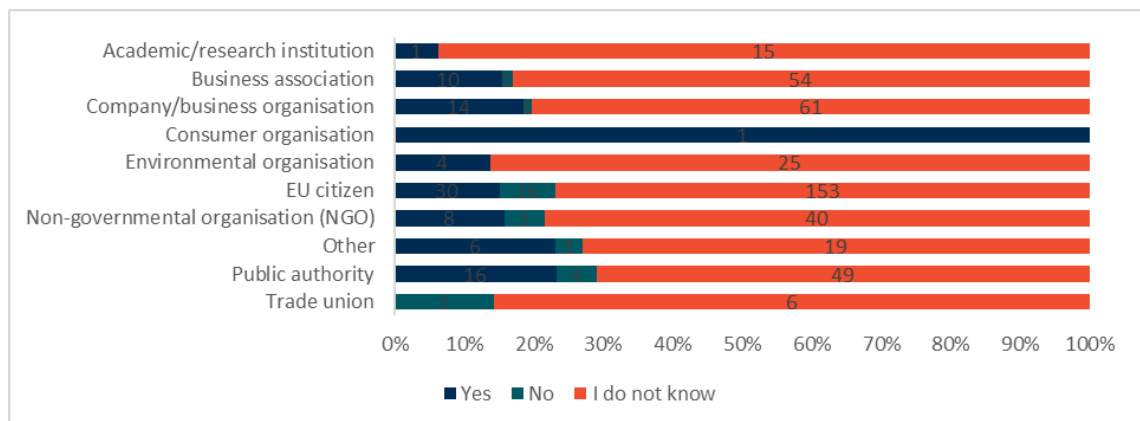
the Directives differs between Member States, or between different regions in their country (see Figure 6-8 and Figure 6-9).

Figure 6-8 Views on the cost-benefit ratios associated with the implementation of the WFD, EQSD, GWD



Note: Question asked was Question 21 - To your knowledge, does the cost-benefit ratio associated with implementing the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive differ between Member States, or between different regions in your or other countries?

Figure 6-9 Views on difference in cost-benefit ratio on implementation of the Floods Directive²⁵¹



Note: Question asked was Question 23 - To your knowledge, does the cost-benefit ratio associated with implementing the Floods Directive, differ between Member States, or between different regions in your or other countries? Responses by stakeholder group.

²⁵¹ As only one response was received from consumer organisations, this view cannot be considered as being representative.

The respondents who noted such differences in the costs and benefits associated with the implementation of the WFD, EQSD and GWD highlighted the following factors:

- **Classification of water bodies** - significant variations in water body status e.g. chemical, ecological status are present across the Member States requiring different levels of mitigation efforts.
- **Location of water bodies** (urban and rural areas) - for example, restoring a dense urban bank costs around 10,000 euros per linear meter (Bièvre Hay-les-Roses) while in rural areas it is around 50 euros per meter (Oise).
- **Number of waterbodies** - for instance, compliance costs are higher in Scandinavian countries as they have about 30,000 water bodies (lakes) per country in comparison to roughly 100-200 waterbodies per country in continental Europe.
- The **demographic and socio-economic conditions** including **density of population and key pressures** differ between Member States leading to varying scale and pattern of measures and associated costs and benefits.
- **Climate conditions, hydrology/ geology** - for example, costs are also influenced by the frequency of torrential rains increasing diffuse contamination due to sewage overflows.
- **Benefits** may vary depending on the initial water body status (ecological and chemical) and socio-political consideration given to water protection objectives.

The respondents who noted differences in the costs and benefits associated with the implementation of the FD highlighted the following factors:

- Geographical conditions of different countries affect the implementation of the FD, so that its implementation (and costs of) will be affected by these conditions.
- Given the absence of a harmonised objective, the very different definitions of risk levels in Member States and the differences in their approaches to flood risk prevention, it is to be expected that cost-benefit ratios vary across Member States.
- Flood risk awareness differs in each country and so do risk management methods.
- Different criteria for efficient flood protection.
- There are different assessment procedures in the Member States and different specific financial assets.
- Differences in the cost-benefit ratio result from the different high damage potential.

6.1.7 EQ 6 What factors have influenced the efficiency, and can good practices of efficient implementation of the Directive be identified?

Conclusions on EQ 6 What factors have influenced the efficiency, and can good practices of efficient implementation of the Directive be identified?	
What has worked well?	<ul style="list-style-type: none"> • Respondents to the OPC believe that more efficient waste water treatment technologies and better technologies in reducing water consumption of household appliances have had the most impact on improving water quality and efficiency. • Other factors include academic research and innovation in improving efficiency in water use and addressing possible sources of contamination, more publicly available information on water quality, water availability and water allocation and increased cooperation. • During the targeted consultation, key factors related to the WFD included the political will to tackle pressures in a strategic and holistic

Conclusions on EQ 6 What factors have influenced the efficiency, and can good practices of efficient implementation of the Directive be identified?	
	<p>way, the ability to finance measures, participation of stakeholders and the general public and consideration of costs/benefits in the preparation of PoMs.</p> <ul style="list-style-type: none"> In the context of the FD, flexibility of the framework and systematic cooperation of MS were considered as key factors.
What has not worked well?	<ul style="list-style-type: none"> N/A
Strength of evidence	Good level of evidence. Conclusions were generally corroborated at the third workshop.
Indication of bias	No bias was identified for this question.

This question explored whether the current policy architecture is efficient based on flexibility of legislation and the availability of voluntary guidance. It also sought to identify good implementation practices across Member States.

Water Framework Directive

Respondents to the **open public consultation** considered factors that have had the most impact on improving water quality and efficiency of water use²⁵². The respondents believe that more efficient waste water treatment technologies and better technologies in reducing water consumption of household appliances have had the most impact on improving water quality and efficiency (76% of responses, covering moderate to very significant improvement) (see the table below). Other factors include academic research and innovation in improving efficiency in water use and addressing possible sources of contamination (74%), changing approaches to the use of water for energy generation (69%), more publicly available information on water quality, water availability and water allocation (68%) and increased international cooperation (66%).

Table 6-18 Overview of factors and their impacts on water quality and efficiency of water use

Scale of improvement							
Factors	None	Slight	Moderate	Major	Very significant	Don't Know	Total
Stricter regulation of environmental pollution	11%	7%	22%	29%	24%	7%	1,806
Stricter regulation to minimise the use of hazardous chemicals in industry, etc.	11%	8%	22%	30%	21%	9%	1,768
International co-operation to tackle pollution	12%	16%	26%	28%	12%	6%	1,732
Changing approaches to the use of water for energy generation/conversion (e.g. hydropower, water cooling systems, etc.)	12%	17%	35%	24%	10%	3%	1,699
More efficient waste water treatment technologies	11%	5%	18%	27%	30%	8%	1,772

²⁵² OPC: Question 11 - What actions do you think have had the most impact on improving water quality and efficiency of water use since the Water Framework Directive was transposed into national legislation in 2003?

Scale of improvement							
Factors	None	Slight	Moderate	Major	Very significant	Don't Know	Total
Better technology in households/appliances to reduce water consumption (e.g. dual-flush toilets, shower-head flow controllers, eco-friendly washing machines)	11%	9%	31%	28%	17%	4%	1,825
Tariffs for water use (e.g. based on industrial, agricultural and domestic water metering)	12%	25%	28%	23%	9%	4%	1,725
More publicly available information on water quality, water availability and water allocation	11%	17%	34%	23%	11%	4%	1,799
More sustainable use of water in agriculture	12%	23%	34%	15%	11%	6%	1,760
Changes in other agricultural practices that might affect water quality and its availability (e.g. reduced use of pesticides, organic farming, crop rotation, etc.)	22%	30%	19%	14%	9%	7%	1,701
Urban planning that "makes space for water"	21%	32%	22%	11%	4%	10%	1,696
Better integration of water protection and use of water for transport	14%	23%	36%	16%	8%	3%	1,622
Academic research and research and innovation activities related to improving efficiency in water use and addressing possible sources of contamination	13%	9%	32%	27%	15%	5%	1,717

Note: Major and very significant factors with a value of 25% or more are highlighted in bold. Note: Question asked was Question 11 - What actions do you think have had the most impact on improving water quality and efficiency of water use since the Water Framework Directive was transposed into national legislation in 2003?

Furthermore, respondents highlighted **integrated river basin management**, **increased accountability**, **increased cooperation** between water users (e.g. agreements between water companies and farmers) and new regulations (e.g. waste water discharge regulations) among important factors that have had the most impact on improving water quality and efficiency of water use.

Targeted stakeholder consultation also elicited views on factors that have influenced the implementation efficiency of the Directives (35 responses)²⁵³. The key factors included among others **political will** to tackle pressures in a strategic and holistic way, the **ability to finance measures** (including through the creation of appropriate financing mechanisms or the use of existing mechanisms), full **participation of stakeholders** and the general public in the definition of objectives and programmes of measures as well as appropriate **consideration of the costs and benefits** in the preparation of programmes of measures, which requires an economic appraisal. Availability of sufficient staff capacity and expertise in Member State competent authority also plays a critical role in implementation of the Directives.

Floods Directive

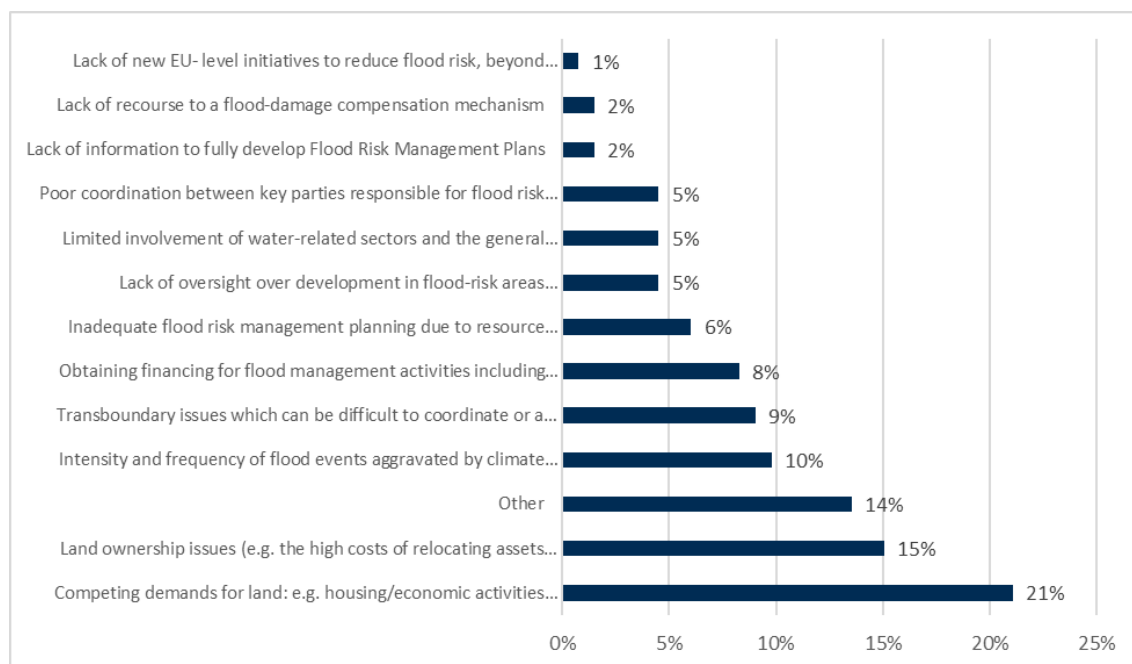
In the context of the **Floods Directive**, stakeholder consultation respondents highlighted the following factors that have contributed to the successful implementation of the Directive:

²⁵³ Costs and Benefits: Question 20: 88 - Based on your experience of the Directives, what factors have influenced the efficiency of their implementation?

- The flexibility of the framework contained within the Directive contributed positively to its implementation.
- The way the Directive had enabled Member States to assemble, in a systematic way, all available material and put it in the context of the plans.

Respondents to the **open public consultation**²⁵⁴ considered and ranked key challenges to the effective management of floods in their area or country. The most common (21%) of the responses consider competing demands for land to be the most serious challenge, followed by land ownership issues (15%) and “other” issues (14%²⁵⁵) (see Figure 6-10).

Figure 6-10 Key challenges to the effective management of floods



Note: the question asked was Question 18 - What are the key challenges to the effective management of floods in your area or in your country?

The table below presents the respondents’ opinions per stakeholder category on key challenges to the effective management of floods in their area or country.

²⁵⁴ OPC: Question 18 - What are the key challenges to the effective management of floods in your area or in your country?

²⁵⁵ The “Other” category included deforestation, sedimentation, lack of storage capacity etc.

Table 6-19 Overview of respondent opinions on key challenges to the effective management of floods

Challenges	Stakeholders										
	Academic/research institution	Business association	Company/business organisation	Consumer organisation	Environmental organisation	EU citizen	Non-EU citizen	Non-governmental organisation (NGO)	Other	Public authority	Trade union
Land ownership issues (e.g. the high costs of relocating assets out of the flood plain) (N=493)	1%	4%	6%	0%	3%	70%	0%	6%	2%	6%	0%
Obtaining financing for flood management activities including for measures that mobilise nature's functions (for example natural water retention measures) (N=593)	1%	5%	8%	0%	1%	73%	0%	3%	3%	4%	1%
Other (N=221)	1%	6%	8%	0%	5%	60%	0%	11%	3%	3%	2%
Competing demands for land: e.g. housing/economic activities versus "space for water" (N=1472)	1%	4%	6%	0%	2%	76%	0%	4%	3%	3%	0%
Inadequate flood risk management planning due to resource issues (human and/or financial) (N=351)	2%	1%	7%	0%	3%	71%	0%	4%	3%	6%	1%
Intensity and frequency of flood events aggravated by climate change (N=894)	2%	4%	7%	0%	2%	73%	0%	3%	3%	4%	1%
Lack of information to fully develop Flood Risk Management Plans (N=163)	2%	2%	7%	0%	3%	77%	0%	1%	6%	2%	1%
Lack of new EU- level initiatives to reduce flood risk, beyond flood-risk management plans (N=62)	0%	3%	5%	0%	3%	76%	0%	6%	0%	6%	0%
Lack of oversight over development in flood-risk areas (unregulated construction and/or inadequate infrastructure) (N=526)	2%	2%	8%	0%	2%	76%	0%	3%	3%	4%	1%
Lack of recourse to a flood-damage compensation mechanism (N=116)	2%	4%	10%	0%	3%	65%	0%	3%	8%	3%	3%
Limited involvement of water-related sectors and the general public in flood-related planning (N=231)	2%	3%	7%	0%	2%	76%	0%	4%	3%	4%	0%
Poor coordination between key parties responsible for flood risk management, leading to, e.g. disconnected planning (N=398)	2%	3%	7%	0%	3%	73%	0%	4%	3%	5%	1%
Transboundary issues which can be difficult to coordinate or a lack of cooperation between neighbouring countries (N=245)	0%	8%	6%	0%	2%	70%	0%	7%	5%	2%	0%

Furthermore, the respondents who highlighted the lack of new EU-level initiatives noted that:

- The cooperation between the neighbouring countries should be improved. International Commissions, etc. should be available for any large bodies of water in order to operate jointly preventive flood protection;
- In Europe, there is a heavy reliance on unsustainable grey infrastructure development to manage flood risks and a low uptake of nature-based solutions providing natural water retention. Dedicated funding for the necessary (large-scale) river restoration and on measures ensuring synergies with Floods Directive and Habitats Directive, such as Natural Water Retention Measures, is lacking (more information on this aspect are included in Section 5.3.2).

6.1.8 EQ 7 Are there opportunities to simplify the implementation of the legislation or reduce unnecessary regulatory cost without undermining the objectives of the Directives?

Conclusions on EQ 7 Are there opportunities to simplify the implementation of the legislation or reduce unnecessary regulatory cost without undermining the objectives of the Directives?	
What has worked well?	<ul style="list-style-type: none"> • No obsolete requirements of any of the Directives were identified (by the majority of the respondents to the open public consultation).
What has not worked well?	<ul style="list-style-type: none"> • Reporting and monitoring are essential to implementing the vision and ambitions of the Directives but the reporting system in place is complex, requiring a very large amount of data. • Respondents to the OPC indicate stronger links could be made with technical, research and innovation progress in the case of the WFD and EQSD. Respondents also indicate that further optimisation of the law is possible in relation to the WFD and EQSD.
Strength of evidence	<p>Good level of evidence - mostly from the stakeholder consultation. Conclusions were generally corroborated at the third workshop.</p>
Indication of bias	No bias was identified for this question.

The efficiency analysis explored opportunities to simplify the implementation of the WFD and the FD or reduce unnecessary regulatory cost without undermining the objectives of the Directives.

The open public consultation explored whether the **WFD, EQSD, GWD and the FD could be simplified, optimised** or stronger links could be made with technical, research and innovation progress²⁵⁶.

Overall, the majority of respondents believe that stronger links could be made with technical, research and innovation progress (70% in the case of GWD, 69% in the case of the FD, 67% in the case of the WFD and 61% of the EQSD)²⁵⁷. Furthermore, 70% and 67% of respondents believe that further optimisation of the law is possible in relation to the WFD and EQSD respectively²⁵⁸ (see Table below).

²⁵⁶ OPC: Question 20 - To what extent do you agree with the following statements on the justification of costs and benefits of the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive? Question 22 - The costs of implementation may be linked to the achievement of the most significant benefits. To what extent do you agree with the following statements on the justification of costs and benefits of the Floods Directive?

²⁵⁷ The number of respondents (excluding “Don’t know” answers) were: 386 (GWD); 343 (FD); 537 (WFD) and 392 (EQSD).

²⁵⁸ The number of respondents (excluding “Don’t know” answers) were: 515 (WFD) and 359 (EQSD).

Table 6-20 Feedback on further simplification and optimisation of the legislation

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
Further simplification of the law is possible						
WFD	18%	34%	11%	17%	20%	541
EQSD	16%	31%	15%	17%	22%	385
GWD	14%	28%	13%	22%	23%	366
FD	11%	31%	14%	26%	18%	340
Further optimisation of the law is possible						
WFD	28%	42%	13%	7%	11%	515
EQSD	24%	43%	14%	6%	14%	359
GWD	17%	46%	25%	7%	5%	352
FD	17%	36%	28%	5%	15%	329
Further optimisation of the implementation of the Directive/s is possible						
WFD	33%	29%	13%	14%	11%	543
EQSD	31%	28%	19%	9%	13%	381
GWD	34%	26%	17%	11%	11%	386
FD	28%	28%	23%	10%	11%	341
Stronger links could be made with technical, research and innovation progress						
WFD	23%	44%	15%	14%	4%	537
EQSD	21%	40%	27%	9%	4%	392
GWD	29%	41%	17%	9%	4%	386
FD	30%	39%	19%	5%	8%	343

Note: Question asked was Question 20 (WFD, EQSD, GWD) and Question 22 (Floods Directive) - To what extent do you agree with the following statements on the justification of costs and benefits of the Water Framework Directive, the Environmental Quality Standards Directive, the Groundwater Directive and the Floods Directive: further simplification of the law is possible; further optimisation of the law is possible; further optimisation of the implementation is possible; stronger links could be made with technical, research and innovation progress?

In the case of the WFD, predominantly business associations (28%), company/business associations (19%), EU citizens (19%), other stakeholders (17%) and public authorities (14%) strongly agreed that further simplification of the law is possible; predominantly EU citizens (33%), company/business organisations (25%) and business associations (24%) strongly agreed that further optimisation of the law is possible; predominantly EU citizens (43%), NGOs (16%) and company/business organisations (12%) strongly agreed that further optimisation of the implementation of the Directives is possible; and predominantly EU citizens (44%), company/business organisations (17%), academic/research institutions (10%), business associations (8%) and public authorities (7%) strongly agreed that stronger links could be made with technical, research and innovation progress.

In the case of the EQSD, predominantly EU citizens (43%), public authorities (17%), business associations (13%) and company/business organisations (12%) strongly agreed that further simplification of the law is possible; predominantly EU citizens (43%), business associations (22%) and company/business organisations (20%) strongly agreed that further optimisation of the law is possible; predominantly EU citizens (43%), NGOs (23%), environmental organisations (11%) and company/business organisations (10%) strongly agreed that further optimisation of the implementation of the Directives is possible; and

EU citizens (54%), company/business organisations (10%) and public authorities (8%) strongly agreed that stronger links could be made with technical, research and innovation progress.

In the case of the GWD, predominantly EU citizens (65%), public authorities (12%), company/business organisations (10%) and business associations (8%) strongly agreed that further simplification of the law is possible; predominantly EU citizens (60%), company/business organisations (16%), business associations (6%), NGOs (5%) and public authorities (5%) strongly agreed that further optimisation of the law is possible; predominantly EU citizens (43%), NGOs (19%), company/business organisations (11%) and environmental organisations (8%) strongly agreed that further optimisation of the implementation of the Directives is possible; and predominantly EU citizens (42%), NGOs (23%), business associations (9%) and company/business organisations (8%) strongly agreed that stronger links could be made with technical, research and innovation progress.

In the case of the Floods Directive, predominantly EU citizens (46%), NGOs (15%), public authorities (15%) and company/business organisations strongly agreed that further simplification of the law is possible; predominantly EU citizens (49%), company/business organisations (18%) and NGOs (15%) strongly agreed that further optimisation of the law is possible; predominantly EU citizens (45%) and NGOs (25%) strongly agreed that further optimisation of the implementation of the Directives is possible; and predominantly EU citizens (43%), and NGOs (25%) strongly agreed that that stronger links could be made with technical, research and innovation progress.

The Open Public Consultation (OPC) sought to explore any **aspects of the WFD** (including EQSD and GWD) or **the FD that are obsolete** for achieving good status or reduction in flood risk²⁵⁹. The majority of respondents consider that the directives contain no obsolete requirements (90% for GWD, 89% for the FD, 79% for the EQSD and 72% for the WFD²⁶⁰). However, 28%, 21%, 11% and 10% of respondents believe that the WFD, EQSD, FD and GWD respectively contain obsolete provisions²⁶¹. Respondents’ views regarding specific aspects of the Directives that they consider obsolete or inefficient are summarised in the table below.

Table 6-21 Obsolete aspects of the Directives - feedback from stakeholders

Directive	Obsolete aspects and shortcomings
Water Framework Directive (112 comments from 604 responses)	<ul style="list-style-type: none"> • “One-out all-out” is no longer a contemporary benchmark (Industry/economic organisations/trade unions) • The definition of ecological status as stated in the WFD is based on a theoretical reference condition equivalent to undisturbed or close to undisturbed conditions (Table 1.2 in Annex V). Today, there is a lack of consensus among researchers about what an “undisturbed state” is (Industry/economic organisations/trade unions). • The WFD requires a 6-year Review of the River Basin Management Plans. As measures and changes especially of the ecological status require more time, an Extension of the Review period should be considered (Industry/economic organisations/trade unions).

²⁵⁹ OPC: Question 37 - Are any aspects of the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive now obsolete for achieving good status or flood risk reduction? [number of responses: 559-604]

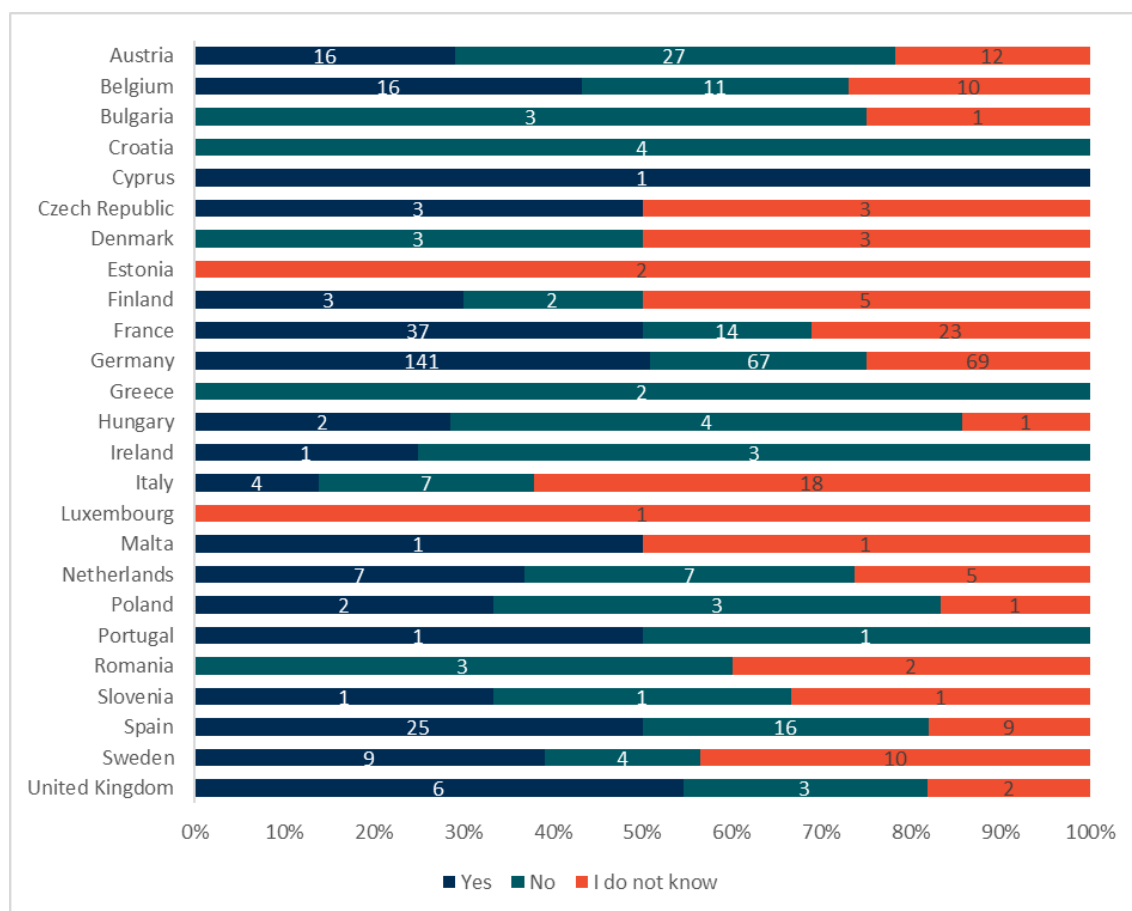
²⁶⁰ This corresponds to: 335 responses out of 371 for GWD; 289 responses out of 326 for the FD; 290 responses out of 369 for the EQSD; and 368 responses out of 512 for the WFD. These numbers exclude the “I don’t know” answers. If these are taken into account, 51% (EQSD), 52% (FD), 60% (GWD) and 61% (WFD) of respondents believe that the Directives contain no obsolete requirements.

²⁶¹ Excluding “I don’t know” answers. If these are taken into account, 24% and 14% of respondents believe that the WFD and the EQSD respectively contain obsolete provisions. Another 7% and 6% think that the FD and the GWD have obsolete requirements.

Directive	Obsolete aspects and shortcomings
	<ul style="list-style-type: none"> The WFD focuses on both chemical status and ecological status. However, resources seem to be mainly devoted to assessing the chemical status. In fact, the “ecological” status is often based on chemicals (EQS) assessment, since the compliance/non-compliance of RBSPs with their EQSs prevails on other aspects (Industry/economic organisations/trade unions). The separation between Heavily Modified Water Bodies and other water bodies is often arbitrary. The WFD must consider the growing effects of the climate change and ensure the correct implementation of rules and strategies able to preserve and improve the key role of hydropower for mitigation and adaptation. In this context, EU authorities should review the Heavily Modified Water Bodies (HMWB) rules, in order to avoid indiscriminate application of the good ecological potential definition and setting unreachable targets (Industry/economic organisations/trade unions). The pressure on Member States to use of the exemption’s clause under art. 4.7 in order to grant permits for industrial activities (In 2015, the Weser case judgement introduced a very strict interpretation of the “non-deterioration principle”) (Industry/economic organisations/trade unions). Member States should be provided with more scope to apply new techniques for monitoring (NGOs and environmental organisations).
<p>Environmental Quality Standards Directive (48 comments from 567 responses)</p>	<ul style="list-style-type: none"> Development of EQS per substance, as currently stated in the EQS directives, is not anymore as relevant due to the huge number (millions) of chemical substances and the “cocktail effect” (synergistic effects of different substances). An integrative approach should rather be developed and accepted by the EU, such as effect-based monitoring and passive sampling. Such an integrative approach could be used additionally to the current EQS if the EU ascertains that an equivalent protection level is guaranteed (Public Authority). Groundwater biota should be monitored in EQS setting (Academic/research institutions). The list of priority substances should only be extended if new EU wide risks are clearly identified (Industry/economic organisations/trade unions). The current Watch list mechanism is relatively slow to derive conclusive data and addresses a far too limited list of substances. It is therefore difficult to use the Watch List mechanism as an early-warning system for identification of emerging risks (overlooked PS) to aquatic ecosystems and human health via the aquatic environment (NGOs and environmental organisations). The list of priority substances must be updated more frequently as some are no longer used or found, while emerging contaminants should be added (Academic/research institution and Industry/economic organisations/trade unions). Concentration based indicators are not a good indicator since they penalise the irrigated areas under irrigation returns (Public Authority).
<p>Floods Directive (9 comments from 559 responses)</p>	<ul style="list-style-type: none"> The six-year review of the preliminary risk assessment is unnecessary. The potential risks should have been apparent after a few cycles (Public Authority). Article 4 of the preliminary flood risk assessment is useful to collect past flood data but has no added value for a small district to exclude areas and risks (Public Authority).
<p>Groundwater Water Directive (14 comments from 562 responses)</p>	<ul style="list-style-type: none"> Quality standards should be closely related to quality standards used in surface waters in terms of chemical status (Public Authority). An indicator of water scarcity should be defined to take into account the potential impact of climate change on groundwater, aquatic and terrestrial ecosystems (Public Authority). Groundwater biota should be monitored (Academic/research institution).

The responses to the OPC suggest that (60% of the 461 respondents²⁶²) consider that the current reporting needs to be revised, improved or simplified. Further 40% believe that it does not need to be revised. Of the respondents that knew the answer to this question (72%), the majority (60%) consider that the current reporting needs to be revised, improved or simplified. EU citizens accounted for 35%, companies/business organisations and associations for 18% and 12% and public authorities for 15%. NGOs and environmental organisations accounted for 5% and 4% respectively. The feedback received from respondents by Member State is presented in figure 6-11.

Figure 6-11 Feedback on the need to revise the reporting under the WFD and FD



Note: Question asked was Question 10 - In your opinion, does the current reporting under the Water Framework Directive and the Floods Directive need to be revised, improved or simplified to allow for further reduction of administrative burden?

Overall, the survey respondents highlighted that while reporting and monitoring are essential to implementing the vision and ambitions of the Directives, the reporting system in place is complex. Reporting systems also require a very large amount of data and are resource intensive requiring significant human and financial resources. At the same time the positive role of the Common Implementation Strategy (CIS) in establishing and streamlining reporting procedures has been noted.

While some respondents believe that simplifying current reporting mechanism under the WFD and the Floods Directive is crucial to ensure compliance, some stakeholders (e.g. farmers) indicated facing already excessive administrative burdens. With less reporting, more emphasis (time and money) could

²⁶² OPC: Question 10: In your opinion, does the current reporting under the Water Framework Directive and the Floods Directive need to be revised, improved or simplified to allow for further reduction of administrative burden?

be placed on implementing and reporting on measures (including on assessing the effects on chemical and ecological status).

At the same time several respondents note that the WFD must keep a high level of ambition and the existing adequate methodological approach (river basin governance, good ecological/ chemical status) should be maintained to avoid compromising the Directive's objectives and the methodological approach currently in place. A number of recommendations were made to improve the reporting and monitoring including obtaining a better overview of the contaminant load. This is especially true on the contamination by biocides, pesticides and veterinary drugs, specific measures taken and their impact (i.e. success in minimizing the load across different sectors). Such analysis requires more information on current situation and the protection of nature reserves, small water bodies and ground water ecosystems from pollution. Introduction of trend indicators to show progress achieved before water status improvement (change) becomes visible was also suggested.

Targeted stakeholder consultation²⁶³, furthermore, sought to identify whether there are **any missing elements in the current reporting requirements**. The majority of the respondents (41%) believed that there are no missing elements in the existing reporting requirements. The critical role of WISE (Water Information System for Europe) to ensure that results are reported in a consistent and useful format has been highlighted as well as the need for it to continue. The Fitness Check of EU Freshwater Policy (2012) also highlighted WISE as a successful example of electronic reporting and of effective co-operation between the Member States and the Commission²⁶⁴.

At the same time further 33% of respondents believed that there are some missing elements in the existing reporting requirements. Specific examples included the lack of consideration of pollutants in sediments under the EQSD (that hinder subsequent identification of appropriate measures) and the lack of consideration of long-term effects of climate and energy policies on water. The respondents also made a number of recommendations to improve reporting, including:

- The need for clear and essential reporting;
- Making the reporting results more visible and transparent to stakeholders including reporting on examples of concrete measures that are implemented by relevant sectors to minimise pollution of water bodies;
- The need for a more flexible way to show the progress achieved;
- Ensuring consistency of reporting between reporting cycles. Changes in monitoring requirements and grouping of groundwater bodies between the first and second reporting cycle has led to confusion amongst Member States and has affected the accuracy, efficiency and comparability of reporting for groundwater.

Targeted stakeholder consultation²⁶⁵ also highlighted the **need to improve the WFD alignment with the Nitrates Directive**, where different reporting periods and methodologies can create alignment issues **and the Marine Strategy Framework Directive** where no alignment currently exists in relation to timing and the content of the Directives. In particular, the respondents believe that a link between the

²⁶³ Question 16.123 - In your opinion, are there any missing elements in the current reporting requirements? [Yes; No; I do not know]

²⁶⁴ European Commission (2012) "The Fitness Check of EU Freshwater Policy" - SWD(2012) 393

²⁶⁵ Targeted consultation: Question 14. 121 - Do you consider the reporting under the WFD, EQSD, GWD and FD to be sufficiently aligned with other relevant environmental policies (marine, nitrates, nature, air, emissions, etc.) in terms of both content and timing? [Open question]

reduction of pollutants in river basins and marine environment is missing and that there is lack of efficient connection between sediment management under the WFD and MSFD.

6.1.9 Question 8 To what extent are monitoring and reporting requirements fit for purpose?

Conclusions on EQ 8 - To what extent are monitoring and reporting requirements fit for purpose?	
What has worked well?	<ul style="list-style-type: none"> The implementation of the monitoring programmes under the WFD was a great achievement, as for the first time comparable pan-European data sets to assess surface waters was being obtained as a fundamental basis for restoration. i.e. the WISE database is a rich source of information from the 1st and 2nd RBMPs. In the 2nd RBMPs, the quantity and quality of the available evidence on status and pressures had grown significantly with better ecological and chemical monitoring programmes. Based on the OPC, the majority of the respondents consider the monitoring obligations to be targeted at the right issues for each of the four Directives.
What has not worked well?	<ul style="list-style-type: none"> There is evidence to suggest that the CIS Guidance document on reporting has not delivered the expected efficiency of the reporting nor of the assessment of the information reported. There is a gap in monitoring with regard to chemical substances as not all priority substances are currently monitored.
Strength of evidence	Good, mostly informed by stakeholder consultation and literature available.
Indication of bias	No bias was identified.

The aim of this evaluation question is to understand the extent to which the monitoring and reporting requirements are fit for purpose. With reference to monitoring under this evaluation question, we understand the environmental monitoring requirements included in the legislation (e.g. measurements of concentration of pollutants). By reporting we mean the obligation from Member States to provide information on the implementation of the legislation at national level.

Status on monitoring and reporting

The 2017 Fitness Check on monitoring and reporting identified water policy as having the second largest number of reporting obligations after waste²⁶⁶. As such, the review of the efficiency of the reporting system is an important aspect of the Fitness Check. The obligations on monitoring and reporting for the respective legislation are listed in the table below.

²⁶⁶ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report; http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

Table 6-22 Overview of the monitoring and reporting obligations

	Monitoring obligations	Reporting obligations
WFD	Monitoring Programmes (Article 8): Location of monitoring stations	Characterisation of River Basin Districts (Article 5) : One off reporting of location of water bodies and protected areas including information on pressures and risks Programmes of Measures (Article 15) reported as part of the implementation assessment River Basin Management Plans (Article 13): Assess progress in implementation of the Water Framework Directive. Legal compliance, policy effectiveness and provision of data and information at EU level (development of WISE).
EQSD		MS to report to EC on the result of monitoring of substances included in the Watch List (Article 8(b)(4)): Gather monitoring data on chemical pollutants belonging to the watch list. MS to communicate inventories of emissions, discharges and losses (Article 5)
Floods Directive		Preliminary Flood Risk Assessment and Areas of Potential Significant Flood Risk (Articles 4 and 5): Assess progress in implementation of the floods directive. The Preliminary Flood Risk assessment is important to define the scope of application of the Directive Flood Hazard Maps and Flood Risk Maps (Article 6): Assess progress in implementation of the Floods Directive. The Flood maps are the essential building block of the Flood Risk Management Plans. Flood Risk Management Plans (Articles 7, 8 and 10): Assess progress in implementation of the floods directive. The Flood Risk Management Plans are the main tool to implement the Directive.

The WFD distinguishes among **three types of monitoring**:

- **surveillance monitoring**, to assess long-term changes resulting from widespread anthropogenic activity;
- **operational monitoring**, to establish the status of those water bodies identified as being at risk of failing to meet their environmental objectives; and assess any changes in the status of such water bodies resulting from the programmes of measures;
- **investigative monitoring** carried out where the reason of any exceedance for ecological and chemical status is unknown; where surveillance monitoring indicates that the objectives for a water body are not likely to be achieved (and determine the causes); or to ascertain the magnitude and impacts of “accidental” pollution.

From early stages in the implementation of the WFD, the implementation of the monitoring programmes was seen as a great achievement, as for the first time comparable pan-European data sets to assess ecological status of surface waters was being obtained as a fundamental basis for restoration

of impacted aquatic ecosystems²⁶⁷. Monitoring is an essential part to follow up on how far away waterbodies are from meeting the environmental objectives.²⁶⁸

The reporting done by Member States is made through the WISE database.²⁶⁹This contains data from the 1st and 2nd River Basin Management Plans reported by EU Member States and Norway according to Article 13 of the Water Framework Directive (WFD). The reporting is supported by a Guidance Document²⁷⁰ of 402 pages long, usually described as a complex document. The Water Directors input to the Fitness Check process found that the guidance material had not delivered the expected efficiency of the reporting nor of the assessment of the information reported²⁷¹. This was also reiterated during the consultation, from interviews with MS experts and also by the Norwegian authorities.

Member States have been adopting and publishing their second RBMPs since December 2015. The plans constitute updates to the first RBMPs published in 2009. By the deadline of 2018, 25 Member States had reported their water information in the WISE system²⁷². The European Environment Agency state of Europe's report is based on this information.²⁷³ The EEA also provides visualisation tools for accessing the details of the results.

The EEA indicated that with the second RBMPs, the quantity and quality of the available evidence on status and pressures had grown significantly with better ecological and chemical monitoring programmes implemented in many Member States.²⁷⁴ More than 130,000 monitoring sites were reported in RBMPs, which allows to conclude in the reduction of the 'unknown status' and the increased confidence in the status assessment²⁷⁵. It should, however, be noted that a number of water bodies remain unmonitored across Member States.

The EEA also noted the improvement in the confidence of the status of assessment which progressed from less than one third of surface water bodies' ecological status with high or medium confidence to 58% in the second RBMPs. For chemical status the confidence is lower than for other status assessment, with 41% of water bodies being reported with high or medium confidence. The confidence in groundwater chemical and quantitative is generally higher with more than 60% of the water bodies being reported with high or medium confidence. Overall, monitoring under the WFD is seen to have improved water governance.

The efforts deployed to develop methodological approach for the ecological status assessment across Member States was particularly acknowledged in the literature²⁷⁶ (e.g. Carvalho et al 2019). Intercalibration of ecological status was reported in the second RBMPs and the EEA concluded it increased up to three-fold since 2008. This means that overall, information reported is more reliable

²⁶⁷ Hering et. al , 2010. The European Water Framework Directive at the age of 10: A critical review of the achievements with recommendations for the future

²⁶⁸ T Giakoumis and N Voulvoulis, 2018. 'PROGRESS WITH MONITORING AND ASSESSMENT IN THE WFD IMPLEMENTATION IN FIVE EUROPEAN RIVER BASINS: SIGNIFICANT DIFFERENCES BUT SIMILAR PROBLEMS, *European Journal of Environmental Sciences*, 8.1 (2018), 44-50 <<https://doi.org/10.14712/23361964.2018.7>>.

²⁶⁹ WISE database, <https://www.eea.europa.eu/data-and-maps/data/wise-wfd-3>

²⁷⁰ http://cdr.eionet.europa.eu/help/WFD/WFD_521_2016/Guidance/WFD_ReportingGuidance.pdf

²⁷¹ European Commission (2018). The Future of the Water Framework Directive (WFD) - Water Directors input to the fitness check process on experiences and challenges of WFD's implementation and options for way forward. https://circabc.europa.eu/d/a/workspace/SpacesStore/a2b1038f-2aa8-44e8-8288-d0f226fe2224/WD2018-2-2_FINAL_The%20Future%20of%20the%20Water%20Framework%20Directive_15112018.pdf

²⁷² Greece, Ireland, Lithuania and Norway reported their data late.

²⁷³ European Environment Agency.

²⁷⁴ Greece, Ireland, Lithuania and Norway reported their data late.

²⁷⁵ Greece, Ireland, Lithuania and Norway reported their data late.

²⁷⁶ Carvalho, L. et al. 2019. Protecting and restoring Europe's waters: An analysis of the future development needs of the Water Framework Directive

and more comparable than during the first RBMP. In particular the support from intercalibration was noted, which has allowed some comparable and robust assessments of the ecological status of Europe's waters. However, according to the overview of RBMPs, Member States were asked to report if there is no corresponding EU intercalibration common type for their national types. At EU level, the majority of national types for natural surface water bodies have been intercalibrated. However, regarding surface water body typology, there were often several national types that had not been intercalibrated in the second RBMPs. The division of a surface water category into types is based on abiotic descriptors such as altitude, geology, size, etc. using System A or B (outlined Annex II of WFD). Many Member States have still not validated their water body typology against biological data, or it is unclear if biological validation has taken place based on the information in the RBMPs.²⁷⁷

Furthermore, the latest implementation report notes that a formal common intercalibration system for water types was not introduced until 2018 but despite this, it has been possible to establish status in almost all waterbodies.²⁷⁸ However, the latest implementation report notes that important gaps remain regarding ecological status and that one issue which remains is the over reliance on expert judgement and grouping different water bodies together, rather than assessing each relevant water body under the specific parameters.

According to the 2019 overview of RBMPs, 551 monitoring programmes were reported by EU Member States including 12 for territorial waters reported by 5 Member States. There are many differences in how Member States have designed and reported their monitoring programmes and several MS-specific gaps have been identified in the reported programmes, including the lack of operational or surveillance monitoring programmes for lakes, transitional or coastal waters in some cases²⁷⁹.

Question 8.1 To what extent are monitoring and reporting requirements fit for purpose?

The Impact Assessment of the Blueprint published in 2012 included a public consultation, the majority of the respondents considered that the Directive on environmental quality standards were addressing the right issues²⁸⁰. On reporting obligations, the majority of stakeholders considered that the reporting obligations fully or partially added value but the onus was on making sure the information was properly analysed²⁸¹.

These views were echoed in the OPC for the Fitness check. As it can be seen in Figure 6-12 (respondents' views on the suitability of the monitoring obligations of the Directives) the majority of the respondents consider the monitoring obligations to be targeted at the right issues for each of the four Directives.

²⁷⁷ European Commission (2019) 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)'.

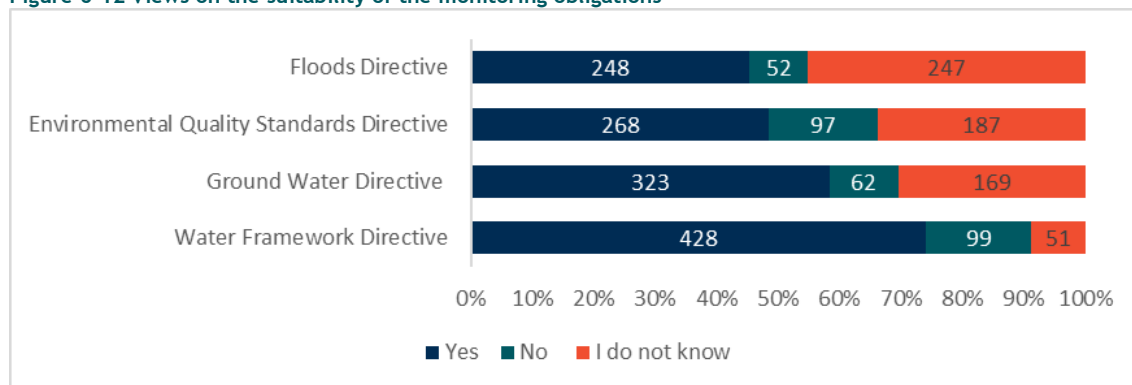
²⁷⁸ European Commission (2019) 'Report from the Commission to the European Parliament and Council on the Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)'.

²⁷⁹ European Commission, 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)'.

²⁸⁰ European Commission, 2012, Impact Assessment to support the Blueprint

²⁸¹ European Commission, 2012, Impact Assessment to support the Blueprint

Figure 6-12 Views on the suitability of the monitoring obligations



Note: Question asked was Question 28 - For the following Directives do you consider the monitoring obligations to be targeted at the right issues?

The table below provides a breakdown of the respondents’ opinions on the suitability of the monitoring obligations per stakeholder category.

Table 6-23 Views on the suitability of the monitoring obligations per stakeholder category

Suitability	Stakeholders										
	Academic/research institution	Business association	Company/business organisation	Consumer organisation	Environmental organisation	EU citizen	Non-EU citizen	Non-governmental organisation (NGO)	Other	Public authority	Trade union
WFD											
Yes	3%	14%	13%	0%	5%	34%	11%	3%	14%	1%	3%
No	1%	12%	20%	1%	7%	36%	5%	12%	7%	1%	1%
I don't know	6%	4%	16%	0%	0%	56%	4%	4%	10%	0%	6%
GD											
Yes	2%	14%	11%	0%	6%	37%	12%	4%	14%	1%	2%
No	2%	8%	9%	0%	6%	42%	9%	14%	9%	0%	2%
I don't know	6%	10%	24%	0%	3%	38%	5%	2%	12%	1%	6%
EQSD											
Yes	2%	11%	9%	0%	7%	37%	13%	5%	15%	1%	2%
No	1%	20%	20%	0%	4%	28%	5%	10%	11%	0%	1%
I don't know	6%	10%	19%	1%	3%	42%	6%	3%	10%	1%	6%
FD											
Yes	3%	12%	11%	0%	7%	38%	13%	2%	15%	1%	3%
No	0%	4%	9%	2%	11%	45%	6%	11%	11%	0%	0%
I don't know	4%	15%	20%	0%	2%	35%	7%	6%	11%	1%	4%

The respondents that answered “No” were requested to provide an explanation of the issues identified. The comments highlighted the following issues:

- The focus of the monitoring on qualitative (chemical and ecological) status was noted, and efforts were indicated as being needed on quantitative aspects, in particular when considering water scarcity and climate change;
- For the Flood Directive, some respondents indicated that more use of smart monitoring and real time data collection could be useful in order to prioritise the use of sustainable resilience.

Insurance representative also indicated that having a wider access to flood data would be valuable in building knowledge and understanding but also resilience;

- For the GWD, the mandatory parameters set to monitor groundwater (Annex V 2.4.2 of WFD) are seen as not being sufficient to give an idea of the groundwater characteristics and missing parameters included: alkalinity; sulphate; chloride; sodium; potassium; calcium; magnesium; iron; manganese; and TOC (or equivalent). Furthermore, concerns were raised by NGOs respondents on the monitoring of chemicals of emerging concern including pharmaceuticals and endocrine substances;
- For the Water Framework Directive: representatives from the navigation sector highlighted that the important relationships between sediments (quantity, dynamics) and ecological status are not reflected in the monitoring obligations;
- For the EQSD: some competent authorities indicated that the substances regulated under the Directive include legacy substances that are banned or being phased out. As such the monitoring should focus on more widely used substances but also on those pollutants that are less known. Competent Authorities indicated that for many substances the biota environmental quality standards are specified with corresponding monitoring obligations. It can be observed however that there are far fewer monitoring points in Europe for biota than for water, and it was noted that the implementation of this requirement is more time-consuming;
- Stakeholders from the drinking water sector highlighted that the EQSD does not include monitoring requirements for substances which are relevant for the production of drinking water. More information on this point is included in the Coherence analysis (see Section 6.5).

These results were also somewhat echoed during the targeted consultation. Participants were asked for their opinion of whether the monitoring requirements included in the WFD and complemented by the GWD and EQSD relevant and sufficient.²⁸² The results are reflected in the table below.

Table 6-24 Responses from expert stakeholders on relevance of the monitoring requirements

	Relevant and sufficient	Relevant, but not sufficient	Neither relevant nor sufficient	I don't know
Spatial coverage	36	9	3	1
Frequency	38	5	3	2
Period of reporting	39	5	3	2
Parameters to be monitored	34	10	3	2

Note: Total responses is 49. Note: Question asked was Question 3 (Targeted consultation: Questionnaire 7 - Monitoring). Are the monitoring requirements included in the WFD and complemented by the GWD and EQSD relevant and sufficient? [Relevant, but not sufficient; Relevant and sufficient; Neither relevant, nor sufficient; I don't know]

The majority of respondents stated that the various aspects of the monitoring requirements were *relevant and sufficient*, with 75% of the cumulative number of answers. The *spatial coverage* and the *parameters to be monitored* were the aspects which respondents thought most often that they were not sufficient. In their explanations, respondents mentioned predominantly:

- The fact that the setting up an EQSD preliminary program of measures precedes the setting of the monitoring program of newly identified substances can cause problems for the setting of

²⁸² [Relevant, but not sufficient; Relevant and sufficient; Neither relevant, nor sufficient; I don't know]

the final program of measures as monitoring starts in 2018 and the results from this year cannot be used sufficiently in setting the preliminary program of measures in 2018;

- Monitoring requirements should take into account climate change;
- Groundwater: Parameters for relevant substances (e.g. pharmaceuticals) are missing; for the WFD/EQSD, the requirements are too extensive and not focused on relevant aspects (POPs and substances not used anymore need to be monitored while relevant substances are missing)
- Efficiency: Monitoring should be fit to the problem to be targeted that means that flexibility to address the problem should prevail rather than rigid requirements. "One size fits all-principle" is not appropriate.
- Monitoring requirements are unnecessarily onerous for stable water bodies

1. Monitoring chemical status

The analysis of the implementation of the WFD identified a clear gap in monitoring with regards to chemical substances as not all priority substances are monitored, and the number of water bodies where monitoring takes place is limited²⁸³.

With regard to the substances being monitoring under the EQSD, it was noted by the Water Directors that the EQS for the river basin specific pollutants vary between Member States which leads to disparities in the assessment of the ecological status but also in transboundary cooperation²⁸⁴. Transboundary cooperation is discussed in further detail under EQ 1.5 How have the Directives facilitated transboundary cooperation? In some instance, the difference can be justified (e.g. substances which are naturally occurring) however for others, the reasons behind the difference is less clear. For this clearer information on the way substances are selected and the way EQS are being derived was indicated as needed.

Article 5 of the EQSD requires MS to establish an inventory of emissions, discharges and losses of all priority substances and the 8 other pollutants in Annex 1 of the EQSD for each RBD. The aim of these inventories is to allow MS to further target measures to tackle pollution from priority substances. It should also inform the review of the monitoring networks and allow the assessment of progress made in reducing emissions, discharges and losses for priority substances²⁸⁵. CIS Guidance document No. 28 provides technical and methodological information for this.²⁸⁶ However in the second RBMPs, only a few MS have established inventories Austria, Cyprus, Luxembourg, Latvia and Slovenia. In others, namely Bulgaria, Croatia, Malta, Sweden and Slovakia, less than 10 substances were included in their inventories.²⁸⁷

²⁸³ European Commission, 2019, Third implementation report of the WFD

²⁸⁴ The Future of the Water Framework Directive (WFD) - Water Directors input to the fitness check process on experiences and challenges of WFD's implementation and options for the way forward. EC (2018) https://circabc.europa.eu/d/a/workspace/SpacesStore/a2b1038f-2aa8-44e8-8288-d0f226fe2224/WD2018-2-2_FINAL_The%20Future%20of%20the%20Water%20Framework%20Directive_15112018.pdf

²⁸⁵ European Commission (2019) 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)'.

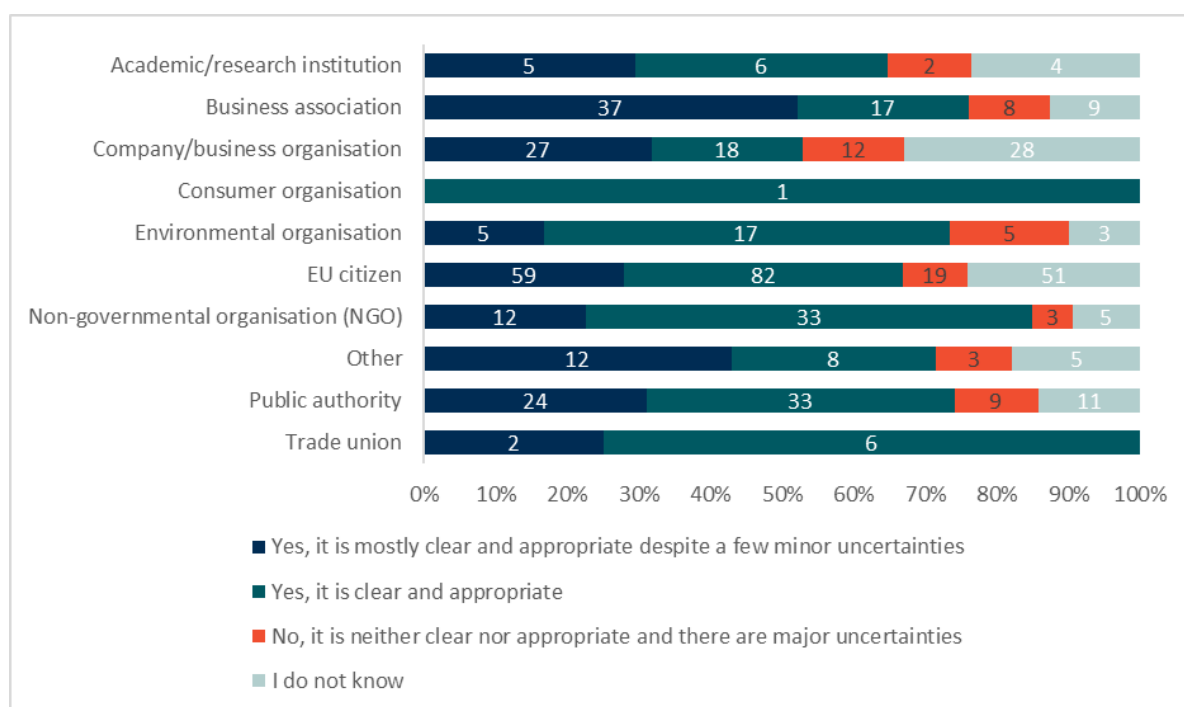
²⁸⁶ CIS Guidance Document No. 28 "Technical Guidance on the Preparation of an Inventory of Emissions, Discharges and Losses of Priority and Priority Hazardous Substances" http://ec.europa.eu/environment/water/water-framework/facts_figures/guidance_docs_en.htm

²⁸⁷ European Commission (2019) 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)'.

2. Spatial aspects of monitoring

The European Water Association indicated in its position paper that added value would be generated by allowing a wider access to the data collected through real time monitoring programmes, in particular for river basin management plans and stated that the monitoring included in the WFD are based on concepts before the development of remote sensing technologies and as such, could be modernised. The implementation report indicated that more efforts are needed for monitoring networks to meet sufficient spatial coverage. The OPC asked respondents whether the Directives are clear enough about the spatial aspects of monitoring. Figure 6-13 presents the results by category of stakeholder. It can be observed from Figure 6-13 that apart from business associations, business organisations and “other” stakeholders, the majority of the respondents from the different stakeholder categories indicated that the Directives are clear about the spatial aspects of monitoring.

Figure 6-13 Views on the clarity of Directives on monitoring for spatial aspects



Note: Question asked was Question 30. Are the Directives clear enough about the spatial aspects of monitoring?

The respondents that answered “No” or “mostly clear” were asked to provide a brief explanation of why and for which Directive. Their responses are summarised in the points below:

- The WFD and the EQS, directives do not provide clear specifications for the monitoring frequency of priority hazardous substances for the operational monitoring. For the Groundwater Directive, the measurement frequency is specified only for qualitative operational monitoring;
- Geographical and climate related differences make it difficult if not impossible to define what is an appropriate frequency of monitoring at EU level. For the WFD, the frequency of monitoring should be defined at MS level;
- A representative network of measurement stations is needed in order to locate the source of pollution;
- The spatial and geographic planning of monitoring stations allow for biased results. Monitoring should be done more frequently to observe more reliable trends, spatial, as well as, temporal

or seasonal. Monitoring stations down-stream of Urban Waste Water treatment outlets could be increased;

- There are not enough obligatory indicators dealing with sediments and morphology, though many problems (also with biota) result from morphological issues (lack of sediment, riverbed erosion etc.).

Question 8.2 How timely and efficient is the Directives' process for reporting and monitoring?

The 2017 Fitness Check on environmental reporting noted that all the water related monitoring was found to be required to meet other obligations (e.g. checking compliance, assessing the need for remedial action)²⁸⁸. Feedback from the Water Directors indicated that the reporting obligations related to the RBMPs are clear and straightforward. The requirements are being implemented through the WISE reporting tool, administered by the EEA. The view from the Water Directors is that the function of reporting tool of the RBMPs has resulted in them being overloaded with details which are used for assessing compliance. This, in turn, weakens their use as a planning and communication tool at the River Basin level²⁸⁹.

Double reporting is being highlighted as an issue due to the requirements from Annex VII of the WFD which is quite extensive with regards to the information to be included in the RBMP and the information to be reported electronically. The input from the Water Directors into the fitness check states that most of the information included in the RBMPs is also required in the electronic reporting, which leads to an inefficient use of resources and ultimately less time spent on the implementation of measures²⁹⁰. This was generally agreed among those MS experts who were consulted as part of the targeted interviews.

One weakness of monitoring stemming from the WFD is the perceived poor linkage between pressures and effects on the ecosystem. A recent review of the future needs of the WFD highlighted that there is redundancy in the WFD assessment schemes, with many representing the impact of the same pressures (e.g. nutrient or organic pollution) across different biological quality elements (e.g. phytoplankton, fish) with differing response times. However, there were few schemes that assessed impacts of hydrological or morphological pressures, or multiple pressure situations²⁹¹.

The 2017 Fitness Check on monitoring and reporting concluded that there was scope for simplification of the EU monitoring, noting the length of the reporting cycles and the potential for harvesting data in a more efficient way²⁹². This was discussed specifically in a workshop “Water Framework Directive (WFD) River Basin District data Source: Make it Work” Expert Workshop on “Environmental Monitoring and Reporting”. As part of the 2017 Fitness Check, public consultation respondents were split on whether the requirements for the WFD were appropriate or too demanding, which reflected the

²⁸⁸ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report; http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

²⁸⁹ The Future of the Water Framework Directive (WFD) - Water Directors input to the fitness check process on experiences and challenges of WFD's implementation and options for the way forward. EC (2018) https://circabc.europa.eu/d/a/workspace/SpacesStore/a2b1038f-2aa8-44e8-8288-d0f226fe2224/WD2018-2-2_FINAL_The%20Future%20of%20the%20Water%20Framework%20Directive_15112018.pdf

²⁹⁰ The Future of the Water Framework Directive (WFD) - Water Directors input to the fitness check process on experiences and challenges of WFD's implementation and options for the way forward. EC (2018) https://circabc.europa.eu/d/a/workspace/SpacesStore/a2b1038f-2aa8-44e8-8288-d0f226fe2224/WD2018-2-2_FINAL_The%20Future%20of%20the%20Water%20Framework%20Directive_15112018.pdf

²⁹¹ Carvalho, L. *et al.* 2019. Protecting and restoring Europe's waters: An analysis of the future development needs of the Water Framework Directive

²⁹² European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

heterogeneity of water resources across the EU²⁹³. It was also noted that the reporting from the EEEA WISE is more detailed than what is required by the legal text itself²⁹⁴. This was reiterated by certain stakeholders in the targeted interviews - while WISE monitors a large variety of elements, many of which go unreported.

As part of the targeted stakeholder consultation, stakeholders were asked if the monitoring data was being fully used to improve the implementation of the Directive. Nearly all respondents stated that they think the monitoring data accumulated is utilised to improve the implementation of the Directive to some degree (92%). Of this, 35% *fully* agreed that data was used to improve the implementation of the Directive, and 56% *only partly* agreed. Further explanations were only provided for those who answered *only partly*, these include:

- Particular sectors are not targeted by PoMs despite monitoring data highlighting that they may be contributing to a high proportion of status failures. This is particular pertinent for agricultural pollution and water body modifications;
- The monitoring implemented by MS may differ from the objectives established in the Directive, which could lead to impacts of sampling points chosen and the quality of the data overall.

The 2017 Fitness Check on environmental reporting indicated that the WFD has "fairly large" reporting costs (100.000-1.000.000), with a large proportion of these costs occurring as a result of the Member States commitment to report water information using common reporting formats and content rather than a direct result of the legislation. The burdens from reporting obligations on Member State authorities range from €100,000 to €1,000,000 annually, mostly from the costs of time for reporting. The estimate does not include costs of monitoring equipment nor time incurred in monitoring emissions. It noted that while the estimate is small in relation to the overall impact of the legislation, the sums involved constitute a source of concern to Member States authorities²⁹⁵. The European Environment Agency produced estimates of annual costs of reporting by category of environmental legislation. This information has been reproduced in the table below.

Table 6-25 EEA's estimate of annual costs of reporting in euros, average for 2014-2016 (estimates by the EEA)

Topic	European Topic Centre budget for reporting activities	EEA thematic FTE	IT budget	IT FTE	Total
Air Quality	310	200	150	100	760
Noise	110	100	100	100	410
E-PRTR	70	100	250	100	520
Biodiversity	660	200	250	200	1,310
Water	250	200	250	200	900
Marine	140	100	250	100	590
Total	1,540	900	1,250	800	4,490

Source: 2017 Fitness check ²⁹⁶

²⁹³ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report; http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

²⁹⁴ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report; http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

²⁹⁵ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report; http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

²⁹⁶ European Commission (2017). Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation. Final Report; http://ec.europa.eu/environment/legal/reporting/fc_overview_en.htm

The administrative burden of the reporting was reiterated during the expert interviews and it was flagged that in some countries with many RBDs that this can be particularly challenging. Opportunities to streamline reporting with UWWTD was also noted as a potential means of increasing the efficiency of the process. This is discussed in further detail under Coherence. It should be noted that with enhanced digitalisation of monitoring and reporting with the use of the WISE platform, the administrative burden is likely to be reduced in the future.

The results from the OPC reiterate that in general, improvements could be made to further reduce the administrative burden of the WFD. A total of 640 respondents provided an answer to this question, out of which 179 (28%) responded “I don’t know”. Of the respondents that knew the answer to this question (72%), Out of the 640 respondents that provided their views to this question, the majority (4360%) consider that the current reporting needs to be revised, improved or simplified.. Their responses are summarised in the points below:

- The complexity of the reporting system leads information not being clearly visible or hard to understand;
- Monitoring and reporting are essential to keep the ambition and vision of the Directive;
- Procedures are well established, due to the Common Implementation Strategy (CIS);
- Significant human and financial resources are required for reporting, not only by authorities but also by agents that could be better used in other activities, such as for the implementation of measures;
- Merging the river basin management plans and plans for flood risk management would significantly reduce the administrative burden on Member States;
- Reporting and monitoring would have to be more stringent. Action plans should be provided with concrete measures and not just in general terms;
- The current reporting needs to be improved to obtain a better overview about on the contaminant load. This is especially true on the contamination by biocides, pesticides and veterinary drugs.

Question 8.3 Is the process for reporting and monitoring clear, flexible and simple enough to support timely decision making?

It should be noted that the analysis for this evaluation question was largely informed by the results of the stakeholder consultation, particularly the OPC, targeted survey and interviews.

The WFD clearly indicates that the public should be involved in the ‘production, review and updating of the RBMPs’ (Article 14(1)). It is noted in the RBMP overview (2019) that stakeholder groups were actively involved in the preparation of the RBMPs in all Member States with an average of more than seven types of stakeholder groups listed in the WFD Reporting Guidance being involved in their RBDs.²⁹⁷ However it is noted in the literature that this can be challenging when RBMPs are very complex and technical documents.²⁹⁸ The feedback received during the stakeholder consultation focus groups echoed these findings. For example, this was brought up at the groundwater focus group and also reiterated in expert interviews with stakeholders. Due to the complexity of the documents, it is therefore vital that they are communicated in a clear and simple manner.

²⁹⁷ European Commission (2019) ‘European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)’.

²⁹⁸ The Future of the Water Framework Directive (WFD) - Water Directors input to the fitness check process on experiences and challenges of WFD’s implementation and options for the way forward. EC (2018) https://circabc.europa.eu/d/a/workspace/SpacesStore/a2b1038f-2aa8-44e8-8288-d0f226fe2224/WD2018-2-2_FINAL_The%20Future%20of%20the%20Water%20Framework%20Directive_15112018.pdf

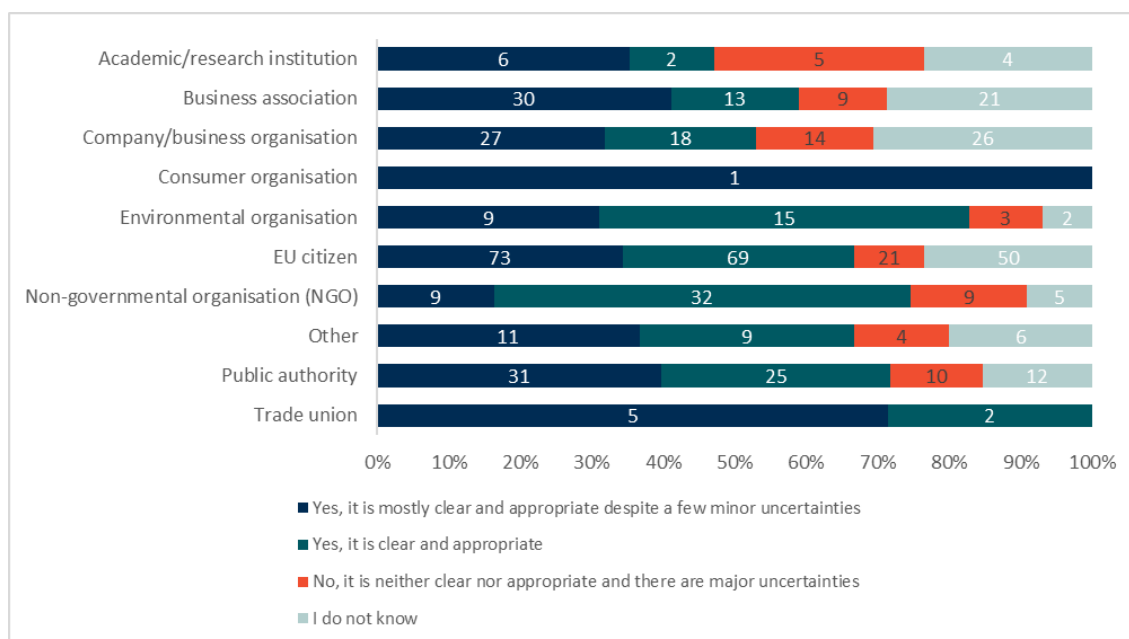
1. Monitoring requirements

In general, the results of the stakeholder consultation revealed that the process for monitoring is seen to be clear and simple, with the majority of feedback being positive on elements such as general clarity and ambiguity of monitoring and frequency specifications.

As part of the targeted consultation, stakeholders were asked whether the monitoring requirements included in the WFD and supplemented by the GWD and EQSD clear and unambiguous. The total respondents to this question were 54. The clear majority of respondents stated that the monitoring requirements included in the WFD were clear and unambiguous, with 52% of respondents stating that the monitoring requirements were *fully* clear and unambiguous, and 41% stating that requirements were *somewhat* clear and unambiguous.

Respondents were also asked for their views on whether the frequency specifications for monitoring were clear and appropriate for the Directives. Figure 6-14 presents the results per category of stakeholders. It can be observed in these results that the majority of the respondents from environmental organisations and NGOs consider the frequency specifications for monitoring sufficiently clear and appropriate in the Directives, including (where relevant) as regard to the monitoring of chemical pollutants in water, biota and sediment. The majority of the respondents from the rest of the stakeholder categories found the frequency specifications for monitoring mostly clear and appropriate, despite a few minor uncertainties.

Figure 6-14 Views on the frequency for monitoring



Note: Question asked was Question 29 - Do you consider the frequency specifications for monitoring sufficiently clear and appropriate in the Directives, including (where relevant) as regards to the monitoring of chemical pollutants in water, biota and sediment?

Linking monitoring requirements with other related legislation is another way of making the process more time-efficient. During the targeted survey, respondents were asked if their monitoring program was well linked with other policies and does the reporting under the Directives exploit links with reporting under other environmental directives or schemes. A clear majority (61%) of respondents stated that monitoring programs are linked to other policies only in part. 24% stated that their monitoring program was fully linked to other policies, whereas 6% stated that they were not linked to other policies with examples including a lack of coherence with the Habitats Directive, Marine

Framework Directive, Nitrates Directive, REACH and the Sustainable Use of Pesticides Directive. The following comments were also provided:

- Those who answered “Yes, fully” also noted that the monitoring programs are well linked to the following Directives: Bathing Waters, Nitrates and UWWTD. Furthermore, it was noted that programs are well aligned to Natura 2000 monitoring approaches;
- Those who answered “Only in part” noted the following:
 - There is a further requirement to make the link between quantitative and qualitative data elements, in addition to integrating climate change projection data;
 - The WFD does not take into account the global perspective on the development and management of water bodies (i.e. requirements of the energy transition and EU goals of decarbonisation);
 - More guidance is required at EU-level;
 - Further efforts are needed to create synergies between biocides, pesticides and veterinary, invasive species, agricultural and national environmental policy.

2. Reporting

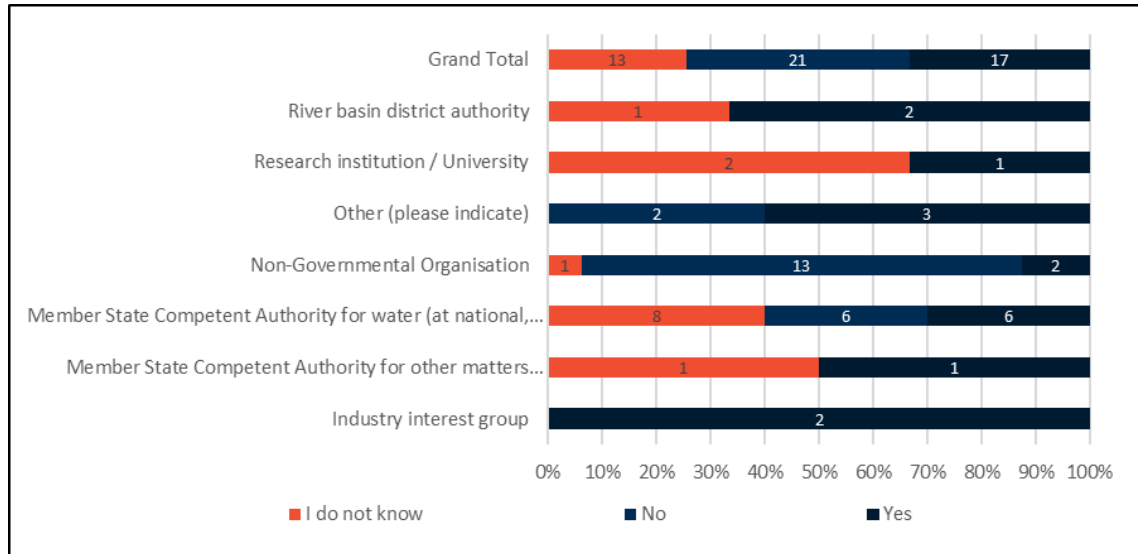
The WISE platform is a web-portal entry to water related information ranging from inland waters to marine has undoubtedly helped streamline reporting under the Directives and allows the different European bodies to more easily collect and share information as well as public access to water data and information reported by Member States. While WISE has been improved over the last years, further investments are planned to create an even more user-friendly, shared environmental system, with amongst others better visualisation capacities. This will very likely further improve the reporting process and make it even more time efficient in the future.²⁹⁹

Stakeholders generally argue that reporting is a big effort for Member States and that reporting to WISE is time consuming, given the fact that not everything that is submitted to WISE actually gets used in reporting. There are some areas which are reported efficiently and some areas which are not. For example, the European overview of RBMPs notes that for protected areas, the reporting for specifically targeted monitoring of protected areas, such as for shellfish, is very limited and even missing in certain MS.

As part of the OPC, respondents were asked whether there are any missing elements in the current reporting requirements. Slightly more respondents stated that there are no missing elements in reporting requirements (41%) compared to those who stated that elements are missing (33%). The breakdown of the results per stakeholder group are summarised in Figure 6-15.

²⁹⁹ European Commission (2019) ‘European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)’.

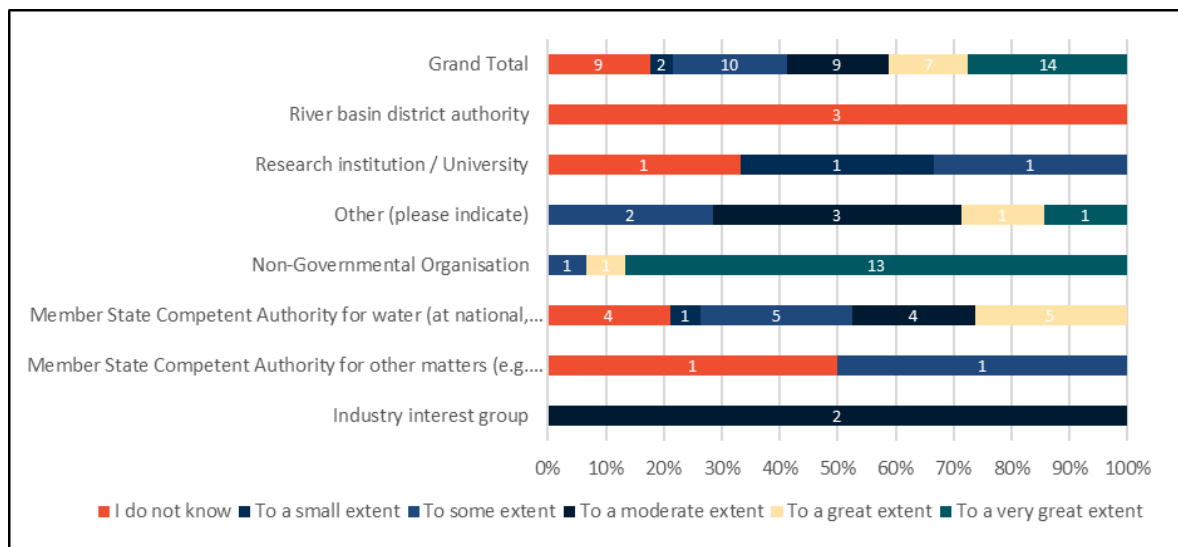
Figure 6-15 Views from respondents on whether there are any missing elements in the current reporting requirements?



Note: Question asked was Question 16 (Targeted consultation: Questionnaire 7 - Monitoring). In your opinion, are there any missing elements in the current reporting requirements?

Streamlined reporting between the WFD and other water-related and environmental policy further increases efficiency of reporting requirements, which remain heavy on Member States. During the targeted survey, respondents were asked to what extent you consider that the reporting requirements for the Directives under this Fitness Check are coherent and synergistic? The results are presented per stakeholder group in Figure 6-16 and indicate a mostly positive view on this question. Most respondents answered that the reporting requirements are coherent and synergistic to a very great extent (27%) or to some extent (20%), followed by those who stated to a moderate extent (18%) and to a great extent (14%).

Figure 6-16 Views from stakeholders on the extent to which they consider that the reporting requirements for the Directives under this Fitness Check are coherent and synergistic?



Note: Question asked was Question 13 (Targeted consultation: Questionnaire 7 - Monitoring). To what extent you consider that the reporting requirements for the Directives under this Fitness Check are coherent and synergistic?

3. Flexibility of the Directives

The Commission has maintained a strict enforcement regarding adoption and reporting of the updated RBMPs, with numerous MS inquiries and infringements initiated where necessary. However, as noted in the European overview of the RBMPs, this approach has resulted in a much quicker uptake in the second cycle than in the first cycle.³⁰⁰

It should also be noted that when stakeholders were asked in the targeted interviews if the Directives were flexible enough with regard to monitoring, it was noted that the Directives can be too prescriptive and, in some cases, lack flexibility. For example, it was noted that the Directive should be more on the results rather than the means³⁰¹. It was noted that in order to assess the status of water bodies the best practice of the moment should be taken. However, it was also noted that such an approach would impede cross-country comparison as it is likely that Member States would be monitoring different aspects.

³⁰⁰ European Commission (2019) 'European Overview -River Basin Management Plans Accompanying the Document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC)'.

³⁰¹ Feedback from interviews

7 Analysis of coherence

7.1 Introduction

The aim of the coherence analysis is to understand the extent to which the WFD and its daughter Directives and the Floods Directive are in line with wider EU policy and international obligations and to what extent those policies reinforce each other in achieving common goals. Policy coherence is essentially about ensuring that policies are coordinated and complementary, and do not contradict one another, following the main definition put forward by the OECD (OECD, 1996).

The first Fitness Check of water policy identified in 2012 that policy coherence had not been the subject of a lot of interest from academic literature and that most of the sources of relevance were non-academic literature, based on the work of international organisations. While similar observations are relevant for this analysis, a number of evaluations of related legislation have been undertaken since (e.g. Drinking Water Directive, Nature Directives) which provides some further evidence to build on this Fitness Check.

7.2 EQ.11- To what extent is the legislation coherent internally?

Conclusions on EQ.11 - To what extent is the legislation coherent internally?	
What has worked well?	<ul style="list-style-type: none"> The Directives are mostly seen as coherent internally. The combined action of the WFD and daughter Directives, and the WFD and the Floods Directive is seen as coherent and effective. The WISE system is considered to be providing coherence by being applicable to the WFD and daughter Directives and allowing a more efficient approach to reporting. While unclarity with regard to terminology and definitions were raised, these are largely implementation issues for which the role of CIS has been highlighted as particularly important. The evidence gathered suggest that the interaction of the WFD, EQSD, GWD and FD are positive and lead to synergies. However more cooperation between the WFD and FD was encouraged in their implementation, in order to avoid counter-productive measures.
What has not worked well?	<ul style="list-style-type: none"> For the WFD one incoherence was identified, related to the applicability of the 2015 deadline for substances added to the priority substance list after this date. When considering the action of the WFD and daughter Directives, the difference in timing of the WFD and the EQSD was raised for the identification of new substances that can occur mid-cycle. Some potential incoherence in the implementation of the WFD and FD was identified with regard to the selection of measures for flood defence that might be contradictory to the objectives of the WFD (e.g. grey infrastructure measures). The differences between the priority substances and the RBSP were also identified as a coherence issue.
Strength of evidence	Strong basis of evidence, with stakeholders' feedback and findings from the literature being aligned.
Indication of bias	No bias identified

The analysis of the internal coherence considers each Directive subject to this Fitness Check in turn.

7.2.1 Internal coherence of the WFD

The first Fitness Check of water policy identified no internal coherence issue within the WFD.³⁰² The feedback received from stakeholders (under the current study) confirm this initial assessment with only minor issues identified but none that are considered to materialise into negative effects.

It is important to bear in mind that as a framework Directive, the WFD state general principles and objectives and leave the practical aspects of the implementation to be decided through the Common Implementation Strategy process. As such this comment, and other similar comments are highlighting implementation issues rather than internal coherence challenges.

The difference between chemical and ecological status highlights another issue, in particular with regard to the different scales of classification, which has been raised through various aspects of the information collection. The fact that chemical substances are considered as part of the ecological status but also defined separately under the chemical status³⁰³, were seen as not being optimal and a source of potential confusion. Furthermore, the lists of substances and EQS are not defined at EU level (contrary to the priority substances) has led to weaknesses in the implementation of those requirements for the RBSP.

Another point made by stakeholders during the targeted consultation was that the current approach to chemical status in which emerging chemicals are periodically identified and moved within the scope of chemical status' determination makes it challenging to observe progress and changes within a river basin district as the overall assessment will be made of different components as time progresses. This is not considered to be an incoherence per se, but rather a challenge of the implementation of the legislation. Finally, one incoherence was raised in relation to the 2015 deadline that still applies for substances that might be added under the scope of the EQS Directive after that time. This appears to be an issue of the legal drafting which in practice does not materialise as the implementation of the provision is pragmatic.

7.2.2 Internal coherence of the EQSD

Overall there is no indication of any internal coherence issues for the EQSD.

The comments from stakeholders (both from the OPC and targeted consultation) raised similar challenges, in particular that the approach of the EQSD based on a 'command and control' approach³⁰⁴ can be seen as outdated and that the analytical methods of the Directive are challenging to implement. However, these do not hint to incoherence.

7.2.3 Internal coherence of the GWD

Overall there is no indication of any internal coherence issues for the GWD.

7.2.4 Internal coherence of the FD

Overall there is no indication of any internal coherences issue for the FD. However, as noted in Section 5.3.2 some stakeholders raised the need for clarification on the terminology.

7.2.5 Internal coherence of the WFD and daughter Directives

The EQSD and the GWD, as daughter Directives of the WFD, have been explicitly drafted to supplement and complete the provisions of the WFD. As such there is very little incoherence expected, and indeed noted by respondents.

³⁰² Fitness Check, WFD

³⁰³ River basin specific pollutants identified at Member State level contribute to ecological status while priority / priority hazardous substances identified at EU level contribute to chemical status.

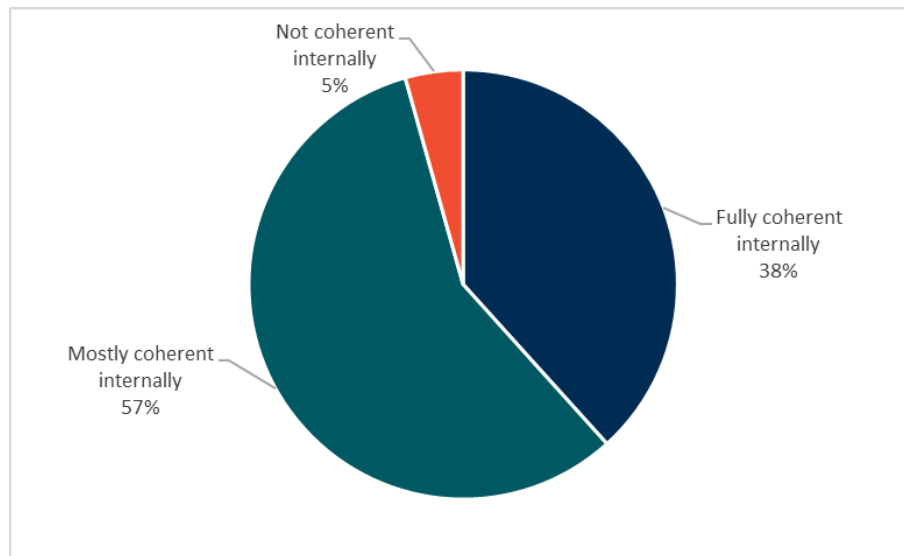
³⁰⁴ This terms refers to traditional regulatory approaches such as setting emission standards, bans of toxic substances, and land planning instruments

The first Fitness check noted that as daughter directives, the GWD and the EQSD are integrated into the procedural framework of the WFD regarding the need for RBMPs and public consultation. In terms of monitoring and data collection, a great achievement (since the introduction of the WFD and of the daughter directives) has been the moving towards more harmonised approaches for sampling and analytical procedures across Europe.

While the first Fitness Check highlighted the need for definition of some key terminology of the Directives, this was not the case as part of this analysis (or to a lesser extent) from the current review, which might suggest an improvement in the common understanding of the legal provisions.

A total of 584 respondents from the OPC provided an answer to the question regarding internal coherence of the four Directives, out of which 148 (25%) responded “I don’t know”. Of the respondents that had an answer to this question (75%), Out of the 584 respondents, the majority (57%) consider the four Directives under the scope of the Fitness Check to be ‘mostly coherent internally’. There are very few respondents (4%) considering these Directives are not coherent. This finding is coherent with the fact that the Directives have been drafted to be complementary to each other. (see Figure 7-1). This finding is coherent with the fact that the Directives have been drafted to be complementary to each other. Only a very small portion (five percent of OPC responses) believe incoherence exists between the WFD and its daughter directives. These respondents mostly came from the general public category, which might have a weaker knowledge of the legal requirements.

Figure 7-1 Views from stakeholders on the internal coherence of the Directives under the Fitness Check scope (OPC)



The respondents that answered “Mostly coherent internally” or “Not coherent internally” were requested to describe the incoherence. Their responses are summarised per Directive and per stakeholder category in the points below:

Water Framework Directive:

Industry/economic organisations/trade unions:

- The WFD is not coherent with the MSFD as the latter contains no part which is relevant to the shellfish aquaculture industry. This means that shellfish waters outside 1 nautical mile do not have any protection;
- Many requirements are vaguely formulated and are not linked to concrete implementation targets. For example, prohibition of deterioration and protection of drinking water resources under Article 7.3 WFD;
- For an efficient implementation of the Water Framework Directive, the revision of the CAP is urgently needed;
- Both the chemical and ecological status have different scales of classification. This is not optimal and needs to be carefully analysed, particularly with respect to the current purpose of each status (EU wide and national);
- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD;
- Coherence is missing in the exemption regime;
- Properly implemented, the WFD is coherent with other policies. However, the way WFD is interpreted in some national implementation and even some CIS guidance documents is not coherent with RES-directive and climate policy. In some cases, targets of FD and WFD are in conflict.

NGOs and environmental organisations:

- For an efficient implementation of the Water Framework Directive, the revision of the CAP is urgently needed;
- There is a need for more coherence between the goals set in article 7 of the WFD and the EQSD as well as the GWD.

Public authorities:

- The 2027 limit does not apply equally to other directives, such as for example EQSD;
- There are some issues which may require further integration between the WFD and the daughter directives for example between Art. 16 WFD and the EQS Directive.

Citizens:

- The incoherence exists mainly concerning the non-implementation of Art.9 EU WFD;
- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD.

Groundwater Directive:

Industry/economic organisations/trade unions:

- There is no consistency in many aspects, e.g. nitrates;
- The effective implementation of the Groundwater Directive requires full implementation of the Nitrates Directive. This is not so far carried out in Germany.

Public authorities:

- The groundwater specific ecosystems should be taken into account for groundwater quality assessment, just as surface ecosystems are for WFD.

NGOs and environmental organisations:

- The effective implementation of the Groundwater Directive requires full implementation of the Nitrates Directive. This is not so far carried out in Germany.

Citizens:

- Annex I is not compatible with Article 6.

Environmental Quality Standards Directive:

Industry/economic organisations/trade unions:

- The EQS Directive overwrites the bottom-up approach used by the RBMP. The EQS level list is more of a legacy deriving from an outdated command and control regime which is no longer needed at EU level;
- No coherence on many aspects in regard to the deterioration;
- The review cycle of the EQSD and the deadline set are not aligned with the 6 year cycles of the RBMP in the WFD.

NGOs and environmental organisations:

- There is a need for more coherence between the goals set in art. 7 of the WFD and the EQSD as well as the GWD.

Public authorities:

- EQS Directive distinguishes ubiquitous pollutants from other PS, but the Commission doesn't come up with solutions to reduce these ubiquitous at the European scale.

Citizens:

- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD.

Floods Directive:

Academic/research institutions:

- Nature-based solutions should be more focused to better match WFD. Conventional floods protection prevent good ecological status due to hydromorphological alterations.

Industry/economic organisations/trade unions:

- There is no coherence in standards;
- Further work could be done to ensure the Water Framework Directive and Floods Directive are coherent in achieving the aims of each of the objectives e.g. flood protection may be reliant on hard engineered defences which can alter the morphology of a river and therefore leads to the river achieving poor or bad ecological status. Therefore, considerations must be made to ensure the exemption of such measures where necessary;
- Quantitative surface water management (WFD, FD) is not giving adequate consideration to structural measures aiming at avoiding floods such as reservoirs. In a context where 95 % (EEA 2018) of Europe's natural floodplains have been converted to other uses, it is not realistic to promote only natural means for flood mitigation.

Public authorities:

- The flooding directive is less coherent with the other directives in terms of the time horizon and possible field of application;
- The objectives between Flood and Water Framework Directive differ - measures for flood protection can have a negative impact on water quality.

The reporting timeframe and review cycle of the EQSD and its deadlines are seen as not well aligned with the reporting cycles of the RBMP (every six years) in the WFD. In practice this means that new EQSD requirements can be set in the middle of a management cycle, which would make it challenging to include and address as part of the RBMP and measures. Views were split on whether this constitutes an incoherence, with some (competent authorities) stakeholders indicating they believed it was, while others (NGOs) indicated that in practice this was preferable as the staggering of reporting deadlines allow competent authorities to focus on specific instruments. The counter-argument was that by adding substances mid-cycle this provides time to research and apply the DPSIR framework properly and prepare for the next cycle. It is worth noting that the addition of new substances as part of the EQSD is a slow process (which was raised by stakeholders as a criticism). This means that Competent Authorities have usually sufficient notice to anticipate the addition of new substances.

Finally, the fact that chemicals are part of the chemical status (through EQS) assessed against two classes but also of the ecological status (through the identification of River Basin Specific Pollutants) assessed against five classes was raised. This means that the emission inventory only covers the priority substances and not the RBSP.

The assessment of the second RBMPs and feedback from the EEA indicated that there are significant differences between Member States in the number of RBSPs that are included in the ecological assessment, and in the standards that have been set³⁰⁵.

The role of WISE for centralising the reporting requirements under the Directives was seen as positive even though the level of details requested was seen by some as going beyond the legal requirements (see analysis of Evaluation Question 8).

7.2.6 Coherence of the WFD and FD

The first Fitness check noted that the Flood Directive fitted well within the WFD process, through the requirements of the Flood Risk Management Plans to be drafted and integrated with RBMPs.

This message was found to be still accurate with very little challenges in the implementation of the WFD and FD being raised.

The European Parliament adopted a water-related resolution in 2015 stressing, amongst others, the importance of water quality and quantity management, the need for full implementation of EU water law and for its increased integration into other EU policies. It called on the Member States to complete and implement their RBMPs and make relevant information available online. Furthermore, it highlighted the synergies between the RBMPs and FRMPs, the need to fully implement the EU water acquis to protect waters against deterioration and progressively achieve good status and called on the Commission and Member States to work together to better integrate these efforts into other relevant policies.

The comments received from Member States competent authorities as part of the targeted consultation raised some potential shortcomings in the implementation; in particular in ensuring that the measures taken to implement the WFD and FD are coherent in achieving each other's objectives. Indeed, with

³⁰⁵ Interviews with the EEA

nature-based solutions to flood management, there is a clear potential for synergies with the achievement of the WFD objectives. Establishing the links between water body status and ecosystem services might facilitate this process. Information on this aspect is presented in Section 5.3.2.

The review of the review of the literature identified some criticisms on the coordination of the implementation of the WFD and the FD³⁰⁶. The fact that opportunities between WFD and FD are under-exploited was also highlighted by the EEA³⁰⁷ in particular with regard to floodplain restoration. Although there is wide agreement on the **need to better integrate the WFD and the FD implementation processes**, the practical implementation of “better integration” varies greatly between Member States. The integrated assessment of the RBMPs noted that several MS have co-ordinated FRMPs and RBMPs. However, both sets of planning and reporting remain often put “side-by-side” with no effective integration throughout the different steps of the planning process³⁰⁸. **Institutional arrangements** for flood management and WFD implementation are very diverse, from a **single competent authority** for both RBMP and FRMPs (e.g. HR, FL, UK) to **different authorities** producing individual or joined plans. While many MS have combined the WFD and the FD planning processes as joint processes (sometimes with a single joint plan), the extent of fully integrated assessment of measures between the WFD and the FD is not common. This leads to risk of potentially conflicting measures being adopted in RBMPs and FRMPs. In some cases, both plans are developed separately with some cross-checking process put in place for assessing coherence.

There are nevertheless also good examples on linking the WFD and the FD, including the Danube river basin and the implementation experience in Slovenia (see information boxes below)³⁰⁹.

Good practice in the Danube

The Danube recommends that for specific measures, competent authorities should make the best use of synergies and avoid potential conflicts that might challenge the achievement of the objectives of the Directives. This includes in particular:

- **Natural water retention measures, i.e. the protection, conservation and restoration of wetlands/floodplains;**
- **Elaboration of an inventory, priority ranking and steps for implementation of restoration measures for the reconnection of lost floodplains and wetlands;**
- **New barriers for fish migration imposed by new infrastructure projects should be avoided, e.g. by building ramps instead of weirs for river bed stabilisation, where deemed to be required;**
- **Restoration of river morphology;**

Good practice in Slovenia

The implementation of the WFD and FD in Slovenia has been coordinated.

As part of the implementation of the FD, a catalogue of measures has been prepared and measures are classified in three groups: measures in synergy with the WFD goals, measures irrelevant for the WFD goals and measures that could potentially conflict with the WFD goals. For the latter group of measures, additional checks are recommended during the implementation to ensure there is no conflict.

³⁰⁶ Beatrice Hedelin, 2016, The EU Floods Directive trickling down: tracing the ideas of integrated and participatory flood risk management in Sweden

³⁰⁷ EEA, 2016, Flood risks and environmental vulnerability – Exploring the synergies between floodplain restoration, water policies and thematic policies. EEA Report No 1/2016.

³⁰⁸ Wood and Acteon, 2019 (not published yet), Integrated Assessment of the River Basin Management Plans

³⁰⁹ ISRBC (2016) Workshop on Flood Risk Management Measures and Links to EU WFD

Finally, the feedback received by expert stakeholders during the targeted consultation raised the difference in the reporting cycles, however it was not seen as source of incoherence.

7.3 EQ. 12 - To what extent is the legislation coherent with wider EU policy?

Conclusions on EQ.12– To what extent is the legislation coherent with wider EU policy?	
What has worked well?	<ul style="list-style-type: none"> The overall legislative system appears to be coherent. The combined action of the Directives with wider water legislation was also underlined as leading to synergies with many of the legislation (e.g. UWWTD, Bathing Water etc) being basic measures under the WFD. The most coherent areas are biodiversity policy, marine protection policies, health protection and funding policies. The role of the CIS process in defining interactions between legislation and concept was highlighted and could be a path for clarifying remaining challenges.
What has not worked well?	<ul style="list-style-type: none"> The areas seen by stakeholders from the OPC as least coherent include: agricultural policies, transport policies, chemicals policy and climate change. On agriculture, the evidence gathered show some challenges to integrate water protection in agricultural practices, including in the use of pesticides and other plant protection products. On transport policies, the evidence gathered show some gaps in the consideration of sediments and their role in ecological status. The inland and wider transport legislation appear to be coherent. On chemicals policy, the lack of feedback from the results observed from the implementation of the WFD into the source control legislation (e.g. REACH) was noted. While not incoherent, the difficulty of making use of the information generated as part of the implementation stream was highlighted.
Strength of evidence	<ul style="list-style-type: none"> Overall good, less evidence was generated for some areas and in general most of the feedback received focused on coherence of the WFD and daughter Directives.
Indication of bias	<ul style="list-style-type: none"> There were some polarised views observed on some coherence issue between the representative of specific sectors (e.g. chemical industry, agriculture) and NGOs, with the former arguing that the legislative framework was operating as intended and the later highlighting that issues are due to lack in implementation

The aim of this evaluation question is to understand whether the interactions of the Directives and the wider legislation are coherent and lead to synergies. This section considers different sectoral policies in turn.

As part of the OPC, stakeholders were asked to provide their views on the coherence of the legislation with other sectoral policies. The views are presented in the table below. The areas seen as least coherent include: agricultural policies, transport policies, chemicals policy and climate change. The most coherent areas are biodiversity policy, marine protection policies, health protection and funding policies.

Table 7-1 Views on coherence with sectoral policy areas

	Fully coherent	Partially coherent	Neither coherent nor incoherent	Incoherent
EU Strategy on Green Infrastructure	44%	43%	8%	5%
Biodiversity policy	49%	40%	7%	4%
Chemicals policy	37%	34%	7%	22%
Marine protection policy	47%	45%	6%	2%
Climate change adaptation and mitigation policy	12%	56%	15%	18%
Industrial emissions policy	37%	32%	11%	20%
Air quality policies	32%	28%	25%	15%
Waste policies	39%	30%	18%	13%
Resource efficiency	35%	35%	16%	14%
Environmental liability	41%	36%	13%	11%
Environmental crime	36%	38%	16%	10%
Transport policy	4%	28%	18%	49%
Health protection	38%	36%	15%	10%
Agricultural policies	8%	22%	8%	63%
Research and innovation	31%	48%	18%	3%
Life+ Funding	38%	47%	9%	6%
Regional policy	8%	66%	16%	10%
Civil protection policy	32%	48%	15%	4%
Other	1%	9%	6%	84%

Results from the public consultation on each policy are shown below:

- EU Strategy on Green Infrastructure: Most positive groups (fully coherent) were EU citizens (39%) and NGOs (33%). Most negative groups (incoherent) were EU citizens, business associations, company/business organisations (23% each) and public authorities (15%);
- Biodiversity policy: Most positive groups (fully coherent) were EU citizens (36%) and NGOs (23%). Most negative groups (incoherent) were business associations (57%) and EU citizens (21%);
- Chemicals policy: Most positive groups (fully coherent) were EU citizens (36%) and NGOs (25%). Most negative groups (incoherent) were business associations, company/business organisations (23% each) and EU citizens (17%);
- Marine protection policy: Most positive groups (fully coherent) were EU citizens (35%) and NGOs (25%). Most negative groups (incoherent) were EU citizens (43%) and public authorities (29%);
- Climate change adaptation and mitigation policy: Most positive groups (fully coherent) were EU citizens (50%) and environmental organisations (14%). Most negative groups (incoherent) were business associations (30%) and company/business organisations (29%);
- Industrial emissions policy: Most positive groups (fully coherent) were EU citizens (35%) and NGOs (27%). Most negative groups (incoherent) were business associations (31%) and company/business organisations (24%);

- Air quality policies: Most positive groups (fully coherent) were EU citizens (35%) and NGOs (27%). Most negative groups (incoherent) were business associations (31%) and company/business organisations (24%);
- Waste policies: Most positive groups (fully coherent) were NGOs (36%) and EU citizens (34%). Most negative groups (incoherent) were EU citizens, business associations (23% each) and company/business organisations (20%);
- Resource efficiency: Most positive groups (fully coherent) were EU citizens (34%) and NGOs (32%). Most negative groups (incoherent) were business associations (28%) and company/business organisations (23%);
- Environmental liability: Most positive groups (fully coherent) were NGOs (30%) and EU citizens (27%). Most negative groups (incoherent) were EU citizens, company/business organisations (22% each), public authorities (19%);
- Environmental crime: Most positive groups (fully coherent) were NGOs (37%) and EU citizens (31%). Most negative groups (incoherent) were EU citizens (36%), NGOs and company/business organisations (14% each);
- Transport policy: Most positive groups (fully coherent) were EU citizens (45%) and environmental organisations (27%). Most negative groups (incoherent) were EU citizens (31%) and NGOs (28%);
- Health protection: Most positive groups (fully coherent) were EU citizens (36%) and NGOs (27%). Most negative groups (incoherent) were business associations (26%) and company/business organisations (22%);
- Agricultural policies: Most positive groups (fully coherent) were EU citizens (38%) and NGOs (15%). Most negative groups (incoherent) were EU citizens (29%) and NGOs (21%);
- Research and innovation: Most positive groups (fully coherent) were EU citizens (35%) and NGOs (34%). Most negative groups (incoherent) were business associations (38%), company/business organisations and EU citizens (25% each);
- Life+ Funding: Most positive groups (fully coherent) were EU citizens (42%) and NGOs (33%). Most negative groups (incoherent) were EU citizens (50%) and business associations (25%);
- Regional policy: Most positive groups (fully coherent) were EU citizens (64%) and environmental organisations (14%). Most negative groups (incoherent) were EU citizens (56%) and NGOs (15%);
- Civil protection policy: Most positive groups (fully coherent) were NGOs (38%) and EU citizens (34%). Most negative groups (incoherent) were EU citizens (58%) and company/business organisations (17%).

The respondents that answered “Other” were requested to explain their answer. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The WFD has recently shown several weaknesses, which include becoming an obstacle to reaching climate policy goals. Besides this, the objectives of the WFD and other European policy strategies such as Energy, Transport, Raw Material Initiative, IED, BAT, REACH or the Urban Waste Water Treatment Directive are not fully coherent with each other. The work of numerous industry installations is directly affected by the different requirements of these strategies;
- There is coherent with Public Procurement Policy;

- Through discouraging investment, the WFD is unfortunately becoming an obstacle to reaching other EU policy goals, such as the Climate policy, the Raw Material Initiative, or the Urban Waste Water Treatment Directive;
- Water legislation is not coherent with climate and renewable energy policies;
- Conflicts between the low-carbon agenda and the environmental agenda (in particular the WFD) negatively impact on the sustainability of the development and operation of hydropower facilities. At the same time, at implementation level, strong differences among Member States undermine a common effective management of water resources;
- Raw Material Strategy is missing from the above list, however there is incoherence between the WFD and the Raw Material Strategy.

NGOs and environmental organisations:

- There is a lack of coherence with energy policy;
- Incoherence occurs with several sectoral policies, primarily agriculture, transport and energy. However, it must be emphasised that any incoherence between sectoral policies and the EU legal framework for sustainable water management is not due to the EU water legal framework. The lack of integration of water protection considerations into other policy areas is, in fact, the root cause of poor implementation of the EU water law, as shown by a range of analyses/studies. For example, lack of policy coherence can be seen in countries not using investment opportunities that are provided by EU financial mechanisms (specifically Cohesion Policy funds and Common Agricultural Policy funding) for implementing WFD measures. Instead, these funds are used to finance measures that directly undermine the WFD objectives (e.g. technical solutions to flood management, navigation, irrigation and land drainage).

Public authorities:

- Water legislation is not coherent with climate and renewable energy policies.

Citizens:

- There is a lack of coherence with energy policy;
- The achievement of the objectives of the WFD was significantly affected by unsustainable practices that are promoted within the framework of other EU sectoral policies, particularly in the areas of agriculture, energy and transport. The objectives of water protection must be integrated into these sectoral policies.

7.3.1 Water policies

The WFD and FD work alongside other EU water legislation such as the Drinking Water (DWD), the UWWTD and the Bathing Water Directive. Overall, this legislative acquis is mostly coherent and while some challenges have been identified, most actually relate to the implementation of the requirements rather than actual incoherence of the legislative texts.

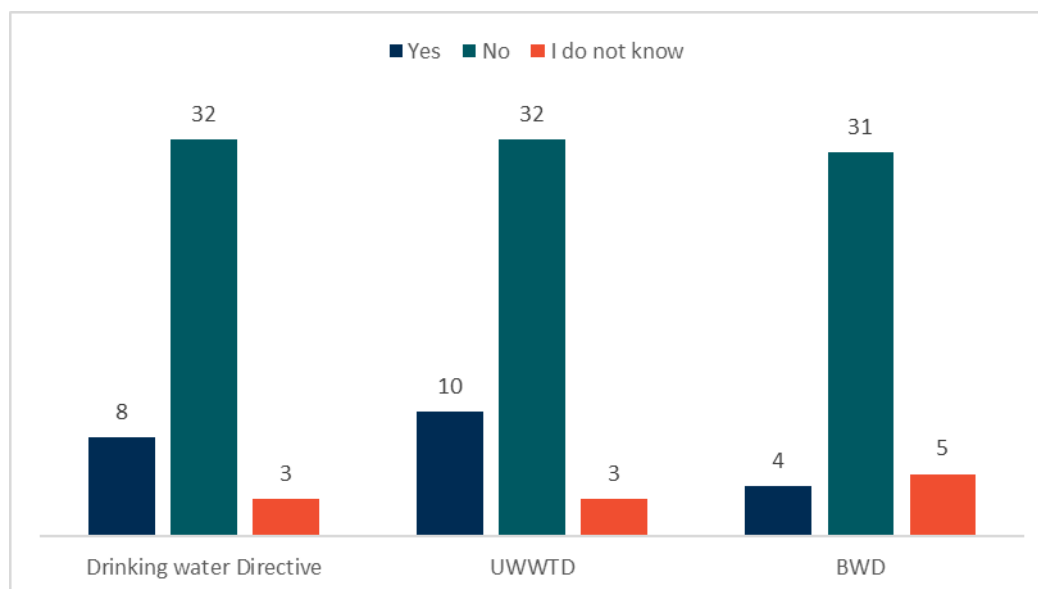
The interaction of water policies with the Directives considered as part of the Fitness Check happen at several level:

- When classifying water bodies, including under the WFD, MSFD, Nitrates Directive (identification of Nitrate Vulnerable Zones) and UWWTD (identification of Sensitive Areas) the level of classification will influence the management practice;
- Meeting quality objectives, which is a requirement under the WFD (good status) but also under the MSFD (Good Environmental Status) and the Inland Navigation (Good Navigational Status);

- Setting control measures for pressures on water bodies. The UWWTD specifies requirements on treatment level and performance while the Nitrates Directive sets limit of application of manure to specified levels.

The figure below presents feedback from expert stakeholders on their awareness of any incoherence issues with the relevant water legislation.

Figure 7-2 Views from stakeholders on awareness of incoherence with the legislation presented



Drinking Water Directive

The Drinking Water Directive³¹⁰ aims is to protect human health from adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean. Article 6 of the WFD stipulates that Member States should make a register of protected areas. The register should include Drinking Water Protected Areas (DWPA's) and areas covered by the Bathing Water Directive, Nitrate Directive (nutrient-sensitive areas) and Natura-2000-sites as well as waters with economically significant aquatic species. Most MS have defined, or are in the process of defining, specific zones including specific water protection measures to avoid pollution to drinking water from agriculture³¹¹. Furthermore, the DWD is a basic measure under the WFD, setting the base for the coherence of the legislation.

The DWD has recently undergone an evaluation. It indicated that the coherence of the DWD with the WFD was especially important, as the protection of drinking water resources is established as an indispensable part of the plans and measures under the WFD. This has made the WFD the most relevant for the quality of drinking water, since protection of drinking water resources is indispensable for plans and measures under the WFD. According to the evaluation, the DWD is coherent with the Nitrates Directive, the WFD, the Groundwater Directive, the Pesticides Directive, the UWWTD, and the Radioactive Substances in Water standards³¹².

Some concerns have been raised by stakeholders on the interactions between the DWD and GWD. In particular, this includes the absence in the GWD of specific requirements in drinking water catchment

³¹⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31998L0083>

³¹¹ [Report from the Commission on the implementation of the WFD and FD 2nd River Basin Management Plans and 1st Flood Risk Management Plans \(Brussels, 26-02-2019\)](#)

³¹² Ecorys, 2016, Study to support the evaluation of the Drinking Water Directive

areas (neither congruence of drinking water relevant substances nor specific requirements for parameters mentioned in both Directives). However, other stakeholders emphasised that the issue had been thoroughly discussed including as part of the Groundwater expert group. This point was reiterated as part of the Focus Group on groundwater. A guidance document related to groundwater and drinking protection areas has been developed providing a clear understanding of the relationship between the legislations³¹³.

The main challenge identified relates to the lack of effectiveness of the provisions requiring the application of the polluter pays principle, which has consequences for water services companies. Interviews with water industry representatives indicated that the legislation was expecting to lead to gradual reduction of the need for treatment of drinking water due to the combined action of the WFD and GWD. However, it is observed that the number of treatments is increasing, and the costs of such treatments are borne by customers through water utility bills³¹⁴.

Urban Waste Water Treatment Directive

The aim of the UWWTD is to protect the environment from the adverse effects of urban waste water discharges³¹⁵. The UWWTD constitutes a basic measure of the WFD and the interactions between the legislations are very important.

Since the adoption of the UWWTD the EU water acquis has grown significantly. The 2012 Fitness Check noted two direct explicit interactions between the UWWTD and WFD.

- First, Sensitive Areas defined under Annex II of the UWWTD are listed as one type of ‘protected area’ under the WFD. Sensitive areas are those waterbodies which are found to be eutrophic, drinking waters which have more than the advised concentration of nitrate and areas where further treatment required under Article 4 of the UWWTD is prescribed;
- Second, the programmes of measures include basic measures derived from other EU law and these include the requirements of the UWWTD. There is a general obligation under the UWWTD for appropriate treatment under the UWWTD, and this can, inter alia, be interpreted with regard to actions necessary to meet WFD objectives.

The 2012 Fitness Check emphasised these interactions as contributing to the coherence of the WFD and the UWWTD.

The UWWTD has been evaluated in a parallel process to this Fitness Check. The evaluation of the UWWTD concluded that while the UWWTD and WFD take different approaches to water management and tackling emissions to water, no incoherence was identified that led to undermining the achievements of the objectives of either legislation. The evaluation concludes that the UWWTD represents a baseline requirement for waste water treatment, whereas the WFD sets overall water body objectives and additional controls on waste water discharges which may be required to deliver these. The evaluation however does identify two gaps³¹⁶:

- Insufficient implementation of the UWWTD (so not controlling pressures affecting WFD objectives).

One issue that came to more attention during the evaluation of the UWWTD is the pollution from run-off and storm water overflows and their impacts on water bodies. According to the definition of floods

³¹³ CIS Guidance 16, <https://circabc.europa.eu/sd/a/aef48d98-7715-4828-a7ee-df82a6df4afb/Guidance%20No%2016%20-%20Groundwater%20in%20WPAs.pdf>

³¹⁴ Interview with stakeholders - EUREAU

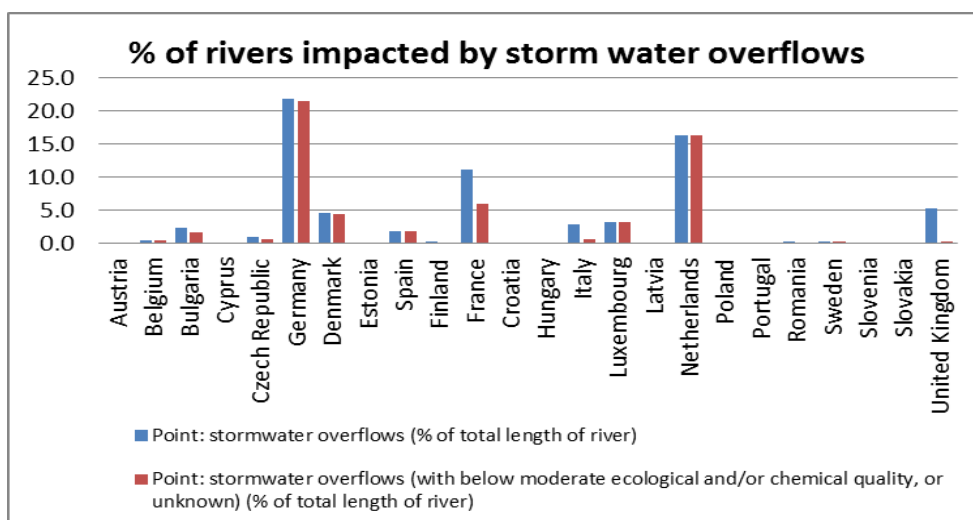
³¹⁵ http://ec.europa.eu/environment/water/urbanwaste/index_en.html

³¹⁶ Wood, 2019 (unpublished yet), Support to the evaluation of the UWWTD

in Article 2 of the Flood Directive, floods from sewers may be excluded from the scope of the Floods Directive. Similarly, the UWWTD includes an exception to the requirements of Article 3 for ‘spills due to unusually heavy rainfall’. As such, there appears to be a gap on provisions addressing this source of pollution. The UWWTD contains some information on storm water overflows, but as outlined in the consultation results of the ongoing evaluative study for the UWWTD, lack of clarity on SWOs is something that respondents to the OPC have expressed a need for further clarity in the legislation itself. There is no formal definition. The pollutants in surface water runoff that are either discharged from combined sewers via SWOs or discharged via separate systems outfalls, are known to be increasing in number and complexity with time. This is outlined in detail in Wood’s (2019) evaluation study for the UWWTD which is yet unpublished.³¹⁷

While there is no EU wide estimate of the quantity of pollutants release from SWOs, the European Environment Agency ‘Pressures and Impacts’ Database³¹⁸ identify proportions of water bodies impacted by different pressures (as reported in the 2nd round of River Basin Management Plans) this include SWOs as presented in Figure 7-3.

Figure 7-3 Percentage of rivers impacted by storm water overflows



Source: EEAWISE database

The feedback from stakeholders also highlighted the inter-relation of the legislation and the potential impacts from incorrect implementation of some provisions on others which demonstrates how heavily integrated the WFD and UWWTD are in practice. For instance, heavy changes to the hydromorphology of a basin such as increased soil sealing, increases vulnerability towards floods events. During such events, waste water can be directed to overflows which will lead to an increase of pollutants dumping in the river basin. Therefore, there is an imperative need for water policy managers and others to fully consider the consequences of one set of actions against the requirements of all the integrated related policy.

One possible challenge in the implementation was raised by a trade association that described instances where the permitting of a new waste water treatment plant can be refused so as to protect the surface water (e.g. to prevent further deterioration) in which the treated water would be discharged. This

³¹⁷ Wood, 2019 (unpublished yet), Support to the evaluation of the UWWTD

³¹⁸ <https://www.eea.europa.eu/themes/water/water-assessments/pressures-and-impacts-of-water-bodies>

situation could be problematic in instances where the size of the agglomeration means that the requirements of the UWWTD to collect and treat water is mandatory.

Bathing Water Directive

No incoherence was identified regarding the Bathing Water Directive.

7.3.2 Marine policies

Maritime Spatial Planning Directive

Maritime spatial planning (MSP) works across borders and sectors to ensure human activities at sea take place in an efficient, safe and sustainable way due to the increasing competition for maritime space for energy, aquaculture and other needs.³¹⁹ Article 2.1 of the Maritime Spatial Planning Directive (MSPD) applies to Member States' marine waters - *“it does not apply to coastal waters or parts thereof falling under a Member State's town and country planning, provided that this is communicated in its maritime spatial plans”*. At the stakeholder workshop of 3 June 2019 some stakeholders raised this issue, for example in relation with shellfish aquaculture. The coherence analysis did not yield any results on the synergies and/or conflicts between the MSPD and the WFD.

Marine Strategy Framework Directive

The MSFD aims to achieve good environmental status of the EU's marine waters by 2020, thus protecting the resource base upon which marine-related economic and social activities depend³²⁰. The Directive aims at a holistic and functional approach to status, by requires an assessment based on a set of process-related, functional objectives, and synthesised in 11 descriptors³²¹.

The WFD and MSFD overlap on coastal waters as the WFD covers transitional and coastal water up to 1 nm from the continental baseline while the MSFD covers all marine waters in the Exclusive Economic Zone. It is clearly stated in the MSFD that in areas where the two Directives overlap, the MSFD is only intended to cover pressures that are not already covered by the WFD (e.g. noise, litter, and some components of biodiversity). Feedback from stakeholders highlighted that the fact that litter is not covered by the WFD could be seen by some as a gap, in particular when considering marine litter emanate to some extent from inland areas.

Feedback from expert stakeholders³²² highlighted the importance of the links between the MSFD hydrographical conditions descriptor and the WFD hydromorphological and physico-chemical supporting elements. In cases of overlap in coastal water bodies, the WFD takes precedence, as such it is seen as important for the implementation process to recognise these links, in particular for new physical modifications.

Some of the **pressures covered by the WFD have an impact on marine waters**, including **pollution** from agriculture (nutrients and pesticides), industry and urban areas. The MSFD has also strong connection with the WFD objective of achieving **hydromorphological conditions** that support good ecological status. The example of sediments was raised as providing a good illustration of the challenges that can happen in the interactions between the WFD and the MSFD. Sediments emanate from the river and into the marine areas. In some river basins there is no management measure for sediments at river level as this is not required by the WFD. This becomes an issue when these sediments reach marine areas as the MSFD consider sediment pollution. This lack of connection was highlighted in particular by estuaries and port related experts.

³¹⁹ https://ec.europa.eu/maritimeaffairs/policy/maritime_spatial_planning_en

³²⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056>

³²¹ Wood and Acteon, 2019, Integrated Assessment of the RBMPs

³²² Interviews with NAVI Task Group

The coordination **between the WFD and the MSFD** implementation takes place in different Member States (e.g. Baltic countries, Germany, France...). For example, in **Croatia**, consideration is given to **projects and investments that contribute to the achievement of quality objectives relevant to both inland and marine waters**. The Adriatic Project, financed by the European Bank for Reconstruction and Development (EBRD), proposes investment in wastewater collection and treatment systems in coastal areas combined with strengthening capacity in water companies. The project aids the WFD to achieve good chemical status for inland and transitional waters, while reducing pressures on marine waters as part of Croatia's obligations under the MSFD³²³.

Synergies and coordination between the WFD and the MSFD is supported in **regional sea actions plans** (although sometimes in more qualitative and policy terms than in terms of combined assessments or selection of measures). In the **Baltic Sea Action Plan** a nutrient reduction scheme was introduced in 2007, which includes Country-Allocated Reduction Targets (CART), indicating how much nutrient inputs the HELCOM countries need to reduce by compared to a reference period (1997-2003). The WFD implementation and the development of the PoMs at MS level are then coordinated with the MSFD in line with the HELCOM Baltic Sea Action Plan (BSAP) and the application of a common methodology³²⁴. Differences in the monitoring were identified, with EQS monitoring that applies to the whole fish for some substances or only to tissue for other substances. Stakeholders also raised the challenge of applying the trophic level correction factor before comparing the measurements with the EQS value. In some areas, this step is not followed due to the lack of robust information on which the trophic factor can be based. OSPAR for example indicated that while data normalisation processes are supported, there would be a need for an agreed mechanism for trophic-level assessment to ensure consistent approaches.³²⁵ Beyond monitoring, the systems for standard setting were also described as questionable for transitional and coast waters.

Some potential for further improvement of synergies was identified, in particular, the terminology used in the WFD implementation and the MSFD which can vary and lead to confusion between the responsible authorities. Some of the views from MSFD experts were that the implementation of the WFD is mainly freshwater led and that the level of knowledge on marine and transitional waters is less developed.

A review of funding in Member States to meet the objectives of WFD and MSFD found that more attention could be given to **projects proposed for EU funding that contribute to both the WFD and MSFD objectives**³²⁶.

The feedback from stakeholders confirm the overall coherence of the two pieces of legislation. However, some respondents highlighted the lack of understanding of marine waters in the implementation of the WFD and the need to support more coordination. Overall the methodology and standards included in legislation like the EQSD may not be completely suited for marine waters. The example from the OSPAR approach found that for marine organisms and in the absence of other data, food safety thresholds have been used to support assessments of environmental quality. However, this approach was seen as not completely satisfactory as it leads to inconsistent measurements³²⁷. Finally, it was highlighted that more information can be learned from the marine approach, with the example of the data viewer developed under the OSPAR convention that presents maps for specific

³²³ Wood and Aceton, 2019, Integrated Assessment of the RBMPs

³²⁴ described in the HELCOM "Guidelines for the compilation of waterborne pollutant load to the Baltic sea (PLC-WATER)," see <http://www.helcom.fi/action-areas/monitoring-and-assessment/manuals-and-guidelines/plc-water-guidelines>

³²⁵ Ospar position paper, 2019

³²⁶ Wood and Aceton, 2019, Integrated Assessment of the RBMPs

³²⁷ Interview with OSPAR stakeholders

substances based on monitoring but also calculated projections for the time required for environmental concentrations to decline to reach the environmental standards. These kinds of projections aid planning and allocation of resources to prioritise measures³²⁸.

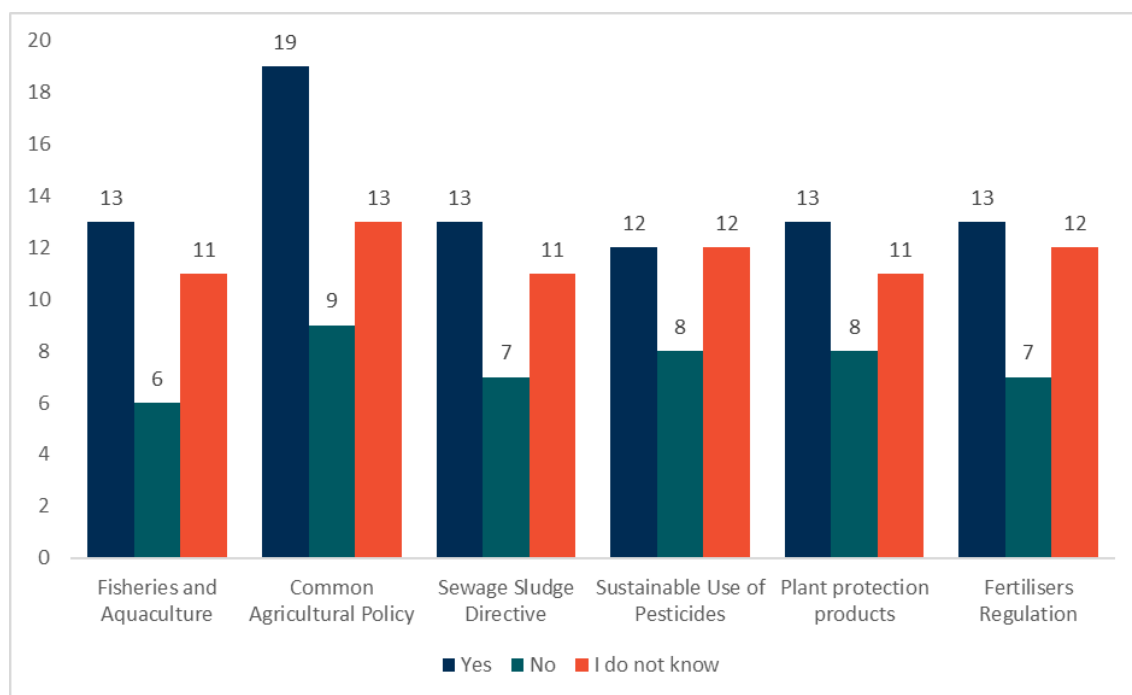
7.3.3 Agricultural policy and land use planning

Water is an essential production resource for agriculture. Worldwide, there is a challenge to produce more food (and double production by 2050), while reducing the use of water, mainly due to pressures from growing urbanisation, industrialisation and climate change³²⁹.

Agriculture is the primary source of pressures preventing water bodies achieving good ecological status across Europe. This is mainly due to diffuse pollution of nutrients (nitrogen and phosphorus) and pesticides, and water abstraction for irrigation³³⁰. The EU policy is to support sustainable agricultural production while mitigating the impact on water and water-related ecosystems are protected, managed and used sustainably. The delicate balance between agriculture and water-related objectives has been addressed at EU level by the evolving EU environmental and agricultural legislation³³¹. As such the main legal interaction is with the Common Agricultural Policy (CAP), but other legislations are important such as the Nitrates Directive and the Sustainable Use of Pesticides Directive.

The general perception is that there are many conflicts between water protection and agricultural policies. The feedback from stakeholders (targeted consultation) is quite consistent across all instruments listed which are seen as conflicting with the objectives of the WFD and to a lesser extent the Floods Directive (see below).

Figure 7-4 Views from stakeholders on the coherence of the water Directives with agricultural policy



Note: The question asked was ‘are you aware of any incoherence between the Directives under the scope of the Fitness Check and the specific instruments listed’

³²⁸ See for example <https://ocean.ices.dk/oat>

³²⁹ OECD 2010. Sustainable management of water resources in agriculture. ISBN 978-92-64-08345-5-No.57283

³³⁰ [Report from the Commission on the implementation of the WFD and FD 2nd River Basin Management Plans and 1st Flood Risk Management Plans \(Brussels, 26-02-2019\)](#)

³³¹ EC 2017, Agriculture and Sustainable Water Management in the EU. Commission Staff Working Document 153 final, Brussels 28.4.2017.

The analysis of the 2nd RBMPs found that basic measures to tackle diffuse pollution were reported for all MS, but not for all RBDs and not for all diffuse pollutants³³². The European Commission concluded that engagement with farmers seems to have increased but it noted that few MS report the provision of advisory support services for farmers on implementation of measures.

This mirrors the findings from the integrated assessment of the 2nd RBMPs that found that the integration of agricultural and water policy processes at MS level was in many instances unsuccessful, with environment/water competent authorities finding it challenging to engage all the relevant actors in the agricultural community (including several private farming operators)³³³. From the review of the application of the DPSIR framework, it was unclear how results of the WFD assessments (carried out at river basin scales) demonstrating the significance of pressures from agriculture were being consolidated at national level and used for supporting changes in agriculture policy implementation.

Common Agricultural Policy

The Common Agricultural Policy (CAP) 2014-2020 sets the legislative framework for agriculture in Europe and is a major part of the EU action with 40% of the EU budget.

The CAP has two main aspects that are relevant when considering water policy objectives:

- Cross compliance and Greening: which link payment of subsidies with specific environmental requirements; and
- The European Agricultural Fund for Rural Development (EAFRD) which incentivise actions going beyond regulatory compliance.

The latest implementation report as well as the EEA's State of Water report have identified agriculture as one of the main pressures affecting water quality status across the EU and the lack of coherence between the WFD and CAP was brought up in the stakeholder workshops, and in the targeted expert interviews conducted for this study. While cross-compliance and greening schemes are examples of some instruments that have been implemented to harmonise payments for the 1st pillar of CAP, it should be noted that issues were raised regarding existing gaps. For example, the European Court of Auditors indicated in their 2017 report that this is not applicable to all farmers and it is often deemed complicated with penalties not deemed to be dissuasive enough. This has contributed to its limited impact on environmental performance.³³⁴

Furthermore, a 2014 review by the European Court of Auditors³³⁵ of the use of these instruments for water protection emphasises that the cross compliance has had a positive impact, but that it has been limited and that the objectives of the WFD have only partially been integrated in the CAP. Delays in the implementation of the WFD hindered the integration of water policy objectives into the CAP. It also concluded that monitoring and evaluation systems related to the CAP do not provide the information necessary to help inform policy making on pressures on water coming from agricultural activity³³⁶. A further analysis of cross compliance³³⁷ conducted by the ECA in 2016 indicated that 68% of farmers receiving 83% of CAP payments were required to comply with cross-compliance. Expectations of society are high that farmers receiving EU subsidies comply with cross-compliance. The cross-compliance

³³² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:30:FIN&qid=1551267381862&from=EN>

³³³ Wood and Acteon, 2019 (not published yet), Integrated Assessment of the River Basin Management Plans

³³⁴ European Court of Auditors (2017) Special Report n° 21/2017: Greening: a more complex income support scheme, not yet environmentally effective. <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=44179>

³³⁵ ECA, 2014, https://www.eca.europa.eu/Lists/ECADocuments/SR14_04/SR14_04_EN.pdf

³³⁶ ECA, 2014, https://www.eca.europa.eu/Lists/ECADocuments/SR14_04/SR14_04_EN.pdf

³³⁷ ECA, 2016 Making cross-compliance more effective and achieving simplification remains challenging, https://www.eca.europa.eu/Lists/ECADocuments/SR16_26/SR_CROSS_COMPLIANCE_EN.pdf

requirements were described by farmers as complicated to understand which make them challenging to comply with. It should be noted that, ultimately, CAP cross compliance does not integrate sufficiently the WFD objectives. This was reiterated during the targeted expert interviews. In order for cross-compliance to be coherent, the WFD must also be considered in the CAP and integrated sufficiently into the agricultural policy.

The CAP provides for EU rural development investments that lead to synergies for water protection and farming activities, however many examples were provided by stakeholders on the use of these investments leading to inadequate results. For example, higher water use efficiency is an attractive target for reducing pressures on water bodies and for achieving good status objective of the WFD. Similarly, the Rural Development Regulation includes requirements on water savings. Consequently, it is one of the most important measures funded by EAFRD and included in many RBMPs across Europe. However, in the targeted consultation, one stakeholder highlighted that irrigation efficiency has seldom led to effective water savings, as experience shows switching to more efficient irrigation systems usually goes hand in hand with expanding the actual irrigated area or switching to more water intensive crops, leading not to water savings but to even greater water use. . As a result of this, it is possible that funding that is available through rural development investments may hinder pressures on water bodies. The integrated assessment of the 2nd River Basin Management Plans concluded that with regard to the PoMs, the information collected at Member State level show that Member States almost entirely rely on measures that can be funded through the **Rural Development Regulation**. However, it is important to indicated that the Rural Development Programs (RDPs) of the CAP are the main source of funding for the programs of measures in the 2nd RBMPs, and have therefore contributed to the implementation of WFD.

There was some emphasis observed on the specific outcomes within Pillar I of the CAP on cross-compliance and greening, but the scope of such measures for addressing the suite of pressures was seen as limited.³³⁸

The lack of application of the cost recovery and water pricing obligations are particularly visible in the agricultural sector and a clear hindrance to the achievement of the objectives of the WFD. It was noted that the application of the polluter pays principle should be improved. The water industry stated that some of the agricultural practices in place lead to increased nitrates, pesticides and residues in water that are being treated by water services companies rather than farmers³³⁹. In this situation, rather than the polluter paying, it is the consumer (through water utilities bills) that pay for the externalities of farming activities while farmers might benefit from funding to support their activities.

While many challenges have been identified, stakeholders from the agricultural sector highlighted the work that has been seeking to better integrate WFD objectives into practical agricultural decision making at Member State level. This includes for example the current joint initiative on agriculture and water between DG AGRI and DG ENV. Furthermore, the European Commission and the Council have both strongly stressed the need for more integration of water policy with agriculture³⁴⁰. The cross compliance is not currently sufficient to prevent the adverse effect to water from activities that are subsidised. Cross-compliance does not include all water-related issues e.g. pesticides.

³³⁸ Wood and Acteon, 2019 (not published yet), Integrated Assessment of the River Basin Management Plans

³³⁹ Eureau, 2019, EurEau position paper on the revision of the Common Agricultural Policy (CAP) <http://www.eureau.org/resources/position-papers/3326-eureau-position-paper-on-the-revision-of-the-common-agricultural-policy-1-3/file>

³⁴⁰ ECA, 2014, https://www.eca.europa.eu/Lists/ECADocuments/SR14_04/SR14_04_EN.pdf

In addition to contributing to increased pressures on the water environment, agricultural policies can also prevent restoration efforts that are needed to achieve the good status objective. It was noted by NGO stakeholders that intensive agricultural land can occupy large areas of floodplains and that these can constitute obstacle for floodplain restoration. While it is noted that these are not linked with the CAP decoupled direct payments, they are seen as a perverse effect from agriculture subsidies that support intensive land use on floodplains that are uneconomic once flood management externalities are considered.

Hydromorphological measures can in some instance conflict with traditional agricultural practices (e.g. augmentation of supply through small-height reservoirs and levees, irrigation channels, land drainage, etc) and it was observed that insufficient attention is given to the benefits that multifunctional measures applied in agriculture land can deliver, including for farmers themselves.

Finally, discussions are ongoing for the revision of the CAP post 2020 which is expected to place greater emphasis on water and environment.

Nitrates Directive

The Nitrates Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. It was pre-existing the adoption of the WFD and is part of the basic measures. The Nitrate Directive requires member states to designate all land draining to waters that are affected by nitrate pollution or that could be affected if action is not taken to decrease nitrate leaching (so-called 'Nitrate leaching Vulnerable Zones' or NVZs). The Nitrates Directive requires that Member States establish a voluntary code of good agricultural practices available to all farmers throughout the country, and a mandatory action program, which is applied either within nitrate vulnerable zones (NVZ) or throughout the whole country (when the whole country is designated as NVZ). Action programmes include measures to limit the period when the land application of fertilisers is allowed, balanced nitrogen fertilisation, a limit to the application of manure nitrogen, and limitations to application of nitrogen fertilisers on sloping soils, during wet conditions, and near watercourses. Additional measures that can be taken include land use management, crop rotation, and winter crops³⁴¹. The increase in agricultural productivity especially in the animal rearing and crops growing sector in the EU during the last decades has led to pollution of groundwater with nitrate and (residues of) pesticides. However, there are large regional differences; total nitrogen input via fertilisers, animal manures, atmospheric deposition, and biological N₂ fixation to agricultural land range from less than 50 kg N per ha per year in regions in Central Europe to more than 300 kg N per ha per year in regions with intensive livestock systems. An EU covering study to quantify the effect of the Nitrate Directive calculated (with the model Miterra) that the Nitrogen emissions and leaching in the EU-27 slightly decreased in the period 2000-2008. Total emissions in the EU in 2008 were smaller with implementation of the ND than without the ND, by 3% for NH₃, 6% for N₂O, 9% for NO_x, and 16% for N leaching and runoff in 2008.³⁴²

The first Fitness Check noted polarised views on the Directive with some stakeholders considering the process-oriented approach to be outdated, while other considered that significant improvements had been achieved on nitrates pollution thanks to this approach.

³⁴¹ Oenema, O. , Bleeker, A. , Braathen, N. A. et al. (2011). Nitrogen in current European policies. In: Sutton, M.A., C.M. Howard, J.W. Erisman, G. Billen, A. Bleeker, P. Grennfelt, H. van Grinsven & B. Grizzetti (Eds). The European Nitrogen Assessment. Cambridge, UK, Cambridge University Press, Cambridge University Press

³⁴² Velthof, G.L., J.P.Lesschen, J.Webb, S.Pietrzak, Z.Miatkowski, M.Pinto, J.Kros, O.Oenema, 2014. The impact of the Nitrates Directive on nitrogen emissions from agriculture in the EU-27 during 2000-2008. Science of the Total Environment 468-469 (2014) 1225-1233.

The main challenge identified in the interaction with the Nitrates Directive seems to be in the implementation of the legislation rather than in the legislative framework itself. Nutrients pollution appears to be considered as being dealt with the Nitrates Directive, while the good agricultural practices are voluntary outside the NVZ. While Member States can in theory adopt compulsory measures outside the NVZs in order to meet the WFD objective, in practice this is not often done. The Nitrate Directive includes two quality objectives, namely < 50mg/l in surface freshwaters and groundwater, in particular those used or intended for the abstraction of drinking water and no eutrophication of freshwater bodies, estuaries, coastal waters and marine waters. However, eutrophication is not well defined in the Nitrate Directive and its monitoring guidelines, especially in relation of phosphorus concentrations. And for many surface water bodies, a concentration of 11.3 mgN/l (equivalent to 50 m/l nitrate) is too high to meet good ecological status.

The overlap between the Nitrates Directive and the WFD were highlighted by stakeholder, in particular, when considering that both aim at avoiding eutrophication but by different means. The approach from the WFD is more precise than the Nitrates Directive's approach. This overlap was already identified as part of the first Fitness Check that described it as a positive overlap reinforcing action under the Nitrates Directive. The first Fitness Check concluded that the Nitrates Directive, which does not specify environment quality objectives, benefited from the requirements of the WFD. However, it also noted that progress on tackling nitrate pollution was variable³⁴³. Finally, the work done by the Ecostat Working Group on setting nutrient boundaries was raised as being useful in supporting the coherence of the Directives.

Some of the feedback provided by stakeholders involved in the provision of drinking water raised the point that the level of nitrate concentrations stated in the GWD are too high to achieve the related WFD target for surface water.

Sustainable Use of Pesticides Directive and Plant Product Regulation

The Sustainable Use of Pesticides (SUP) Directive is an important instrument to reduce the risks and impacts of pesticides on human health; on the environment; and for promoting Integrated Pest Management.

There is a wide variation between MS in the total pesticide use as well as in the relative use of fungicides, herbicides and insecticides, depending on the type of crops cultivated, which affect the pressure on water resources. Eurostat present recent data on quantities of pesticides sold³⁴⁴.

The Plant Protection Product (PPP) Regulation relies on a two-step approach: the authorisation and the application.

On the authorisation step, impacts on aquatic environment are considered but it is noted that there is a lack of alternatives that can be considered. The consequences of this are unclear, in particular whether it has lead to harmful substances being authorised due to lack of alternative.

The PPP Regulation includes an option for Member States to request additional environmental monitoring. If compound concentrations are exceeded, this can lead to a revision of the authorisation. However in practice this is not widely applied and even interpreted differently (i.e. as market surveillance rather than monitoring)³⁴⁵.

Brock et al. (2006) have compared the PPP Regulation with the WFD³⁴⁶. The WFD is applied to large water bodies and intend to guarantee a long-term water quality. The PPP Regulation is intended to

³⁴³ IEEP, 2011, Support to Fitness check Water Policy, http://ec.europa.eu/environment/water/blueprint/pdf/safeguard_fitness_freshwater.pdf

³⁴⁴ Eurostat [tai02] - Sales of pesticides by type of pesticide - Kg of active ingredient

³⁴⁵ Wood and Acteon, 2019 (not published yet), Integrated Assessment of the River Basin Management Plans

³⁴⁶ Brock, T.C.M., Arts, G.H.P., Maltby, L. & P. J. Van den Brink, 2006. Aquatic Risks of Pesticides, Ecological Protection Goals and Common Aims in European Union Legislation. *Integrated Environmental Assessment and Management* 2(4): 20-46.

protect the margins of agricultural fields and ditches and the use of correct doses on crops limiting the losses. So, there is a difference in scale between those two legislations. The summary of the comparison is reproduced below.

Comparison PPP Regulation and WFD

PPP Regulation

- Prospective ERA for PPPs (a.s. and formulations)
- Field exposure predicted
- Emissions based on GAP
- Effects: Following EC/EFSA guidance
- Tiered approach (e.g. *SSDs mesocosms, models*)
- Tests with standard test species as data requirement
- Recovery of effects may be considered (ERO-RAC) under strictly defined conditions

WFD

- Retrospective ERA all chemicals
- Field exposure measured
- All emission routes
- Effects: Guidance EC
- Weight of evidence (*focus on SSDs, considering cosms*)
- Mining of dossier and open literature toxicity data
- Population recovery not considered in EQS setting

On the application step, it was noted that some Member States do not have sufficient resources to check that products are being applied as intended. The implementation of the PPP Regulation allows one Member State to use the findings from another Member State as part of the application step to grant the application for a substance. While the process is in line with the requirements of the Regulation, this means that substances can be granted without taking account of specific local or national specificities. It is important to note that commercial products are authorised at Member State level.

Finally, it appears that farmers rely on agricultural advisors on the choice of pesticides and other plant products. It is important to involve these advisors as part of the discussion to raise awareness to potential impacts on water and on the application of the Integrated Pest Management.

Water utilities trade association noted that there is strict limit value for pesticide content in drinking water that was set with the adoption of the Drinking Water Directive in 1998. Despite this, water companies have observed the increase in the concentration of pesticides in surface water and groundwater which lead to the needs for additional treatments. These costs are then passed on to consumers through utility bills.

It was noted that while the PPP Regulation includes the provision allowing Competent Authorities to require companies to conduct environmental monitoring after the products have been sold, very few actually use this. As a consequence, data regarding monitoring of pesticide residues in groundwater are not widely available.

Fish and aquaculture

The Shellfish Directive was repealed with the adoption of the WFD. Annex IV (1) indent ii requires that areas designated for the protection of economically significant aquatic species are registered as protected areas as per the requirements of Article 6.

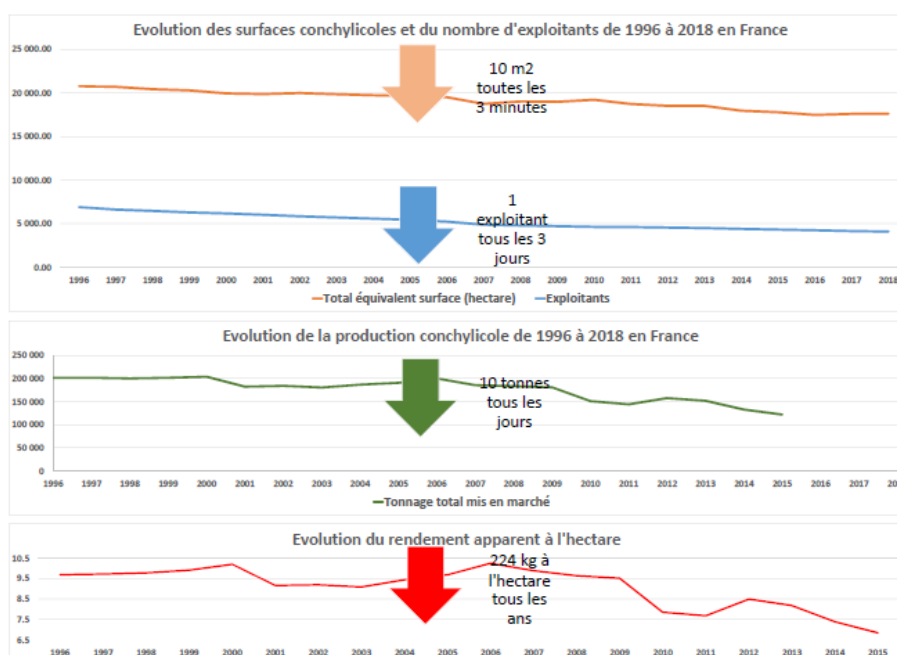
The review of the implementation of the WFD noted that the objectives related to the repealed directives (Fish and Shellfish) are very limited and concentrated in a few countries.³⁴⁷ It also noted that most countries have used the same standards as in the repealed Directive with only

³⁴⁷ European Commission, 2019, Staff Working Document on Overview of the implementation

very few countries introducing significantly different standards for the protected areas. There were also few countries that have either no standards at all or no standards for a considerable percentage of the shellfish areas. This seems to indicate that despite the repeal of the legislation, the framework for the protection of shellfish waters has remained. However, it should be noted that the implementation of such obligations have been uneven in MS. 56% of MS have continued to establish the same requirements for protected areas associated with shellfish production, 22% have set different standards and the remaining 22% have no standards.

This is contradicted by the feedback from the trade association representing shellfish industry³⁴⁸ in the EU indicated however that this repeal has left a gap as the level of protection provided by the WFD is not comparable. In particular, the Shellfish Directive used to set quality criteria for water areas that were designated as shellfish waters³⁴⁹.

Information submitted to support the argument shows the decrease in the number of producers (1 less every 3 days) and of the productivity of the existing shellfish producers in France between 1996 and 2018. While some of these impacts are due to natural economic conditions and concentration of farms, it was considered likely to also reflect challenges from decreased quality of water.



Source: Bruno Guillaumie, provided following interview

It was also noted that there are challenges in combining the protected areas from the WFD and the classification of water for sanitary and human health reason for the consumption of shellfish required by the Hygiene Package (Regulation 852/2004³⁵⁰). This was seen as a source of confusion for Member States that consider that protection of human health elements of shellfish consumption is ensured by the mapping required under the WFD - but this is not the case. One stakeholder highlighted in the interviews that based on human health, using water as a proxy is not enough information to do the hygiene analysis for shellfish. Classification areas and protected areas for growing shellfish are different

³⁴⁸ Interview with the European Mollusc Producers Association

³⁴⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3A128177>

³⁵⁰ <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:226:0003:0021:EN:PDF>

areas. Finally, feedback to the OPC raised instances where water bodies were rated in poor status under the WFD but products from these waters were considered to be safe to eat. However, this is an observation rather than an incoherence due to the fact that status assessment covers a range of different elements.

7.3.4 (Renewable) energy policy

The **Renewable Energy Directive (RED)** establishes a binding renewable energy target for the EU for 2030 of at least 32% of energy to be generated from renewable sources³⁵¹. There are some tensions between the use of water to generate energy (e.g. through large or small hydropower or infrastructure to facilitate energy production and transport) and the protection of the natural flows and hydromorphology.

There are more than 25,000 hydropower plants in Europe, with recent increase in planned development for small hydropower³⁵². Hydropower generates 36% of renewable electricity in the EU. Hydropower plants are favored as part of the energy mix due to their flexibility and storage capacity but also for their long-life cycle and low operational costs³⁵³.

A review of the integration of the water requirements into the practices identified three approaches for **integrating hydropower development and management and WFD obligations**:

- **The review of permits** to account for the WFD objectives and obligations (e.g. Bulgaria, Estonia and Norway);
- The identification of priority rivers for which river continuity is to be restored (e.g. Czech Republic, France and Lithuania);
- **The development of assessment tools** accounting for WFD and hydropower issues. For example, in **Sweden**, the Energy Agency and water authorities developed a joint national strategy for hydropower in 2014 proposing a balanced approach between the objectives of the WFD and the EU energy Directives.

In 2018, the European Commission published a guidance on the requirements for hydropower in relation to EU nature legislation and many of the reflections there are applicable to wider water management issues³⁵⁴. The aim of such document was to aid in arbitrating these competing uses.

The feedback from stakeholders is split between energy and hydropower experts and NGOs. The former highlighted the ‘green’ nature of hydropower generation and highlighted that the requirements of Article 4(7) might make it a challenge to meet the renewable energy targets was compromised. As an example, the uncertainty regarding the exemptions based on cost efficiency as part of the PoMs was seen as an important constraint for hydropower development³⁵⁵. Similarly, the Weser interpretation of non-deterioration was seen as strict and further hampering hydropower activities. Conversely, NGOs highlight that hydropower has an environmental impact that should not be underestimated, and that it should be ensured that existing and new hydropower does not undermine the objectives of the WFD.

³⁵¹ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC

³⁵² EEB, 2018, Bringing Life Back to Europe’s Waters, http://d2ouvy59p0dg6k.cloudfront.net/downloads/bringing_life_back_to_europe_s_waters_web_1.pdf

³⁵³ Eurelectric, 2018, Position Paper on the WFD

³⁵⁴ European Commission (2018) Guidance on the requirements for hydropower in relation to Natura 2000 <http://ec.europa.eu/environment/nature/natura2000/management/docs/Hydro%20final%20May%202018.final.pdf>

³⁵⁵ Eurelectric, 2018, Position Paper on the WFD, also interviews

It was also noted by stakeholders that there are positive examples of hydropower and water protection in Europe. For example, Austria has adopted pre-planning instruments to balance hydropower development and other interests in Lower Austria, many countries have decided to retrofit fish passes in some existing infrastructure and to remove obsolete installations (e.g. France)³⁵⁶.

The TEN-E Regulation is the other legislation which was often quoted as source of incoherence. The Regulation deals with energy infrastructure in the EU and aims to assist national governments and companies to better interconnect electricity and gas infrastructure across national borders³⁵⁷. The Regulation deals with Projects of Common Interest (PCI), which should not prevent the achievement of good status nor lead to deterioration of status of water bodies. The recent report supporting the evaluation of the TEN-E Regulation noted that the Regulation is overall coherent with the legislative framework but noted some feedback from stakeholders with regard to the ‘common interest’ understanding of the PCIs, which are interpreted as being of public interest from an energy perspective and that considerations of Article 6(4) of the Habitats Directive and Article 4(7) of the WFD should be also strengthened³⁵⁸.

Feedback from the OPC highlight that the legislative framework is sufficiently clear on the prioritisation of interests. The WFD include safeguard within articles 4 and 11 to guarantee that socio-economic and cultural considerations are consistently considered and the TFEU includes an overriding protection and improvement of the environment within Article 194. As such the development of energy projects should be done within this framework. The role of the Environmental Impact Assessment and Strategic Environmental Assessment Directives were highlighted as important here to maintain the balance between competing objectives. It was also indicated that the impact on the environment of PCIs should feature more prominently in the assessment process. The importance of implementing the legislation with wider legislative framework in mind was highlighted.

7.3.5 Climate change policy

Climate change, including the mitigation of greenhouse gas emissions and the adaptation to climate change impacts have gained attention since the adoption of the WFD and FD. **For the FD, the recent increase in extreme weather events** (e.g. record breaking temperatures and extreme hydrological events) that are attributed to climate change have highlighted the relevance of this interaction. **Overall, the WFD and daughter Directives are considered to be coherent with climate change policies.**

The **climate-proofing** of the 2nd RBMPs using the CIS Guidance Document on climate change is reported by most Member States in the 2nd planning cycle. Although climate change is expected to affect all dimensions of good water status, it is mainly **considered in relation to water quantity and abstraction issues**. This was seen as a gap as the impacts of climate change on water quality should also be considered.

The integrated assessment of the 2nd RBMPs concluded that the potential **synergies between the RBMPs and climate change adaptation were not fully exploited**. Climate change is investigated (more or less thoroughly depending on MS) in parallel to the river basin planning process, with limited operational synergies and implications in terms of WFD assessments and selection of measures. When specific adaptation plans or strategies exist in Member States, these can: (1) be very theoretical and generic without operational outcomes for the RBMPs; (2) prescribe their own life and investment cycles

³⁵⁶ EEB, 2018, Bringing Life Back to Europe’s Waters,

³⁵⁷ <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex%3A32013R0347>

³⁵⁸ Trinomics, 2018, Evaluation of the TEN-E Regulation and Assessing the Impacts of Alternative Policy Scenarios

with limited consideration to the WFD timetable; or (3) have no operational and practical WFD implications in terms of adapting assessments, shifting measure selection to different priorities, adapting financing conditionality, etc. It is important to stress that Member States that do not consider water abstraction a significant issue (e.g. Baltic States) give limited attention to climate change risks. Due to the limited knowledge base on current abstraction, they might fail addressing climate change and the new (over-) abstraction problems that might arise in river basins not historically facing abstraction challenges. This was not due to lack of coherence of the legislation but a failure to integrate climate requirements into the implementation of the Directives.

The Flood Directive also has an important role to play in adaptation to the impacts of climate change. The feedback from stakeholders noted the importance of the Directive in the context of increasing extreme weather events. No incoherence was identified with the other EU policies dealing with climate change.

However, the review from the European Court of Auditors of the implementation of the floods Directive noted that one future challenge was for the fuller integration of climate change into flood risk management³⁵⁹. The impact from floods are projected to rise from €7 billion a year in 1981-2010 to €46 billion a year by 2050 due to the influence of climate change and economic changes. The European Court of Auditors found that many Member States do not factor the impact of climate change on the magnitude, frequency and location of floods, and use historical data that do not reflect future weather conditions.

These findings were largely echoed by stakeholders, as part of the Focus Group on Floods that emphasised the importance of factoring climate change into flood management. More details on this is presented in the relevance analysis.

7.3.6 Transport policies

The review of the coherence with transport policies considered inland navigation and wider transport policies. From the OPC results, transport appears to be one of the least coherent policy areas. It is important to note that most of the EQS failures observed are related to mercury and PAHs which are emitted from the combustion of fossil fuels. Transport emissions are likely to be an important source for these emissions.

Inland navigation

Inland navigation can lead to pressures on the water environment, from disturbance due to shipping (including dredging of sediments), pollution from shipping, and morphological disturbances (e.g. channelisation, straightening or locks) of the water bodies to allow for ships to pass through. The integrated assessment of the RBMPs observed a **few examples of links made between navigation and the WFD implementation** in programme of measures (for Member States where inland navigation exists) and hypothesised that it might be due to the scale at which the WFD is implemented, which does not consider the transboundary interconnections that take place between rivers due to the navigation canal networks.

Feedback from navigation experts³⁶⁰ indicated that the main challenge resides in the lack of consideration of the role of sediments in aquatic ecosystems as part of the WFD. It is highlighted that port and navigation sector have expertise in dealing with sediments and their relationship with the

³⁵⁹ European Court of Auditors, 2018, <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=47211>

³⁶⁰ Interviews with the NAVI Task Group

aquatic environment so that they are managed adequately but that it is not sufficiently addressed by the WFD. For example, an analysis done at the River Rhine level showed the importance of sediments in the morphology of the rivers and the impacts from activities on these³⁶¹. Furthermore, sediment act as a sink for contaminants which mean that water quality might appear to be adequate but sediment is deteriorating. Contaminated sediments are transported between water bodies and boundaries with consequences for the authorities downstream. The example of the Port of Hamburg showed that out of the annual costs of €100M for sediment dredging and relocation, €30-40M are due to pollution from upstream that have to be managed at the port level. This appears to be in contradiction with the requirements of the polluter pays.

The cooperation between Member States (or even federal states) was found to be challenging in some pollution cases. For example, in the River Basin Elbe, upstream work on a bridge in Czech Republic released some PCB particles into water. Due to a lack of rainfall, it is suspected that most of the PCB has deposited into the upper part of the catchment areas. If they had fully reached downstream this would have led to the closure of the Port of Hamburg which is the third largest European port³⁶².

The **TEN-T Regulation** aims to close the gaps between Member States' transport networks, remove bottlenecks that can hamper the internal market and overcome technical barriers³⁶³. The policy has, inter alia, promoted the use of inland navigation as an alternative to road and rail transport. Conversely, the WFD's hydromorphological aspect encourage the removal of unnecessary navigation structure and the re-design of infrastructure to support habitats and fish passage. The principle of non-deterioration also applies. As such there is potential for conflict between the WFD and the TEN-T Regulation.

From stakeholders' feedback it appears that the TEN-T Regulation updated in 2013 has allowed a better integration of environmental considering into the transport decision making. This is due in particular to:

- Recital 34: during infrastructure planning, Member States and other project promoters should give due consideration to the risk assessments and adaptation measures adequately improving resilience to climate change and environmental disasters;
- Recital 35: Member States and other project promoters should carry out environmental assessments of plans and projects in order to avoid or, where avoidance is not possible, to mitigate or compensate for negative impacts on the environment, such as landscape fragmentation, soil sealing and air and water pollution as well as noise, and to protect biodiversity effectively;
- Recital 36: the protection of the environment and of biodiversity, as well as the strategic requirements of inland waterway transport, should be considered);
- Article 16: on priorities for inland waterway infrastructure development and outlines that priority should inter alia be given to "paying particular attention to the free-flowing rivers which are close to their natural state and which can therefore be the subject of specific measures";
- Article 36: requires an integrated approach, with an environmental assessment of plans and projects carried out in accordance with the EU environmental law, including the WFD, Nature Directives and the EIA and SEA Directives.

³⁶¹ https://www.chr-khr.org/de/veroeffentlichung/von-der-quelle-zur-mundung?position=0&list=beLQrTYMjNvGtvnfiAAB_TSfSti0AqQEqs_b_crYSs6U

³⁶² Interview with Port of Hamburg Authority

³⁶³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1315>

A potential incoherence was identified for Article 15 of the TEN-T Regulation, which sets targets that could conflict with WFD objectives. However, it was also indicated by stakeholders that exemptions to the requirements could be granted, so the coherence remains ensured. The feedback from stakeholders also highlighted examples where the development of navigation infrastructure is seen as threatening the WFD objectives of protecting and restoring water sources by the application of Article 4.7, regarding large infrastructural development projects. The example of the project to improve navigation conditions on the Danube between Calarasi and Braila in Romania was quoted as an example. There are concerns that the project will overlap with ecological ‘hot spots’ and disturb migration and habitats of many fish species.

Finally, some differences were identified between the Good Navigation Status objective for inland waterways under TEN-T and reaching the WFD ecological status objectives. These relate in particular on the focus of the GNS on navigational depth, vs the ecological focus of the WFD. For example, it is possible that objectives to achieve navigational depth could, in some projects, be at odds with objective of preserving and protecting the natural flow of freshwater bodies such as rivers as they would require significant modification to natural water bodies.

Other transport

Road and rail transport are source of **pollution pressures on water resources**. These result from polluting substances deposited by use of roads/rail tracks and washed out by runoff (directly or into aquatic ecosystems) or because of maintenance activities (e.g. use of herbicides on rail tracks). Whether the WFD obligations are fully integrated into instruments dealing with transport pollution (e.g. environmental impact assessments, discharge permits, authorisation and best practice for maintenance, etc.) remains unclear.

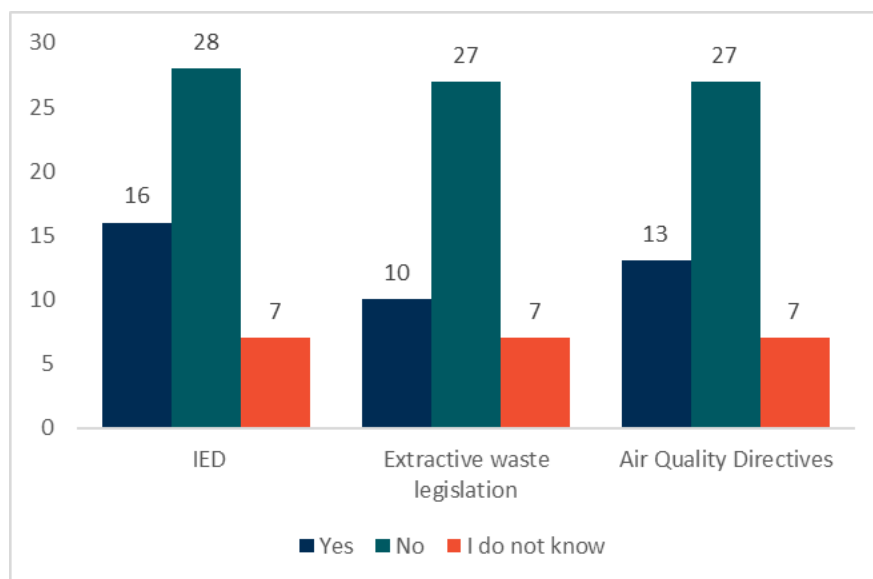
The integrated assessment of the 2nd RBMPs found very little measures (if any) addressing atmospheric deposition as part of the Member States measures.

No incoherence was raised between the Floods Directive and transport policies.

7.3.7 Industrial and air quality policies

The analysis of the coherence considered the interactions of several industrial and air quality policies. In general, it was found to be relatively coherent but some examples of challenging implementation of the legislation, in particular the WFD and the EQSD.

Figure 7-5 Responses to expert stakeholders on ‘are you aware of incoherence with the legislation are provided in the figure below?’



IED

The Industrial Emissions Directive³⁶⁴ is the main EU instrument regulating pollutant emissions from industrial installations, it aims to achieve a high level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU, through the application of Best Available Techniques (BAT). It should also be noted, despite a lack of specific findings, the IED is also relevant to coherence with Article 6 of the Floods Directive, particularly regarding the development of flood scenarios which may indicate potential adverse consequences to integrated pollution prevention and control regarding accidental pollution in instances of flooding and potentially affected areas.

A report by the EEA published in 2019³⁶⁵ noted that direct emissions to water bodies from industrial sites have decreased in recent years, but the pollution pressure remains high. In addition, the extent of emissions from facilities (outside the scope of the IED) remain largely unknown. In most countries industrial point sources of pollution are identified as a relatively small source of pressure. The EEA report suggests that industrial point sources not regulated by the IED may be a larger source of pressure on the quality of water than the installations covered by the IED. This would suggest that the IED regulatory process is effective in controlling industrial pollution. However, this also shows that measures to control pollution from smaller industry may be less effective.

The review of the literature identified little evidence of incoherence between the WFD and the IED. It is also noted that Article 10 of the WFD describes the ‘combined approach’ by which both point and diffuse sources should be addressed. This lists the emission controls based on best available techniques and the relevant emissions limit values as described under the IED. A workshop on the implementation of the IED and water noted some challenges in the practical implementation of the Directives³⁶⁶. For example, it was noted that the permitting under the IED is based on emissions limit values defined

³⁶⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0075>

³⁶⁵ EEA, 2019, Industrial waste water treatment- pressures on Europe's environment

³⁶⁶ See Berlin Workshop: BAT for Industrial Waste Water Treatment and its Contribution to Water Quality, Nov 2017 <https://circabc.europa.eu/w/browse/2057802a-f097-4631-a42c-65399df53c5f>

according to best Available Techniques (BAT-AELs) which are derived from concentrations of emissions while the WFD need data expressed as loads to be able to derive ambient concentrations and annual loads.

This was also expressed in the feedback of stakeholders (including competent authorities) stating that combining the BAT-AELs and the EQS approaches can be challenging. Experience from Member States was also reflecting on the challenge to set stricter EQS than the BAT-AELs, due to the misunderstanding of the interaction of the legislations and that compliance with the IED was not always sufficient to improve (or prevent deterioration of) water quality.

Some stakeholders (including from Competent Authorities and NGOs) noted that water efficiency was not featuring prominently in the Best Available Techniques Conclusions Documents, and that such inclusion would increase the coherence of the legislation. Furthermore, there are more BAT-AELs set for air emissions than for water discharges.

The absence of BAT-AELs for water for mercury in the IED was noted as a gap, specifically in light of the impact of mercury on the failing of good ecological status of surface water bodies.

Finally, comments were raised on some of the substances for which BAT-AELs are defined but which are classified as priority substances under the EQSD. Considering that emissions of these substances should be reduced, it is a contradiction for some stakeholders to have acceptable emissions levels defined under the IED. The lack of opportunities for the EQSD progress to feed into the IED were raised as a potential limitation in the effectiveness of the legislation.

Air Quality Directives

The Air Quality Directive³⁶⁷ sets standards for ambient air quality with the aim of achieving the objectives of the ‘Clean Air for Europe’ policy. The EEA assessment of state of water report notes the importance of atmospheric deposition as a source of pressure on water bodies in particular for surface water bodies (e.g. 38% of surface water bodies are failing good status due to atmospheric deposition, most of which is mercury).

The feedback from expert stakeholders noted that there is no guidance for air quality competent authorities on dealing with atmospheric deposition to water. It is also unclear whether meeting the air quality standards is sufficient to protect the quality of water bodies from these emissions. The issue of lag time should also be noted, as the effects of air quality improvements on atmospheric deposition of pollutants to water will take some time to enter in to effect, so lag time for the results must be considered.

Extractive Waste Legislation

The Extractive Waste Directive provides a framework for the safe management of waste from extractive industries at EU level³⁶⁸. The Directive requires that mining operations establish a safe and environmentally secure handling of the mine waste (tailings).

Overall, the introduction of the EWD has facilitated the management of waste from extractive industry including the protection of water from mining sites.

³⁶⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0050>

³⁶⁸ <http://ec.europa.eu/environment/waste/mining/index.htm>

However, some of the feedback received was more critical (mainly from trade association) and noted that the introduction of the WFD has made permitting for new mining projects difficult. This is seen as problematic when considering the overall objective of self-sufficiency in the production of metals that are used as part of the EU’s energetic transition. As such being able to access metals and other raw materials for the production of batteries but also other technologies are important. Importing these materials from non-EU country could lead to externalising environmental consequences to countries with less stringent environmental protection standards. Links were made to other EU existing policies that support these developments such as the Raw Materials Initiative, the EU Action Plan for the Circular Economy, and the EU industrial strategy (“An Industrial Strategy for Europe”, 2017) and the growing list of metals critical for EU needs (list of Critical Raw Materials for the EU, 2017).

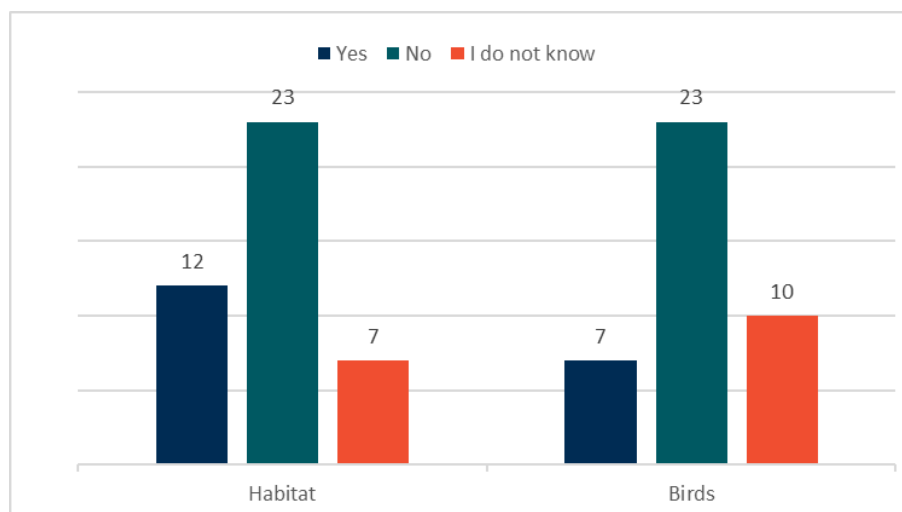
Other stakeholders raised the issue of mine drainage, which can happen long after the closure of the mine and lead to discharges into surface water. The suitability of the Directive in protecting the environment after the closure of the installation was questioned.

No incoherence was raised between the Floods Directive and industrial and air quality policies.

7.3.8 Nature legislation

The review of the coherence included primarily the Habitats and the Birds Directives. Responses to the OPC for coherence is provided in the figure below.

Figure 7-6 Responses to expert stakeholders on ‘are you aware of incoherence with the legislation below?’



The Habitats Directive (HD), together with the Birds Directive (BD), forms the "Nature Directives" which is the legal basis for the creation of the Natura 2000 network of protected areas. The Habitats Directive aims to contribute towards protecting biodiversity in the EU, including in the marine environment, through measures designed to maintain or restore, to a favourable conservation status, natural habitats and species of wild fauna and flora of Community interest (Art. 2). The Birds Directive is concerned with the conservation of all naturally occurring wild bird species and covers their protection, management and control (Art. 1(1)).

Both the WFD and the Nature Directives have a similar non-deterioration principle. However, the scale of application of the legislation is different with the habitat type or the biogeographical region often

not aligned with the river basin district unit. Both legislations have 6 years reporting cycles which are not in sync, but this is seen by some as positive as it allows the outcomes of one to feed into the other. The protection targets set are also different, the WFD established ecological and chemical objectives while the Natures Directive protect based on habitats and species with the aim of reach favourable conservation status.

One element of overlap lies in the fact that some of the water dependent protected habitats and species are part of the WFD quality elements (e.g. protected fish or macrophytes species). The integrated assessment of the 2nd RBMPs noted that the coordination between the WFD and EU **biodiversity policies** has gained more attention in recent years, recognising the strong connections between improvements in the health of aquatic ecosystems and biodiversity.

There have been examples of positive interactions where the **size of water bodies have been adjusted for enhancing synergies** between the WFD and Natura 2000/Habitats & Birds Directive in terms of assessments and selection of measures for achieving both good water status and biodiversity objectives. The attention given to **natural water retention measures**, also, brings the objectives of the WFD, the FD and biodiversity policy together when selecting measures. There are also attempts made to better **integrate water and biodiversity in terms of governance**.

A guidance document has been published to clarify the terminology used in the Nature Directives and the WFD³⁶⁹. This was seen as positive and supporting the overall coherence of the legislation. Furthermore, a 2014 workshop on the coordination of the nature, biodiversity, marine and water policies³⁷⁰ concluded that while there are differences in the objectives and assessment methodologies, there are no obstacles preventing the Directives from working together effectively. Several examples of synergies between the legislation were identified, including for example a series of case studies on synergies between the WFD, MSFD and the Nature Directives³⁷¹ and in ‘Bringing life back to Europe’s waters: The EU water law in action’.

The review of the 2nd RBMPs published in 2019 highlighted the CIS guidance No36 published on Article 4(7) as a “noteworthy example” of assisting compliance in practice by national authorities. Guidance Document No. 36 aims to share best practice regarding the permitting of projects. Article 4(7) of the WFD outlines the conditions under which exemptions can be applied for “new modifications to the physical characteristics of a body of water, alterations to the level of bodies of groundwater or new sustainable human development activities” where the achievement of good status or potential may be phased or not be achieved, or under which deterioration may be allowed. As such, this document is relevant in the context of this evaluation question as use of exemptions have been identified as an aspect of the implementation of the Directive that demonstrates the challenges in meeting the objectives. The document flags integration with other policies from other sectors as a key issue and aims to integrate water management with other policy areas including energy, transport, fisheries, agriculture and tourism by integrating relevant programmes (e.g. Trans-European transport network, the EU Raw Materials Strategy, Common Agricultural Policy) with achieving WFD objectives.

³⁶⁹ Guidelines on the implementation of the Birds and Habitats Directives in estuaries and coastal zones, 2011
http://ec.europa.eu/environment/nature/natura2000/management/docs/guidance_doc.pdf

³⁷⁰ https://circabc.europa.eu/sd/a/7e3142ee-2cf8-4086-a294-3094b6774943/NBMW%20Workshop_Background%20document.pdf

³⁷¹ <http://ec.europa.eu/environment/nature/natura2000/management/docs/Compilation%20WFD%20MSFD%20HBD.pdf>

A JASPERS guidance document highlights the differences between the assessment process under the WFD, EIA and Habitats³⁷². This is meant to assist decision making on funding projects. It notes the differences in the ‘significance test’ which is defined in the Habitats Directive as having an adverse effect on the integrity of the site concerned. Another difference was highlighted between article 4(7) of the WFD and 6(4) of the Habitats Directive, where the Habitats Directive has an additional ‘imperative’ reason of overriding public interest. There is also a requirement for compensatory measures in the Habitats Directive but not in the WFD. There are instances where more harmonisation between the Directives could be beneficial. For example, in the case where the impact from a potential project may affect an aquatic species/habitat that is protected in the Nature Directive, more stringent objective should be applied for the WFD (i.e. regarding Art 4.7).

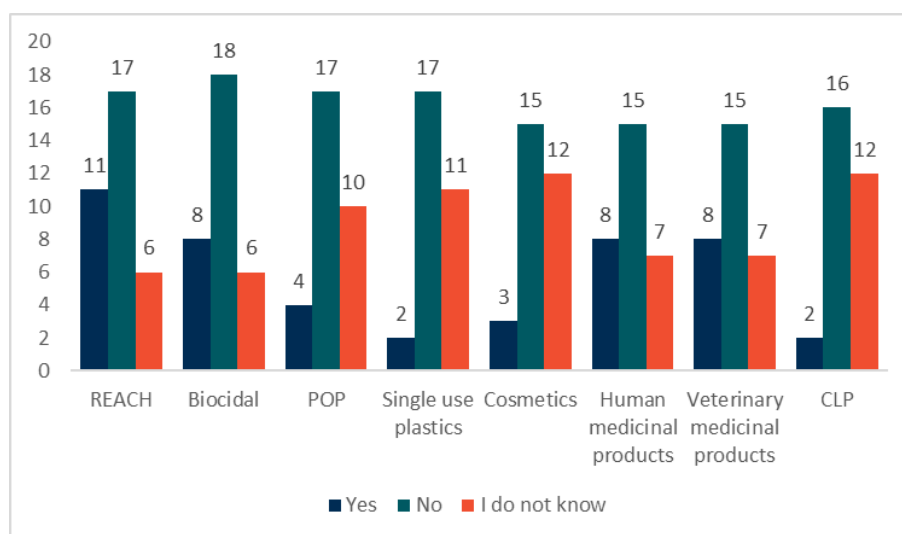
While the Flood Directive does not refer to the Nature Directives, there is a duty upon Member States to take steps to coordinate the implementation of the FD with the WFD which has strong synergies with the Natures Directive. In addition, examples of synergies with the FD were also identified, for examples of ecosystems restoration leading to improved habitats³⁷³ but also on the use of wetlands to alleviate flooding and its impacts³⁷⁴.

Comments from stakeholders confirmed the overall coherence of the legislative framework and indicated that more links between the RBMPs, FRMPs and Habitats management plans could be positive.

7.3.9 Chemicals policy

The analysis of the coherence considered several chemical legislative instruments.

Figure 7-7 Responses to expert stakeholders on ‘are you aware of incoherence with the legislation below?’



The First Fitness check concluded that there was no major incoherence between water and EU chemical legislation, with the implementation of the chemical legislation contributing to the objectives of EU water policy.

³⁷²

<http://www.jaspersnetwork.org/plugins/servlet/documentRepository/searchDocument?category=Water%20and%20Wastewater>

³⁷³ Wetland International, evidence of river restoration measures improving ecological conditions.

³⁷⁴ WWF, 2002, managing Floods in Europe: The answers already exist <http://assets.panda.org/downloads/managingfloodingbriefingpaper.pdf>

These findings are largely confirmed by the feedback from stakeholders that have not raised examples of incoherence, however potential challenges in the implementation of the legislation were identified in particular with regard to the REACH Regulation.

The feedback received on this aspect highlight missed opportunities in the lack of interactions between the authorisation process under REACH and the water legislation in particular the EQSD. For example, the fact that information generated as part of the implementation of REACH cannot be used as part of the priority substance inventory under the WFD. This is explained by the fact that the data generated under the specific legislation have different uses and objectives with REACH focusing on hazard data and uses while the WFD focuses on emissions and impacts. This means that the data generated under REACH are not directly usable in the WFD implementation. The terminology and complexity of REACH was also identified as a barrier for water managers.³⁷⁵

Feedback from trade associations³⁷⁶ highlighted the challenges in the process of designation of priority substances under the EQSD and WFD, in particular the variation of the River Basin Specific Pollutants (both in terms of the number of different RBSPs identified by different MS, but also the EQS threshold set for the same RBSP by different Member States) and the impact that correction factors applied at national level can have. This is illustrated in the figure below.

Variation on the EQS for RBSP

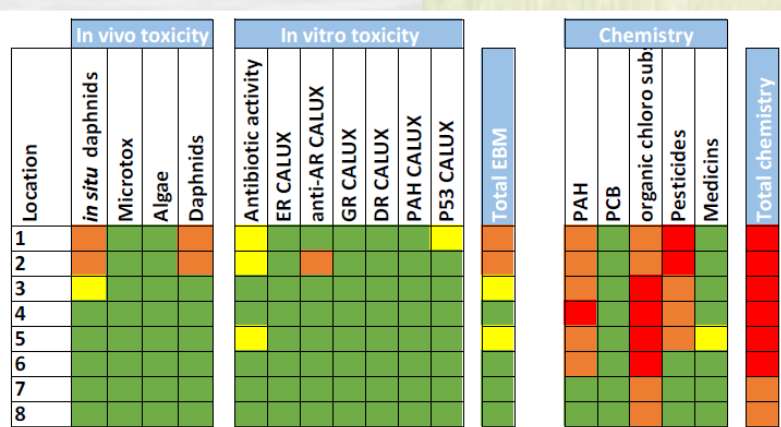
Table 4. Ethylbenzene – a case study for the effect of differences in assessment factors (AF).

	Data source for EQS _{fresh}	AF	EQS _{fresh} (µg/L)	EQS _{secondary poisoning} (µg/L)	EQS _{human health} (µg/L)	Final EQS (µg/L)
Denmark	NOEC of 1000 µg/L for	50	20	Not considered	Not considered	20
France	<i>Ceriodaphnia dubia</i> (7 days)	10	100	119	65	65
The Netherlands	(Niederlehner et al., 1998)	10	100	237	65	65

Source: European Environment Quality Standards Variability Study, Aarhus University, 2016

‘Effect based method’ process that has been recently investigated and allows to consider unidentified and not monitored substances but also the ecological effects of the mixture of substances.

Example ‘surface water monitoring by a regional waterboard’



Source: Effect based monitoring in the Netherlands, Ecofide. Presentation to WG Chemicals 2018

³⁷⁵ Wood and Acteon, 2019, Integrated assessment of the 2nd RBMPs

³⁷⁶ Interview with Joint Industry Group including CEFIC, Concawe, Mining Association, ECPA.

In particular for RBSPs that are metals, a further issue was identified by stakeholders. Uptake of metals is a key issue when considering toxicity and toxicological impacts. To these ends bioavailability correction factors exist for metals, which in turn will affect the EQS that is developed and assigned. For different MS it is unclear whether bioavailability correction for metals emission have been used. This was raised as a possible issue as the lack of clarity means that EQS for RBSPs may not be comparable between different MS, which is an example of incoherence with WFD legislation.

A further point is that bioavailability and use of bioavailability correction factors can also have an impact on the overall STE (Spatial, Temporal and Extent) Score, which is in turn used to support the risk assessment phase of the review of substances. This includes assessment of new priority substances at European Level. Recent discussions within the CIS in particular for silver, have highlighted that further guidance is needed on this topic to avoid incoherence in how substances are selected and EQS assigned.

The legislation on chemicals (except from REACH) is undergoing a Fitness Check. The support study published in 2017³⁷⁷ notes the potential synergies between the information generated as part of the implementation of the EQSD and chemicals legislation. The identification of possible new priority substances require data, in particular monitoring data, and it is stated that the WFD has ‘weak links’ to the approval processes for the use of chemicals in other areas. An example is provided: the working group on chemicals that supports the implementation of the WFD has identified pharmaceuticals as a potential high concern. Data to quantify the risk from specific named pharmaceuticals in surface waters is limited. Additionally, the exchange of data provided under the Directive on Medicinal Products for Human Use (2001/83/EC) has been limited due in part to intellectual property issues. It is also noted that while Directive 2001/83/European Commission requires an environmental risk assessment for new or altered human pharmaceuticals, it does not stop authorisation of the pharmaceutical substance, even where a potential risk to aquatic environments is identified, rather it only requires additional labelling on safe disposal.

Finally, one practical example was provided by a trade association stakeholder³⁷⁸ regarding anti-foulant substances used on the hull of ships that, while authorised under the Biocides Directive, can end up being banned at national level for the protection of aquatic environment. These substances are meant to reduce the risks posed by invasive alien species, out of which it is noted that a large share is aquatic. In these situations, it is unclear how to arbitrate competing protection interests.

7.3.10 Civil protection policies

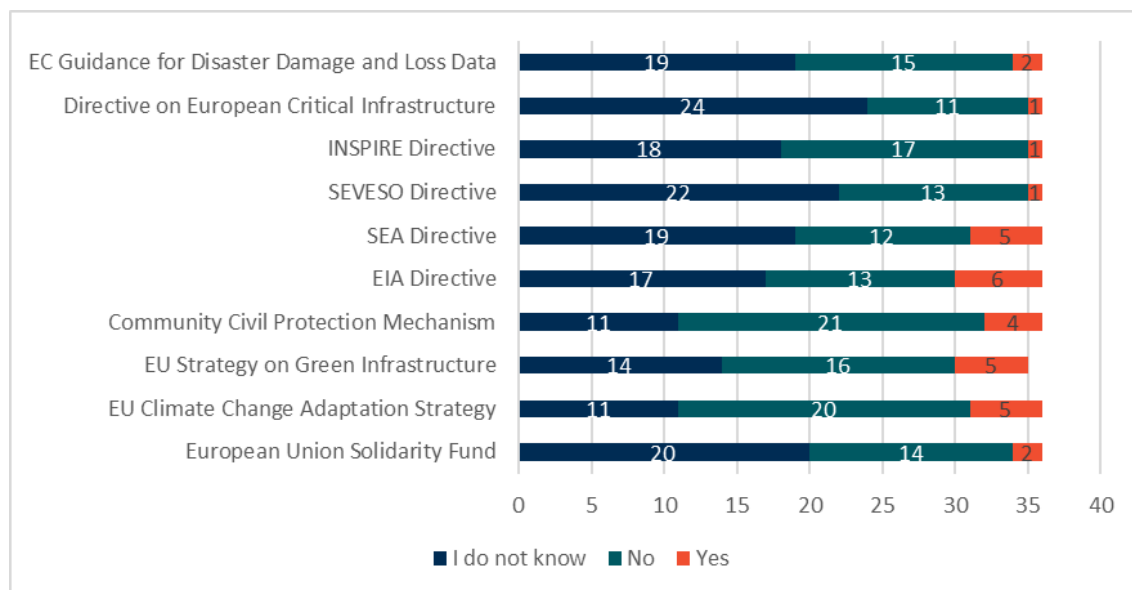
The FD provides a framework for the management of risks from flooding. As such its interactions with civil protection policies is important. There was clear support from stakeholders on the coherence of the legislation with civil protection policies and no additional evidence identified to suggest any incoherence.

The targeted consultation asked for views on the coherence with other legislation of particular relevance for the Floods Directive and little issue was reported.

³⁷⁷ Amec Foster Wheeler, 2017, Support to the Fitness Check on the most relevant chemicals legislation <https://publications.europa.eu/en/publication-detail/-/publication/07ad8b92-dbca-11e7-a506-01aa75ed71a1/language-en/format-PDF>

³⁷⁸ Through interviews

Figure 7-8 Views from stakeholders (targeted consultation) on coherence of the Floods Directive with other legislation



Note: Questionnaire 1, Question 16: of the targeted consultation Are you aware of any incoherence between the FD and the following policy areas? Please indicate “Yes”, “No” or “I do not know”.

The issue identified from stakeholders were related to the implementation of the legislation, in particular, gaps remaining with the controls of development in flood-prone areas and forward planning for climate change and nature-based solutions still not fully operationalised. As highlighted in Section 6.3.3, the potential overlap with intensive agriculture was noted by some expert respondents. The farms can occupy floodplains as well as upper catchments where floods can be generated and can lead to challenges in the restoration of floodplain areas.

7.3.11 Other policies

The review of interactions of the Directives with other policies identified the following of relevance.

Environmental Liability Directive

The Environmental Liability Directive³⁷⁹ establishes a framework based on the polluter pays principle to prevent and remedy environmental damage. Shortcomings were identified in the implementation of the ELD in the context of remediation from environmental damage. An example was provided whereby pollution from upstream work had affected water quality downstream leaving the downstream river basin to address damage and remediate. Legal advice was sought as a result and it was confirmed that the Directive does not grant an actional right to damage limitation and remediation in affected neighbouring states and consequently no liability action could be initiated³⁸⁰.

Strategic Environmental Assessment Directive and Environmental Impact Assessment Directive

The first Fitness check of EU freshwater policy concluded that the SEA and EIA Directives were fully synergistic with water policy. It indicated that carrying out a SEA could be particularly helpful in reducing the environmental impacts of new plans and programmes that could have negative impacts on the aquatic environment, while the EIA can help prevent or mitigate negative impacts on water status from activities.

³⁷⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02004L0035-20130718>

³⁸⁰ from Reese/Kack 2018

No coherence issue was raised with regard to the SEA Directive. Stakeholders emphasised that the Directive assists in preventing unnecessary damage to water bodies.

For the EIA Directive, stakeholders indicated that there might be situation where projects (e.g. deepening navigational access to ports) could be acceptable under the EIA assessment but could fail due to the hydromorphological considerations under the WFD. In such an example minimum navigational depth, ecoflow and connectivity and blockage of sediment supply by locks could be at odds with the WFD.

7.4 EQ.13 - To what extent is the legislation coherent with international obligations?

Conclusions on EQ.13 - To what extent is the legislation coherent with international commitments	
What has worked well?	<ul style="list-style-type: none"> The action of the Directives is seen as supporting the EU international obligations including the UN SDG, the regional seas convention and the Sendai disaster risk reduction framework.
What has not worked well?	<ul style="list-style-type: none"> Potential incoherence in the application of the IMO MARPOL’s provisions in sea port has been identified and is being investigated. Doubts were raised on the effectiveness of the Minamata Convention on limiting the impacts from mercury pollution considering the high number of water bodies failing due to mercury pollution.
Strength of evidence	<ul style="list-style-type: none"> Moderate - most of the evidence is based on stakeholders’ feedback and from their experience in implementing the legislation, there were little published resources on coherence with international commitments.
Indication of bias	<ul style="list-style-type: none"> No bias identified

The aim of this evaluation question is to consider the coherence of the Directives with international obligations, our analysis has covered international water obligations such as the UN Sustainable Development Goals, the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes³⁸¹ and other international seas conventions (e.g. OSPAR, Helcom and Barcelona Convention). For the Floods Directive in particular our analysis considered the coherence with the Sendai framework.

Links were made between the objectives of the **Minamata Convention**³⁸² whose aim is to protect human health and the environment from the adverse effects of mercury emissions. For example, one stakeholder from the European Commission highlighted in the targeted consultation that the high number of water bodies failing good status due to ubiquitous substances and in particular mercury, which was raised as a potential gap or failure against the Convention in effectively addressing mercury emissions.

Coherence with the regional sea agreements was already identified under the First Fitness Check, noting that monitoring sites under the WFD were also used to provide data required under the OSPAR Convention³⁸³.

The **UN Sustainable Development Goals** provides a series of 17 individual goals, that once reached, should ensure peace and prosperity for people and the planet, now and into the future. One of the

³⁸¹ <https://www.unece.org/env/water/>

³⁸² <http://www.mercuryconvention.org/>

³⁸³ <https://www.ospar.org/convention> - see also under Marine policies

goals, focuses on clean water and sanitation³⁸⁴. The High Level Panel on water noted in 2017 that water was the common denominator linking all SDGs³⁸⁵. No incoherence was identified between the SDGs and the Directives considered. However, stakeholders (including NGOs and trade associations³⁸⁶) highlighted that the implementation of the EU legislation falls short from the ambition needed to reach the objectives of the SDGs in particular with regard to integrated water resources management and sustainable withdrawals. It was also recommended to consider SDGs as a whole rather than individual goals.

The **UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes** ³⁸⁷ was described as being coherent with the TEN-T policies in particular when considering the navigational depth considerations.

One potential incoherence was raised with regard to **the International Maritime Organisation's Convention MARPOL**³⁸⁸ on the prevention of pollution from ships and in particular its Annex VI. The Convention applies in seaports which can also be covered by the WFD. Under the MARPOL Convention, ships are authorised to fit open loop scrubbers that capture PAHs and metals from exhaust and re-inject it into the water. This avoids sulphur emissions to air³⁸⁹. However, it was noted that such a practice would lead to emissions to water and potentially to sediments which is conflicting with the water protection approach of the WFD. This issue has been raised by the European Commission to the IMO³⁹⁰.

The **UN Framework Convention on Climate Change** and its protocols, including the Paris Climate agreement require action to be taken to reduce emissions and increase the generation of clean energy. In that respect, the role of the WFD in limiting hydropower production in some areas can be seen as source of challenges. Information on this aspect is presented under the review of coherence with energy policies.

No incoherence was identified with regard to the **Sendai framework for disaster risk reduction**³⁹¹ and the Floods Directive.

³⁸⁴ <https://sustainabledevelopment.un.org/?menu=1300>

³⁸⁵ High Level Panel on Water (HLPW) (2018) Making Every Drop Count, An Agenda for Water Action, HLPW Outcome Report, p. 15. See also WWF UK (2017) A River Runs Through it, p. 12-13.

³⁸⁶ Eureau policy coordination, 2017

³⁸⁷ <https://www.unece.org/env/water.html>

³⁸⁸ [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)

³⁸⁹ Interview with stakeholders

³⁹⁰ <https://data.consilium.europa.eu/doc/document/ST-5782-2019-INIT/en/pdf>

³⁹¹ <https://www.unisdr.org/we/coordinate/sendai-framework>

8 Analysis of Relevance

The assessment of relevance of the WFD and the FD concerns testing the relationship between the needs of EU society in the field of water and flooding and the objectives and scope of the Directives. A summary of the overall answer to the main evaluation question for this evaluation criterion is presented below.

Table 8-1 Conclusions on EQ.10

Conclusions on EQ.10 - To what extent are the objectives still relevant and properly addressing the key problem that ecosystems and society presently face? (the adverse consequences of floods & insufficient water status of (selected) water bodies in the EU as needed for sustainable, balanced and equitable water use)?	
What has worked well?	<ul style="list-style-type: none"> The need for public intervention in the field of water remains high due to economic importance of water to EU industry, citizen support for legislation in the field of water and floods remains strong and importance of water to ecosystems (the biodiversity in aquatic ecosystems is in highest decline). Not all waters in the EU are in good condition yet and pressures from various sources remain to date and are not likely to disappear in the near future. Objectives of the WFD and FD are very comprehensively and ambitiously phrased. Neither of them are time-bound or specific with respect to an indicator and thus remain relevant whatever the circumstance; The WFD and FD are legally able to deal with emerging contemporary issues, such as emerging substances and climate change, due to their flexible nature and the provisions created that for dealing with these emerging issues
What has not worked well?	<ul style="list-style-type: none"> However, stakeholders are divided about how facilitative the WFD actually is to dealing with emerging substances (changes in Priority Substances list is slow), new issues such as invasive alien species challenge water status indicators not foreseen before and efficiency in monitoring plans could be achieved with new techniques. There is uncertainty among stakeholders about how climate change is dealt with in the WFD and the FD (not explicit in the WFD and unclear in the FD) Water scarcity and quantity issues remain ill-covered in the WFD and existing indirect measures on those are ineffective. Pluvial flooding in the FD, though officially covered by the FD, generally underrepresented in FRMPs due to their complexity.
Strength of evidence	Strong: Sufficient evidence gathered and available via literature, good response rate in surveys, good input from various interviews. Conclusions generally corroborated in validation workshop in June.
Indication of bias	We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

8.1 Introduction

According to the Better Regulation Guidelines, ‘relevance’ establishes the relationship between the needs and problems of society and the objectives of the Directive. It answers the main evaluation question: *To what extent are the WFD and the FD (still) relevant?* This section of the analysis evaluates if there are any disparities between these objectives and needs/problems of society, which in essence, will give an indication whether the Directive is indeed - still - addressing the correct issues. This

analysis is supported by several sub-evaluation questions that jointly help to answer the overall main evaluation question. The full list of sub-evaluation questions that form part of this relevance analysis are presented in Section 2.1.3. For better readability and to avoid duplication of information, the sub-evaluation questions have been grouped into three sections in this chapter: an analysis of the needs and problem of water issues (section 8.2); a check on the adequacy of the objectives and scope of the Directives in relation to the problems and needs (section 8.3); and, the adaptability of the Directive to technical/scientific progress (section 8.4).

The methodology of this section is in-line with the previous sections of this report. The analysis from the literature review provided an initial basis, which was followed by triangulation of results from the OPC, targeted surveys, stakeholder workshops and targeted interviews.

8.2 The need for regulation in the area of freshwater and floods

Evaluation questions addressed in this section
EQ 10.1 How relevant is EU water legislation to EU citizens and what is their level of support for it?
EQ 10.4 What are the needs of EU society in relation to the quantity of available water (water scarcity) and to what extent do the objectives of the Directives address these needs?

8.2.1 What is the need for good quality/quantity freshwater resources for EU society?

Water is used daily for a variety of purposes by a plethora of consumers. The need for good quality and quantity of water in the EU is described from three important perspectives below.

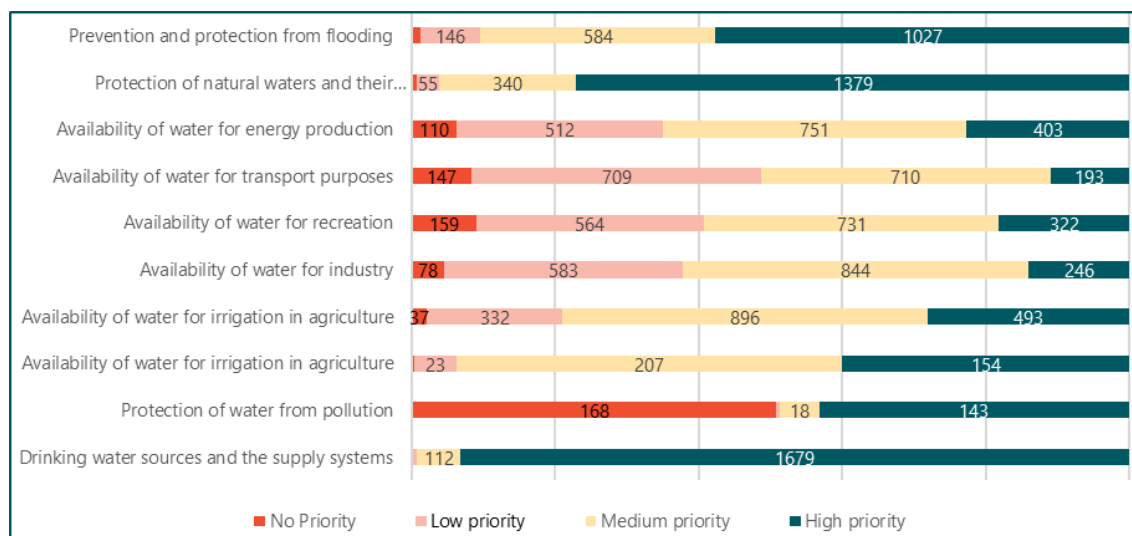
Citizens

European citizens consider water a key priority in their lives. In 2013, a large campaign called Right2Water gathered 1.8m signatures across the EU to underline that many citizens consider guaranteed water and sanitation a principal human right.³⁹² More recently, a Eurobarometer study of 2017 showed that more than a third (36%) of EU citizens picked the pollution of rivers, lakes and groundwater when forced to pick the four most important environmental issues in their lives (only climate change, air pollution and waste management were picked more often). Some 30% also picked shortages to drinking water as most important issue currently faced by society. Lastly, some 25% of EU citizens listed frequent flood and drought events as one of the four main environmental issues.³⁹³ Similarly, as highlighted in section 2.3, the results derived from the OPC show that the majority of EU citizens rank the protection drinking water sources and supply systems, and the prevention and protection from flooding is a high priority. Figure 8-1 also shows that the majority of respondents were unaware of the importance of the protection of water from pollution and the availability of water for irrigation in agriculture.

³⁹² See <https://www.right2water.eu/>

³⁹³ European Commission. 2017. Special Eurobarometer 468, Attitudes of European citizens towards the environment. Online at: http://data.europa.eu/euodp/en/data/dataset/S2156_88_1_468_ENG

Figure 8-1 “When you think of water and its different uses and functions, which of the following do you consider as a priority?”



Source: Open Public Consultation.

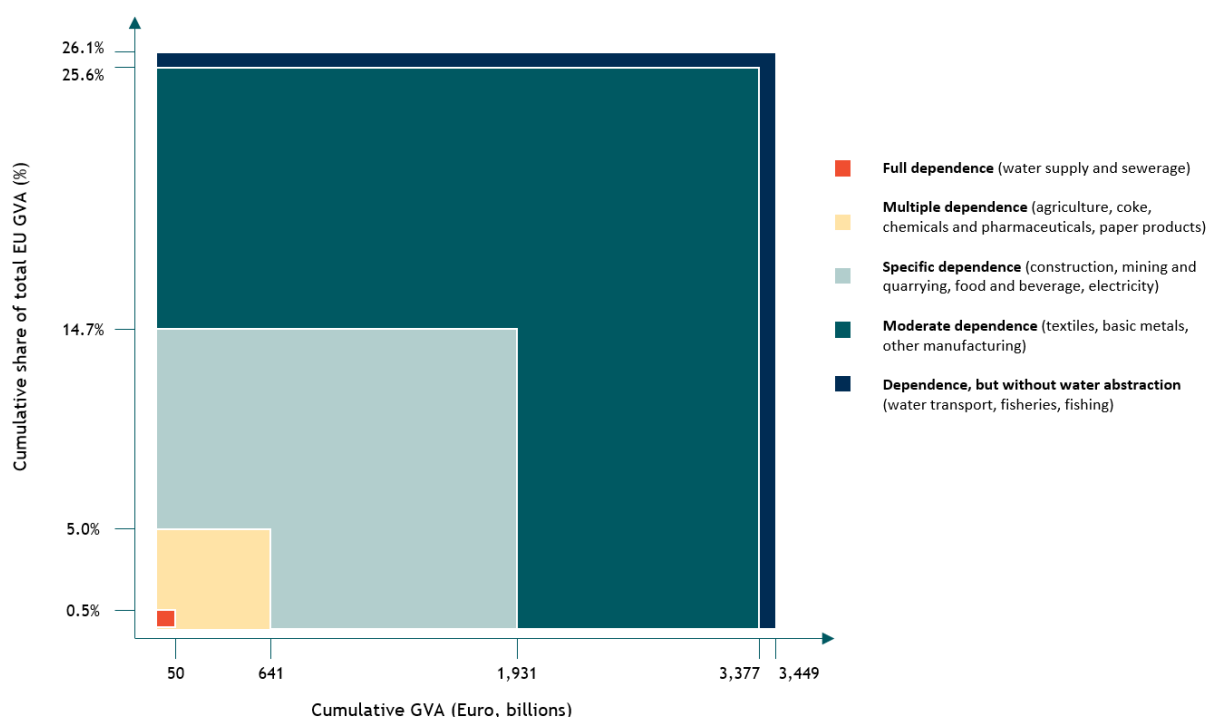
Industry

Many economic activities depend on a stable and clean source of water for their business operations to fulfil the demands from EU and international consumers. In the recently completed BLUE-2 study,³⁹⁴ it was calculated that economic sectors with either a full dependence (the sector will not function at all without water, e.g. water supply) or multiple dependences (water is a necessary input for production, but main output is not water-related, e.g. agriculture, chemicals, paper products) on water, make up 5% of the European GDP. Many of these sectors also play a critical non-economic role in our society, such as electricity and food. From all of the water abstracted in the EU yearly, electricity production accounts for the largest share of water use (45%), followed by agriculture (28%) and then water supply and sewerage (16%). In addition, the 14 most water-dependent sectors in the EU provide around 44 million full-time jobs (2015 data), equating to approximately 24% of total EU employment.³⁹⁵ The gross-value added of these water-dependent sectors is shown in the figure below.

³⁹⁴ Spit et al., 2018. The Economic Value of Water - Water as a Key Resource for Economic Growth in the EU. Deliverable to Task A2 of the BLUE2 project “Study on EU integrated policy assessment for the freshwater and marine environment, on the economic benefits of EU water policy and on the costs of its non- implementation”. Online at: http://ec.europa.eu/environment/blue2_study/pdf/BLUE2%20Task%20A2%20Final%20Report_CLEAN.pdf

³⁹⁵ ibid

Figure 8-2 Gross Value Added (GVA) of water-dependent sectors in the EU, 2015



Source: Taken from Spit et al., 2018.

Note: The legend represents the ranking of sector dependence on water, as grouped within the report.

Ecosystems

Not only human beings and our economy needs sufficient and clean waters, European ecosystems critically depend on it for their survival. Despite freshwater ecosystems only covering around 1% of the earth's surface, around 10% of all animals and 35% of all invertebrates live in such environments and require sufficient levels of water quality and quantity.³⁹⁶ The condition of aquatic ecosystems is also intrinsically linked to the well-being of humans, due to the various ecosystem services that are provided. For example, a healthy aquatic ecosystem will provide, inter alia, a source of food and water, flood protection and coastal protection, purify water and provide a platform for recreational activities.³⁹⁷ The delivery of such ecosystem services derived from aquatic environments are generally enhanced when the ecosystem itself is in greater condition, therefore increasing the benefits that humans obtain.³⁹⁸ As shown in earlier sections, the ecological quality of aquatic ecosystems throughout Europe has deteriorated to various levels from reference conditions. It can therefore be estimated that this has also impacted human well-being, particularly in areas where deterioration levels are high. Furthermore, the rate of biodiversity loss is increasing, and projected habitat loss of freshwater ecosystems expected to rise in freshwater ecosystems.³⁹⁹

8.2.2 What is the need for floods legislation?

Floods are becoming one of the costliest natural disasters in Europe⁴⁰⁰ resulting not only in major economic damage but also in the loss of human lives, and currently constitute the main risk faced by

³⁹⁶ BioFresh. 2019. Global Freshwater Biodiversity Atlas. Online at: <http://atlas.freshwaterbiodiversity.eu/>

³⁹⁷ Grizetti et al. 2019. Relationship between ecological condition and ecosystem services in European rivers, lakes and coastal waters.

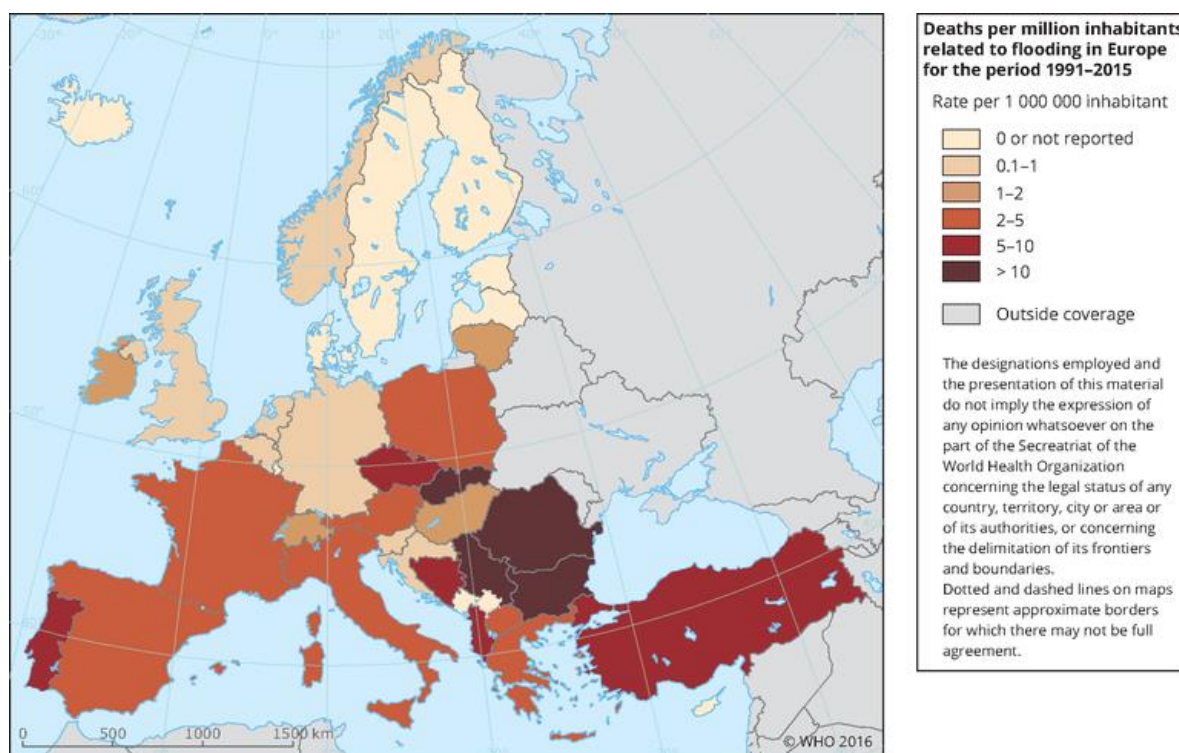
³⁹⁸ *ibid*

³⁹⁹ Valentini, et al. 2014. Europe. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Online at: https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap23_FINAL.pdf

⁴⁰⁰ EEA. 2018. Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices. EEA Report No. 15/2017.

European emergency management authorities⁴⁰¹. In the period between 1991-2015, a large part of the EU suffered >2-5 fatalities per million in habitants due to flood events (see Figure 8-3). A naturally occurring phenomenon aggravated by man-made alternations to riparian zones and floodplains, floods can for example severely damage important infrastructure and cultural sites, displace populations and pollute drinking water.⁴⁰² With the effects of climate change becoming increasingly apparent it has been estimated that the population annually affected by floods in Europe could increase from 216 000 to between 540 000 and 950 000 by 2080.⁴⁰³ Moreover, damages in the EU resulting from a combination of climate change and socio-economic change could by the same year amount to as much as €98 billion/year if no further adaptation measures are undertaken⁴⁰⁴. In addition to climate change other pressures such as land-use change, continued loss of floodplains and other hydromorphological alternations will further enhance the frequency and impacts of floods across Europe, albeit with certain regional variations. Prompted inter alia by the large floods in the Danube and Elbe rivers in 2002 the Floods Directive was adopted establish a framework for the assessment and management of floods with the objective of reducing the potential consequences of flooding. Members States demonstrated in their first FRMPs that they have now fully embraced the concept of flood risk management⁴⁰⁵, improvements for successful implementation are still needed. This includes, inter alia, a further integration of spatial planning and the effects of climate change.⁴⁰⁶

Figure 8-3 Deaths per million of inhabitants related to flooding in Europe (1991-2015)



Source: EEA. 2016. *Floods and Health*, online at: <https://www.eea.europa.eu/data-and-maps/indicators/floods-and-health-1/assessment>

⁴⁰¹ European Commission SWD. 2017. 176 final. Overview of Natural and Man-Made Disaster Risks the European Union may face. Online at https://ec.europa.eu/echo/sites/echo-site/files/swd_2017_176_overview_of_risks_2.pdf

⁴⁰² EEA. 2018. Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices. EEA Report No. 15/2017.

⁴⁰³ Alfieri et al. 2015. Ensemble flood risk assessment in Europe under high end climate scenarios

⁴⁰⁴ European Commission COM. 2019 final. Report on the implementation of the Water Framework and the Floods Directive

⁴⁰⁵ ibid

⁴⁰⁶ European Court of Auditors. 2018. Special Report No. 25 - Floods Directive: progress in assessing risks, while planning and implementation need to improve.

8.2.3 What is the problem?

Water Framework Directive

According to its preambles, the WFD was aimed at tackling the problems faced by EU waters due to the “increasing pressure from the continuous growth in demand for sufficient quantities of good quality water for all purposes”.⁴⁰⁷ The basis for requiring such action was due to, inter alia, continued organic, pesticide and heavy metal pollution to surface waters and groundwaters, and unsustainable water consumption.⁴⁰⁸ Despite progress being made in tackling such issues (see Sections 3.4 and 5.2), many EU waters are not yet in good status and suffer from the consequences of diverse sources of pollution. Water quantity issues also persist throughout Europe, with the total area and population affected by water stress conditions remaining significant. Since 1990, the population exposed to water stress conditions has remained relatively unchanged, at around 33% (data available up to 2015).⁴⁰⁹ Similarly, around 20% of the total EU-28 river basin area is exposed to water stress conditions annually. The total area exposed has declined slightly since 1990, yet the geographic spread of water scarcity encompasses all regions of Europe, not only southern parts.⁴¹⁰ These findings seem to point towards the unsustainable management of water resources in Europe, which is a view supported by OPC MS respondents, where 65% of 1,756 MS respondents stated that they did not feel that water is presently managed and used sustainably (the results to the same question derived almost identical results for non-MS stakeholder respondents). Our EU society therefore needs good quality and quantity of water, but there are various pressures on our waters which prevents the nature from meeting those needs by itself.

Various key pressures continue to exacerbate water quantity and quality issues throughout Europe, as outlined in Section 3.2. The main pressures on the ecological quality of surface waters are hydro morphological pressures (40% of EU water bodies affected), diffuse source pollution (38%), atmospheric deposition (38%), point source pollution (18%) and abstraction (7%).⁴¹¹ Chemical pressures can derive from multiple sources including industry, transport, agriculture and waste disposal.⁴¹² Agriculture is a major source of diffuse pollution due to excessive nutrient application and pesticide usage.⁴¹³ Mercury and brominated diphenyl ethers (flame retardant) are responsible for the failure to achieve good chemical status in the largest proportion of surface water bodies throughout the EU.⁴¹⁴ In addition to these pressures, a growing number of emerging contaminants are being found in surface waters, such as endocrine disruptors, pharmaceuticals, personal care products, nanoparticles and plastics.⁴¹⁵ Information on emerging substances remains scarce, therefore the impacts of such pollutants on both the aquatic environment and human health remain unknown.⁴¹⁶ Agriculture is also seen as the main pressure impacting the good chemical status of EU groundwater due to diffuse pollution from nitrates and pesticides.⁴¹⁷ Nitrates were noted as a pollutant amongst 24 MS 2nd RBMPs, causing a failure of

⁴⁰⁷ Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy, Preamble (4).

⁴⁰⁸ EEA. 1995. Environment in the European Union 1995.

⁴⁰⁹ EEA. 2018. Use of freshwater resources. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/use-of-freshwater-resources-2/assessment-3>

⁴¹⁰ *ibid*

⁴¹¹ EEA. 2018. European waters: Assessment of status and pressures 2018, EEA report No. 7/2018.

⁴¹² *ibid*

⁴¹³ European Commission SWD. 2019. 30 final, European Overview- River Basin Management Plans. Online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:30:FIN&qid=1551267381862&from=EN>

⁴¹⁴ EEA. 2018. European waters: Assessment of status and pressures 2018. EEA Report No 7/2018.

⁴¹⁵ Houtman. 2010. Emerging contaminants in surface waters and their relevance for the production of drinking water in Europe

⁴¹⁶ EEA. 2011. Hazardous substances in Europe’s fresh and marine waters.

⁴¹⁷ European Commission SWD. 2019. 30 final, European Overview- River Basin Management Plans. Online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:30:FIN&qid=1551267381862&from=EN>

reaching good chemical status in 18% of groundwater body areas by area, as opposed to pesticides causing failure in 6.5% of groundwater bodies by area.

Total water abstraction has decreased by approximately 7% between 2002 and 2014⁴¹⁸, yet the abstraction of both surface water and groundwaters to meet the demands of the economy continues to incur detrimental impacts to European waters. For example, the over abstraction of water currently threatens 25% of the remaining wetland habitats in Europe due to excessive draining.⁴¹⁹ The abstraction of water can also lead to water being reintegrated into the environment in a deteriorated state,⁴²⁰ impacting the quality of water. Another major pressure on water resources throughout Europe is the occurrence of droughts, which is explored in more detail in textbox 8-1.

Floods Directive

The introduction of the Floods Directive in 2007 aimed at tackling one of the major disaster events occurring throughout Europe: flooding. At the time of adoption of the Directive, a significant number of fatalities, displacements, economic and environmental damages were occurring due to flood events.⁴²¹ Despite progress in implementing the Directive and its success in prompting Member States to transition from a reactive to preventative approach to flood risk management, floods still continue to cause major damage throughout the European continent. While impacts of flooding have been shown to result in fewer annual fatalities since 1950, the number of people impacted has increased consistently.⁴²² Despite the reduced number of fatalities, some 5000 Europeans lost their lives in flood-related disasters in the period 1980-2013.⁴²³ From similar time frames, a downward trend in the financial losses of flooding has occurred, although significant cycles of loss have taken place during this period.⁴²⁴ This is also true for overall insured losses from flood events,⁴²⁵ whilst calculations indicate GDP losses of €150 billion from river floods between 2000-2013.⁴²⁶ In fact, out of the over €433 billion worth of economic losses caused by weather- and climate-related extreme events in EEA countries in the period of 1980-2015, the largest share (38%) was caused by floods.⁴²⁷

Since 1870, the most common form of flood events have been flash flood events (accounting for 56% of all flood events), fluvial flooding (39% of all flood events), coastal flooding (4%) and compound events (1.5%). Such events are unequally distributed throughout Europe, both spatially and temporarily.⁴²⁸ These flood types are increasing in frequency, severity and duration, as shown in Figure 8-4 below.

⁴¹⁸ EEA. 2018. European waters: Assessment of status and pressures 2018. EEA Report No 7/2018.

⁴¹⁹ EEA. 2016. The problems of water stress. Online at: <https://www.eea.europa.eu/publications/92-9167-025-1/page003.html>

⁴²⁰ EEA. 2018. Use of freshwater resources. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/use-of-freshwater-resources-2/assessment-3>

⁴²¹ European Commission SWD. 2006. 15 final, Annex to the Proposal for a Directive of the European Parliament and of the Council on the assessment and management of floods - Impact Assessment. Online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52006SC0066&from=EN>

⁴²² Paprotny et al. 2018. Trends in flood losses in Europe over the past 150 years.

⁴²³ EEA. 2016. River floods. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/river-floods-2/assessment>

⁴²⁴ Paprotny et al. 2018. Trends in flood losses in Europe over the past 150 years.

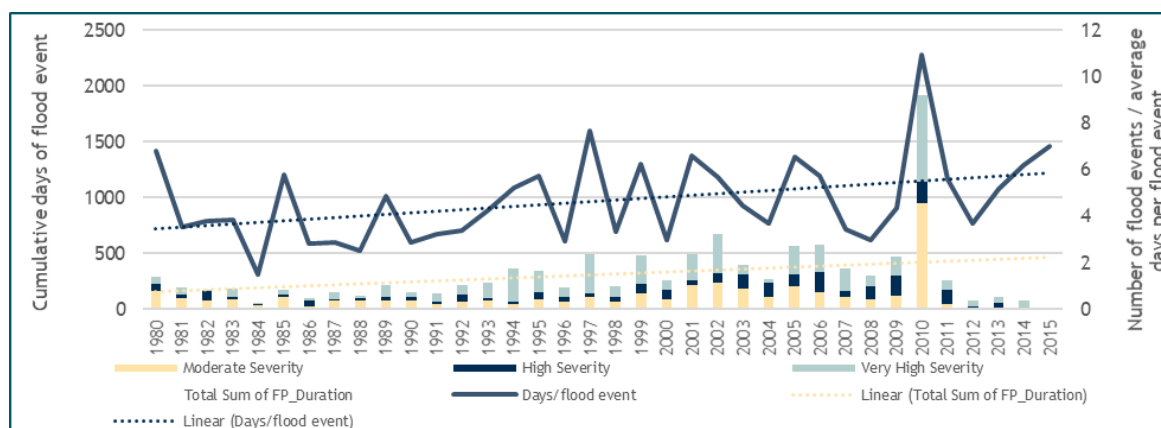
⁴²⁵ For example, see data available at: <https://natcatservice.munichre.com/>

⁴²⁶ EEA. 2016. River floods. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/river-floods-2/assessment>

⁴²⁷ EEA. 2017. Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices. EEA Report No 15/2017.

⁴²⁸ Paprotny et al. 2018. Trends in flood losses in Europe over the past 150 years.

Figure 8-4 Evolution of number and length of flood events and their severity, 1980-2015



Source: EEA-ETC-ICM Flood Phenomena dataset, 2015

Multiple factors impact the severity and magnitude of flood events throughout Europe, yet the predominant pressures are land-use change and hydromorphological alterations, and climate change. The sealing of land by man-made structures can result in an increased intensity and frequency of flooding,⁴²⁹ and such impermeable surface areas continue to increase in Europe.⁴³⁰ The loss of floodplains (70-90% of floodplain area throughout Europe is ecologically degraded due to human activities⁴³¹) is linked to worsening floods, with flood waves becoming higher, the velocity of rivers becoming quicker and greater sediments deposits made. Overall the disconnect created between rivers and floodplains has resulted in their role in flood mitigation being degraded.⁴³² In relation to climate change, the most direct impact to flooding is linked to observed increases in the frequency and severity of heavy precipitation events and coastal storm surges. Such events have increased the risk of fluvial and coastal flooding in various regions throughout Europe.⁴³³

8.2.4 How is the problem likely to evolve?

EU society's and ecosystems' need for water and flood protection cannot be met by nature's ecosystems themselves due to various human-induced pressures as described in the previous section. The problems that these pressures create are likely to persist, and might even be further aggravated, in the future.

WFD

As shown in earlier sections, ubiquitous pollutants are a significant pressure on EU waters, causing a large proportion of EU water bodies failing to meet 'good' ecological and chemical status. This is particularly pertinent for legacy pollutants such as mercury. Mercury consumption in the EU is projected to continue to decrease,⁴³⁴ with various regulations currently in place to continue to phase-out the use and application of mercury. Despite this, there is currently no prospect of a zero-mercury economy occurring in Europe in the medium term,⁴³⁵ meaning that mercury will continue to infiltrate

⁴²⁹ EEA. 2018. Urban land take. Online at: <https://www.eea.europa.eu/airs/2018/natural-capital/urban-land-expansion>

⁴³⁰ EEA. 2016. Flood risks and environmental vulnerability. EEA Report No.1/2016.

⁴³¹ EEA. 2019. Why should we care about floodplains? Online at: <https://www.eea.europa.eu/themes/water/european-waters/why-should-we-care-about-floodplains>

⁴³² *ibid*

⁴³³ EEA. 2016. Floods and health. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/floods-and-health-1/assessment>

⁴³⁴ EEA. 2018. Mercury in Europe's environment. A priority for European and global action. EEA report No 11/2018.

⁴³⁵ *ibid*

the environment, including aquatic ecosystems. Other significant pressures on water quality, such as nitrogen deposition and the intensification of land-use change from agriculture are expected to remain elevated for the foreseeable future⁴³⁶. This is also likely to impact groundwater resources, where MS have reported significant upward trends of nitrates, in addition to rising chloride, sulphate and pesticide pollutants.⁴³⁷ Also hydrological variability, sewage effluent and chemical emissions are projected to increase.⁴³⁸ Pressures on the hydro morphology of European rivers are not likely to reduce either, given the ambitious renewable energy targets the EU adopted and the pivotal role that inland shipping will continue to play in European transport policy.⁴³⁹ Overall, therefore, it seems safe to conclude that the pressures affecting European water quality are likely to at least persist in the future and many of them projected to increase.

Regarding the projected quantity conditions of freshwater resources, lakes, ponds and streams are projected to continue to diminish in coverage because of agricultural intensification, urbanization and climate change⁴⁴⁰. Indeed, it is expected that water demand in all EU sectors is expected to increase by 16% by 2030.⁴⁴¹ Groundwater recharge rates are projected to decrease throughout most of Mediterranean, with slight declines in Ireland and large parts of France. In Alpine regions, such recharge rates are expected to increase.⁴⁴²

Textbox 8-1 Climate change and water quality/quantity

Climate change can result in multiple direct and indirect changes on water quality and quantity. Below, an exploration of some of these interactions are explored.

Water quality

Temperature is one of the predominant factors affecting the majority of physico-chemical balances and biological reactions in water bodies.⁴⁴³ Climate change is projected to continue to warm surface water bodies throughout Europe,⁴⁴⁴ leading to imbalances in chemical processes such as nitrification and denitrification, which can affect quality conditions in water bodies.⁴⁴⁵ Temperature increases can also inflict water quality issues by, inter alia, altering pH and dissolved oxygen levels, bacterial growth, pesticide behavior, and evaporation rates.⁴⁴⁶ In addition, higher water temperatures are likely to lead to greater pathogen survival rates in surface waters,⁴⁴⁷ potentially increasing human exposure.

⁴³⁶ Engardt et al. 2017. Deposition of sulphur and nitrogen in Europe 1900-2050. Model calculations and comparison to historical observations

⁴³⁷ European Commission SWD. 2019. 30 final, European Overview- River Basin Management Plans. Online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:30:FIN&qid=1551267381862&from=EN>

⁴³⁸ Sjerps et al. 2017. Projected impact of climate change and chemical emissions on the water quality of the European rivers Rhine and Meuse: A drinking water perspective

⁴³⁹ EEA. 2018. European waters: Assessment of status and pressures 2018, EEA report No. 7/2018.

⁴⁴⁰ IPBES. 2018. The IPBES regional assessment report on biodiversity and ecosystem services for Europe and Central Asia.

⁴⁴¹ European Commission SWD. 2017. Agriculture and Sustainable Water Management in the EU. Online at: https://circabc.europa.eu/sd/a/abff972e-203a-4b4e-b42e-a0f291d3fdf9/SWD_2017_EN_V4_P1_885057.pdf

⁴⁴² Bisselink et al. 2018. Impact of a changing climate, land use, and water usage on Europe's water resources. Online at: <https://ec.europa.eu/jrc/en/publication/impact-changing-climate-land-use-and-water-usage-europe-s-water-resources-model-simulation-study>

⁴⁴³ Delpla et al. 2009. Impacts of climate change on surface water quality in relation to drinking water production

⁴⁴⁴ EEA. 2016. Water temperature. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/water-temperature-2/assessment>

⁴⁴⁵ RIVM. 2010. Impact of climate change on water quality in the Netherlands. Online at: <https://www.rivm.nl/bibliotheek/rapporten/607800007.pdf>

⁴⁴⁶ EPA. 2002. Nitrification. Online at: https://www.epa.gov/sites/production/files/2015-09/documents/nitrification_1.pdf; Delpla et al., (2009) Impacts of climate change on surface water quality in relation to drinking water production; RIVM (2010) Impact of climate change on water quality in the Netherlands. Online at: <https://www.rivm.nl/bibliotheek/rapporten/607800007.pdf>

⁴⁴⁷ Delpla et al. 2009. Impacts of climate change on surface water quality in relation to drinking water production

Concentration rates of pollutants are also indirectly linked to climate change, as hydrological changes can impact the dilution rates within surface waters.⁴⁴⁸ In areas with decreased water levels due to reduced rainfall, higher concentrations of pollutants can often be found.⁴⁴⁹ Alterations in hydrological cycles can also lead to greater nutrient runoff and increased soil erosion, which can increase turbidity and result in further pollutant additions within the water column.⁴⁵⁰ Similarly, in high alpine regions, increased snow and glacial melt has resulted in increased heavy metal deposits in surface waters through their transportation within meltwater.⁴⁵¹ In regards to the ecology of surface water ecosystems, projected water temperature increases could lead to changes in phenology, whilst also increasing the number of warm-water species. This can also increase the availability of suitable habitats for invasive species, which are expected to become more prevalent throughout Europe,⁴⁵² which can result in substantial impacts on the environment.

Water Quantity

Water quantity problems are often intertwined with water quality issues,⁴⁵³ with overlapping drivers often impacting both conditions. The principal drivers of surface water quantity issues related to climate change include precipitation and temperature changes. Annual river flow rates are expected to decrease throughout the majority of southern European regions whilst conversely increasing in northern regions due to changes to precipitation and snow melt rates.⁴⁵⁴ Extreme temperatures which are projected to rise over the 21st century are expected to result in large increases in meteorological and hydrological droughts in most of Europe, with the greatest increase in drought conditions projected for southern regions.⁴⁵⁵ The impact of climate change on groundwater resources is less understood, due to spatial variabilities in soil, evapotranspiration and aquifer properties.⁴⁵⁶ Nevertheless, models have projected average groundwater recharge rates to decrease throughout Europe due to climate change.⁴⁵⁷ The aforementioned impacts of climate change on water quantities can also induce negative feedbacks, due to human interactions through water abstractions. For example, in prolonged high temperature periods a heightened requirement for water resources is often witnessed- for public water supply, cooling waters for increased energy use, and crop water requirements. Abstractions at such times when water levels are typically already at low levels can maximise the detrimental impacts on freshwater ecology.⁴⁵⁸

FD

As demonstrated through the OPC, European citizens and stakeholder agree that flood risk continue to be an issue that needs to be tackled in their country or region.⁴⁵⁹ Extreme hydrological events such as heavy precipitation and floods are, similar to other climate-related extreme weather phenomenon,

⁴⁴⁸ Wen et al. 2017. Organic pollution of rivers: Combined threats of urbanization, livestock farming and global climate change

⁴⁴⁹ EEA. 2019. Climate change and water- Warmer oceans, flooding and droughts. Online at: <https://www.eea.europa.eu/signals/signals-2018-content-list/articles/climate-change-and-water-2014>

⁴⁵⁰ RIVM. 2010. Impact of climate change on water quality in the Netherlands. Online at: <https://www.rivm.nl/bibliotheek/rapporten/607800007.pdf>

⁴⁵¹ Delpla et al. 2009. Impacts of climate change on surface water quality in relation to drinking water production

⁴⁵² Kovatset al. 2014. Europe. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

⁴⁵³ RIVM. 2010. Impact of climate change on water quality in the Netherlands. Online at: <https://www.rivm.nl/bibliotheek/rapporten/607800007.pdf>

⁴⁵⁴ EEA. 2016. River flow. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/river-flow-3/assessment>

⁴⁵⁵ EEA. 2016. Meteorological And hydrological droughts. Online at: <https://www.eea.europa.eu/data-and-maps/indicators/river-flow-drought-2/assessment>

⁴⁵⁶ BIO Intelligence Service. 2012. Literature review on the potential Climate change effects on drinking water resources across the EU and the identification of priorities among different types of drinking water supplies. Online at: http://ec.europa.eu/environment/archives/water/adaptation/pdf/ADWICE_FinalReport.pdf

⁴⁵⁷ Doll. 2009. Vulnerability to the impact of climate change on renewable groundwater resources: a global-scale assessment

⁴⁵⁸ EEA. 2009. Water resources across Europe – confronting water scarcity and drought. EEA Report No. 2/2009.

⁴⁵⁹ In the OPC carried out under this assignment, 1279 out of 1755 respondents replied affirmative to the question “Do you think that flood risk is a problem that needs to be tackled in your country or region?”

predicted to increase in both frequency and magnitude throughout Europe.⁴⁶⁰ This positive correlation between the impact on climate change on flood risks has been acknowledged by most Member States in their FRMPs, in which 24 out of 26 Member States considered and/or provide evidence that climate change impacts were considered.⁴⁶¹ Indeed, climate change can be expected to affect all water-related functions.⁴⁶² Sea-level rise and an increase in the frequency and severity of extreme rainfall are expected to increase coastal, fluvial and pluvial flood risk throughout Europe.^{463, 464} Groundwater flooding is less of a concern than fluvial, pluvial and coastal flooding, although climate change impacts are less certain.⁴⁶⁵ Such flood risk projections can also translate in higher predicted damages caused by flooding. For example, it has been estimated that without further investments in coastal adaptation, the current expected annual damage of €1.25 billion is projected to increase to a range between €93 and €961 billion by the end of the century.⁴⁶⁶ As research has indicated that the increase in economic losses due to flooding can partly be explained by an increased concentration of wealth in flood-zones⁴⁶⁷, the continued rapid urbanisation will require further improvements of flood risk prevention⁴⁶⁸. Models have also shown that under high-end climate change scenarios, the expected annual population affected by flooding is projected to increase throughout most of Europe up to 2080.⁴⁶⁹

8.3 Do the objectives of the WFD and the FD (still) adequately address these needs and problems?

Evaluation questions addressed in this section

EQ 10.4. What are the needs of EU society in relation to the quantity of available water (water scarcity) and to what extent do the objectives of the Directives address these needs?

EQ 10.3 What defines sustainable management of water resources in the EU, what is the need for it and how do WFD and FD contribute to it?

The need for good quality and quantity of water and legislation in the area of floods for citizens, industry and ecosystems is described in Section 5.2. In this section, we assess whether the objectives and the scope of the WFD and FD adequately respond to these needs and problems.

8.3.1 Water Framework Directive

Water quality

Article (1) of the WFD establishes objectives for ecological quality⁴⁷⁰ in addition to objectives for the reduction and controlling of discharges, emissions and priority substances⁴⁷¹ with the aim to provide “sufficient supply of good quality surface water and groundwater [...]”. The approach to attaining these

⁴⁶⁰ EEA. 2018. Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices. EEA Report No. 15/2017, see also Paprotny et al. 2018. Trends in flood losses in Europe over the past 150 years

⁴⁶¹ European Commission COM. 2019. Final. Report on the implementation of the Water Framework and the Floods Directive

⁴⁶² Paprotny et al. 2018. Trends in flood losses in Europe over the past 150 years

⁴⁶³ ibid

⁴⁶⁴ Alfieri et al. 2018. Multi-Model Projections of River Flood Risk in Europe under Global Warming

⁴⁶⁵ EEA. 2016. Flood risks and environmental vulnerability. EEA Report No 1/2016

⁴⁶⁶ Yousdoukas et al. 2018. Climatic and socioeconomic controls of future coastal flood risk in Europe

⁴⁶⁷ EEA. 2017. Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices. EEA Report No. 15/2017

⁴⁶⁸ European Commission COM. 2019. Final. Report on the implementation of the Water Framework and the Floods Directive.

⁴⁶⁹ Alfieri et al. 2015. Ensemble flood risk assessment in Europe under high end climate scenarios

⁴⁷⁰ Article 1 (a) of the WFD aims to prevent “further deterioration and protects and enhances the status of aquatic ecosystems”

⁴⁷¹ Article 1 (c) of the WFD aims at “enhanced protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances”

objectives (through the operationalized of Articles 4 and 10) embodies a more holistic, river-basin focused approach to water quality management than methods previously employed, which mainly focused on controlling emissions from point sources.⁴⁷² Both an expert judgement by the evaluation team and interview results find that the objective of the WFD is comprehensive: it covers relevant freshwater resources, transitional waters and coastal waters (to some extent), addresses pollution as well as sets quality standards and links to floods. The objective is not linked to a specific target but states that waters should reach good status and should not deteriorate, which makes the objective time-invariant and thus still relevant to date. The formulation of the objective also still adequately links to the needs and problems to date, since not all waters have reached good status and the pressures faced to date are also covered by the scope of the Directive.

The fact that the WFD is broad and comprehensive in its ambitions regarding biological and hydrological standards, while at the same time very specific about the way in which to measure and approach the biological and hydromorphological quality of waters (in Annex V) has according to scholars⁴⁷³ and interviews also led to challenges in implementation, because the use of such specific indicators draws the attention to improving the score for those specific indicators, whereas the overall idea is to improve ecological and biological quality of the waters.

8.3.2 Quantity of water and sustainable water management

Article (1) of the WFD does not refer directly to protect and enhance sufficient quantity of water, but refers indirectly to the need for sufficient water quantity by targeting sustainable water use: “*The purpose of this Directive is to [...] promote sustainable water use based on a long-term protection of available water resources [...] and thereby contributing to [...] the provision of the sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced, and equitable water use*”. However, “sustainable water use” is subsequently not defined in Article (2) and thus it is not precisely clear what the Directive aims for in the field of quantity of water based on its legal text. Also interview and survey results indicate that the water quantity aspect is not very clearly covered by the Directive. Stakeholders were asked in the targeted survey to define what they consider sustainable management of water resources. Table 8-2 provides some illustrative answers per key stakeholder group. It is clear that all of them relate sustainable use to reflect abstraction levels should not deplete available water resources. Respondents to the OPC also most clearly referred to “*reducing pollution into the water cycle*” (more than 50% of respondents scored this a 5 for importance based on scale of five). Nearly 80% of respondents also thought that “*RBMPs manage/optimize water allocation to different uses based on available resources*” and also rated highly was “*well maintained water distribution networks*”, which both help to address sustainable use of water effectively according to them.

⁴⁷² Voulvoulis et al. 2017. The EU Water Framework Directive: From great expectations to problems with implementation

⁴⁷³ E.g. Hering et al. 2010. The European Framework Directive at the age of 10: A critical review of the achievements with recommendations for the future, *Science of the Total Environment*, 408-19, 4007-4019

Table 8-2 Key stakeholder responses to the targeted questionnaire: " The Directives aim to contribute to the sustainable management of water - in your opinion, what is the sustainable management of water resources?"

Stakeholder group	Response
Industry Groups	"A sustainable water management needs to address and harmonise all of uses of water."
Member State Competent Authorities	"The coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment." "Sustainable water management requires to ensure water availability for ecosystems and all water users in adequate quantity and quality for current and future generations."
NGO	"Sustainable management of water resources is management which meets current water resource needs without compromising the health and integrity of the water environment, nor the ability of future generations to meet their water resource needs. In practice this means decisive action to ensure that water use and pollution does not deplete the quantity or quality of water resources and the ecology that depends on them."

However, the overall impression that stakeholders provided in the workshops and interviews for this project was that the WFD does not fully address all issues relating to water quantity. According to these stakeholders, this relates to the past and current political reality around the interpretation of the subsidiarity principle concerning national water resources, preventing a more full-fledged coverage of water quantity issues in the Directive. According to the majority of stakeholders, given this situation the WFD addresses water quantity issues "as good as it can", but issues relating to water abstraction and water use therefore remain, such as "conflicting water uses due to unclarities about exemptions"⁴⁷⁴. It is similarly noted in the European Commission SWD (2019) document that applying exemptions which permit small abstractions can still lead to groundwater bodies not achieving good quantitative status, with 16% of the area of groundwater affected by over abstraction in Europe.⁴⁷⁵ Stakeholders mentioned during targeted consultations that, inter alia, preventing the misuse of exemptions is imperative for sustainable water management.

Figure 8-5 In your opinion which of the following aspects contribute the most to the sustainable use of water? (5- highest, 1- lowest)

	1	2	3	4	5	Do not know	Weighted score
Using and/or disposing of fewer chemicals, aiming at zero emissions of pollutants into the water cycle	13	24	71	117	318	30	4.3
Other	14	0	7	7	45	48	3.9
River Basin Management Plans that manage and optimise water allocation to different uses according to the available resources	23	57	116	153	172	49	3.8
Well-maintained water distribution networks (i.e. inspection, analysis, risk assessment and replacement of leaky pipework)	19	64	148	150	150	39	3.7
Adequate policies on water pricing and cost recovery and tariffs	30	76	117	150	158	43	3.6

⁴⁷⁴ Quote from respondent to the targeted survey question "The Directives aim to contribute to the sustainable management of water - in your opinion, what is the sustainable management of water resources? Do the Directives contribute to this?"

⁴⁷⁵ European Commission SWD. 2019. 30 final. European Overview- River Basin Management Plans. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:30:FIN&qid=1551267381862&from=EN>

	1	2	3	4	5	Do not know	Weighted score
Research and innovation to develop approaches that reduce water use / remove the need to use water at all	31	78	127	167	137	31	3.6
Impact assessments of water abstraction schemes	29	61	143	167	99	63	3.5
New technological solutions that use water efficiently (e.g. eco-friendly washing machines) and optimised water treatment and distribution systems	30	76	186	151	89	41	3.4
Introducing separate sewer/wastewater systems in buildings	75	88	118	127	88	70	3.1
Water accounts as part of the planning cycles	68	61	113	84	77	149	3.1
Water quality standards linked to use (e.g. less stringent standards for treated waste water used for irrigation than for treated waste water supplied to households)	81	91	154	110	59	72	2.9

Source: OPC - expert survey, Total number of respondents: 574

What the WFD does do within this margin of operation, manage sustainable use via:

1. Water abstraction measures (Article 11.3);
2. Through promoting sustainable water use through cost-recovery and water pricing principles.

Ad 1) Under the WFD, water abstraction control measures (such as under Article 11.3 (e)) are in place, requiring MS to maintain a register to control water abstractions and a requirement for prior authorisation of abstraction. All MS have currently implemented such measures, yet the majority of MS apply exemptions for small abstractions.⁴⁷⁶ As noted in the previous paragraphs, this can lead to problems with achieving good quantitative status in groundwater bodies.⁴⁷⁷ Despite progress in reducing pressures to water abstraction being slow between the 1st and 2nd cycle of RBMPs, the majority of MS are planning measures related to water abstraction and scarcity issues.⁴⁷⁸ Actions related to water scarcity and abstraction have included extended metering, further water abstraction controls and review licenses, in addition to improved datasets on water abstraction.⁴⁷⁹

Ad 2) Another tool within the Directive which relate to the sustainable use of water resources include cost recovery (Article 9). Sustainable management of water resources in the WFD is promoted in the Directive particularly through the article on cost recovery (Article 9), since if the price of water reflects the cost of abstraction of water accurately, economic incentives make sure that over abstraction of water is discouraged. The Article is however poorly implemented (see *Effectiveness* and EEA (2013)⁴⁸⁰, implying that promoting sustainable water use via cost-recovery is not effective.

The WFD thus addresses water quantity appropriately via its objective and address water quantity indirectly via water abstraction measures and cost recovery. There is some anecdotal evidence from literature that the WFD has had a positive effect on water quantity issues in Europe⁴⁸¹. Yet most of the respondents (33%) to the targeted questionnaire state that the WFD considers water scarcity only “to

⁴⁷⁶ European Commission SWD. 2019. 30 final, European Overview- River Basin Management Plans. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:30:FIN&qid=1551267381862&from=EN>

⁴⁷⁷ *ibid*

⁴⁷⁸ *ibid*

⁴⁷⁹ *ibid*

⁴⁸⁰ EEA. 2013. Assessment of cost recovery through water pricing. EEA Technical Report No. 16/2013.

⁴⁸¹ Apostolaki et al. 2019. Assessing the Effectiveness of the WFD as a Tool to Address Different Levels of Water Scarcity Based on Two Case Studies of the Mediterranean Region

some extent”. Also, the evolution of additional legislative and non-legislative EU action in the field of water quantity issues, indicates that the WFD seems to come short to address all problems and needs in relation to water quantity. Drought is a natural hazard that occurs in both high and low rainfall areas of Europe⁴⁸² and can develop over short (weeks or months) or longer (seasons, years) periods. Data from 2000-2006 show that each year, on average 15% of the EU total area and 17% of the EU total population have suffered from the impact of droughts. Drought is a recurrent phenomenon that affects vast areas and millions of people in Europe: the total cost of droughts over the past 30 years amounts to € 100 billion, with the 2003 drought alone costing € 8.7 billion, affecting over 100 million people and a third of the EU territory⁴⁸³.

In 2007, the European Commission decided to launch the strategy for Scarcity and Droughts in the EU.⁴⁸⁴ The strategy presents some evidence that the WFD was not doing enough to counteract water scarcity and drought issues, as it proposes several non-binding policy options for MS to “*address and mitigate the challenge posed by water scarcity and drought within the Union*”. These policy options include: implementing water pricing; allocating water funding more efficiently; improving drought risk management; implementing additional water supply infrastructures; integrating water efficient technologies and practices; improving water-saving awareness; and, improving water scarcity and drought knowledge and data. A review of the strategy in 2012 found that the implementation of these policy options is generally limited amongst MS, particularly in regard to water pricing and drought risk management options.⁴⁸⁵ The WFD and the additional non-legislative action therefore comes short to address scarcity and droughts issues appropriately. A study ‘Assessing and Strengthening the Science and EU Environment Policy Interface’ (EC, 2012) yielded fifteen recommended key actions to be taken to improve the science policy interface at the European level, including the launch a follow-up study to better understand science/environmental policy interfaces in Member States and Regions, to develop a network of science advisors across Member States (national and regional level) and DGs and to develop informal networks with knowledge-broker offices and agencies in Member States and EU Regions.⁴⁸⁶

Secondly, in earlier assessments of the WFD⁴⁸⁷, water reuse was also assessed to be insufficiently promoted by the WFD. Indeed, it is only mentioned in Annex VI as an illustrative supplementary measure to be taken by Member States. As a result, a new *Regulation on minimum requirements for water reuse* is currently proposed by the European Commission to the Parliament. In the accompanying impact assessment, it is also stated that there is a gap in EU policy on the issue.⁴⁸⁸

482 Van Lanen, H. A.J. , L.M. Tallaksen, D. Assimacopoulos, K. Stahl, W. Wolters, J. Andreu, S.I. Seneviratne, L. De Stefano, I. Seidl, F. Castro Rego, A. Massarutto and E. Garnier, 2015. Fostering Drought Research and Science-Policy Interfacing: Achievements of the DROUGHT-R&SPI project. In: Drought: Research and Science-Policy Interfacing, Publisher: CRC Press, Taylor & Francis Group, A Balkema Book, ISBN 9781138027794. Editors: Joaquin Andreu, Abel Solera, Javier Paredes-Arquiola, David Haro-Monteagudo, Henny van Lanen, pp. 3-11

483 EC, 2007. Addressing the challenge of water scarcity and droughts in the European Union. Communication from the Commission to the European Parliament and the Council. COM(2007) 414 final).

484 European Commission COM. 2007. 414 final, Addressing the challenge of water scarcity and droughts in the European Union

485 European Commission SWD. 2012. 672 final, Report on the Review of the European Water Scarcity and Droughts Policy

486 EC, 2012. Assessing and Strengthening the Science and EU Environment Policy Interface. Report pre-pared for DG Environment of the European Commission by Milieu Ltd. and Collingwood Environmental Planning Ltd. ISBN : 978-92-79-23532-0.

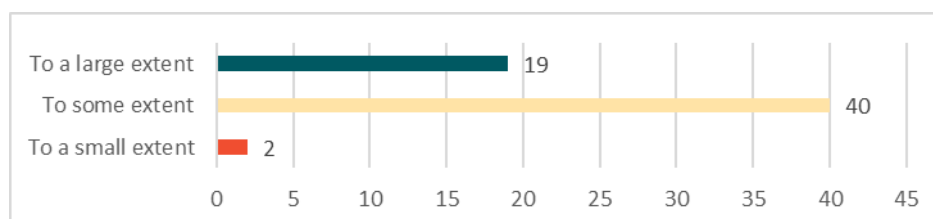
487 European Parliament. 2015. Water legislation: Cost of non-Europe report and Deloitte & IEEP, 2011, Support to Fitness Check Water Policy

488 European Commission SWD. 2018. 249 Final. Impact Assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council on minimum requirements for water reuse.

8.3.3 Flood risk

Article (1) of the Floods Directive aims to “establish a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community.” As examined in the effectiveness sections, the definition of ‘flood’ (“the temporary covering by water of land not normally covered by water”) sufficiently covers all flood types, whilst stakeholders during targeted consultations agree that the flood management processes established by the FD meet current needs.

Figure 8-6 “To what extent does the flood risk management framework established by the FD meet the current needs (i.e. reduce the adverse consequences from flooding)?”



Source: Targeted survey

Targeted stakeholder consultations showed that the majority of respondents (97% from a total of 39 respondents) reported that the Floods Directive assists in reducing the adverse consequences from flooding to at least some extent. A predominant factor in such positive feedback can be attributed to comprehensive and flexible nature of the Floods Directive. The structure of the Directive itself has provided a framework which can address the consequences of flooding through the broad and non-specific objectives prescribed. Multiple MS representatives at the Floods Directive Focus Group consultation stated that the Directive has sufficient internal flexibility to allow MS to define their own priorities and approaches to flood risk management, whilst also allowing adaptation to future external changes. Consultations with MS did not uncover any legal impediments which prevent authorities from addressing relevant problems or threats, highlighting that sufficient flexibility is afforded by the Directive. This flexible nature may have also led to a focus on certain types of floods being assessed throughout Floods Directive stages of implementation.

Due to the Directive not specifying flood types to be incorporated in the process of developing FRMPs, many MS have focused on fluvial floods. As noted in section 2.3, pluvial flooding is rarely considered in FHRMs due to the lack of such flooding types identified during the PFRA and FHRM stages, despite such flood types remaining a major source of floods throughout Europe. Some MS representatives stated during the Floods Directive Focus Group that it is very difficult to incorporate pluvial flooding within these stages, predominantly due to lack of data. Therefore, the significance of pluvial flooding could be misrepresented amongst FRMPs. Representatives stated that due to the often-localised nature of such flood events, MS should have the option to voluntarily develop pluvial FRMPs which align with local conditions. It was suggested by some participants in the Focus Group that pluvial flooding should be excluded from the Floods Directive and addressed with other measures, however it was not discussed where else it could better be addressed.

Overall, the objectives of the FD provide both a relevant and comprehensive framework to address flood risk. The framework allows MS to approach flood risk management in a flexible manner, in turn allowing flood issues to be addressed objectively, in a case-specific manner. Despite this, issues dealing

with the complexity of pluvial flooding has resulted in this flood type remaining underdeveloped in Floods Directive processes whilst it remains a major source of flood risk in the EU.

8.4 The adaptability of the Directives to technical and scientific progress

Evaluation questions addressed in this section
EQ 9.2 How well adapted are the Directives to technical and scientific progress and new possibilities arising from technological innovation?

Table 8-3 Summary information on technical and scientific progress

Conclusions on EQ.9.2 - How well adapted are the Directives to technical and scientific progress?	
What has worked well?	<ul style="list-style-type: none"> The need for public intervention in the field of water remains high due to economic importance of water to EU industry, citizen support for legislation in the field of water and floods remains strong and importance of water to ecosystems (the biodiversity in aquatic ecosystems is in highest decline). Not all waters in the EU are in good condition yet and pressures from various sources remain to date and are not likely to disappear in the near future. Objectives of the WFD and FD are very comprehensively and ambitiously phrased. Neither of them are time-bound or specific with respect to an indicator and thus remain relevant whatever the circumstance; The WFD and FD are legally able to deal with emerging contemporary issues, such as emerging substances and climate change, due to their flexible nature and the provisions created that for dealing with these emerging issues
What has not worked well?	<ul style="list-style-type: none"> However, stakeholders are divided about how facilitative the WFD actually is to dealing with emerging substances (changes in Priority Substances list is slow), new issues such as invasive alien species challenge water status indicators not foreseen before and efficiency in monitoring plans could be achieved with new techniques. There is uncertainty among stakeholders about how climate change is dealt with in the WFD and the FD (not explicit in the WFD and unclear in the FD) Water scarcity and quantity issues remain ill-covered in the WFD and existing indirect measures on those are ineffective. Pluvial flooding in the FD, though officially covered by the FD, generally ignored in FRMPs due to their complexity.
Strength of evidence	Strong: Sufficient evidence gathered and available via literature, good response rate in surveys, good input from various interviews. Conclusions generally corroborated in validation workshop in June.
Indication of bias	We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

Also crucial to the relevance of the Directives is their flexibility to adopt emerging technologies and scientific progress to ease and improve implementation of the Directives. In this section, we assess this dimension by reviewing key technological and scientific innovations to date and their link to the Directives and secondly assess the flexibility of the Directives with regard to innovations.

8.4.1 Key relevant technological and scientific innovations

The literature review and inputs from stakeholders identified several relevant technological and scientific innovations in the water sector since the adoption of the Directives. These have been grouped in three (interlinked) categories: *monitoring and assessment*; *environmental management practices*; and *technological advancements in water treatment facilities and other point sources*. The section below presents a summary overview of key findings of each category.

Monitoring and assessment

Several stakeholders highlighted the development and availability of new monitoring tools and sources of information. For instance, the improved availability of *high-quality satellite data*, *remote sensors* and *drone technology* can greatly improve the surveillance and operational monitoring of water bodies.⁴⁸⁹ Since the adoption of the WFD, monitoring through satellite images has become more affordable thanks to free and open data provided through the Copernicus Sentinels.⁴⁹⁰ Satellite monitoring has the benefit of providing water managing authorities with improved data on several water quality parameters (such as water colour and cyanobacteria⁴⁹¹) at a large spatial and temporal scale, also in real time. This can for example help to identify and prevent algae blooms at an early stage, in turn increasing the efficiency of mitigation measures.⁴⁹² Satellite data can also improve monitoring where traditional practices like data sampling is too complex or time consuming, such as in regions with a large number of water bodies. One interviewee further made the point that monitoring could be made more precise and efficient by sharing data and/or facilities between the research community and operators. This would improve data availability and reliability by cross-checking data from research observatories and policy monitoring networks. Increased involvement of citizens in the monitoring process ('citizen science') is another novel approach that can help reduce monitoring costs.

Other improvements in this category include the development of new metrics, classification methods and modelling practices⁴⁹³. This includes, for instance, an enhanced understanding and use of metal bioavailability which has permitted to deploy models for classifying chemical status with respect to heavy metals. One monitoring technology specifically related to multiple stressors which has improved significantly since the adoption of the WFD is the use of bio-assays, biosensors and bio-trackers. Moreover, DNA analysis techniques can provide a picture of the biological status in a cost-effective manner.

More specific to the Floods Directive, innovations in hydrological and hydraulic science have improved flood mapping and modelling and risk assessments. For instance, digital elevation models enable more accurate flood maps and risk assessments down to the local level, helping to improve flood risk management to the right scale.

⁴⁸⁹ See for instance: Carvalho et al. 2019. Protecting and restoring Europe's waters: An analysis of the future development needs of the Water Framework Directive

⁴⁹⁰ Earth Observation-Based Services For Monitoring And Reporting Of Ecological Status (EOMORES) project, <http://eomores-h2020.eu/project/>

⁴⁹¹ Carvalho et al. 2019. Protecting and restoring Europe's waters: An analysis of the future development needs of the Water Framework Directive

⁴⁹² CyMonS project, <https://business.esa.int/projects/cymons>

⁴⁹³ Examples of such progress are the development of Ecological Quality Ratios to assess transitional and coastal waters and measuring emerging Disinfection By-Products in drinking water, see <https://www.eip-water.eu/projects/disinfection-products>

A future challenge associated with these innovations is to demonstrate their compatibility with existing intercalibrated methods and their cost effectiveness and how they can be integrated into the current monitoring and assessment structures.⁴⁹⁴

Environmental management

In the wider field of environmental management, an *improved understanding of water dynamics and their interaction* and a growing emphasis on *ecosystem services and green infrastructure* are some of the main developments. Currently, most assessment methods and water management measures have been developed to be responsive to single stressors which have been assumed to be dominant, although about 40% of European waters are subjected to multiple stressors.⁴⁹⁵ A growing scientific understanding of the interaction and relationship between multiple pressures is aiming to help river basin managers to prioritise among various stressors, however this still proves difficult in practice.⁴⁹⁶ As an example, many of the biological assessment metrics used in the WFD classifications outlined in Annex V such as ‘benthic invertebrates’ rather respond to general degradation from multiple stressors and do not generally allow to establish causal inference in multiple stressor situations, which makes choice of appropriate and cost-efficient management measures difficult.⁴⁹⁷ Under the MARS program, such a diagnostic ‘hierarchy-stressor’ tool was developed to help identify appropriate options to address multiple stressors on surface water bodies. Several respondents and stakeholders noted that the scientific understanding and of the interaction between multiple stressors should be better reflected in the monitoring and assessments methods and strategies.

As outlined before, the role and benefits of ecosystem services, nature-based solutions (NBS) and (other) green infrastructure measure are other important innovations in environmental management. While the Directives do not explicitly use the term ‘ecosystem services’ it does have an ecosystem focus, with the purpose of protecting future human uses of the environment when implemented in a social and economic context.⁴⁹⁸ On average, references to ecosystem services were absent in the first round of RBMPs, but the concept is appearing more frequently in the second cycle.⁴⁹⁹ The increased integration of ecosystem services in RBMPs and FRMPs was highlighted by respondents, while it has also been noted than in some Member States the adoption has been limited due to a lack of political support⁵⁰⁰. However, the majority of WFD surface water monitoring focuses on biological structure (for indicators such as the biological community composition or temperature) rather than function, in line with the emphasis on structural indicators included in Annex II and V and the targets needed for reaching good status.⁵⁰¹ Due to the focus on biological structure rather than function, there is a perceived poor linkage between pressures and their effect on the ecosystem, and subsequently between the objectives of the WFD and the functioning of ecosystem services. Adopting a monitoring and assessment approach that better valorises the multiple benefits of ecosystem services can help

⁴⁹⁴ Euraqua. Online at:

<http://www.euraqua.org/download/18.2aa2697816097278807dc1d/1520935500923/WFD%20Position%20Paper%20February%202018.pdf>

⁴⁹⁵ EEA. 2018. European waters: Assessment of status and pressures 2018, EEA report No. 7/2018.

⁴⁹⁶ Carvalho et al. 2019. Protecting and restoring Europe’s waters: An analysis of the future development needs of the Water Framework Directive; MARS project (2018) Final Report. Available online at http://www.mars-project.eu/files/download/final_report/MARS_FinalReport_April2018.pdf

⁴⁹⁷ Lemm et al. 2019. Diagnosing the causes of river deterioration using stressor-specific metrics.

⁴⁹⁸ Vlachopoulou et al. 2014. The potential of using the ecosystem approach in the implementation of the EU Water Framework Directive.

⁴⁹⁹ Grizzetti et al. 2016. Ecosystem services for water policy: Insights Across Europe

⁵⁰⁰ European Commission SWD. 2019. 30 final. European Overview - River Basin Management Plans

⁵⁰¹ Vlachopoulou et al. 2014. The potential of using the ecosystem approach in the implementation of the EU Water Framework Directive.

shift focus from merely achieving legal compliance towards a broader sets of ecological, economic, human and social benefits - with the possibility to strengthen support for more costly (but efficient) management measures.⁵⁰² Some stakeholders mentioned the benefits of focusing more strongly on environmental objectives in terms of biological functioning rather than structure to better facilitate technological and scientific advances, it did not become clear what innovations may then be better integrated, nor was it clear whether the overall effectiveness of a system based on (less specific) functional indicators may improve progress towards meeting the objectives of the WFD towards good quality waters.

Also, in the context of the FD, the literature review and respondents to the targeted questionnaire highlighted increased knowledge on ecosystem services and NBS as important innovations. Methods for proper cost-benefit analysis considering ecosystem services brought by restoration measures, while still at the development stage, was deemed to be crucial for effective implementation of the FD.

Technological advances in water treatment facilities and other point sources

Considerable progress has been made in *water treatment facilities* and at other *point sources*. Examples of this are the further advancement of technologies such as reverse osmosis to clean wastewater⁵⁰³, and landfill treatment to filter effluents discharged into water bodies⁵⁰⁴. An interviewee stated that technological advancements have also been made in combining water treatment technologies with methods reducing energy or water consumption and reduce costs. This includes wastewater treatment through novel membrane, anaerobic digestions and adsorptive process techniques, which offer increasing potential lower-cost, less energy-intensive and more comprehensive removal of pollutants.⁵⁰⁵ Several stakeholders noted that the strict interpretation of the environmental quality objectives and non-deterioration principle (Article 4.1) and derogations (Article 4.7) in the *Weser case*⁵⁰⁶ have had a direct impact on the permitting process of Member States authorities, leading to reduced incentives for the uptake of new technologies or the construction of new water treatment plants (see also section 5.2.2).

8.4.2 Inherent flexibility of the Directives

The evidence suggests that there are slightly diverging views on the flexibility of the Directives to take into account scientific progress. While several respondents and parts of the reviewed literature state that there are no legal barriers to innovative technologies and approaches inherent in the Directives, others noted a lack of uptake of novel technologies in the implementation phase and that some of the technical Annexes and guidance documents takes too prescriptive of an approach which in this regard. On balance, it appears that while it in theory in possible do adopt and consider scientific and technological innovation, doing so in practice is less straight forward.

Water Framework Directive

Several provisions of the WFD allow to take into consideration technological and scientific progress. As an example, Article 20 stipulates that Annexes I, III and section 1.3.6 of Annex V '*may be adapted to scientific and technical progress*'. Meanwhile, the technical Annexes, in particular Annex V, set out

⁵⁰² Vlachopoulou et al. 2014. The potential of using the ecosystem approach in the implementation of the EU Water Framework Directive; Grizzetti et al. 2016. Ecosystem services for water policy: Insights Across Europe

⁵⁰³ See: <https://www.eip-water.eu/projects/urban-wastewater-upgrading-operations-dow-chemical-terneuzen-n>

⁵⁰⁴ See: <https://www.eip-water.eu/projects/life-releach-decreasing-environmental-impact-waste-management-innovative-leachate-treatment>

⁵⁰⁵ Respondent, added open questions

⁵⁰⁶ See ruling from 1 July 2015 in the Court of Justice of the European Union, case C-461/13

detailed information on the various quality elements and how to describe their statuses as well as the design of the monitoring systems. While these Annexes could in principle risk to lock-in the use of particular technologies or methodologies, the implementation guidance ‘is open to continuous improvements’ in fields that are ‘undergoing continuous changes through scientific research’⁵⁰⁷. Despite these wordings of the legal text, some respondents noted that Annex V prevents the use of alternative indicators and parameters. Due to the focus on specific indicators on biological structure of waters, there may be a risk that measures or improvements that would improve biological functioning could be missed and that the relations assumed between the biological structure aspects focused on in the Directive and the good water status aimed for are not complete or partially inefficient. One interviewee therefore argued that the Directives should focus on strengthening the objectives rather than the means by which these should be achieved. However, there have been no indications from the remainder of the consultation results that the focus on biological functional indicators is inappropriate for meeting the overall objectives of the Directive.

The results from the data collection demonstrated that there were diverging views on the (perceived) *legal barriers* inherent in the WFD that hinder the adoption of new techniques and scientific progress. Some respondents held that the Directives follow an “adaptive approach” and have spurred technological and scientific innovation, which the CIS-work helping to diffuse and share this knowledge. Respondents to the targeted questionnaire indicated that the main barriers to incorporating new innovations can rather be attributed to a lack of political will and/or financial resources rather than the Directives themselves. A majority of respondents further believed that the Directives allowed for technological and scientific advances to be used in the implementation process.

Table 8-4 To what extent do you agree stronger links could be made with technical, research and innovation progress (e.g. by requiring environmental performance to reflect technological progress and advanced non-technological solutions)?

	Do not know	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Total
Water Framework Directive	43	22	76	82	234	123	580
Environmental Quality Standards Directive	138	14	34	104	156	84	530
Groundwater Directive	135	14	34	66	160	112	521

However, in the OPC respondents agreed on average that stronger links could be made between the WFD and its daughter directives, and technical and scientific progress with a similar result for the FD. One interviewee underlined the weak science-policy interface and regretted that the CIS Science-Policy Interface (CIS-SPI)⁵⁰⁸ group had not been continued beyond 2012. The lack of institutionalised/formalised processes for connecting science and policy makers was described as a missed opportunity to better pool and direct resources to respond to emerging challenges in the water sector and to promote the update of improved technologies. Several respondents and one interviewee

⁵⁰⁷ European Commission. 2009. CIS Guidance Document No. 19. Guidance on Surface Water Chemical Monitoring

⁵⁰⁸ Jointly led by DG RTD and the French National Agency for Water and Aquatic Environments, the CIS-SPI established in 2012 aimed at establishing a working relationship between water-related research projects and WFD implementers and to contribute to the implementation of the various CIS-SPI tasks. See DG RTD (2012) *Science-policy interface in support of the Water Framework Directive - CIS-SPI Activity report 2010-2012*. Available online at: <https://publications.europa.eu/en/publication-detail/-/publication/c6ce8d62-fd1c-4821-af90-e7c7fdff5860>

also expressed that operators/management authorities are cautious to implement new technologies by fear of not complying with the discharge levels [set out in the IED] and/or the cost of implementing new technologies. Some respondents described that they perceived a lack of incentives to ‘push’ for the adoption and implementation of new technologies and a ‘great scepticism’ towards their implementation even if positive results already existed. Consequently, often only temporary permits are granted, which could delay the uptake of new technologies. In this context, the re-interpretation of Article 4.7 following the *Weser* ruling was argued to have reduced incentives for operators to improve the technology further, such as for industrial waste water treatment.

Similarly, some interviewees indicated that the monitoring and assessment criteria are too static, which does not accommodate for new monitoring and/or assessment methods. For instance, while the WFD contains clauses that allows the Commission to revise the technical Annexes or include new substances in the EQSD, this process has proven to be slow. Another interviewee stressed that the improved understanding of the interaction between multiple stressors and advancement in water treatment facilities had to be closer linked to monitoring and assessment practices, especially in the context of setting new standards for water reuse. Especially the need to adapt the monitoring process in relation to an enhanced understanding of multiple stressors was highlighted. When assessing the chemical status, only individual substances or groups of substances are considered - the substance-oriented approach subsequently ignores the effects of mixtures and interaction of substances. An interviewee stated that the WFD should provide enhanced “space” for the use of new and innovative monitoring technologies such as effect-based monitoring, and that replacements of current methods must be possible.

Floods Directive

Similar to the WFD, the FD refers to the adaptability of innovation. The recitals explicitly state that ‘Member States should base their assessments, maps and plans on appropriate ‘best practice’ and ‘best available technologies’, and that the Commission ‘should be empowered to adapt the Annex to scientific and technological progress’. The Articles laying out the preparation of flood hazard maps, flood risk maps and flood risk management plans contain elements that shall be included but in a non-prescriptive manner.⁵⁰⁹ CIS guidance⁵¹⁰ has been developed to aid in the implementation of the Directive, with the aim to assist inter alia the prioritisation of risk reduction measures and identifying knowledge gaps.

In the targeted questionnaire, 33 respondents answered the specific questions on technological and scientific innovation, with many respondents focusing on technological advancement relating to flood modelling, mapping and forecasting, as well as technologies that facilitate data storage and transfer (such as the internet). The development of nature-based flood management was also mentioned by two respondents. In relation to the incorporation of technological and scientific developments into FD implementation, no stakeholders pointed to any structural impediment to incorporation due to the FD, however it was noted that more work was needed to fully incorporate these developments into standard practices.

⁵⁰⁹ Consider for example Article 7(3) which stipulates that ‘relevant aspects’ shall be taken into account, and that the flood risk management plans shall ‘address all aspects of flood risk management’.

⁵¹⁰ Flood Working Group (2012) Resource document on flood risk management, economics and decision making support

Moreover, respondents also identified certain aspects of the Directive that should be updated. This include some of the requirements and mandatory reporting fields for the PFRA stage to take into consideration developments in flood modelling. It was also noted that the Directive should consider that water management needs to answer to both floods and droughts and that more robust models for evaluating damages was needed. Similar as for the WFD, it was also noted that improved assessment methods and indicators to fully valorise the benefits of ecosystem services would improve the adoption of nature-based solutions and other green infrastructure measures. It was also noted that an ecosystem-based approach would offer opportunities to better link the FD and the WFD.

Finally, several respondents to the targeted questionnaire also stated that fuller implementation of the WFD would be a significant contributor to better implementation of the FD, for example: *“Full implementation of the Water Framework Directive would play a greater role than any changes to the FD: many measures that would contribute to WFD objectives have flood risk management benefits that are not taken into account during the RBMP process and in particular decisions on disproportionate cost.”*

9 EU Value Added

The final evaluation criterion that requires assessment in Fitness Check and evaluation of EU policy intervention concerns the added value of the EU level intervention, as opposed to intervention by Member States at national level.

A summary of the overall answer to the main evaluation question for this evaluation criterion is presented in the box below.

Table 9-1 Summary information on EU value added

Conclusions on EQ.14 - What is the additional value resulting from these Directives compared to what could reasonably have been expected from Member States acting at national and/or regional level?	
What has worked well?	<ul style="list-style-type: none"> The (legal) design of the WFD and the FD exploits a number of significant potential sources of EU value added and thus the potential for EU value added from the Directives is large, in particular through facilitating transboundary cooperation in international waters, setting a common best practice framework across the EU (catchment-based and lifting standards in a number of European countries) and introducing a number of other innovative policy instruments (in particular the WFD) EU value added also created through mainstreaming of water policy in other areas where EU policy is in place and objectives may conflict with WFD objectives, notably agriculture, transport, chemicals and energy. Evidence points at significant effect from enforcement actions by EU institutions and the service provided by EU institutions for (potential) dispute settlement between Member States The need for EU intervention continues to be strong, with the international nature of waters not changing, the pressures on water quality and flood risk not decreasing (if at all, increasing) due to climate change, economic and population growth and projected concomitant involvement of ‘competing’ policy areas also governed by EU policy (energy, agriculture, chemicals, transport)
What has not worked well?	<ul style="list-style-type: none"> The potential of EU value added through innovative policy instruments and transboundary cooperation not delivered in practice to the extent made possible by the design of the WFD: <ul style="list-style-type: none"> Number of IRBDs with full international cooperation scope largely those that were already cooperating before the WFD came into force Cost-recovery measures ill-implemented by Member States (Article 9) Mixed results on effective implementation of public engagement Limited information available on the effectiveness and implementation of WFD supplementary measures
Strength of evidence	Moderate: There has been a good response rate in surveys and sufficient views from stakeholders in interviews, but concrete evidence on impact and effects generally lacking as counterfactual cannot easily be established. Topic is not well covered in literature either.
Indication of bias	We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

9.1 Introduction

The rationale behind studying EU added value relates to justifying why a regulatory intervention at EU level as opposed to action initiated by Member States at national or regional level is worthwhile. From the principle of subsidiarity in the EU, it is therefore a key evaluation criterion in evaluations. The main evaluation question that needs to be answered reads: *What is the additional value resulting from the WFD and FD compared to what could reasonably have been expected from Member States acting at national and/or regional level?* All sub-evaluation questions that are relevant to support the development of the overall answer to this main evaluation question are listed in Annex B.

The Better Regulation Guidelines (BR-GL) on assessing EU added value indicate that “*the analysis of EU added value is often limited to the qualitative given the [...] difficulties to identify a counterfactual*”⁵¹¹. In the case of the WFD, the counterfactual dates back to a situation of 20 years ago and it simply comparing the situation now to the situation then ignores the fact that Member States may by themselves have developed more ambitious policy in the field of water in the absence of the WFD also. This also holds, though to a more limited extent due to the age of the Directive, to the FD. Despite the work on developing a credible baseline scenario for this study, the situation without EU intervention remains quite unclear. To overcome this, the BR-GL indicate that: “*in many ways, the evaluation of EU added value brings together the findings of other [evaluation] criteria, presenting arguments on causality and drawing conclusions based on the evidence at hand about the performance of the EU intervention and whether it is still justified*”⁵¹². In line with this, the methodology we developed to assess the EU added value of the WFD and the FD is based on:

- Identifying the dimensions and measures of the Directives that by (legislative) design go beyond what Member States could have achieved by themselves;
- Drawing on the findings from effectiveness, efficiency, coherence and relevance, establishing what share of the results achieved can be traced back to the implementation of these unique EU dimensions (and test whether they were effective)
- Corroborate this analysis with stakeholder views and opinions gathered through the OPC, targeted survey results and the interview programme.

9.2 The additional value of EU level intervention

Evaluation questions addressed in this section
What is the additional value resulting from the WFD and FD compared to what could reasonably have been expected from Member States acting at national and/or regional level?
What would have been the effect of non-implementation of the Directives and what are the costs/foregone benefits of only partial implementation of the Directives, if this is the case?

9.2.1 The design of the Directives builds upon significant sources of potential EU value added

Table 9.2 presents an overview of sources of potential EU value added for the WFD. Communication materials launched after the introduction of the WFD in 2002 positioned the Directive as an innovative piece of ambitious legislation that went beyond the state of play of policy making at the time.⁵¹³ Indeed, the WFD introduced a number of innovative policy tools and instruments that were at the time when developing it not applied or considered in many Member States and were considered best practice

⁵¹¹ European Commission. n.d. Better regulation guidelines evaluation fitness checks, chapter IV, online at: <https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-evaluation-fitness-checks.pdf>

⁵¹² European Commission. n.d. Better Regulation Guidelines Chapter 6, pp. 63, online at: <https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-evaluation-fitness-checks.pdf>

⁵¹³ European Commission. 2002. Water is life - Water Framework Directive, online at: http://ec.europa.eu/environment/water/water-framework/pdf/waterislife_en.pdf

in the field. The most innovative policy measures included the natural geographic formations of waters as the relevant spatial unit to manage water policy (catchment-based approach), the combined approach of managing point and diffuse source pollution and setting biological quality requirements for waters (combined approach), the development of supplementary measures to bridge the gap between observed and required action, the introduction of pricing mechanisms to stimulate sustainable use of water and requirements on participating of the public in water policy making. Next to these, however, we find that the Directive exploits additional sources of potential value added by:

- Ensuring more effective policy dialogue and policy coherence with other policies administered at EU level that may either directly conflict with or relate to the objectives of water policy;
- Stimulating the enforcement of policy implementation using the legislative powers of the various EU institutions.

Table 9-2 Overview of sources of potential EU value added for the WFD

EU Value Added - Water Framework Directive			
Catchment-based approach & transboundary cooperation	Innovative policy measures	Policy coherence	Enforcement of policy and legal action
Policy area (water) is by nature transboundary	Supplementary measures in the POMs (Art.11)	Mainstreaming water policy in other EU policy areas	Long-term water policy planning
Catchment-based approach	Pricing mechanism/cost-recovery principle (Art.9)		Legal action and punishments
Best practice sharing and uptake (particularly through CIS)	Public participation requirements (Art.14)		
	Combined approach (Art.10)		

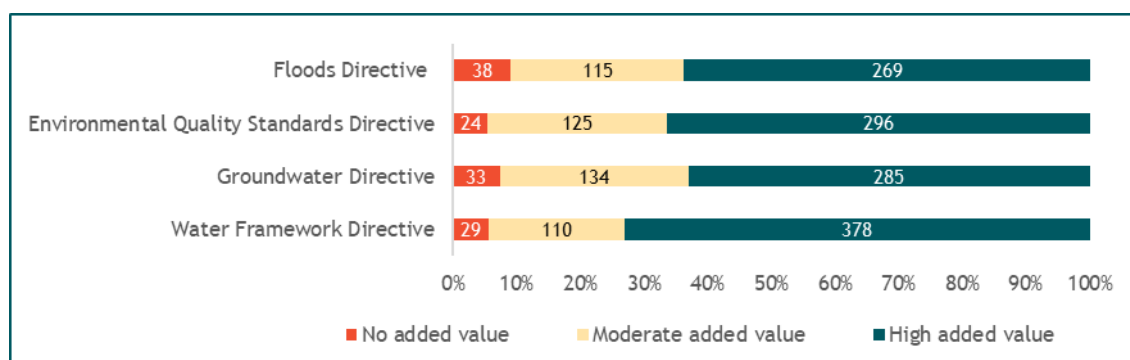
Since the FD to a large extent relies on the same natural geographic formations as relevant spatial unit (rivers) as the WFD, the FD also aimed to exploit the potential of international coordination as source of EU value added. Especially fluvial flood risk for downstream regions is affected strongly by events and actions in upstream regions. Similar to the WFD also, the FD also aims to create EU value added by introducing one best practice approach in relation to flood risk management in all Member States, which could lead to higher levels of flood risk management overall (and thus reduced risks), but also more effective cooperation between countries that would have acted regardless of EU action. Finally, EU value added could also be created through the more effective implementation by Member States as a result of enforcement and infringement actions by the Commission and the Court of Justice. The provision of a platform for dispute settlement and intermediation by the Commission between countries in the field of flood policy could also ensure more effective flood risk management from the perspective of the overall international river basins districts. Table 9-3 presents an overview of these dimensions through which, by design of the FD, EU value added could be created.

Table 9-3 Overview of sources of potential EU value added for the FD

EU Value Added - FD		
Catchment-based approach & transboundary cooperation	Innovative policy measures	Enforcement of policy and legal action
Catchment-based approach for international waters also more effective for flood management, especially fluvial flooding	Standardised definitions and approaches to flood risk management leading to synergistic effects	Infringement cases
	Promoting best practice uptake in all Member States (incl. public participation)	Platform for (legal) action and dispute settlement

The next section triangulates the evidence gathered on the actual effects of these dimensions since the implementation of the Directives to establish the extent of EU value added created by the WFD and FD through these dimensions. Overall though, it needs to be stated that a majority of respondents to the OPC (reflecting all stakeholder groups citizens, NGOs, competent authorities, industry, etc) regard the EU value added of both the FD and the WFD-family as “high” (>50% for the FD and >65% for the WFD) and only a small minority considers there is no EU value added (see Figure 9-1). A large percentage of respondents argue that some European countries would not have national legislation on water management, in the absence of the WFD, and hence consider the WFD as the major driver for the improvement of the water quality in recent years. NGOs (76% of 69 respondents), public authorities (65% of 69 respondents) and EU citizen (61% of 226 respondents) stakeholder groups gave the highest proportion of positive responses to the value added by the WFD. The next sub-sections will review which elements of both Directives can be considered to provide more or less EU value added and offers a bottom-up validation of this high-level OPC finding.

Figure 9-1 “What is the additional value of adopting legislation at EU level compared with what could be achieved by legislation at national/regional level?”



Source: Open Public Consultation

9.2.2 Catchment-based approach and transboundary cooperation

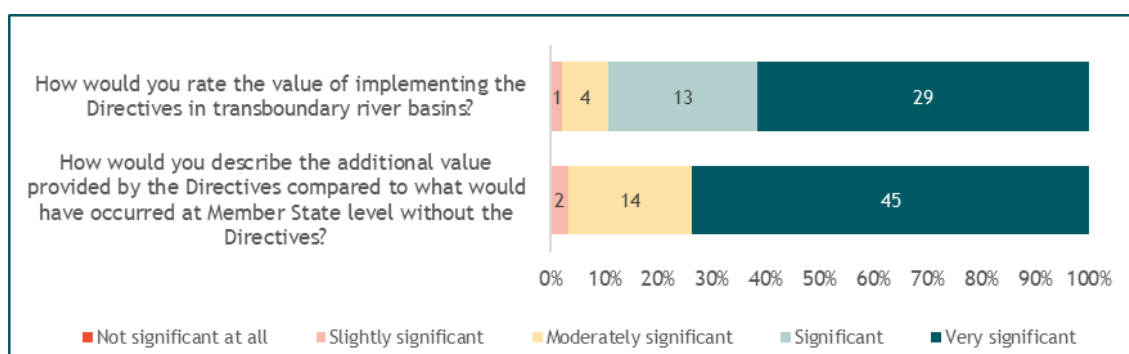
WFD

Waters are natural geographic formations that do not respect national borders. The EU has a lot of waters that are shared between countries: about 60% of EU surface area lies in river basins that cross at least one national border.⁵¹⁴ As a result, actions by one Member State that affect the water of a lake or river that is shared with another Member State directly affect the status of that water body in both Member States. The management of good quality and quantity of surface waters is therefore most effective if the relevant unit of measurement is the entire catchment area of the water, so that synergistic effects from actions with similar objectives can be achieved. Before 2000, some Member States with common waters cooperated across borders (e.g. Rhine), but most Member States coordinated action in their domestic parts of the catchment areas (see baseline section). Article 3, 5 and 13 of the WFD ensured the development of competent authorities to manage international river basins and encouraged the analysis of the characteristics of the basin and the formulation of an appropriate programme of measures for those basins. By facilitating these administrative structures, analysis and management of international waters, the Directive strives to promote the most effective governance method for shared waters.

⁵¹⁴ European Commission. 2008. Water Note 1 - Joining forces for Europe’s Shared Waters: Coordination in International River Basin Districts, online at: http://ec.europa.eu/environment/water/participation/pdf/waternotes/water_note1_joining_forces.pdf

As also illustrated in Chapter 5, the extent of international cooperation between the competent authorities is however not fully utilised to date. A significant share of IRBDs are of so-called category “2” and “3”, implying that there is no iRBMP produced (for both “2” and “3”) or no international coordinating body present (for “3”). There has also been limited progress between the first and the second cycle of RBMPs in advancing transboundary cooperation.⁵¹⁵ A number of category 1 iRBMs also already had transboundary cooperation agreements in place before the WFD came into force.⁵¹⁶ Still, the extent of transboundary cooperation in shared waters has increased since the adoption of the WFD, with the erection of more international coordinating bodies, an increasing number of cooperation agreements as well as iRBMPs. The large majority of expert stakeholders related to the implementation of the WFD mention the value of implementing the WFD and FD in transboundary river basins is ‘very significant’ (58%) or ‘significant’ (26%), see Figure 9-2⁵¹⁷. Representatives from countries with international cooperation in place before the WFD commenced also mention that the depth and extent of cooperation has significantly increased since the WFD, as the legal framework ensures an alignment of objectives across countries, more domestic political pressure across participating countries to act as well as the possibility of EU mediation in the case of uncoordinated actions taken. Despite these positive views on the effect of transboundary cooperation from involved stakeholders, there is little evidence on the actual impact or coordinated measures taken as a result of the cooperation. The latest RBMP implementation report notes that coordination on delineation of water bodies took place to some extent only in Cat-1 iRBs, joint monitoring only takes place in category 1 and about half of category 2 basins, efforts to produce joint status assessments only took place in category 1 basins (and even there differences remain) and the efforts to produce iRBMPs in category 1 basins often contain a summary of measures taken at national level. About half of them report joint measures being implemented at international level, but none of them include specific details about these actions. **As a result, with a significant number of iRBs not cooperating at the highest level (Cat-1) and the lack of details about the results of the impact of cooperation in Cat-1 iRBs, it cannot be concluded that the high potential EU value added from the perspective of transboundary cooperation is fully being realised. The potential for EU value added is significant, though and stakeholders think the cooperation is effective, but a focus on better implementation should ensure this potential is also realised.**

Figure 9-2 Targeted questionnaire results EU Value Added



Source: Targeted Questionnaire

⁵¹⁵ European Commission SWD. 2019. 30 final, European Overview - River Basin Management Plans, online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=SWD:2019:30:FIN&qid=1551267381862&from=EN>

⁵¹⁶ For example the ICPDR (Danube) signed in 1994 (into force in 1998), the first convention in relation to the ICPR (Rhine) dates back to 1963

⁵¹⁷ Though the question did not distinguish between the WFD and the FD, nearly all respondents referred to the WFD in their explanation to their answer.

FD

The FD aims to promote the same type of international coordination among Member States as in the WFD (Article 3), though allows them also to deviate from the arrangements promoted as long as they report and comply with the same requirements as in the FD. The majority of Member States have chosen to follow the governance system provided for by the WFD; only Italy and Ireland choose different structures in some basins. Those Member States that have their geographical units and governance structures fully aligned between the FD and the WFD should also be developing FRMPs in an internationally coordinated manner for their iRBs. According to the EC, also good cooperation exists between relevant competent authorities in Italy and Ireland.⁵¹⁸ The common framework for developing flood risk management plans in this internationally coordinated manner facilitates that Member States cooperate on setting similar objectives regarding flood management in relevant iRBDs, cooperate on identifying risks, and defining preventive measures to reduce flood risk in the international region overall. Without facilitating this cooperation, Member States are not incentivised to work together and are technically able to pass problems onto each other.⁵¹⁹

Since many Member States chose the same governance structure for the FD as for WFD, the degree of international cooperation is also largely similar, with a large share of iRBs/Floods geographic units without iFRMP or internationally coordinating bodies.⁵²⁰ Regardless, according to stakeholders it is safe to conclude that more international cooperation takes place with the FD in place and the existing international cooperation is also beneficial and effective (Floods Focus Group). Also 57% of targeted survey respondents reported a belief that benefits were produced from the requirement for coordination between the FRMPs and RBMPs through Article 9 of the FD, such as through the coproduction of knowledge.

However, similar to the WFD, little concrete evidence on the results and effect of the cooperation could be provided. One representative mentioned that Sweden and Finland could cooperate through a common Interreg IV A project to produce a common flood hazard map. The latest FD implementation report concludes there is little information available in the first (i)FRMPs on the financing of actions with a transboundary nature. Only for the Duero RB, one measure referred to costs of transboundary action, but did not specify any details. The report also states that *“a great number of FRMPs noted that there were no transboundary measures, and for this reason transnational effects have not been considered”*.⁵²¹ **Overall, therefore, there is too little evidence to date to conclude that the international cooperation facilitated by the FD has resulted in changed outcomes on the ground across the EU.** However, the FD is only in its first FRMP cycle, few measures have been implemented so far and existing international cooperation could still bear more fruits in the long term.

9.2.3 Innovative policy measures

Next to introducing value added from the perspective of international coordination, the Directives also went beyond the status quo by implementing innovative policy action based on best practice standards

⁵¹⁸ European Commission. 2014. Technical Report - 078. Links between the Floods Directive and Water Framework Directive.

⁵¹⁹ European Commission. 2006. Impact Assessment of the Proposal for a Directive on the Assessment and Management of Floods

⁵²⁰ European Commission Staff. 2019. Working Document 31 final. European Overview - Flood Risk Management Plans

⁵²¹ EC Staff Working Document (2019) 31 final, 2019, European Overview - Flood Risk Management Plans, pp. 124

across the EU (Boeuf, Fritsch, 2016)⁵²². The effectiveness of these policy actions can therefore also be seen as source of EU value added.

WFD - A combined approach from a systems-perspective & supplementary measures

The WFD replaced a water management system that was based on addressing pressures from the most significant (point) sources in isolation, by introducing a holistic and systems approach to catchment management based not only on managing emission limit values (from point sources), but also steering for and measuring biological quality elements of waters: the ‘combined approach’ described in Article 10 of the Directive⁵²³. Together with prescribing a process that requires obtaining a detailed understanding of the catchment functioning based on the DPSIR framework, the WFD represented a shift to a systems-approach to water management. The effectiveness of the approach overall is discussed in detail in Chapter 5, but a good proxy for the EU added value of this more ambitious approach is the effectiveness of the **supplementary measures** in Member States’ PoMs, since these category of measures largely capture all additional action that is taken by Member States beyond implementing the emission control measures captured by already existing legislation that were repealed by the WFD and other ‘more conventional measures’ that would likely have been taken by Member States acting individually. Supplementary measures therefore capture the additional efforts of Member States to aim to reach good status of waters that cannot be achieved by the basic measures.

Table 9-4 illustrates that there are nearly as many supplementary measures included in Member States’ PoMs (10,157 compared to 12,800 basic measures), but many of them are not mapped against the main purpose of the action. There has been a significant increase in listed supplementary measures from the 1st to the 2nd planning cycle, but the latest European Commission implementation report does not provide an overview of the (comparative) effectiveness of the measures. In 2015, the European Commission reported that by 2012 in a third of the Member States over 20% of supplementary measures had not been started and in 80% of Member States, less than 20% of supplementary measures had been completed.⁵²⁴ Lack of funding, further research work needed, or administrative barriers were most frequently mentioned as reasons for delays in implementing supplementary measures.

Table 9-4 Overview of number of measures contained in MS 2nd RBMPs

		Basic	Supplementary
KTM1	Construction or upgrades of wastewater treatment plants	5,579	
KTM2	Reduce nutrient pollution from agriculture	565	274
KTM3	Reduce pesticides pollution from agriculture	285	
KTM6	Improving hydromorphological conditions of water bodies other than longitudinal continuity	442	1,442
KTM7	Improvements in flow regime and/or establishment of ecological flows	408	
KTM8	Water efficiency, technical measures for irrigation, industry, energy and households	572	
KTM11	Water pricing policy measures for the implementation of the recovery of cost of water services from agriculture		16

⁵²² Boeuf and Fritsch. 2016. Studying the implementation of the Water Framework Directive in Europe: A meta-analysis of 89 journal articles

⁵²³ Petersen et al. 2009. The environment as a challenge for governmental responsibility - the case of the European Water Framework Directive.

⁵²⁴ European Commission. 2015. SWD, 50 final. Report on the progress in implementation of the Water Framework Directive Programme of Measures.

		Basic	Supplementary
KTM13	Drinking water protection measures	243	
KTM14	Research, improvement of knowledge base reducing uncertainty	1,193	1,602
KTM15	Measures for the phasing-out of emissions, discharges and losses of Priority Hazardous Substances or for the reduction of emissions, discharges and losses of Priority Substances	280	
KTM21	Measures to prevent or control the input of pollution from urban areas, transport and built infrastructure	706	
KTM25	Measures to counteract acidification		13
Total		12,800	10,157

Source: European Commission SWD (2019) 30 final, European Overview - River Basin Management Plans

Beyond the (unknown) effectiveness of supplementary measures, some stakeholders (interviews and workshops) and academics (e.g. Voulvoulis⁵²⁵) believe that the impact of the ‘systems’ and combined approach is moderate so far due to a weakening link between the assessment of pressures and impacts and measures. Due to a focus on compliance and meeting indicators of good status, there is tendency to implement measures that do not readily address significant pressures. The third implementation report of the Commission also concluded that the link between measures taken and the main risks and pressures in river basin should be improved.⁵²⁶ Despite the absence of conclusive evidence on the impact of the supplementary measures and the doubts about the functioning of the WFD from a systems perspective, most stakeholders in interviews and the workshops mentioned that the major benefit and impact of the Directive was the increased ambition for the management of waters compared to national policies, which is also captured by this ‘systems’ dimension and the requirements on biological quality. Findings from the OPC also show that a majority of stakeholders (362, or 53%) believe that the catchment-based approach, which indirectly links to the systems thinking, has “substantially” contributed to the achievement of the Directives’ objectives. **Thus the EU value added of introducing the combined and systems approach to water management is likely to have led to higher levels of ambition in objective and target setting in water management in the EU, yet due to a lack of evidence on the effectiveness of supplementary measures and the concerns about the increasing disconnect from the systems-thinking while implementing the Directive, the expected positive effect for EU value added from this innovative policy dimension cannot be confirmed.**

WFD - Economic incentives

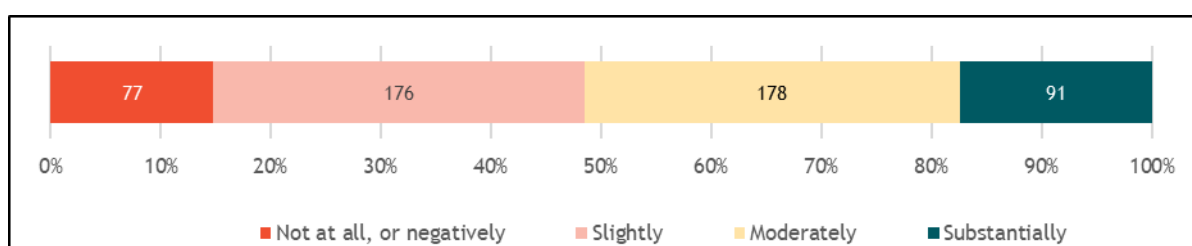
The WFD was an early adopter of the polluter pays principle and explicitly including economic instruments to manage environmental pressures by requiring Member States to take into account the principle of recovery of the costs of water services, including guidance on how environmental costs should be covered among economic agents (Article 5, 9 and Annex III). Based on interviews, not many Member States implemented (part of) such economic strategies in water policy. As a result, EU value added could be achieved since the design of the measures stimulates sustainable management of water use through market forces. However, the fifth EC’s implementation report concludes that the progress on the implementation of the cost recovery principle and the use of economic instruments is still limited since the implementation of the Directive and that “*only a number of Member States have changed their previous approaches to water pricing or their water pricing policies based on the work*

⁵²⁵ Voulvoulis et al. 2017. The EU Water Framework Directive : From Great Expectations to problems with implementation

⁵²⁶ European Commission SWD. 2012. 379 final. European Overview - River Basin Management Plans

done to implement Article 9”.⁵²⁷ A significant share of Member States apply for exemptions to use the cost recovery principle, use a narrow definition of what costs need to be covered or and/do not refer to incentive pricing or adequate contributions clearly in their RBMPs. Respondents to the OPC are more positive about the impact of the Article on the progress towards achieving the objectives of the Directive, but a large share of the “substantially” and “moderately” results are driven by the responses from NGOs that may be biased to defend the inclusion of the obligation. Public authorities, citizens, industry associations and academics are more skeptical towards its impact with most answers from these groups in the categories of “slightly” and “moderately” (both 28% of their answers, 56% jointly). **Despite the potential for EU value added, it can be concluded that there has been limited EU value added created from this perspective in the WFD.**

Figure 9-3 “How far have the following factors contributed towards achieving the objectives of the Directives? Obligations regarding the recovery of the costs of water services”



Source: Open Public Consultation

FD & WFD - Public participation

The WFD and later the FD were also developed around the principle of involving the public in the management of waters and floods, though the strength of the requirements in the FD are less strong than in the WFD (only a requirement to make FRMPs public). Public and stakeholder participation in environmental planning has been shown to improve the environmental quality of decisions as well as enhance implementation of policy and can thus be seen as best practice tool.⁵²⁸ According to interviewees, not all Member States were systemically involving the public in water policy making at the time of drafting the WFD and thus the concept can be seen as providing value added by requiring all Member States to adopt the principle. Though, also partially because of the WFD, it would have been more likely that public participation had become more mainstream in 2007 when the Floods Directive was adopted and by now is also much more likely to be considered by Member States acting alone, the WFD and FD have contributed to the adoption of the concept over time across the EU.

Both Directives’ requirements are general, leaving Member States free to determine how to do it. The public participation requirement is- still now - considered the greatest challenge to national administrative cultures and established water management traditions⁵²⁹. The extent to which it helped can therefore vary strongly across Member States and thus also the way it is implemented will affect its effectiveness.

⁵²⁷ European Commission SWD. 2019. 31 final. European Overview - Flood Risk Management Plans. Pp 251.

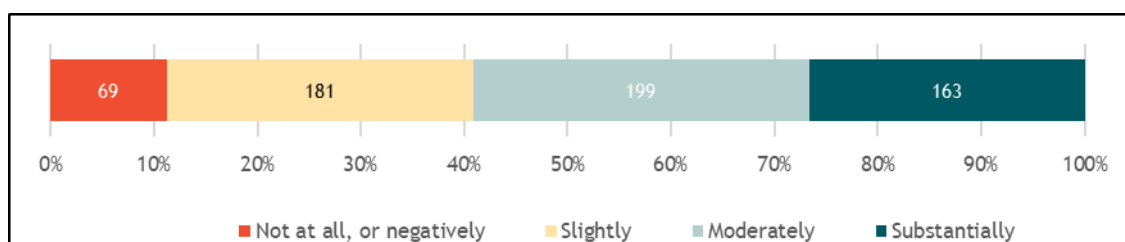
⁵²⁸ Drazkiewicz, Challies, Newig. 2015. Public participation and local environmental planning: Testing factors influencing decision quality and implementation in four case studies from Germany.

⁵²⁹ Boeuf and Fritsch. 2016. Studying the implementation of the Water Framework Directive in Europe: a meta-analysis of 89 journal articles.

Both stakeholders and literature note that the public interest is typically low.⁵³⁰ Some scholars note a trend towards less efforts in the area, compared to before, perhaps because of perceived ineffectiveness or inefficiency, especially for the FD.⁵³¹ Still, some regional and anecdotal evidence shows that the concept has helped: Across North Sea countries, the implementation of the concept in the scope of the WFD has been found to improved quality and plan effectiveness, as well as increased acceptance and ownership of plans.⁵³² In Germany, despite the various approaches used, all cases studied helped to stimulate implementation in different ways.⁵³³ The majority of respondents to our OPC note that the concept has ‘slightly’ or ‘moderately’ helped to achieve the objectives of the WFD (see Figure 9-4). NGO’s were again more positive than public authorities and business associations. Expert respondents to the targeted questionnaire largely believed that Article 14 has contributed towards achieving the objectives of the WFD in their country or RBD (67% said yes, 16% did not know and 18% said no). The question however does not provide evidence on the *extent* to which the requirements have helped achieve the objectives of the WFD and in their comments many referred to the fact that the documents subject to consultations are too complex and lengthy for the public and that “public engagement is pointless”. Engagement with business users and organised stakeholders is considered effective and helpful though. A few respondents also mentioned that here and there evaluations of the concept at national level were conducted, but not always included the outcomes. When they did, the conclusion was mostly that several weaknesses in the system were identified.

Public participation requirements in the WFD and the FD can in general be considered no-regret measures that are based on best practice in environmental policy making. It has been proven in literature that, when well implemented, they contribute to more effective policy making. Since not all Member States systemically did public participation, **the concept brought EU value added. However, the evidence on the implementation of the concept shows that implementation could be improved to substantially improve effectiveness and efficiency of the concept.**

Figure 9-4 “How far have the following factors contributed towards achieving the objectives of the Directives? The obligation for the RBMPs and FRMPs to undergo public consultation”



Source: Open Public Consultation

FD - Standardised best practice approach to flood risk management

According to the Floods Focus Group and the targeted questionnaire results (Q10), the largest benefit of the Floods Directive is the standardized approach to flood risk management, based on the best practice in flood risk management approaches. According to the members of the Floods Focus Group, the 5-step process and its details as outlined in the Directive constituted best practice at the time of developing it

⁵³⁰ Newig, et al. 2014. What Role for Public Participation in Implementing the EU Floods Directive? A Comparison With the Water Framework Directive, Early Evidence from Germany and a Research Agenda.

⁵³¹ Ibid.

⁵³² Hophmayer-Tokich and Krozer. 2007. Public participation in rural area water management: experiences from the North Sea countries in Europe.

⁵³³ Drazkiewicz, Challies, Newig. 2015. Public participation and local environmental planning: Testing factors influencing decision quality and implementation in four case studies from Germany.

and it still does. The targeted questionnaire results (Q7 - Floods) do show that 2/3 of respondents indicate that they have flood policy elements in place that go beyond the ambitions of the FD (1/3 said they did not have those), but most of these are not substantial deviations from the process the FD dictates. When asked for the key benefits of the FD, the answers that received the highest overall ratings was 'improved information and better decisions' (55% said very significant). We are unable to establish what proportion of this change is directly related to the FD, given that some MS had similar provisions in place, and others may have improved their flood management over this time without European legislation.

According to the Floods Focus Group, it is certainly the case that some (North-Western) Member States had in place flood risk management processes prior to the FD. However, there were also at least three Member States that indicated that they did not have flood risk management process in place before 2007 at all and were not likely to develop one either. As a result, **requiring the implementation of a best practice approach to flood risk management will have increased the average level of flood risk management planning across the EU, with improved information and reduced risks overall as a result.** There is no information available however regarding the *magnitude* of the effect as there is no information available on the baseline policy situation before adoption of the FD country-by-country.

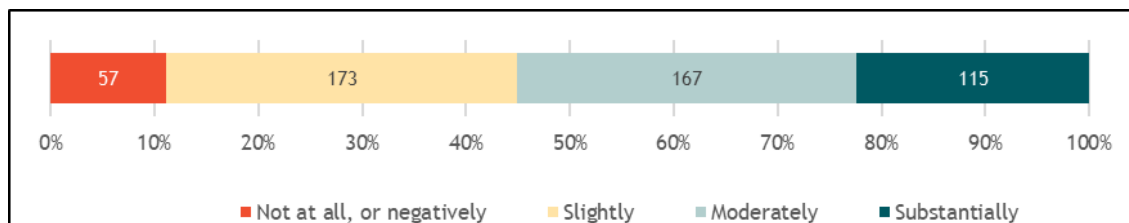
The fact that a common framework and methodology is used across the EU results in standardised definitions and terms being used across Member States, which is a benefit that was rated very highly in the targeted questionnaire results (61% of respondents said that 'standardised terms and approaches' is a 'very significant' benefit of the FD). **This benefit translates directly to EU value added as Member States acting individually would not be able to achieve this very easily in isolation, or at least not at this scale.** The standardised terms help the interpretation of flood risk data produced across Member States, which in turn could for example help insurers provide better assessment of risks and impacts of events with a transboundary nature. Neither in the targeted questionnaire, nor in interviews though could stakeholders provide concrete examples on how the alignment of definitions and terms precisely helped them. Feedback from the consultations also pointed out that even more alignment of definitions would be desired, such as on defining low and high probability flood events (currently only medium flood events are defined).

9.2.4 Policy coherence

The coherence of the WFD and the FD with other EU policy areas has extensively been discussed in Chapter 7. The fact that there is policy at EU level, especially for water, is however by itself already a source of EU value added since the major pressures on reaching the objectives of the WFD (improvement in status of waters and no further deterioration) are also governed by EU level legislation: Agriculture, chemicals, energy and transport policy amongst others. As shown in Chapter 1 (State of Play), 49% of surface water bodies suffer from chemical pollution, 40% from morphological changes and 28% from nutrient pollution, all of which link to the former policy areas. The EU value added from this dimension stems from the fact that EU staff need to more effectively ensure that the implementation of EU-level policies in those areas do not harm the objectives of the WFD (mainstreaming WFD objectives in other policy areas). This would be more difficult without legislation in place at the same 'level' as water policy. Partially as a result of these dialogues and efforts at EU level, the CAP has improved integration of water pollution concerns (see Section 7.3.3). Many respondents to the OPC also agree that alignment with other legislation has contribution towards

achieving the objectives of the WFD and FD: 43% of respondents say it ‘moderately’ or ‘substantially’ contributed to the effectiveness of the Directives.

Figure 9-5 “How far have the following factors contributed towards achieving the objectives of the Directives?: Alignment with other legislation (in particular that under WFD Annex VI)”



Source: Open Public Consultation

9.2.5 Enforcement of policy and legal action

A final aspect that cannot easily be delivered by Member States operating in isolation is the supervisory and legislative role that the EU institutions (in particular the European Commission and the Court of Justice) play in guiding and enforcing the implementation of legislation. As a result, the value created by the European Commission and/or ECJ in the area of the WFD and the FD translates directly into EU value added. Three dimensions are found to be relevant in this respect:

1. The effect from the provision and result of infringement procedures against Member States that do not correctly implement the WFD and/or the FD. Since the WFD and the FD are Directives, Member States can be held legally accountable for the correct transposition and implementation of the Directives into practice and into national law. The European Commission has closely monitored the correct implementation of the Directives and used infringement procedures where necessary to enforce correct implementation. On average, there have been 80 infringement cases in the field of water policy since 2007.⁵³⁴ Not only did the infringements concern incorrect transposition, the European Commission (and ECJ) have also used the procedure for better implementation, such as recently when the European Commission brought Spain to the ECJ for failure to protect the Doñana Wetlands in January 2019.⁵³⁵ The EU value added from this has contributed to a more complete implementation of the water and floods policy than could be expected by Member States alone, because otherwise they would not have needed the infringement procedure in the first place. Some 27% of respondents to the OPC considered this enforcement dimension to have “substantially” contributed towards achieving the objectives of the WFD and another 25% thought it “moderately” contributed. Overall, thus, a majority of respondents that thought this dimension was rather important for the implementation of the Directive.
2. **The effect from providing a long-term binding policy goal for all Member States beyond their national election cycles.** According to some interviewees, also the power of a long-term binding policy target and framework beyond national election and policy cycles cannot be underestimated. The WFD and FD provide for long term and relevant objectives that are binding for Member States to implement. As a result, the Directives encourage and ensure a minimum level of implementation of policy action in the field of water and floods beyond various cycles of national governments that may change their attitude towards water and/or

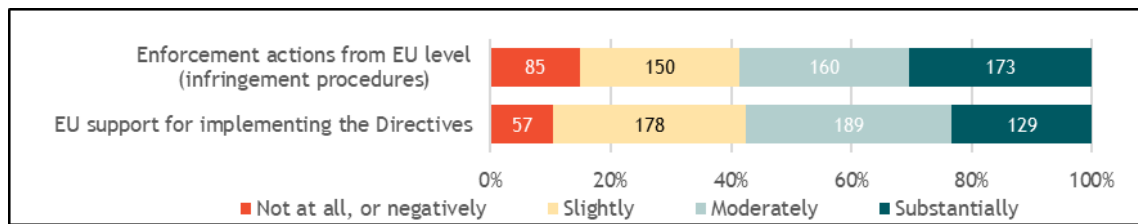
⁵³⁴ European Commission. 2019. Commission takes Spain to Court for failure to protect Doñana Wetlands, online at: http://ec.europa.eu/environment/legal/law/pdf/statistics_sector_from_2007_to_2017.pdf

⁵³⁵ European Commission. Legal Enforcement - Statistics on environmental infringements, online at: http://europa.eu/rapid/press-release_IP-19-466_en.htm

floods policy depending on election outcomes. The interviewees could not further quantify or provide a magnitude to the effect, but according to them could be considered significant.

3. The effect from providing a route for dispute settlement, mediation or legal action at EU level in case of disagreements between or within Member States. Finally, the WFD and the FD provide for the opportunity for Member States to raise incorrect or conflicting implementation of measures with the objectives of the WFD and FD by other or within Member States to the European Commission to resolve or even to the ECJ. The impact of the *Weser* case presented in previous chapters of the report already demonstrated that the impact of bringing issues to the ECJ can have important consequences for the implementation of water policy in the EU and related measures and actions. Beyond that case, the formal complaint that NGOs in Norway filed against the EFTA Surveillance Authority (ESA) about the incompatibility of hydropower licenses provided in Norway in 2011 is another example of the added value that can be provided via these mechanisms. After several dialogues and letters between the ESA and the Norwegian government between 2011 and 2018, the Norwegian government has adjusted their position with respect to the licenses.⁵³⁶ Participants to the Flood Focus Group as well as interviewees mentioned that they also consider it a true value added of the Directive that the potential is there to file a complaint with the European Commission and have a platform for the settlement of disputes. They could not provide concrete examples as they did not do it yet in the past, but the fact that the possibility is there already creates more credibility and leverage in existing discussions. Most respondents to the OPC also regarded the EU support to the implementation of the Directives as positive (Figure 9-6).

Figure 9-6 “How far have the following factors contributed towards achieving the objectives of the Directives?”



Source: Open Public Consultation

9.3 The need for continued EU action

Evaluation questions addressed in this section

EQ 14.2 To what extent do the issues covered by the Directives still require action at EU level?

⁵³⁶ Van Portalen. 2011. The complaints to the ESA concerning hydropower and the WFD in Norway, online at: <http://www.vannportalen.no/english/complaint/the-complaints-to-the-esa-concerning-hydropower-and-the-wfd-in-norway/>

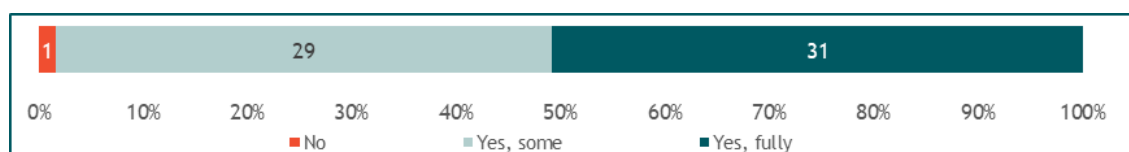
Table 9-5 Summary information on need for continued EU action

Conclusions on EQ. 14.2 - To what extent do the issues covered by the Directives still require action at EU level?	
What has worked well?	<ul style="list-style-type: none"> The need for EU intervention continues to be strong with the ‘problem’ persisting: not all waters in good status yet and pressures on waters not decreasing (diffuse sources, hydromorphology and atmospheric deposition in particular) Climate change predicted to increase likelihood of frequency and magnitude of flooding Rationale for EU intervention remains as waters continue to be international and (international) catchment-based approach as effective tool. Pressures from ‘competing’ policy areas remain to have EU policy in place and thus requiring mainstreaming. Stakeholder support for continued EU intervention high
What has not worked well?	<ul style="list-style-type: none"> Water pricing policies and water scarcity issues remain issues that stakeholders believe can better be addressed at Member State level (solidarity principle)
Strength of evidence	<ul style="list-style-type: none"> Good: There has been a good response rate in surveys and sufficient views from stakeholders in interviews. Arguments rely on relevance assessment also, where evidence base is strong.
Indication of bias	<ul style="list-style-type: none"> We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

The assessment of relevance of the WFD and FD showed that both Directives remain relevant to date due to the fact that many surface waters in the EU are not (yet) in good status and chemical pressures, particularly from diffuse sources, and hydromorphological pressures continue to exist. External developments such as climate change increase most of the pressures threatening quality and quantity of waters as well as flood risk. Since the problems in relation to the WFD and the FD are likely to persist, the rationale for EU intervention for both the WFD and the FD remains unchanged. Respondents to the targeted questionnaire, were also unanimous in their support for continued EU intervention in the field of floods and water as shown in the Figure below.⁵³⁷ In the explanation of their rationale for these answers, many stakeholders pointed to some of the sources of EU value added discussed in section 6.2:

- EU action continues to be relevant still today to address the continuing problems in the field of floods and freshwaters due to their **transboundary nature**, which does not change over time and makes policy cooperation across countries particularly effective;
- Due to the (expected) developments in the field of renewable energy policy (with increasing climate ambitions and targets), chemicals policy, transport policy (inland shipping) and agricultural policy (to continue being able to meet demand for agricultural products), all of which are governed by EU policies as well, the significance of water policy mainstreaming in these other policy areas remains important now and in the future to facilitate progress towards WFD objectives.

Figure 9-7 ‘Do the issues covered by the Directive still require action at EU’

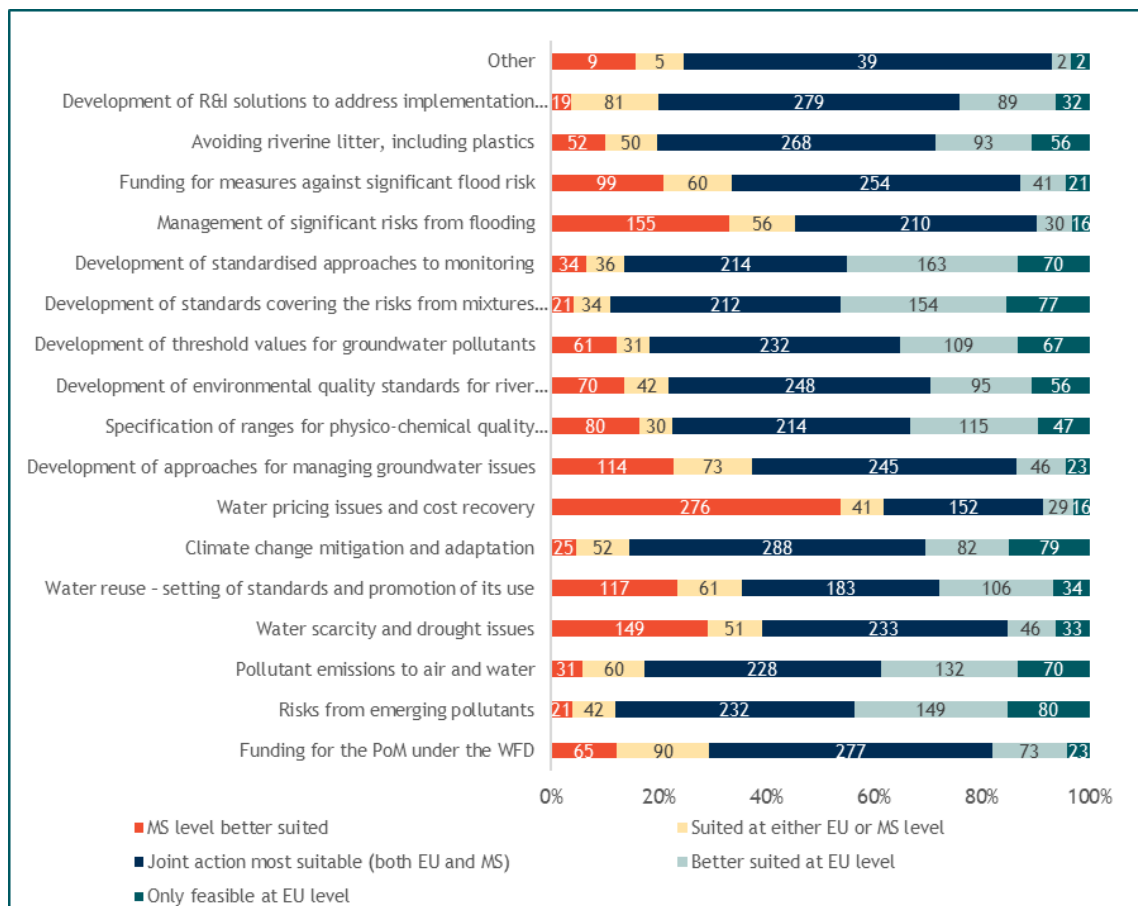


Source: Targeted Questionnaire

⁵³⁷ The one “no” response appears to be a mistake by the given the explanation provided for his answer in the question after.

The OPC also asked respondents’ opinion about which topics were best addressed at EU level and which better at Member State level. The answers can therefore be viewed as a current reflection of whether EU intervention continues to be desired in certain areas or not. As shown in Figure 9-8, in particularly the fields of “risks from emerging pollutants” (>40% of respondents said it should be best or only covered at EU level), “development of standards for mixtures of pollutants” (>40%), and “development of standardized approaches to monitoring” (>40%) continued EU action seems to be particularly desired by respondents. All these issues have increasing relevance in the future, which increases the relevance for continued EU intervention. The issues that are seemingly best placed to be handled by Member States individually include “water pricing and cost recovery”, “water scarcity and drought issues” and “managing the risks of flooding”. In relation to drought, there are clear recommendations (EC, 2912, Wolters et al, 2015) towards improving the science/ environmental policy interfaces in Member States and Regions, through development of formal and informal networks of science advisors across Member States (national and regional level) and DGs.⁵³⁸ In relation to flood risk management, this finding could reflect the technical nature of flood management, and the associated lack of public awareness, an issue identified by MS in the Floods Focus Group as a key challenge for competent authorities. The mentioning of water pricing and scarcity issues as top national issues may explain the poor progress of attempted EU intervention in those fields as established in earlier sections.

Figure 9-8 OPC result on continued need for EU action



Source: Open Public Consultation.

⁵³⁸ EC, 2012. Assessing and Strengthening the Science and EU Environment Policy Interface. Report pre-pared for DG Environment of the European Commission by Milieu Ltd. and Collingwood Environmental Planning Ltd. ISBN : 978-92-79-23532-0.

10 Conclusions

This section presents the main conclusions of our analysis.

10.1 Conclusions per evaluation criteria

The conclusions are presented in a series of summary table presenting for each evaluation criteria our overall analysis.

Conclusion on effectiveness - Have the objectives been achieved, which factors have contributed to this?	
What has worked well?	<ul style="list-style-type: none"> • It is well documented that the implementation of all the Directives have improved over time (i.e. based on implementation reports, overview of the 2nd RBMPs and the EEA State of Waters report). • Overall, the non-degradation requirements of the Directive seems to have been well implemented. • The WFD has allowed water quality to be prioritised over successive planning cycles, and has undoubtedly improved transboundary cooperation mechanisms and enhanced those international networks that were in place before. • The FD has shifted policy from being based on flood defence, towards flood risk assessment and is a potential template for best practice disaster management. • The WFD is noted as a global model for water governance, as outlined by the UN in their analysis of water governance in Eastern Europe. • There are a number of factors that have contributed towards this improved implementation including CIS Guidance documents published by the Commission, and the availability of EU funding. The compliance assurance activities and legal enforcement proceedings have also been key factors. • Despite divergence of stakeholder opinion on the one-put-all-out principle, it is seen as an important element of the WFD based on scientific principles. However, there have been some challenges to communicate progress based only on overall status. • The range of positive unintended effects e.g. the raise in hydrological skills within non-water competent authorities, and the ‘flagship’ role of the WFD in establishing a European governance model suggest that benefits from the legislation have been reaching further out than expected. • The flexibility and standardised approach of the FD processes have encouraged its implementation, which is compounded by the CIS working group on Floods. • The implementation of the legislation has raised to an increase in knowledge that would not have happened without the Directives.
What has not worked well?	<ul style="list-style-type: none"> • Overall, the objectives of good status have not been reached, which is explained by an under-estimate of the level of efforts needed and a lack of knowledge on aquatic ecosystems. • There is a reliance of MS on EU financing mechanisms, and a lack of other funding which needs to be identified for measures under the WFD and FD. • Concerns regarding the use of exemptions have been raised by stakeholders. With nearly 50% of water body covered by an exemption, it is questionable that this is a reflection of the expectations of the legislator when drafting the Directive. • It remains unclear whether full implementation of Article 9, regarding the cost recovery principle, has been achieved.

Conclusion on effectiveness - Have the objectives been achieved, which factors have contributed to this?	
	<ul style="list-style-type: none"> Overall a limited number of unintended negative effects have been identified which suggest that the legislation was carefully drafted. In the context of the FD, there is an uneven consideration of climate change by MS and CBA is unevenly used to inform the selection of measures in FRMPs. As identified by the consultation, private insurance and land use planning are factors which have hindered the FD. Furthermore, challenges remain regarding the incorporation of green infrastructure/nature based solutions within FRMPs.
Strength of evidence	Strong: Sufficient evidence gathered and available via literature, good response rate in surveys, good input from various interviews. Conclusions largely corroborated in validation workshop in June.
Indication of bias	We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

Conclusion on efficiency - How efficient has the implementation of the Directives been?	
What has worked well?	<ul style="list-style-type: none"> Overall, the 2nd cycle RBMPs and compliance check assessment reports provided valuable evidence with regard to costs of WFD measures (at least €116 billion in investment costs and €14 billion/year annual O&M costs) Implementation of the WFD has resulted in reduced emissions to the aquatic environment and improved ecological, chemical and quantitative status of water bodies (Effectiveness assessment) leading to wider ecosystem service benefits. The implementation has also resulted in better knowledge of water environments, improved cooperation and better public information. Similarly, FRMPs provided valuable evidence with regard to costs of flood prevention and mitigation measures (at least 14 billion Euro (2016-2021)) The Floods Directive had instilled a different way of thinking about flooding, looking to identify and mitigate risk rather than reacting to flooding after it has occurred. It has positively contributed to coordination and development of a framework for managing flood risks, raising public awareness about flooding and flood risk management and to climate change adaptation. Consultation results suggest that the costs involved in implementation of the Directives are justified given the benefits that will be achieved in the long term. Consultation results also suggest that apart from business associations, companies/business organisations and trade unions, the majority of the respondents believe that there is no evidence the WFD of the FD has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties.
What has not worked well?	<ul style="list-style-type: none"> Data on costs reported in RBMPs and FRMPs has been partial as a number of countries did not report cost information. In addition, the reported cost information is too aggregated to allow for firm conclusions on cost and cost effectiveness levels while the lack of benefit data precludes derivation of cost-benefit ratios. . Furthermore, RBMPs reported largely qualitative benefit information Few comprehensive CBA studies on water management (assessing benefits of improved water body status) are available including studies in the Netherlands, Belgium, France and the UK that have carried out national studies on costs/benefits of WFD implementation. Little evidence was identified from the academic literature which monetised benefits of the WFD.

Conclusion on efficiency - How efficient has the implementation of the Directives been?	
	<ul style="list-style-type: none"> Ecosystem services assessment in the context of the WFD has been largely limited to the analysis of groundwater dependent terrestrial ecosystems. Some Member States such as France and the UK have carried out studies to value aquatic ecosystem services and/or used ecosystem services framework in developing RBMPs. Reporting and monitoring are essential to implementing the vision and ambitions of the Directives but the reporting system in place is complex, resource and data intensive.
Strength of evidence	Medium: Only partial evidence on costs and benefits was available in RBMPs and FRMPs and wider literature, good response rate in surveys, good input from various interviews. Conclusions largely corroborated during the third workshop.
Indication of bias	We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

Conclusion on coherence - How coherent are the legislation with the other EU and international acquis?	
What has worked well?	<ul style="list-style-type: none"> The Directives are mostly seen as coherent internally. The combined action of the WFD and daughter Directives, and the WFD and the Floods Directive is seen as coherent and effective. The WISE system is considered to be providing coherence by being applicable to the WFD and daughter Directives and allowing a more efficient approach to reporting. While unclarity with regard to terminology and definitions were raised, these are largely implementation issues for which the role of CIS has been highlighted as particularly important. The evidence gathered suggest that the interaction of the WFD, EQSD, GWD and FD are positive and lead to synergies. However more cooperation between the WFD and FD was encouraged in their implementation, in order to avoid counter-productive measures. The combined action of the Directives with wider water legislation was also underlined as leading to synergies with many of the legislation (e.g. UWWTD, Bathing Water etc) being basic measures under the WFD. The action of the Directives is seen as supporting the EU international obligations including the UN SDG, the regional seas convention and the Sendai disaster risk reduction framework.
What has not worked well?	<ul style="list-style-type: none"> When considering the action of the WFD and daughter Directives, the difference in timing of the WFD and the EQSD was raised for the identification of new substances that can occur mid-cycle. Some potential incoherence in the implementation of the WFD and FD was identified with regard to the selection of measures that might be contradictory to the objectives of the WFD (e.g. grey infrastructure measures). The areas seen as least coherent include: agricultural policies, transport policies, chemicals policy and climate change. On agriculture, the evidence gathered show some challenges to integrate water protection in agricultural practices, including in the use of pesticides and other plant protection products. On transport policies, the evidence gathered show some gaps in the consideration of sediments and their role in ecological status. The inland and wider transport legislation appear to be coherent. On chemicals policy, the lack of feedback from the results observed from the implementation of the WFD into the source control legislation (e.g. REACH)

Conclusion on coherence - How coherent are the legislation with the other EU and international acquis?	
	<p>was noted. While not incoherent, the difficulty of making use of the information generated as part of the implementation stream was highlighted.</p> <ul style="list-style-type: none"> • Potential incoherence in the application of the IMO MARPOL’s provisions in sea port has been identified and is being investigated. • Doubts were raised on the effectiveness of the Minamata Convention on limiting the impacts from mercury pollution considering the high number of water bodies failing due to mercury pollution.
Strength of evidence	Strong: Sufficient evidence was gathered and available via literature, good response rate in surveys, good input from various interviews. Conclusions generally corroborated in validation workshop in June.
Indication of bias	We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

Conclusion on relevance - To what extent are the objectives still relevant and properly addressing the key problem that ecosystems and society presently face? (the adverse consequences of floods & insufficient water status of (selected) water bodies in the EU as needed for sustainable, balanced and equitable water use)?	
What has worked well?	<ul style="list-style-type: none"> • The need for public intervention in the field of water remains high due to economic importance of water to EU industry, citizen support for legislation in the field of water and floods remains strong and importance of water to ecosystems (the biodiversity in aquatic ecosystems is in highest decline). Not all waters in the EU are in good condition yet and pressures from various sources remain to date and are not likely to disappear in the near future. • Objectives of the WFD and FD are very comprehensively and ambitiously phrased. Neither of them are time-bound or specific with respect to an indicator and thus remain relevant whatever the circumstance; • The WFD and FD are legally able to deal with emerging contemporary issues, such as emerging substances and climate change, due to their flexible nature and the provisions created that for dealing with these emerging issues
What has not worked well?	<ul style="list-style-type: none"> • However, stakeholders are divided about how facilitative the WFD actually is to deal with emerging substances (changes in Priority Substances list is slow), new issues such as invasive alien species challenge water status indicators not foreseen before and efficiency in monitoring plans could be achieved with new techniques. • There is uncertainty among stakeholders about how climate change is dealt with in the WFD and the FD (not explicit in the WFD and unclear in the FD) • Water scarcity and quantity issues remain ill-covered in the WFD and existing indirect measures on those are ineffective. Pluvial flooding in the FD, though officially covered by the FD, generally underrepresented in FRMPs due to their complexity.
Strength of evidence	Strong: Sufficient evidence gathered and available via literature, good response rate in surveys, good input from various interviews. Conclusions generally corroborated in validation workshop in June.
Indication of bias	We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.

Conclusion on EU Value Added - What is the additional value resulting from these Directives compared to what could reasonably have been expected from Member States acting at national and/or regional level?	
What has worked well?	<ul style="list-style-type: none"> • The (legal) design of the WFD and the FD exploits a number of significant potential sources of EU value added and thus the potential for EU value added from the Directives is large, in particular through facilitating transboundary

Conclusion on EU Value Added - What is the additional value resulting from these Directives compared to what could reasonably have been expected from Member States acting at national and/or regional level?	
	<p>cooperation in international waters, setting a common best practice framework across the EU (catchment-based and lifting standards in a number of European countries) and introducing a number of other innovative policy instruments (in particular the WFD)</p> <ul style="list-style-type: none"> • EU value added also created through mainstreaming of water policy in other areas where EU policy is in place and objectives may conflict with WFD objectives, notably agriculture, transport, chemicals and energy. • Evidence points at significant effect from enforcement actions by EU institutions and the service provided by EU institutions for (potential) dispute settlement between Member States • The need for EU intervention continues to be strong, with the international nature of waters not changing, the pressures on water quality and flood risk not decreasing (if at all, increasing) due to climate change, economic and population growth and projected concomitant evolvement of ‘competing’ policy areas also governed by EU policy (energy, agri, chemicals, transport)
What has not worked well?	<ul style="list-style-type: none"> • The potential of EU value added through innovative policy instruments and transboundary cooperation not delivered in practice to the extent made possible by the design of the WFD: <ul style="list-style-type: none"> ○ Number of IRBDs with full international cooperation scope largely those that were already cooperating before the WFD came into force ○ Cost-recovery measures ill-implemented by Member States (Article 9) ○ Mixed results on effective implementation of public engagement ○ Limited information available on the effectiveness and implementation of WFD supplementary measures
Strength of evidence	<p>Medium to low: There has been a good response rate in surveys and sufficient views from stakeholders in interviews, but concrete evidence on impact and effects generally lacking as counterfactual cannot easily be established. Topic is not well covered in literature either.</p>
Indication of bias	<p>We have been able to draw perspectives from all relevant stakeholder groups, thus minimising any risk of biased conclusions.</p>

Appendix A- Glossary

Abbreviation	Explanation
APSFR	Area of Potentially Significant Flood Risk
BAT (AELs)	Best Available Techniques (associated emission levels)
BAU	Business as Usual
BD	Birds Directive
BOD	Biochemical Oxygen Demand
BR-GL	Better Regulation Guidelines
BSAP	Baltic Sea Action Plan
CA	Competent Authorities
CAP	Common Agricultural Policy
CART	Country-Allocated Reduction Targets
CBA	Cost Benefit Analysis
CIS	Common Implementation Strategy
COD	Chemical Oxygen Demand
DWD	Drinking Water Directive
DWPA	Drinking Water Protected Areas
EAFRD	European Agricultural Fund for Rural Development
EBRD	European Bank for Reconstruction and Development
ECA	European Court of Auditors
ECJ	European Court of Justice
EEA	European Environment Agency
EECCA	Eastern Europe, the Caucasus and Central Asian countries
EIA	Environmental Impact Assessment
EQ	Evaluation Question
EQSD	Environmental Quality Standard Directive
ESA	EFTA Surveillance Authority
EU	European Union
EUSF	European Union Solidarity Fund
EUWI	European Union Water Initiative
EWD	Extractive Waste Directive
FD	Floods Directive
FRMP	Flood Risk Management Plan
GHGs	Greenhouse gas emissions
GI	Green infrastructure
GIS	Geographic Information System
GWAAE	Groundwater associated aquatic ecosystems
GWD	Groundwater Directive
GWDTE	Groundwater dependant terrestrial ecosystems
GWWL	Groundwater Watch List
HD	Habitats Directive with the
IED	Industrial Emissions Directive

Abbreviation	Explanation
JRC	Joint Research Centre
LoE	Level of effort
MS	Member State
MSFD	Marine Strategy Framework Directive
MSP	Maritime spatial planning
NBS	Nature-based solutions
NGO	Non-Governmental Organisation
NVZ	Nitrate Vulnerable Zones
O&M	Operation and maintenance
OPC	Open Public Consultation
PAHs	Polycyclic aromatic hydrocarbons
PBDEs	Polybrominated diphenyl ethers
PCI	Projects of Common Interest
PFRA	Preliminary Flood Risk Assessment
PoMs	Programmes of Measures
PS	Priority Substance
RBD	River basin districts
RBMPs	River Basin Management Plans
REACH	Registration, Evaluation, Authorisation & restriction of Chemicals
RED	Renewable Energy Directive
SCG	Strategic co-ordination group
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SWD	Staff Working Document
TBT	Tributyltin
TVs	Threshold values
UoMs	Units of management
uPBT	Ubiquitous, persistent, bio accumulative and toxic
UWWTD	Urban Waste Water Treatment Directive
WFD	Water Framework Directive
WGs	Working Groups
WISE	Water Information System for Europe
WTP	Willingness to Pay
WWTP	Waste Water Treatment Plant

Appendix B- Evaluation Framework

	Judgement Criteria	Indicators	Method	Sources	
EQ.14 - What is the additional value resulting from these Directives compared to what could have reasonably been expected from Member States acting at national, regional and/or international level?					
14.1	What is the additional value resulting from these Directives compared to what could reasonably have been expected from Member States acting at national and/or regional level?	There is clear additional value from the Directives compared to what could have been expected from national or regional level actions.	<p>Comparison of the baseline and the resulting implementation to identify the additional effort that has resulted from WFD and FD.</p> <p>Value of water (use and non-use) with and without WFD and FD, qualitatively.</p> <p>Perceived value of improved coordination and communication between countries sharing RBDs or groundwater bodies.</p> <p>Perceived value of improved management of water.</p> <p>Perceived value of improvement management.</p> <p>Obligatory and voluntary uptake of WFD and FD in national procedures</p> <p>Added value of WFD and FD.</p> <p>Added value of WFD and FD towards reaching SDGs.</p> <p>Appreciation of the value of Good Environmental Status and of Flood risk management.</p>	<p>Review of literature.</p> <p>Analysis of survey answers.</p> <p>Analysis of public consultation.</p> <p>Follow up interviews.</p> <p>Focus group.</p> <p>Workshops.</p>	<p>Blue2 project, in progress.</p> <p>Cost of non-Europe, EPRS, 2015.</p> <p>Interviews Fitness Check.</p> <p>Workshops Fitness Check.</p> <p>SDG monitoring and assessment plans.</p> <p>Minutes, proceedings, websites of international river basin authorities.</p>

		Judgement Criteria	Indicators	Method	Sources
			<p>Appreciation of a uniform approach towards environmental status and flood risk management in countries sharing international RBDs or groundwater bodies.</p> <p>Appreciation of a uniform approach towards environmental status and flood risk management across the EU.</p>		
<p>Q. 15. To what extent do the issues covered by the Directives still require action at EU level?</p>					
15.1	To what extent do the issues covered by the Directives still require action at EU level?	The Directives provide significant added value beyond what could have been reasonably expected by Member States, or EU level coordination provide alternative significant benefits (e.g. vis-à-vis international obligations).	<p>Inventory of remaining gaps between current and desired situation (different in their nature between WFD and FD, as FD has no obligation to reach a target status).</p> <p>Comparison of the gaps with the additional effort induced by WFD/FD.</p> <p>Overlapping areas point to need for EU action.</p> <p>Feedback from stakeholders on need for EU action.</p>	<p>Review of literature.</p> <p>Analysis of survey answers.</p> <p>Analysis of public consultation.</p> <p>Follow up interviews, in particular with head of River Basin Commissions and the CIS working groups</p> <p>Focus group.</p> <p>Workshops.</p>	<p>Documents from MSs on drinking water quality.</p> <p>Interviews Fitness Check.</p> <p>Workshops Fitness Check.</p>

Appendix C- Literature sources

Year of Publication	Title	Author
European institutions		
2019	(SWD) 2019 30 final, European Overview - River Basin Management Plans	European Commission
2019	(SWD) 2019 31 final, European Overview - Flood Risk Management Plans	European Commission
2019	(COM) 2019 95 Final, Report from the Commission on the implementation of the Water Framework Directive (2000/60/EC) and the Floods Directive (2007/60/EC), Second River Basin Management Plans First Flood Risk Management Plans.	European Commission
2019	COM (2019) 128 final, European Union Strategic Approach to Pharmaceuticals in the Environment	European Commission
2019	SWD(2019) 32 final, International Cooperation under the Water Framework Directive (2000/60/EC) - Factsheets for International River Basins	European Commission
2018	Review of the 1st Watch List under the Water Framework Directive and recommendations for the 2nd Watch List	European Commission, Joint Research Centre,
2018	Guidance Document No. 24. River Basin Management in a Changing Climate (Common Implementation Strategy)	European Commission
2018	Nitrates Directive Implementation Report.	European Commission
2018	DROUGHT - Research and Science-Policy Interface, Technical Report No.23.	European Commission
2018	EFAS (European Flood Awareness System) [dataset].	European Commission, Joint Research Centre
2018	WISE - Reporting of Flood Risk Management Plans.	European Commission, European Environment Agency
2017	Special Eurobarometer 468, Attitudes of European citizens towards the environment	European Commission
2017	Support to the Fitness Check of monitoring and reporting obligations arising from EU environmental legislation	European Commission
2017	Agriculture and Sustainable Water Management in the EU.	European Commission
2017	SWD (2017) 176 final, Overview of Natural and Man-Made Disaster Risks the European Union may face	European Commission
2017	Fitness Check on Chemicals Legislation.	European Commission
2017	Capacity Building, Programmatic Development and Communication in the field of Environmental Taxation and Budgetary Reform, Final Report.	European Commission
2017	SWD (2017) 153 final, Agriculture and Sustainable Water Management in the EU	European Commission
2017	Report on the Mid-term Evaluation of the Programme for Environment and Climate Action (LIFE).	European Commission

Year of Publication	Title	Author
2017	Guidance Document No. 36 Exemptions to the Environmental Objectives according to Article 4(7) (Common Implementation Strategy)	European Commission
2016	Study to support the evaluation of the Drinking Water Directive	European Commission
2016	Ex-post Evaluation of 2007-2013 Cohesion Policy.	European Commission
2016	Synthesis Report on the Quality of Drinking Water in the Union examining Member States' Reports for the 2011-2013 period, foreseen under Article 13(5) of Directive 98/83/EC.	European Commission
2016	Outcomes of the Working Group Floods (WGF) Report on Experience from the 1st cycle of Implementing the Floods Directive in the Member States.	European Commission
2016	WFD Reporting Guidance 2016 (Common Implementation Strategy)	European Commission
2016	The Floods Directive first cycle questionnaire results report	European Commission
2015	Fourth WFD Implementation Report.	European Commission
2015	EU overview of methodologies used in preparation of Flood Hazard and Flood Risk Maps	European Commission
2015	European Overview Assessment of Member States' reports on Preliminary Flood Risk Assessment and Identification of Areas of Potentially Significant Flood Risk.	European Commission
2015	SWD (2015) 50 final, Report on the Progress in Implementation of the WFD Programmes of Measures.	European Commission
2015	COM(2015) 120 final, The Water Framework Directive and the Floods Directive: Actions Towards the 'Good Status' of EU Water and to Reduce Flood Risks.	European Commission
2015	Water Legislation - Cost of non-Europe.	European Parliament
2015	Report from the Commission on the outcome of the review of Annex X to Directive 2000/60/EC on priority substances in the field of water policy	European Commission
2014	Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (WFD 2000/60/EC) Resource Document. Technical Report - 2014 - 078.	European Commission
2014	EU Policy Document on Natural Water Retention Measures, Technical Report - 2014 - 082.	European Commission
2013	Press release: Commission takes Poland to Court over Water Legislation.	European Commission
2013	Directive 2013/39/EU amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy	European Commission
2012	COM(2012) 670 final, Implementation of the Water Framework Directive (2000/60/EC) River Basin Management Plans	European Commission
2012	A Blueprint to Safeguard Europe's Water Resources.	European Commission
2012	SWD(2012) 382 , Impact Assessment accompanying the Blueprint Communication.	European Commission

Year of Publication	Title	Author
2012	SWD(2012) 393, Fitness Check of EU Freshwater policy.	European Commission
2012	Press release: Commission asks Italy to Transpose Water Legislation Correctly.	European Commission
2012	Guidance Document No.18 Guidance on groundwater status and trend assessment (Common Implementation Strategy)	European Commission
2012	SEC(2011) 1547 final, Impact assessment for the proposal for a Directive amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy	European Commission
2012	Transboundary Cooperation Fact Sheets	European Commission
2011	SEC(2011) 1546 final Environmental Quality Standards Directive (EQSD) Impact Assessment.	European Commission
2011	The Costs of Not Implementing the Environmental Acquis.	European Commission
2011	Guidelines on the implementation of the Birds and Habitats Directives in estuaries and coastal zones	European Commission
2011	SEC(2011)1546, Executive summary of the impact assessment accompanying the proposal for a Directive amending Directives 200/60/EC and 2008/105/EC as regard priority substances in the field of water policy	European Commission
2009	Guidance Document No. 21 Guidance for Reporting under the Water Framework Directive (Common Implementation Strategy).	European Commission
2009	COM(2009) 156 final 5 econd WFD Implementation Report, programmes for monitoring of water status	European Commission
2008	Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council	European Commission
2007	Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (1)	European Commission
2007	COM(2007) 128 final, Towards sustainable water management in the European Union	European Commission
2006	COM (2006) 397 final, Environmental quality standards in the field of water policy and amending Directive 2000/60/EC	European Commission
2006	Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration	European Commission
2006	SEC(2006)947, Impact assessment for the proposal for a Directive on environmental quality standards	European Commission
2006	SEC (2006) 0066, Annex to the Proposal for a Directive of the European Parliament and of the Council on the assessment and management of floods - Impact Assessment	European Commission
2006	COM(2006)397, Proposal for a Directive on environmental quality standards in the field of water policy	European Commission

Year of Publication	Title	Author
2006	SEC(2006) 66 , Impact Assessment of the Proposed Floods Directive.	European Commission
2005	WFD Common Implementation Strategy - The impacts of coastal flooding, flood mapping and planning	European Commission
2005	Evaluation of the Impact of Floods and Associated Protection Policies.	European Commission
2003	SEC (2003) 1086, Groundwater Directive Impact Assessment.	European Commission
2003	Guidance Document No. 1 Economics and the Environment.	European Commission
2003	COM (2003) 550 final, On the protection of groundwater against pollution	European Commission
2003	Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Economics and the Environment The Implementation Challenge of the Water Framework Directive	European Commission
2000	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy	European Commission
1998	Council Directive 98/83/EC of 3 November 1998 on the Quality of Water Intended for Human Consumption (Drinking Water Directive).	European Commission
European Agencies		
2018	Eionet Central Data Repository (CDR) [dataset].	European Environment Agency
2018	European Waters: Assessment of Status and Pressures 2018.	European Environment Agency
2018	Climate change adaptation and disaster risk reduction in Europe. Enhancing coherence of the knowledge base, policies and practices	European Environment Agency
2018	Water Management in Europe - Price and Non-price Approaches to Water Conservation.	European Environment Agency
2017	Green Infrastructure and Flood Management - Promoting cost-efficient flood risk reduction via green infrastructure solutions	European Environment Agency
2017	Non-REACH Chemicals Evaluation.	European Chemicals Agency
2016	Flood Risks and Environmental Vulnerability – Exploring the Synergies between Floodplain Restoration, Water Policies and Thematic Policies.	European Environment Agency
2015	State of the Environment.	European Environment Agency
2015	EU Overview of Methodologies used in Preparation of Flood Hazard and Flood Risk Maps.	European Commission
2015	Guidance Document No.31 Ecological Flows in the Implementation of the WFD.	European Commission
2015	Assessment of the Effectiveness of Reported Water Framework Directive Programmes of Measures.	Joint Research Centre
2014	Water Reuse in Europe.	Joint Research Centre
2013	Reporting of Flood Hazards and Risk Maps.	European Environment Agency

Year of Publication	Title	Author
2013	Europe's water: An indicator-based assessment	European Environment Agency
2012	Vulnerability to Water Scarcity and Drought in Europe - Thematic Assessment for EEA Water.	European Environment Agency
2012	Hydromorphological Alterations and Pressures in European Rivers, Lakes, Transitional and Coastal Waters. Thematic Assessment for EEA Water 2012 report.	European Environment Agency
2011	Hazardous substances in Europe's fresh and marine waters	European Environment Agency
2009	Water resources across Europe – confronting water scarcity and drought	European Environment Agency
2003	State of the Environment	European Environment Agency
1995	Environment in the European Union 1995.	European Environment Agency
Consultancy		
2019	Integrated Assessment of the RBMPs	Wood and Acteon
2019	Global Freshwater Biodiversity Atlas	BioFresh
2018	Task A3 of the BLUE 2 Project, Study on EU Integrated Policy Assessment for the Freshwater and Marine Environment, on the Economic Benefits of EU Water Policy and on the Costs of Its Non-Implementation	Russi and Farmer
2018	Annex XIII Application of the Bottom-up Multicriteria Methodology in Eight European River Basin District The Tide-Elbe RBD Task A3 of the BLUE 2 Project: Study on EU Integrated Policy Assessment for the Freshwater and Marine Environment, on the Economic Benefits of EU Water Policy and on the Costs of Its Non-Implementation	Baur and Stroebel
2017	Survey on Practitioners' Views about the Implementation Challenges with EU Environmental Legislation, their Underlying Reasons and Ways to Improvements: 2017.	European Union Network for the Implementation and Enforcement of EU Law (IMPEL)
2017	Support to the Fitness Check of Monitoring and Reporting Obligations arising from EU Environmental Legislation.	ICF, IEEP for the European Commission
2017	Charaterization of Unplanned Water Reuse.	Technical University of Munich for the European Commission
2016	Workshop "Water and Agriculture", 24 October 2016, Bratislava, Slovak Republic.	Member State
2016	EU-level Instruments on Water Reuse - Final Report to Support the Commission's Impact Assessment.	Amec Foster Wheeler/Kirhensteine, I. et al for the European Commission
2015	Impact Assessment of options for a Legislative Instrument on Water Reuse.	Wood for European Commission
2015	Evaluation of the Drinking Water Directive.	ECORYS for the European Commission

Year of Publication	Title	Author
2015	Water Framework Directive Scientific and Technical Support related to Ecological Status. Summary report of JRC activities in 2015.	van de Bund W., Poikane S.
2015	Impact Assessment of Options for a Legislative Instrument on Water Reuse.	BIO for the European Commission
2014	Appraisal of Policy Options to Manage Pesticides.	RICARDO-AEA for the Department of Environment, Food and Rural Affairs (UK)
2013	Background paper to the Public Consultation on the Revision of the Annexes of the Groundwater Directive.	ARCADIS/Scheidleder, A., Bogaert, S.
2012	Literature review on the potential Climate change effects on drinking water resources across the EU and the identification of priorities among different types of drinking water supplies.	BIO Intelligence Service
2012	Contribution of LIFE ENV/INF/NAT Projects to the Implementation, Dissemination and Further Development of EU Environmental Policies and Legislation - Water Sector.	Astrale for the European Commission
2012	Comparative Study of Pressures and Measures in the Major River Basin Management Plans in the EU. Task 4 b - Costs & Benefits of WFD Implementation: Final report.	ACTeon/Mattheiß, V., et. al for the European Commission
2012	Comparative Study of Pressures and Measures in the Major River Basin Management Plans. Task 4 b: Costs & Benefits of WFD Implementation. Financing Water Management and the Economic Crisis-A Review of Available Evidence. Final Report.	ACTeon/ Stanley, K. et. al for the European Commission
2010	Managing Scarce Water Resources - Implementing the Pricing Policies of the Water Framework Directive	Entec for the European Commission
2007	Costs and Benefits Associated with the Implementation of the Water Framework Directive, with a Special Focus on Agriculture: Final Report.	Wood/De Nocker et. al for the European Commission
2005	The Impacts of Coastal Flooding, Flood Mapping and Planning.	Water Research Centre (WRC) for the European Commission
2005	Assessing economic impacts of the specific control measures for priority substances and priority hazardous substances regulated under Article 16 of the Water Framework Directive	Ecolas
2004	Water, Food and Environment Dialogue on the Implementation of the EU Water Framework Directive in Agricultural Water Management in the CEE Region.	Global Water Partnership, Central and Eastern Europe
2003	Economic assessment of groundwater protection	BRGM and Ecologic
Other public bodies and institutions		
2018	Making Every Drop Count, an Agenda for Water Action - Outcome Document.	High-level Panel on Water (UN/WB)
2018	The IPBES regional assessment report on biodiversity and ecosystem services for Europe and Central Asia	IPBES
2018	Floods Directive: progress in assessing risks, while planning and implementation need to improve	European Court of Auditors
2017	OECD Study on Water Management in Switzerland.	OECD

Year of Publication	Title	Author
2016	Making cross-compliance more effective and achieving simplification remains challenging	European Court of Auditors
2016	Water Policy Reforms in Eastern Europe, the Caucasus and Central Asia.	EU, OECD, UNECE
2016	Sustainable Development Goals in the Netherlands, Building Blocks for Environmental Policy for 2030.	Netherlands Environmental Assessment Agency
2015	World Bank informal draft of UWWTD note in Danube Region.	World Bank
2014	Integration of EU water policy objectives with the CAP: a partial success	European Court of Auditors
2014	Europe. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.	Kovatset et al. (IPCC)
2010	Impact of climate change on water quality in the Netherland	RIVM
2010	Sustainable management of water resources in agriculture	OECD
2005	Synergies in Assessment and Monitoring between OSPAR and the European Union.	OSPAR Commission
2003	The Economic Analysis according to the Water Framework Directive in the Danube River Basin.	UNDP
Undated	Issue Brief SDG 6: Ensuring Availability and Sustainable Management of Water and Sanitation for All.	UNDP
Academia		
2019	Protecting and restoring Europe's waters: An analysis of the future development needs of the Water Framework Directive	Carvalho et al.
2018	Multi-Model Projections of River Flood Risk in Europe under Global Warming.	Alfieri et al.
2018	Water Resource Management for Sustainable Development.	Sidti, et al.
2018	The Economic Value of Water - Water as a Key Resource for Economic Growth in the EU. Deliverable to Task A2 of the BLUE2 project "Study on EU integrated policy assessment for the freshwater and marine environment, on the economic benefits of EU water policy and on the costs of its non- implementation"	Spit et al.
2018	Flood Risk Management In Europe: The EU 'Floods' Directive and a Case Study of Ireland	Adamson
2018	Climatic and socioeconomic controls of future coastal flood risk in Europe	Vousdoukas et al.
2018	Trends in flood losses in Europe over the past 150 years	Paprotny et al.
2017	The EU Water Framework Directive: From Great Expectations to Problems with Implementation.	Voulvoulis et al.
2017	The EU Floods Directive trickling down: tracing the ideas of integrated and participatory flood risk management in Sweden	Hedelin

Year of Publication	Title	Author
2017	Towards the Review of the European Union Water Framework Directive: Recommendations for more Efficient Assessment and Management of Chemical Contamination in European Surface Water Resources.	Brack et al.
2017	Projected impact of climate change and chemical emissions on the water quality of the European rivers Rhine and Meuse: A drinking water perspective	Sjerps et al.
2017	Deposition of sulphur and nitrogen in Europe 1900-2050. Model calculations and comparison to historical observations	Engardt et al.
2017	Reconciling Agriculture and Stream Restoration in Europe: A Review Relating to the EU Water Framework Directive.	Flavio et al.
2017	Flood Dynamics in Urbanised Landscapes: 100 Years of Climate and Humans' Interaction.	Sofia et. al
2017	Organic pollution of rivers: Combined threats of urbanization, livestock farming and global climate change	Wen et al.
2017	Human pressures and ecological status of European rivers	Grizzetti et al.
2016	Flood risk governance in Poland: Looking for strategic planning in a country in transition (report D3.6), STAR-FLOOD	Matczak et al.
2016	Toward More "Evidence-Informed" Policy Making?	Head
2016	European Water Association Conference Proceedings.	European Water Association
2016	Studying the Implementation of the Water Framework Directive in Europe: a Meta-analysis of 89 Journal Articles.	Boeuf and Fritsch
2016	Transforming European Water Governance.	Jager et al.
2016	The European Union Approach to Flood Risk Management and Improving Societal Resilience: Lessons from the Implementation of the Floods Directive in six European Countries.	Priest et al.
2015	Public participation and local environmental planning: Testing factors influencing decision quality and implementation in four case studies from Germany	Drazkiewicz et al.
2015	Ensemble flood risk assessment in Europe under high end climate scenarios	Alfieri et al.
2015	Implementing the European Flood Risk Management Plan.	Hartmann and Spit
2014	European Water Policy and Research on Water-related Topics - An Overview.	Quevauviller
2014	Impact of WFD Article 7 on Drinking Water Directive Compliance for Pesticides: Challenges of a Prevention-led Approach.	Dolan et al.
2014	Europe. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change	Valentini, et al.
2014	The potential of using the ecosystem approach in the implementation of the EU Water Framework Directive	Vlachopoulou et al.
2014	What Role for Public Participation in Implementing the EU Floods	Newig et al.

Year of Publication	Title	Author
	Directive? A Comparison With the Water Framework Directive, Early Evidence from Germany and a Research Agenda	
2014	Article 9 Water Framework Directive: Do we Really need to Calculate Environmental and Resource Costs?	Helmholtz Centre for Environmental Research - UFZ
2014	Did You Say Reference Conditions? Ecological and Socio-economic Perspectives on the European Water Framework Directive.	Bouleau and Pont
2013	Is it Worth Protecting Groundwater from Diffuse Pollution with Agri-environmental Schemes? A Hydro-economic Modeling Approach.	Hérivaux et al.
2013	Combination of multiple biological quality elements into waterbody assessment of surface waters	Caroni et al.
2012	Floods - Vulnerability, Risks and Management. ETC CCA/ICM Joint Technical Paper 2/2012.	Hilden et al.
2011	Nitrogen in current European policies	Oenema et al.
2011	The EU Water Framework Directive: A multi-dimensional Analysis of Implementation and Domestic Impact.	Liefferink et al
2011	Impact of the European Water Framework Directive on Knowledge of Biodiversity.	Argillier
2010	Is IWRM Achievable in Practice? Attempts to Break Disciplinary and Sectoral Walls through a Science-policy Interfacing Framework in the Context of the EU Water Framework Directive.	Quevauviller
2010	Emerging contaminants in surface waters and their relevance for the production of drinking water in Europe	Houtman
2010	The European Water Framework Directive at the Age of 10: A Critical Review of the Achievements with Recommendations for the Future.	Hering et al.
2010	Water Sustainability in a Changing World	Schnoor
2009	Impacts of climate change on surface water quality in relation to drinking water production	Delpla et al.
2009	The environment as a challenge for governmental responsibility - the case of the European Water Framework Directive	Petersen et al.
2009	The Social Benefits of Restoring Water Quality in the Context of the Water Framework Directive: A Comparison of Willingness to Pay and Willingness to Accept	Del Saz-Salazar
2008	The Potential Role of Stated Preference Methods in the Water Framework Directive to Assess Disproportionate Costs	Brouwer
2008	Science-policy Guidelines as a Benchmark: Making the European Water Framework Directive.	Lagace et al.
2008	The Water Framework Directive: A Soap Bubble? An Integrative Proposal: FLEA (Fluvial Ecosystem Assessment).	Nardini et al.
2007	Public participation in rural area water management: experiences from the North Sea countries in Europe	Hophmayer-Tokich and Krozer
2007	Concept of Technical Support to Science-policy Interfacing with Respect to the Implementation of the European Water Framework Directive.	Willems, and de Lange

Year of Publication	Title	Author
2007	The European Water Framework Directive: How Ecological Assumptions Frame Technical and Social Change.	Steyaert and Ollivier
2006	Implementing the Water Framework Directive: How to Define a “Competent Authority”.	Green and Fernández-Bilbao
2005	Wastewater Treatment and WFD Implementation in CEE Danube Countries - Slovakia.	Miloslav Drtil, et al.
2003	The European Water Framework Directive and Water Management Research.	Mostert
Industry associations and NGOs		
2019	Weakening the EU Water Law: Industry’s Wish List	Living Rivers Europe
2018	Water Framework Directive: Experiences & Recommendations from the Hydropower Sector.	EURELECTRIC
2018	Some Views on the WFD from Swedish Farmers.	Federation of Swedish Farmers
2018	EDF’s Key messages on the Ongoing WFD Review.	EDF
2018	Bringing Life Back to Europe’s Waters	WWF et al.
2018	EurEau Position on the WFD post 2027 Scenario.	EurEau
2018	Eurelectric Position Paper on the WFD	Eurelectric
2018	Evaluation of the TEN-E Regulation and Assessing the Impacts of Alternative Policy Scenarios	Trinomics
2018	EWA Position Water Framework Directive 2019.	European Water Association
2018	Input to the WFD Stakeholder Workshop.	EurEau
2017	Directive on Sustainable Use of Pesticides.	Pesticides Action Network Europe
2017	Investment Study on Needs for Water Industry.	Value of Water Campaign
2017	DWA Position on Fitness Check.	Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e.V. (DWA)
2017	Position on Review of WFD.	Bundesverband der Deutschen Industrie e.V (BDI)
2017	The Need for Greater EU Policy Coordination Realising the Water Framework Directive.	EurEau
2017	Customers and Cost Recovery Realising the Water Framework Directive.	EurEau
2017	Water and Agriculture.	EurEau
2016	EurEau’s views on Actions Needed to Create a Water and Agriculture Nexus.	EurEau
2015	Implementation Challenge.	European Union Network for the Implementation and Enforcement of EU Law

Year of Publication	Title	Author
		(IMPEL)
2013	Integrating the Water Framework Directive and the Nature Directives: Implementation in Central and Eastern Europe.	CEEweb for Biodiversity
2012	The European Citizens’ Initiative: “Water and Sanitation are a Human Right! Water is a Public Good, Not a Commodity!”	Right2Water
2010	WFD, Floods and other EU Directives - WFD Implementation, Strategies and Policies.	SHARE - Sustainable Hydropower in Alpine Rivers Ecosystems
2002	Managing Floods in Europe: The answers already exist	WWF
Projects		
2017-2021	Fairway-project - Farm System Management and Governance for Producing Good Water Quality for Drinking Water Supplies.	Horizon 2020
2017-2020	CLEARANCE - Circular Economy Approach to River Pollution by Agricultural Nutrients with use of Carbon-storing Ecosystems.	Horizon 2020
2017-2019	Water-Protect.	Horizon 2020
2014-2018	MARS - Managing Aquatic Ecosystems and Water Resources under multiple Stress.	Horizon 2020
2014-2016	DEMOWARE - “Innovation Demonstration for a Competitive and Innovative Water Reuse Sector”.	Horizon 2020
2013-2018	SOLUTIONS - Solutions for Present and Future Emerging Pollutants in Land and Water Resources Management.	Horizon 2020
2011-2018	REFORM - Restoring Rivers for Effective Catchment Management.	Horizon 2020
2010	Xerochore- An Exercise to Assess Research Needs and Policy Choices in Areas of Drought Extended Guidance Document after Conference on Drought Management and Policy Options (Deliverable 5.2).	Horizon 2020
2009	Water Stress Mitigation: The AquaStress Case Studies.	AquaStress
2008	Water saving in Agriculture, Industry. and Economic Instruments. Part A - Agriculture.	AquaStress
2008	Water saving in Agriculture, Industry. and Economic Instruments. Part B - Industry.	AquaStress
2008	Water saving in Agriculture, Industry. and Economic Instruments. Part C - Economic instruments.	AquaStress

Appendix D- Synopsis report

This Appendix is the synopsis report of all stakeholder consultation activities undertaken as part of the FC of the WFD and FD. In agreement with the Better Regulation requirements, this report provides an outline of the consultation strategy, describes the consultation activities undertaken, presents the stakeholder groups that participated, and a description of the methodology and tools used to process the data gathered. The results of each consultation activity are briefly presented.

Introduction

This synopsis report summarises the results of all of the consultation activities undertaken as part of the project “Fitness Check (Evaluation) of the Water Framework Directive and the Floods Directive” Specific Contract Number 07/0201/2018/SFRA/779945/ENV.C.1 of the European Commission DG Environment under Framework contract ENV.F.1/FRA/2014/0063).

The consultation strategy

The consultation strategy for the Fitness Check was published by the Commission in May 2018⁵³⁹. The consultation strategy targeted both the Fitness Check and the parallel evaluation of the Urban Waste Water Treatment Directive. As such, the consultation strategy was wide ranging to cover several aspects of the EU water legislation. We have described below the elements of the consultation strategy with particular relevance for the Fitness Check.

Objectives

The objectives of the consultation were:

- To complement conclusions based on existing and already known data and literature review to the Fitness Check, among other things, and to understand to what extent the Directive has been successfully implemented, to what extent its objectives have been met, what the challenges were and whether there have been trade-offs in the implementation.
- To gather further evidence to substantiate the analysis of relevance, effectiveness, efficiency, coherence and EU added value. Of particular relevance, the coherence and links with other European legislation such as the Urban Waste Water Treatment, Nitrates, Bathing Water and the Sewage Sludge Directives were analysed.
- To gather additional information, going beyond pure implementation information and helping to assess the functioning of the Directives, and the benefits and costs that different stakeholders attach to them.

Stakeholders

Relevant stakeholders to be addressed as part of the Fitness Check were identified as:

- Member States and their public authorities responsible for the environment, water management, health, infrastructure and urban planning, disasters, and economic uses of water. For the Fitness Check it was considered important to include International River Basin District Commissions as well;
- The Working Groups under the Common Implementation Strategy;

⁵³⁹ Fitness Check of the Water Framework Directive, its associated Directives and the Floods Directive, and Evaluation of the Urban Waste Water Treatment Directive, Consultation Strategy, http://ec.europa.eu/environment/water/water-urbanwaste/legislation/pdf/2018.04.20%20Consultation%20Strategy%20UWWTD_WFD_FD.pdf

- Industrial/economic actors, including small and medium sized enterprises, within sectors with an impact on water or impacted by the Directives;
- Non-Governmental Organisations and citizens' initiatives;
- International organisations relevant to the Directive, e.g. those providing funding, advice on health, technical or governance issues, local implementation aid;
- Academia, research and innovation organisations and institutes; and
- Citizens.

Methods for engagement of stakeholders

The methods to be applied according to the consultation strategy were identified as:

- Open public consultation through an online questionnaire, including expert consultation as part of the same exercise, using the Commission consultation's website;
- Targeted consultations including:
 - Targeted online survey;
 - Focus Groups;
 - Stakeholders' workshops; and
 - Interviews.
- Feedback received on the evaluation roadmap.

All of these methods were applied.

Public consultation

The Public Consultation aimed to gather the opinion of any interested citizen or organisation, in particular targeting stakeholders that would be unlikely to be involved in the other more specialist targeted strands of the consultation activities.

The questionnaire was drafted to be accessible to the public and, to this end, included two parts: a general part containing 28 questions with limited amount of technical language in relation to the Directives and an expert part containing 52 questions which included more specific details and made reference to the evaluation terminology (e.g. unintended effects, efficiency etc). It was made available in all EU languages and uploaded to the EU Survey tool⁵⁴⁰. The public consultation was held on the EU Survey portal between September - March 2019. The survey was made available in 23 EU languages. To maximise the response rate, a link to the questionnaire was placed on the Consultations page within the EUROPA Website,⁵⁴¹ and a number of organisations were also contacted directly and asked to help disseminate the link to the questionnaire.

All questions, except those identifying the respondent, were optional.

The consultation received a total of 385,088 responses. The first step undertaken was to remove duplicates responses (i.e. multiple responses from the same respondent with identical responses). A total of 15,010 responses were removed leaving a total of 370,078 responses to analyse. Out of these 368,764 responses were identified as being campaigns with 1,944 responses being non-campaign responses. Out of these non-campaign respondents all provided some response to Part I of the questionnaire, while less than half provided at least one response to Part II of the consultation.

⁵⁴⁰ <https://ec.europa.eu/eusurvey/home/welcome>

⁵⁴¹ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5128184_en

Campaign responses

The campaign with the greatest number of responses was the #ProtectWater campaign organised by WWF. This campaign supported a positive view of the Water Framework Directive and sought to ensure that the Water Framework Directive remains intact, is fully implemented by Member States and is enforced by the European Commission. It guided respondents on how to reply to questions in both Part I and Part II of the questionnaire. The WWF claims on its website that the campaign has generated 375,386 replies. According to the results retrieved from the consultation, 368,303 respondents answered exactly as suggested by this campaign.

Two more campaigns, in addition to the #ProtectWater campaign, were identified and named as Campaign 2 and Campaign 3. These campaigns were unidentified because it is unclear which interest groups are responsible for preparing them.

Out of the 368,303 responses retrieved from WWF’s #ProtectWater campaign, 361,275 (98%) were from EU Member States. Of the responses from the EU Member States, 46% were from Germany; 6% from the Netherlands; 5% from Austria, Sweden, Spain, Belgium and Italy each; 4% from France and Hungary each; 3% from Finland and the UK each; and 2% from Bulgaria and Poland each. The remaining responses were spread relatively evenly among the other EU Member States.

All the responses received from Campaign 2 were from EU Member States. Out of the 409 responses, 69% were from Germany, 30% were from Austria, and the remaining five responses were split between Bulgaria, Estonia, Greece and Belgium.

For Campaign 3, out of the 52 responses, 51 were from Germany and 1 was from a Non-EU country.

Non campaign responses

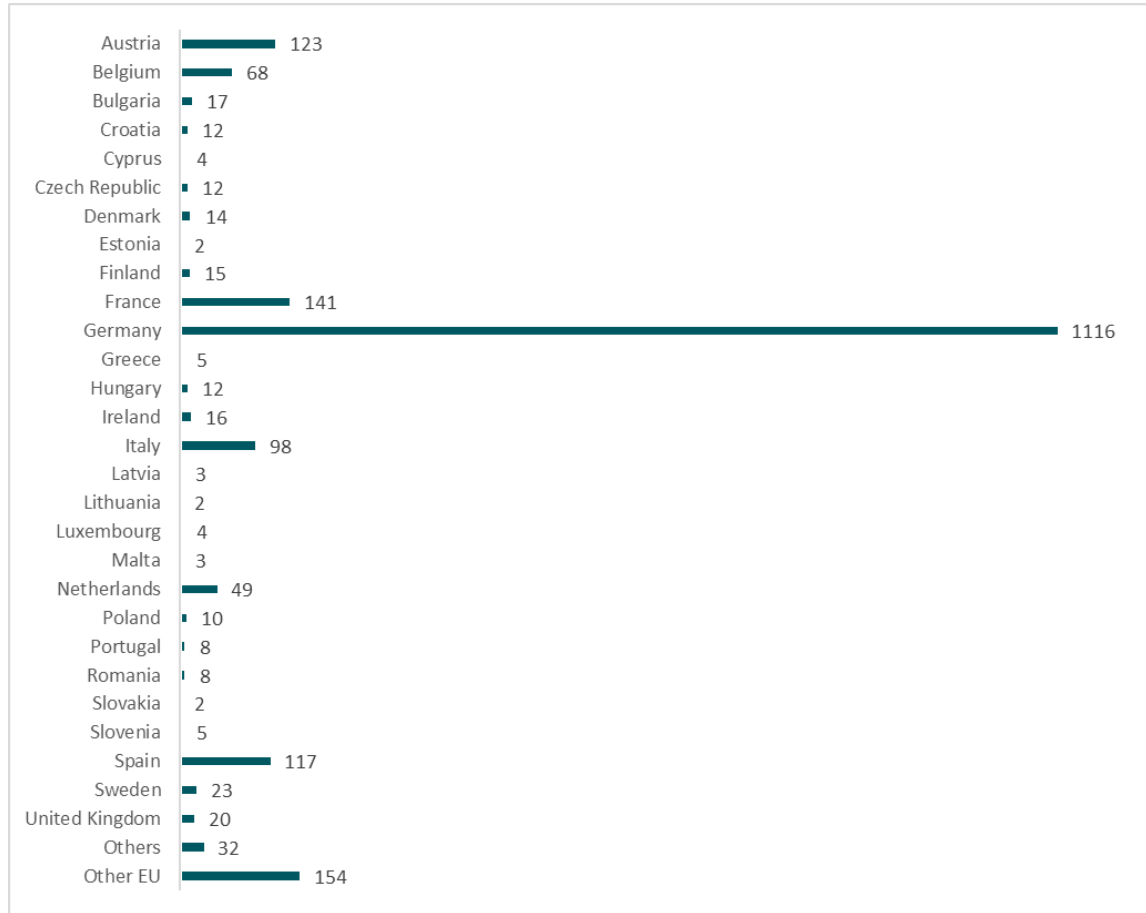
As it can be observed from Figure 2-2, the large majority of respondents from non-campaign responses (69%) were EU citizens which is to be expected for such an exercise particularly considering there was a high level of publicity of the consultation, with several organisation encouraging interested citizens to respond.

Figure D-1 Overview of response number per category of respondents



The respondents were identified as from places in the EU and beyond. More than half were from Germany (1,116 respondents), followed by France, Austria and Spain. Non-EU respondents represent 2% (32) responses. A split of respondents is presented in the below.

Figure D-2 Overview of respondents' country



Position papers

As part of the consultation process stakeholders were invited to submit additional information including position papers. The information submitted was reviewed in order to identify position papers. More than 100 separate submissions were received, some of these included documents that were submitted multiple times by different stakeholders. When this situation arose, the position paper was logged and reviewed only once. In total, 90 unique position papers were submitted. An overview of the position papers received is presented in the table below.

Table D-1 Overview of position papers received

Author	Title
Société Internationale de Biospéologie (SIBIOS) / International Society for Subterranean Biology (ISSB)	Review Process of WFD: Expert consultations Statement on Groundwater Ecosystems and Riverbed Colmation
Port of Rotterdam	Contribution to the public consultation as part of the Fitness Check of the EU Water Framework Directive
Irrigants d'Europe	WATER FRAMEWORK DIRECTIVE (WFD) - POSITION PAPER

Author	Title
Finnish Energy	Response to the Public Consultation on the Water Framework Directive
Union Française de l'Electricité	Propositions du secteur hydroélectrique français pour la révision de la DCE.
No author	Below we summarize our core messages
Statkraft	Main challenges related to the Implementation of the Water Framework Directive (WFD) Statkraft's viewpoint
No author	Contribution à la consultation sur la révision de la DCE
AN FORAM UISCE The water forum	PUBLIC CONSULTATION TO INFORM THE FITNESS CHECK OF THE EU WATER FRAMEWORK DIRECTIVE
Euromines	Euromines position on the current evaluation of the Water Framework Directive (WFD)
EUWMA	EUWMA Frankfurt Declaration on Water Framework Directive
BDI	BDI's proposals for the review of the Water Framework Directive (WFD)
EurAqua	Research and Innovation Needs for Enhanced WFD Implementation
IAWR	Position of the International Association of Waterworks in the Rhine Basin (IAWR) concerning the Public Consultation to inform the Fitness Check of the EU Water Framework Directive and its associated Directives
ÖVGW	ÖVGW Position concerning EU Water Framework Directive
Landbrug & Fødevarers	Erhvervsorganisationen Landbrug & Fødevarers indspil til WFD Fitness Check
PAN Europe and PAN Germany	PAN Europe and PAN Germany position concerning the current review of the Water Framework Directive (WFD) and its Daughter Directives
Eurelectric	Water Framework Directive: Experiences & Recommendations from the Hydropower Sector
WKO	Position der Wirtschaftskammer Österreich REFIT Wasserrahmen-Richtlinie
VKU	ÜBERPRÜFUNG DER EUWASSERRAHMENRICHTLINIE 2019
BAB	UK Farming Unions Response to the Public Consultation to inform the Fitness Check of the EU Water Framework Directive, its associated Directives and the Floods Directive
IPO	IPO Position Paper - EU waterrichtlijnen
AGW	agw-Position anlässlich der „Öffentlichen Konsultation als Beitrag zur Eignungsprüfung der EUWasserrahmenrichtlinie und der damit verbundenen Richtlinien“
Living Rivers Europe	The EU Water Framework Directive. Fit for Purpose

Author	Title
Swedenergy	Remarks on modernization of the Water Framework Directive to efficiently balance local and global environmental needs
ECPA	ECPA Position paper in the context of Public Consultation for the Fitness Check of the Water Framework Directive and the Floods Directive
Zurich	Zurich Insurance Group - Response to public consultation on the fitness check of the EU Water Framework Directive and the Floods Directive (February 2019)
Water UK	Fitness check of the Water Framework Directive and Floods Directive
	Zu den Zielen der WRRL
Fortum	FITNESS CHECK OF THE EU WATER FRAMEWORK Fortum's views for the public consultation
EUROFER	EUROFER Position Paper on the Fitness Check Water Framework Directive and Daughter Directives for the Public Consultation
NABU	Flussgebietsübergreifende Stellungnahme des NABU zu den Bewirtschaftungsplänen und den Maßnahmenprogrammen der Wasserrahmenrichtlinie (WRRL)
DVGW	POSITION PAPER Fitness Check of the EC Water Framework Directive
Fortum Sverige	COMMENTS FROM FORTUM SVERIGE AB
Miljø- og Fødevarerministeriet	Høringssvar i forbindelse med kvalitetskontrollen af EU's vandrammedirektiv, dets datterdirektiver (grundvandsdirektivet og direktiv om miljøkvalitetskrav) og oversvømmelsesdirektivet
ENEL	ENEL VIEWS ON THE EU WATER FRAMEWORK POLICY
VATTENFALL	Key messages on the Water Framework Directive (WFD)
MEDEF	Directive Cadre sur l'Eau - remarques et propositions du MEDEF
MEDEF	Water Framework Directive
COPA-COGECA	FITNESS-CHECK OF THE WATER FRAMEWORK DIRECTIVE (WFD)
SWA	Key issues to address in the Water Framework Directive (WFD) to reach a sustainable water management - description and examples from the Swedish Water Alliance (SWA)
CDP	CDP Europe's comment on European Commission's Fitness Check of the EU Water Framework Directive, its associated Directives (Groundwater Directive and Environmental Quality Standards Directive) and the Floods Directive
Insurance Europe	Insurance Europe comments on the Fitness Check of the EU Floods Directive
KEMIRA	Evaluation of the UWWTD

Author	Title
DBV	Stellungnahme zur öffentlichen Konsultation zur Waaserrahmenrichtlinie, damit verbundener Richtlinien sowie der Hochwasserrichtlinie
ICOMIA	Contribution to the public consultation as part of the Fitness Check of the EU Water Framework Directive
Wiener Wasser	Position Wiener wasser
CEMR	Fitness check of the WFD and FD
DIHK	DIHK-Stellungnahme
Businesseurope	Response to the public consultation on the WFD
Bayerischen Bauernverbandes	Stellungnahme zur WFD und FD
RWE Group	Questionnaire statement
Innogy	Public Consultation to inform the Fitness Check
AöW	Wie weiter mit der Europäischen Wasserrahmenrichtlinie?
UPM	Fitness check of the WFD
	Norwegian inputs to the Fitness Check of the Water Framework Directive
Stockholm University Baltic Sea Center	General views regarding the WFD
Danish Environment Technology Associations	Position on the evaluation and fitness check of WFD
ECCR	Response to the Public Consultation WFD
EFBW	Fitness check of WFD and FD
Euracoal	Position paper on WFD
Eurochambres	Statement of the fitness check of the WFD and FD
The Norwegian Biodiversity Network (Sabima), The Union of Outdoor Recreation Organizations in Norway, The Norwegian Hunters' and Anglers' Association, WWF Norway, The Norwegian Trekking Association and Friends of the Earth Norway	Input to the fitness check of the WFD
Royal Norwegian Ministry of Climate and Environment	Norwegian inputs to the Fitness Check of the WFD
ECSA	Answer to the public consultation WFD and FD
Finnish Forest Industries	Response to the consultation on the WFD
Swedish Association of Local Authorities and Region	Fitness check on the WFD
UKELA	Response to Fitness Check of the EU Water Legislation
UNIPER	Position on the fitness check of the EU WFD
Coldiretti	WFD remarks

Author	Title
Wetlands International	Feedback to the EU Fitness Check of the WFD
Norsk Industri	Position on the current fitness Check of the WFD
German Association for Water, Wastewater and Waste / Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e. V. (DWA)	Review of the Water Framework Directive 2019
EDF	EDF's Key messages on the ongoing WFD review
EurEau	Post 2027 scenario: Realising the Water Framework Directive
Wastewater Management in the Danube Region:	Is the UWWTD implementation delivering results for the people, the economy and the environment?
LANTBRUKARNAS RIKSFÖRBUND FEDERATION OF SWEDISH FARMERS	Some views from the Federation of Swedish Farmers on the review of the Water Framework Directive
CLEARANCE	Restoring riparian wetlands for clean water and agriculture - policy recommendations for the European Water Framework Directive, Fitness Check and review process, as well as the Common Agricultural Policy review process
European Water Association	EWA Position - Commitment to the Water Framework Directive - further development of the WFD while maintaining its objectives
Norwegian Environment Agency	How we organized implementation in Norway, and lessons learnt from evaluation.
IHK Nord (2018)	Expertise zu den wirtschaftlichen folgen der WRRL in NordDeutschland
Zentralverband der deutschen	Vorschläge zur Optimierung der Wasserrahmenrichtlinie
MARS (2018)	MARS Recommendations on how to best assess and mitigate impacts of multiple stressors in aquatic ecosystems
Seafish (2019)	Response to the Fitness Check of the EU Water legislation
CSOs in Spain	Contribution from CSOs in Spain to the WFD Fitness Check
Arbeitsgemeinschaft der Wasserwerke im Einzugsgebiet der Elbe (AWE)	Position of AWE in the context of the consultation of the WFD
Wattenfall and Fortum	Key messages on the WFD
Port of Antwerp	Position paper on WFD
Xylem	Xylem Position on Fitness Check on the WFD
Deutscher Städtetag	Überprüfung der EU-Wasserrahmenrichtlinie 2019

Targeted consultations

Targeted consultation took the form of stakeholders' workshops, focus group workshops, targeted online survey and interviews. Details on each of these are presented below.

Targeted online survey

A targeted survey was held online during March 2019. Expert stakeholders including Member States, international organisations, Commission services, NGOs, industry representatives and academics were invited to provide views on a range of topics. The survey was split into 10 short questionnaires focusing on:

- The Floods Directive
- Water body status: ecological, chemical and quantitative status
- Environmental objectives and exemptions
- Groundwater Directive
- Costs and benefits of the Directives
- Cost recovery and pricing
- Monitoring
- Public participation and opportunities for engagement
- Coherence of the legislation
- EU added value

The number of responses varied for each part of the survey and in total 205 respondents took part in the survey. Several respondents also took the opportunity to submit useful supporting information and evidence.

5. Focus Groups workshops

A series of focus groups workshops were organised by the project team. The aim of such gatherings was to explore in detail one specific topic selected based on the need for additional information.

The following focus groups were held:

- Floods Directive -held following the WG Floods meeting in Lisbon on 28th March and 29th March.
- Groundwater Directive -held in Brussels, on 29th April.
- Costs and benefits - interactions organised in writing (questions sent to expert) with a meeting to be held on 27th June in Brussels.

Ahead of each focus group workshop, participants were sent a short background document with a series of questions / points to explore as part of the discussions.

Participants were selected based on their expertise and involvements with the topics considered. The distribution of participants took into account the importance of ensuring some representativeness through spread of countries and identity of participants.

Following the focus group workshops, concise minutes of the day were sent to DG Environment for further sharing with participants and beyond. Some of the key points discussed are presented below.

Event	Key points discussed
Focus Group workshop on Floods Directive	<ul style="list-style-type: none"> • it is still too early to know whether the Directive has been entirely successful as it is somewhat dependent on the occurrence of flood events to test the modelling and measures employed. • The Directive has positively contributed to coordination and development of a framework for managing flood risks. • The Directive has positively contributed to raising public awareness about flooding and flood risk management. • It was identified that there are two main indicators of success 1) implementing measures and 2) risk reduction. The latter was considered difficult to be measured. Furthermore, flood risk reduction is difficult to monitor as a result of factors such as climate change and increases in population in certain areas. • The flexibility and framework of the Directive have helped Member States to work together, communicate with the public and understand risk concepts.
Focus Group workshop on Groundwater Directive	<ul style="list-style-type: none"> • It is up to date and many relevant scientific research streams were driven by the GWD. As a result, the knowledge of groundwater has increased immensely (both for groundwater quantitative and chemical status). • There are still important scientific gaps for the implementation of the GWD, especially on aspects for protected areas (risk assessment for drinking water, groundwater dependant terrestrial ecosystems (GWDTE), groundwater associated aquatic ecosystems (GWAAE)). For ecosystems targeted work, these gaps are around understanding the sensitivities of terrestrial and aquatic ecosystems to groundwater quality and quantity. • Effects of climate change are difficult to model / predict. Climate change can be seen as an additional pressure. • Groundwater quantity is tackled in the WFD not the GWD. Issues with regards to the monitoring and quantitative status assessment need clarification, for instance: on how to deal with karstic aquifers; on assessing risks for GWDTE; and on groundwater level and/or groundwater flow (note: Technical report 6, 2011-056 provides relevant guidance on these issues). • Overall it is difficult to compare costs and benefits, however there was a general view that the benefits were higher than the costs. • In some instances, the costs have been reduced by the GWD as it reduced the burden in comparison to other legislation (e.g. DK). Similarly, in the NL costs for monitoring for groundwater specifically have been reduced.

Stakeholders' workshops

A series of three workshops were organised in order to introduce the Fitness Check process in more detail to stakeholders, present the findings to date and gather feedback. The workshops have gathered more than 120 participants to date including representatives from Member States' competent authorities, industry, NGOs, EU services, academia and international organisations.

- Workshop 1 took place on 10 October in Brussels. The event had a strong emphasis on process: it was important at that early stage for stakeholders to understand their opportunities for interacting with the project and the overall Fitness Check process.
- Workshop 2 took place on 3 April in Brussels. The purpose was to present preliminary messages based on the analysis of the literature and the initial results from the public consultation. Emphasis was put on discussions with opportunities for stakeholders to share their views on the messages being presented.
- Workshop 3 took place on 3 June in Brussels. The aim of the workshop was to present the conclusions from the project with regard to the effectiveness, efficiency, relevance, coherence and EU added value of the Directives under the scope of the Fitness Check. The workshop was attended by more than 80 participants with many more attending the live streaming.

Ahead of each workshop, participants were provided with a short background document summarising key points that would be presented. As part of the workshops, participants were asked to provide their views on the information presented and provide additional thoughts and materials in relation to these topics.

All workshops were attended to full capacity, demonstrating the large interest from stakeholders with the Fitness Check process.

In addition, a specific expert workshop on pollutants of emerging concerns was held in coordination with the evaluation of the UWWTD. The key points discussed during this event are listed below.

Event	Key points discussed
<p>Expert workshop on pollutants of emerging concerns</p>	<p>While WWTPs are points of release of substances, they are not the origin of the pollution. As such, the elimination and / or the prevention at source of the pollution should also be considered as part of the analysis.</p> <p>Some of the substances have demonstrated impacts on the environment (e.g. diclofenac on aquatic species), however there are also large data gaps.</p> <p>Several projects have been completed on sampling and removing specific substances (e.g. microplastics, pharmaceuticals) from waste water.</p> <p>There is not a unique treatment technique that can address all pollutants of emerging concern, the costs of treatment vary by Member State but also by size of the WWTPs. In addition, tackling substances individually is not an effective approach, and broad treatment approaches are better suited, also in taking into account mixtures.</p> <p>The needs for treatment vary according to the type of waste water being generated. This can be influenced by the demographics of the agglomerations (e.g. more pharmaceutical products with older populations) but also based on the industries and their activities (i.e. more effluents produced during the week than the weekend).</p> <p>The fact that the UWWTD does not adequately deal with the pollution from pollutants of emerging concern is legitimate due to the fact it was not designed with such pollution in mind.</p>

Interviews

In April and May 2019 interviews were organised with selected stakeholders. A total of 74 individuals were approached for interviews. These include Member States Competent Authorities, International River Basin District, NGOs, industry representatives, research organisations and Commission services. The selection of the interviewees was done in order to address remaining gaps in particular with regard to costs and benefits, transboundary cooperation and coherence of the legislation.

In addition, the Strategic Coordination Group of the Common Implementation Strategy was approached and offered interviews. Following this, an additional 11 stakeholders requested an opportunity to be interviewed.

Feedback received on the evaluation roadmap

A total of 82 stakeholders provided feedback on the evaluation roadmap during the consultation period⁵⁴². The key feedback is summarised in the table below, organised per evaluation criteria.

⁵⁴² https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-4989291/feedback_en?p_id=121146

Overview of key issues raised Roadmap feedback
<p>General comments on the Fitness Check:</p> <ul style="list-style-type: none"> • The public consultation should be well publicised and accompanied with clear background documents • The process should consider costs and benefits • The process should be transparent, taking the example of CIS processes • The focus is not only freshwater, the WFD also covers transitional, coastal and groundwater • The scope of the Fitness Check is broad, and should focus on key issues: environmental targets, EQS, water management plans, concept of non-deteriorations, costs of water services, shrinking resources and high energy intensity. • The scope does not mention the European Citizen Initiative on the Right to Water⁵⁴³, which should be integrated as a relevant source of information.
<p>Coherence</p> <ul style="list-style-type: none"> • External coherence: There is a need for more linkages between the WFD and other Directives, in particular the Marine Strategy Framework Directive and the Shellfish Waters Directive • External coherence: There is a need for a better integration of climate change in the directives through more encouragement of alternatives such as reuse (including raw waters reuse) • External coherence: the assessment should consider the Sustainable Development Goals • Internal coherence: There is no common definition or practices about 'sensitive areas' in Member States for the WFD. There is no definition for the 'frequent flooding' and 'extreme flooding' provisions in the FD.
<p>Effectiveness</p> <ul style="list-style-type: none"> • Enforcement: A better enforcement of the WFD is needed, including more infringement proceedings at EU level. • Objectives: The goal of 2015 has not been met, so there is a need to re-evaluate objectives. • Monitoring: Monitoring of the WFD should be integrated with the monitoring of groundwater status and of quality of discharged waste water and should consider potential requirements in Drinking Water monitoring
<p>Efficiency</p> <ul style="list-style-type: none"> • Cost-effective measures: More guidance might be needed on cost-effective measures, and to investigate whether the WFD has encouraged the efficient use of measures • Polluter Pays Principle: The principle is not applied enough. • Funding: It is unclear whether funding opportunities have supported the implementation of the Floods Directive, in particular considering INTERREG and Horizon 2020
<p>Relevance</p> <ul style="list-style-type: none"> • Innovation: whether the Directives are sufficiently encouraging innovation. • Energy efficiency: this should be better considered in the Directive, in particular linking to climate change mitigation. • Assessment of chemical status using the 'one out all out' principle should be reviewed and considered if justified.

The opinions raised and evidence provided in this feedback are used in the study directly, with a number of the respondents providing further materials as part of the other consultation activities undertaken.

Use of the information gathered

All of the information gathered as part of the data collection exercise, both through the consultation streams highlighted in this synopsis report, as well as literature review and evidence gathering by the team of consultants was combined. This formed the basis for the examination of all data sources against each of evaluation questions, noting relevant sources of evidence that are then quoted in the main body of the evaluative study. Data was analysed to identify contradictory or supportive statements and evidence to reach the conclusions contained in the final evaluative study. To this end, the last workshop was used to confirm the findings based on this information and to adjust the conclusions according to stakeholders' views. In this context, all widely supported views are entirely considered in the final report, with less widely supported views identified as such.

⁵⁴³ <http://ec.europa.eu/citizens-initiative/public/initiatives/successful/details/2012/000003>

Appendix E- Public Consultation Report

Fitness Check of the Water Framework Directive and the Floods Directive Public consultation report



Report for

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Document revisions

No.	Details	Date
1	Report on public consultation	24 April 2019
2	Revised report taking into account Commission comments	19 July 2019

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1 Introduction

1.1 Objectives of the project

The European Union's Evaluation and Fitness Check Roadmap concerning the Fitness Check of the Water Framework Directive and the Floods Directive⁵⁴⁴ identifies the need for the European Commission to carry out a Fitness Check to look at functioning of and relationship between the Water Framework Directive (WFD), the Floods Directive (FD), the Groundwater Directive (GD) and the Environmental Quality Standard Directive (EQSD).

The overall objective of the project is to support this Fitness Check by studying the effectiveness, efficiency, relevance, coherence and EU added value of the four Directives, through application of the European Commission's Better Regulation Guidelines and by gathering, compiling, assessing and synthesising evidence against these criteria.

This project is led by Wood plc and is delivered together with Trinomics B.V., Wageningen Environmental Research (WENR) (part of Wageningen University & Research) and Deltares.

1.2 Purpose of the report

This report is the public consultation report for the project "Fitness Check (Evaluation) of the Water Framework Directive and the Floods Directive" Specific Contract Number 07/0201/2018/SFRA/779945/ENV.C.1 of the European Commission DG Environment under Framework contract ENV.F.1/FRA/2014/0063.

The aim of the report is to present analysis and results of the public consultation held as part of the Fitness Check and as described in the Roadmap.

1.3 The public consultation

The public consultation was held on the EU Survey portal between September - March 2019. The survey was made available in 23 EU languages and received a total of 385,088 responses. The analysis of the responses, presented in this report, will feed into the overall analysis of the evaluation questions presented in the final report to support the Fitness Check.

The consultation was based on a questionnaire with 80 questions and was split in two parts: a general part, gathering views on general aspects of the Directives and an expert part targeting more knowledgeable respondents on the details of the Directives. Part I included 28 questions while Part II included 52 questions which looked in more details at each of the Directives considered under the Fitness Check. All questions, except those identifying the respondent, were optional.

The analysis of the responses received identified several campaigns. A campaign is described in the Better Regulation guidelines as situations where organisations call on their members to participate in the consultation with suggested responses⁵⁴⁵. These have been described separately in Section 4.

⁵⁴⁴ https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-5128184_en

⁵⁴⁵ Better Regulation Toolbox

1.4 Structure of the report

The report is organised as follows:

- Section 2 presents the methodology used as part of our analysis;
- Section 3 presents the analysis of respondents (excluding campaigns);
- Section 4 presents the analysis of responses from campaigns;
- Section 5 presents the results of the analysis of Part I of the questionnaire;
- Section 6 presents the results of the analysis of Part II of the questionnaire; and
- Section 7 presents the review of the position papers submitted as part of the consultation.

2 Methodology for the analysis

2.1 Overview

The Open Public Consultation included a mix of closed and open questions. Part I of the questionnaire targeting the general public mainly comprised closed questions and was organised thematically (e.g. importance of water, knowledge of water, knowledge of floods). Part II of the questionnaire, addressed at more expert respondents, comprised a mix of open and closed questions and was organised according to the better regulation evaluation criteria, namely: effectiveness, efficiency, relevance, coherence and EU added value.

The first step undertaken was to remove duplicates responses (i.e. multiple responses from the same respondent with identical responses). A total of 15,010 responses were removed leaving a total of 370,078 responses to analyse. Out of these 368,764 responses were identified as being campaigns with 1,944 responses being non-campaigns. Out of these non-campaign respondents all provided some response to Part I of the questionnaire, while less than half provided at least one response to Part II of the consultation.

2.2 Analysis of closed questions

The closed questions have been analysed quantitatively and qualitatively. The responses have been distinguished by Member States and categories of respondents. The text description accompanying the charts presenting the results in the sections below provides an overview of total number of respondents.

In the comparison of views arising in the different categories of respondents and Member States, it is important to keep in mind that the total number of responses vary and might not be representative of the view of the Member State in general or of the category of respondents in some instances.

2.3 Analysis of open questions

The open questions responses were analysed qualitatively. Where trends could be observed, for example recurring comments, or similar views were expressed we have described such trends. Comments made were grouped in order to avoid repetition, where some comments were made by a large number of stakeholders or by similar categories of stakeholders we have also highlighted these.

2.4 Analysis of the campaign responses

The campaign responses have been identified and segregated as required by the Better Regulation guidelines. An overview of the campaigns is presented in Section 4.

3 Overall analysis of respondents (excluding campaigns)

This section of the report excludes campaign responses. The results, therefore, in terms of total number of respondents reflect the non-campaign responses only.

3.1 Overview of distribution responses

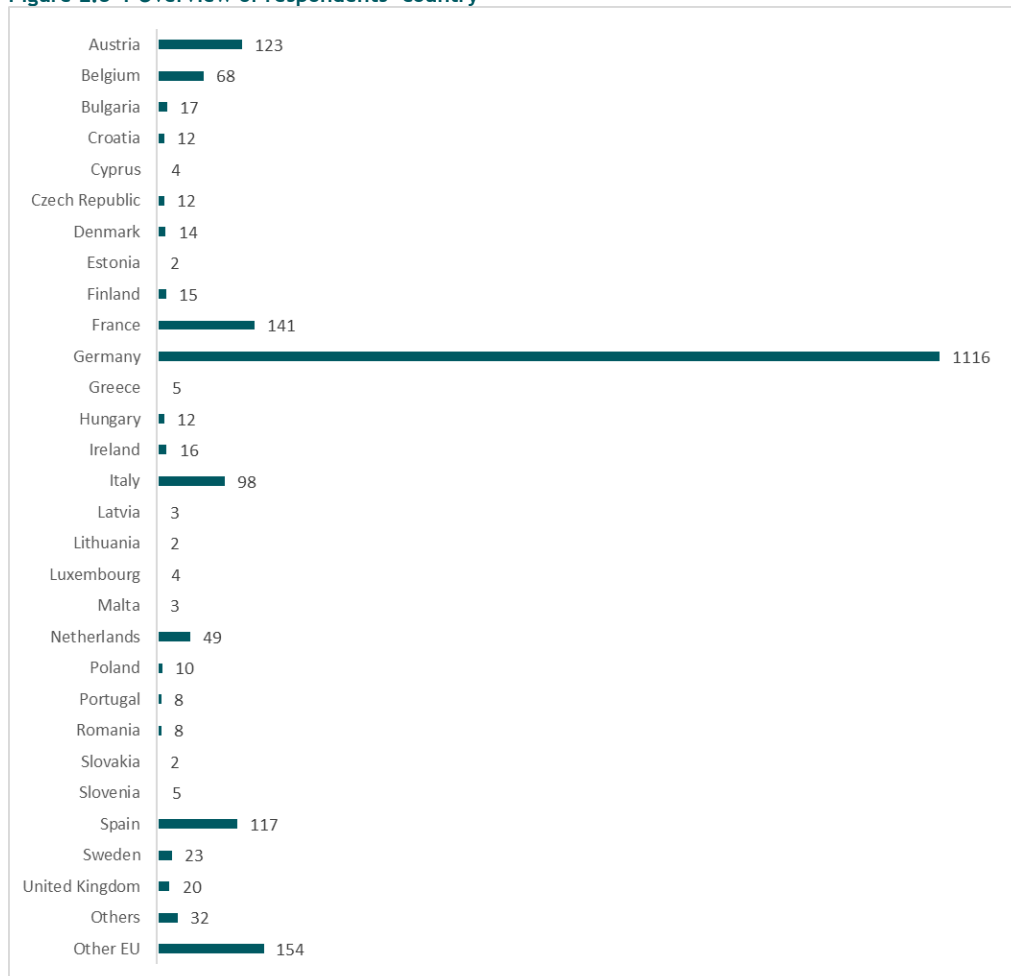
A total of 1,944 respondents each provided at least one response to the open public consultation, but there is variability in the response to the full 80 questions.

All of these respondents provided at least some views on Part I questions. Out of these non-campaigns respondents, 737 provided at least one response to Part II (the expert part) of the questionnaire.

3.2 Overview of geographical spread of responses

The respondents were identified as from places in the EU and beyond. More than half were from Germany (1,116 respondents), followed by France, Austria and Spain. Non-EU respondents represent 2% (32) responses. A split of respondents is presented in the figure below. In order to gauge the number of respondents per Member State in terms of their relative proportions, Table E.3-1 ranks Member States by the proportion of the population that responded to the open public consultation.

Figure E.3-1 Overview of respondents' country



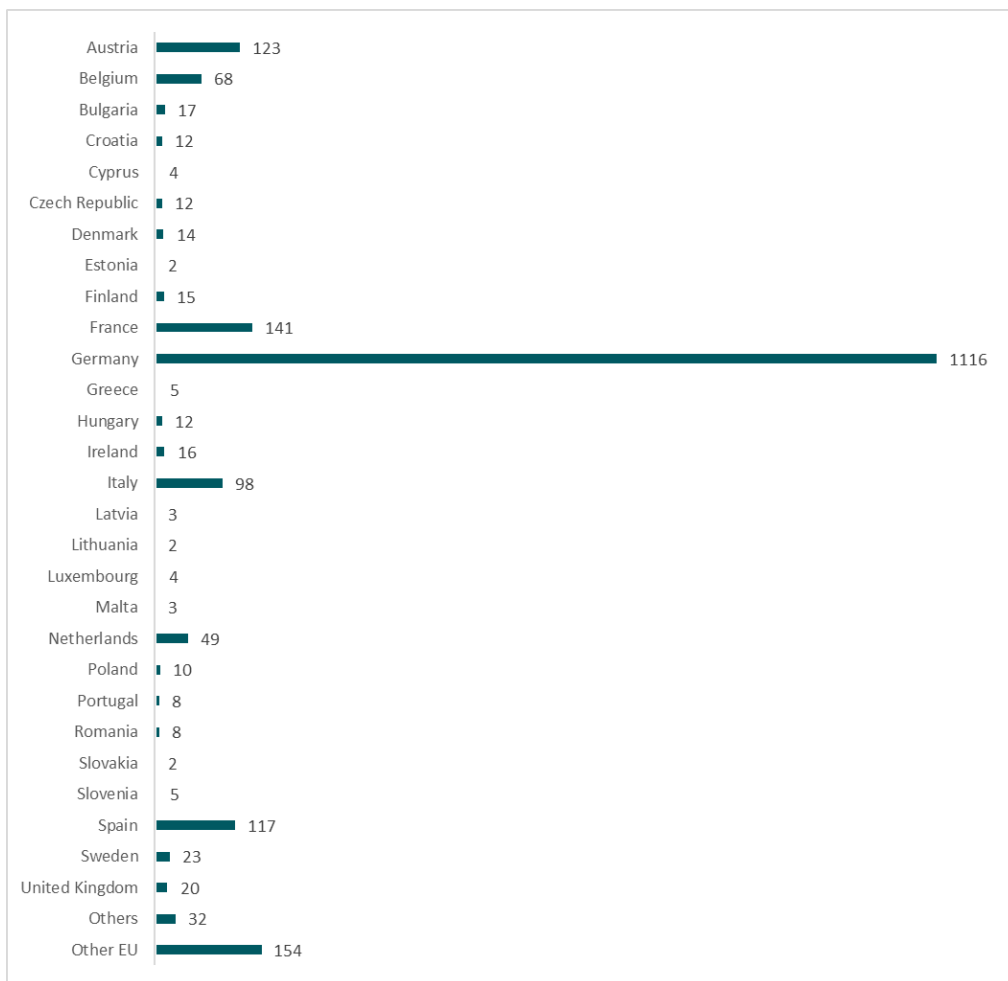


Table E.3.2 Responses per Member State as a proportion of their population with highest proportion of respondents first

Member State	Number of responses	Population ¹	Number of responses as a percentage of population
Austria	123	8,792,500	0.00139892%
Germany	1116	82,437,641	0.00135375%
Malta	3	440,433	0.00068115%
Luxembourg	4	589,370	0.00067869%
Belgium	68	11,365,834	0.00059828%
Cyprus	4	854,802	0.00046794%
Ireland	16	4,774,833	0.00033509%
Croatia	12	4,154,213	0.00028886%
Netherlands	49	17,220,721	0.00028454%
Finland	15	5,577,282	0.00026895%
Spain	117	46,528,966	0.00025146%
Denmark	14	5,743,947	0.00024373%

Member State	Number of responses	Population ¹	Number of responses as a percentage of population
Slovenia	5	2,065,895	0.00024203%
Bulgaria	17	7,101,859	0.00023937%
Sweden	23	10,080,00	0.00022817%
France	141	67,024,633	0.00021037%
Italy	98	61,219,113	0.00016008%
Latvia	3	1,950,116	0.00015384%
Estonia	2	1,315,635	0.00015202%
Hungary	12	9,797,561	0.00012248%
Czech Republic	12	10,467,628	0.00011464%
Portugal	8	10,291,027	0.00007774%
Lithuania	2	2,847,904	0.00007023%
Greece	5	10,757,293	0.00004648%
Romania	8	19,638,309	0.00004074%
Slovakia	2	5,435,343	0.00003680%
United Kingdom	20	65,808,573	0.00003039%
Poland	10	37,972,964	0.00002633%

Note: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017D2461>

3.3 Overview of identity of respondents

As it can be observed from the figure below, the large majority of respondents (69%) are EU citizens which is to be expected for such an exercise particularly considering there was a high level of publicity of the consultation, with several organisation encouraging interested citizens to respond.

Figure E.3-2 Overview of response number per category of respondents



4 Overall analysis of responses from campaigns

A large number of responses resulted from campaigns led by specific interest groups. If 10 or more responses provided the same comment to an open question in the questionnaire, there were identified as belonging to a campaign. At least three campaigns were identified generating a total of 368,764 responses: The #ProtectWater campaign organised by WWF and two unidentified campaigns.

It has not been possible to quantify their influence on the results in a precise manner since not all campaigns published a list of suggested replies, and some respondents may have been influenced by campaigns without following a prescribed set of responses. Others may have answered in the same way as the campaigns by coincidence.

4.1 Overview of distribution responses

The campaign with the greatest number of responses was the #ProtectWater campaign organised by WWF. This campaign supported a positive view of the Water Framework Directive and sought to ensure that the Water Framework Directive remains intact, is fully implemented by Member States and is enforced by the European Commission. It guided respondents on how to reply to questions in both Part I and Part II of the questionnaire. The WWF claims on its website that the campaign has generated 375,386 replies. According to the results retrieved from the consultation, 368,303 respondents answered exactly as suggested by this campaign.

Two more campaigns, in addition to the #ProtectWater campaign, were identified and named as Campaign 2 and Campaign 3. These campaigns were unidentified because it's unclear which interest groups are responsible for preparing them.

Campaign 2 generated 409 responses. It supported a critical view of the Directive, suggesting that more measures are needed to address diffuse emissions from agriculture and new burdens such as microplastics. It guided respondents on how to reply to the questions in Part I of the questionnaire only. Campaign 3 generated 52 responses. It also supported a critical view of the Directive, calling for the inclusion of non-motorised recreational use as a social function of waters in the Directive. It too only guided respondents on how to reply to the questions in Part I of the questionnaire only.

4.2 Overview of geographical spread of responses

Out of the 368,303 responses retrieved from WWF's #ProtectWater campaign, 361,275 (98%) were from EU Member States. Of the responses from the EU Member States, 46% were from Germany; 6% from the Netherlands; 5% from Austria, Sweden, Spain, Belgium and Italy each; 4% from France and Hungary each; 3% from Finland and the UK each; and 2% from Bulgaria and Poland each. The remaining responses were spread relatively evenly among the other EU Member States.

All the responses received from Campaign 2 were from EU Member States. Out of the 409 responses, 69% were from Germany, 30% were from Austria, and the remaining five responses were split between Bulgaria, Estonia, Greece and Belgium.

For Campaign 3, out of the 52 responses, 51 were from Germany and 1 was from a Non-EU country.

4.3 Overview of identity of respondents

Out of the 368,303 responses retrieved from WWF's #ProtectWater campaign, 98% of the responses were from EU-citizens and 2% were from non-EU citizens.

All the 409 responses received from Campaign 2 were from EU citizens.

Out of the 52 responses received from Campaign 3, 51 responses were from EU citizens and 1 was response was categorised as 'Other'.

4.4 Overview of the results to the final open question in Part I and Part II

All three campaigns provided responses for the final open question in Part I of the questionnaire, with respondents from the same campaign providing the same comment, although sometimes in different languages.

Only the WWF's #ProtectWater campaign provided a response to the final open question in Part II.

Part I of the questionnaire

WWF #ProtectWater

The WWF's #ProtectWater campaign provided the following comment for the final open question in Part I asking for comments on the legislation. This comment was provided by each of the 368,303 respondents, although at times in different languages.

"I care about the current and future state of our freshwater ecosystems and I agree with the environmental groups that the EU Water Framework Directive (WFD) is fit for purpose, and it has delivered on protection and restoration of our waters, as well as yielded benefits for economy and society. Please consult my more detailed response on why the WFD is effective, efficient, relevant, coherent and of added value in the comment box of Part II of the survey.

As a citizen who cares about the environment, I am opposed to changing the WFD, and want to see its high standards upheld and met across Europe. Currently, Member States show little ambition in implementing the WFD. This is evident in ineffective river basin management plans, programmes of measures that are poorly delivered, insufficient funding allocated to implement control measures, and excessive use (and misuse) of various types of exemptions provided within the WFD. WFD needs full implementation by Member States, and enhanced enforcement from the European Commission."

Campaign 2

Campaign 2 provided the following comment for the final open question in Part I in German which has been translated into English. This comment was provided by each of the 409 respondents.

"The questions asked are very broad in some areas and therefore not concrete. The answer options partly allow an interpretation in many directions. It therefore seems necessary to add a few essential points in order to communicate the experiences and concerns clearly.

The Water Framework Directive has taken some measures in recent years. In particular, the hydropower industry has invested a lot of money in the production of fish penetration and in morphological improvements. However, these improvements are not yet sufficiently reflected in the overall ecological status of the waters. It is reasonable to suppose that other burdens are in conflict with the achievement of objectives (for example, entries from agriculture, river strains). In a next step, the focus should therefore be placed on these areas, since only in synopsis, an implementation of

the guideline can be ensured with the best means. In particular, in the field of diffuse inputs from agriculture, few measures were implemented. In any case, this must be followed. Also, with regard to "new burdens" such as microplastics, entries from the air, etc., improvement measures must be initiated as soon as possible, so that the extensive measures of hydropower can have their effect.

In any case, with regard to the use of water for power generation, a distinction must be made between hydropower and water use for cooling purposes in thermal and nuclear power plants. Thermal and nuclear power plants do not represent sustainable energy production and are thus in conflict with other European objectives. They also cause very different pressures on the waters than hydropower. In any case, this is compatible with the protection of ecosystems and makes an important contribution to climate protection and to a renewable energy supply."

Campaign 3

Campaign 3 provided the following comment for the final open question in Part I in German which has been translated into English. This comment was provided by each of the 52 respondents.

"The EU WFD provides for systematic improvements in aquatic ecosystems and the continuity of the aquatic fauna, but it does not foresee the receipt / improvements of canoe or rowing abilities in the waters, and many measures already implemented and future measures are limited to the common use of water. Discharge areas are thus burdened more, which increased carbon dioxide emissions.

In fact, only the natural experience of intact river landscapes leads to an increased understanding of ecological relationships and thus to increased acceptance of conservation and remediation measures in bodies of water. Especially for families lakes, rivers and streams are achievable (and hopefully in the future also experienceable) goals of recreation.

Therefore, I call for the inclusion of 'nonmotorized recreational use as a social task of waters' in the EU WFD."

Part II of the questionnaire

The WWF's #ProtectWater campaign was the only campaign to provide a response to the final open question in Part II of the questionnaire.

The following is the comment provided for the final open question in Part II. This comment was provided by 368,299 respondents, although at times in different languages. Four out of the 368,303 respondents for this campaign did not provide a response to this question:

"Healthy freshwater ecosystems are important to me. I am somewhat familiar with WFD and agree with environmental groups that it is fit for purpose and its ambitious objectives are justified:

- *The approach set out in WFD is appropriate to prevent deterioration, restore freshwater ecosystems and ensure a reliable supply of clean water for all legitimate water uses. WFD led to more stringent national water protection laws to be adopted, and EU-level action is also justified because freshwater ecosystems do not recognise borders. WFD is flexible enough to accommodate socio-economic concerns, governance structures, local cultural preference and traditions.*

- *WFD remains relevant to addressing diverse pressures faced by EU waters and water-related societal and economic challenges (including climate change and new technological developments such as*

fracking). Describing ecosystem health with WFD's 'one-out-all-out principle' remains critical, as does the use of appropriate water pricing in line with polluter/user pays principle.

- Where properly implemented, WFD has proved to be effective in protecting and restoring freshwater ecosystems. The current poor state of EU waters is caused by my government's lack of ambition and political will to address the main pressures on our waters; it is NOT the result of WFD legal provisions and approach to water management.

- As well as protecting nature, WFD has added value to the economy and yielded additional social benefits (e.g. avoided costs for treatment of water, prevented economic losses due to droughts and floods, health benefits).

- WFD is coherent with other pieces of EU environmental law and supports EU economic development-related objectives. However, achievement of WFD objectives has been significantly undermined by unsustainable practices promoted under EU sectoral policies (esp. agriculture, energy, transport). I appeal to the Commission and Member States to not change the WFD, but instead better implement and enforce it, and integrate water protection objectives into other sectoral policies (esp. agriculture, energy, transport, flood management)."

5 Overview of the results to Part I

The results presented in this section of the report cover only responses which were not organised by a campaign. The structure of the section follows the organisation of the questionnaire.

5.1 Overview of identity of respondents

This section presents the responses received to Part I of the public consultation which was targeted at the ‘general public’.

A total of 1,944 respondents provided at least one response to a question in Part I. On average, the number responding from each Member State is presented in Table E.5-2, with the number influenced by how many of the questions were answered across all of Part I. Table E.5-3 shows the same results but organised by category of respondent. Note that the numbers are different throughout reflecting on varying numbers of respondents.

Table E.5-2 Overview of average number of respondents per Member State

Member State	Average number of respondents	Member State	Average number of respondents
United Kingdom	15	Ireland	14
Sweden	13	Hungary	12
Spain	112	Greece	5
Slovenia	5	Germany	1067
Slovakia	2	France	128
Romania	7	Finland	13
Portugal	8	Estonia	2
Poland	10	Denmark	12
Netherlands	44	Czech Republic	11
Malta	3	Cyprus	4
Luxembourg	4	Croatia	12
Lithuania	2	Bulgaria	17
Latvia	3	Belgium	44
Italy	95	Austria	109
Total	1,773		

Table E.5-3 Overview of average number of respondents per category

Category of respondent	Average number of respondents
Academic/research institution	27
Business association	66
Company/business organisation	127
Consumer organisation	3
Environmental organisation	37
EU citizen	1326
Non-EU citizen	6
Non-governmental organisation (NGO)	75
Other	55
Public authority	70
Trade Union	9
Total	1,801

Note: the total is higher in this table because some of the respondents belonged to this category but not from EU Member States. Considering the small number of responses, we considered it would be valuable to include their views as well.

5.2 State of European waters

Question 1 - How do you assess the situation of Europe's waters today?

The first question asked respondents how they assessed the situation of Europe's water. A total of 1,801 respondents provided their views, out of which 20 (1%) responded "I don't know". Out of the 1,781 (99%) respondents that had an answer to this question, majority of the respondents (50%) considered the state of Europe's waters as 'not good' and 34% of respondents considered them 'acceptable'.

Of the respondents that considered the state of Europe's water as 'not good', between nearly a quarter to a half reported low familiarity with the Directives: 20% were unfamiliar with the WFD, 35% were unfamiliar with the Groundwater Directive, 39% were unfamiliar with the EQSD and 43% were unfamiliar with the FD. Overall, a moderate proportion of respondents that held this view reported low familiarity of the Directives.

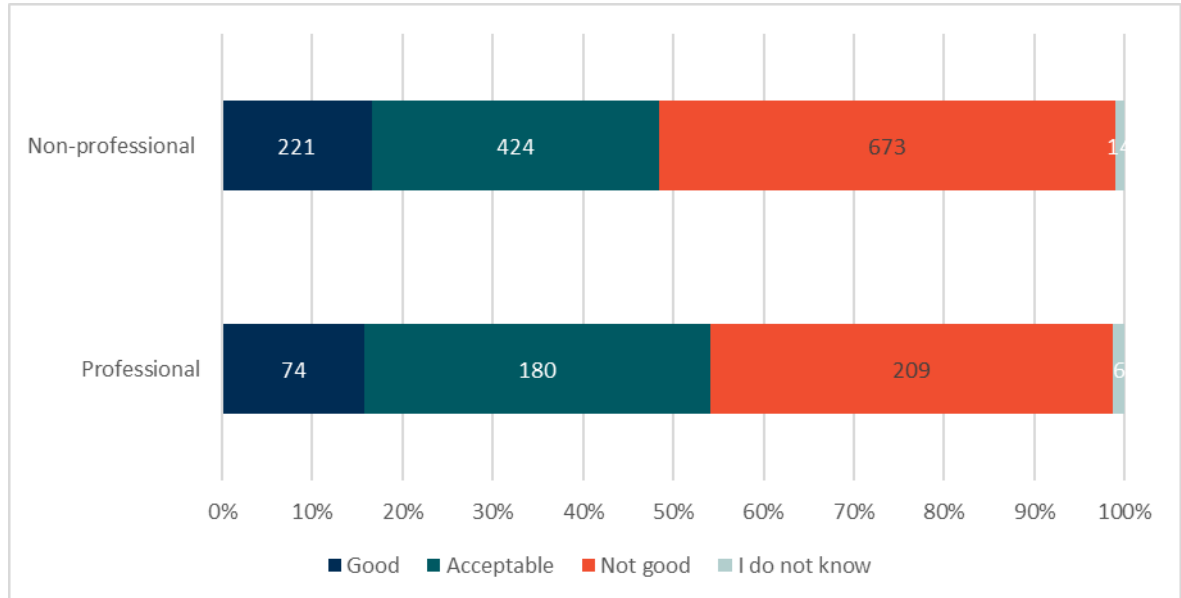
Good	Acceptable	Not good	Total
295	604	882	1,781
17%	34%	50%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-1 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-4 presents the results by specific categories of stakeholders. The

proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-1 shows that a greater proportion on non-professional stakeholders consider the quality of Europe’s water to not be good compared to professional stakeholders.

Figure E.5-1 Views from professional and non-professional stakeholders on water situation



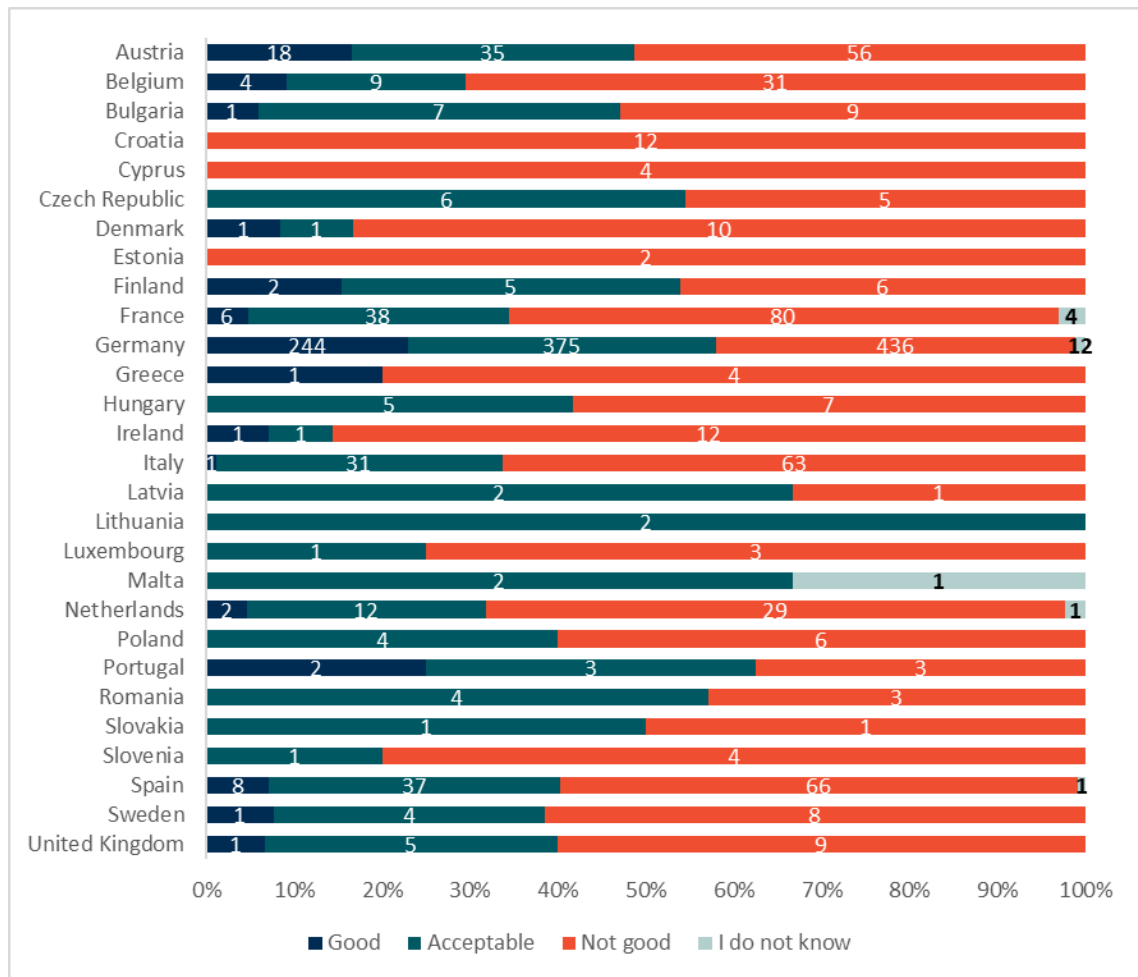
It can be observed in Figure E.5-4 that general public and competent authorities have the relatively similar perception that broadly 50% of waters are in a good or acceptable state. In contrast, business associations and organisations have a more positive view, with nearly 80% of respondents estimating the waters as either good or acceptable.

Figure E.5-4 Views from specific categories of stakeholders on waters situation



A comparison of views per Member State was undertaken in order to identify any issues affecting regions at EU level. The trends are quite similar in most Member States and reflect the average trend of a majority of respondents finding the current state of waters to be ‘not good’. Member States where all respondents consider the state of waters as ‘not good’ are Croatia, Cyprus and Estonia. However, these Member States have very few respondents, so it is not possible to consider these views are representative.

Figure E.5-2 Views on state of waters per Member State



5.3 Priorities for water and water use

Question 2 - When you think of water and its different uses and functions, which of the following do you consider as a priority?

Respondents were asked to rate a range of water uses and functions by order of priority. shows the level of knowledge of respondents for this question by providing a breakdown of the proportion of respondents that knew the response for each water use/function and the proportion of respondents that answered “I don’t know”.

Table E.5-5 Level of knowledge for Question 2

	% Know	% Don't know	Total number of respondents
Drinking water sources and the supply systems	100%	0%	1,803
Protection of water from pollution	100%	0%	1,794
Availability of drinking water and water for domestic use	100%	0%	1,783
Availability of water for irrigation in agriculture	100%	0%	1,784
Availability of water for industry	100%	0%	1,785
Availability of water for recreation	99%	1%	1,785
Availability of water for transport purposes	99%	1%	1,781
Availability of water for energy production	99%	1%	1,788
Protection of natural waters and their associated ecosystems	100%	0%	1,790
Prevention and protection from flooding	99%	1%	1,789

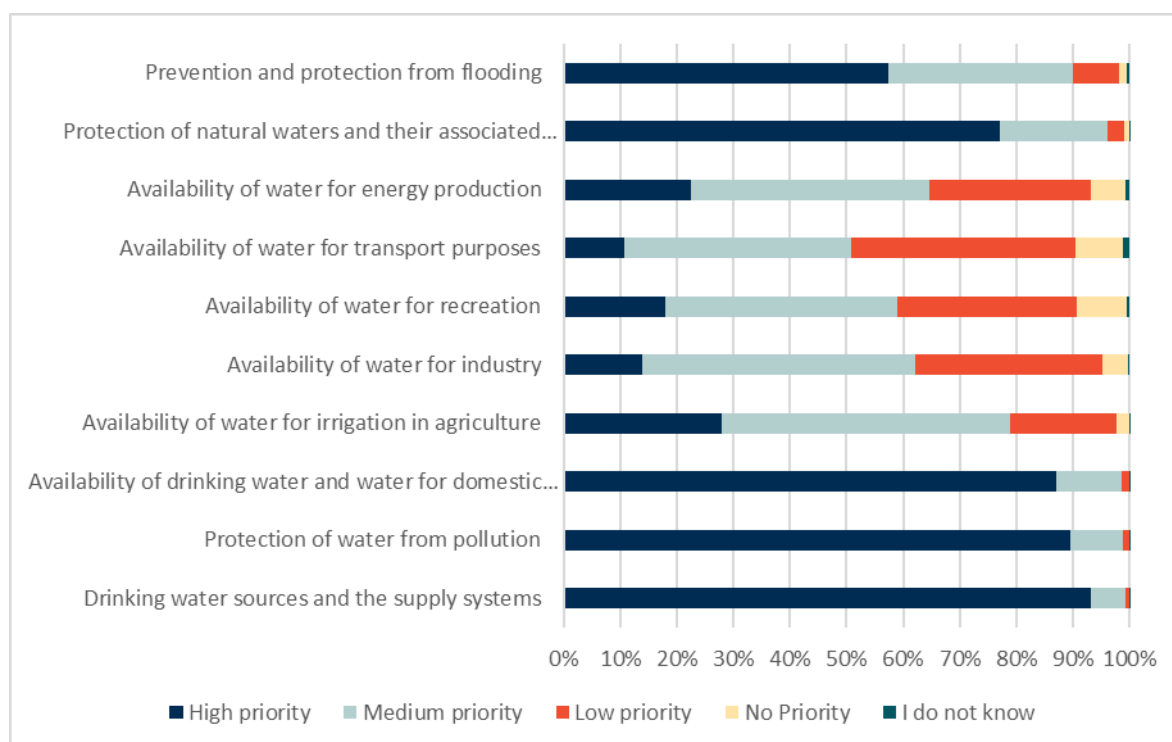
The overall results are presented in Table E.5-6.

Table E.5-6 Overview of the priority for water and its uses

	High priority	Medium priority	Low priority	No Priority	Total
Drinking water sources and the supply systems	1,679	112	11	0	1,802
Protection of water from pollution	1,605	168	18	1	1,792
Availability of drinking water and water for domestic use	1,551	208	23	0	1,781
Availability of water for irrigation in agriculture	499	909	336	37	1,784
Availability of water for industry	249	858	592	79	1,785
Availability of water for recreation	322	731	564	159	1,776
Availability of water for transport purposes	193	710	709	147	1,759
Availability of water for energy production	403	751	512	110	1,776
Protection of natural waters and their associated ecosystems	1,379	340	55	13	1,787
Prevention and protection from flooding	1,027	584	146	23	1,780

As can be observed from Figure E.5-3, the top five highest priority uses are: drinking water sources and supply systems, protection of water from pollution, availability of drinking water and water for domestic use, protection of natural waters and their ecosystems, and prevention from flooding. In comparison the uses which are rated as 'no priority' include the availability of water for recreation, the availability of water for transport purposes and the availability of water for energy production. The low prioritisation of recreational use of water is surprising and was further investigated. The overwhelming majority of those responding 'no priority' were EU citizens. This might reflect the lack of awareness of the links between water quality and recreational services but also the role of water in transport or energy production.

Figure E.5-3 Priorities with regards to water and water use



Respondents were asked if there are any other priorities for water and water use in addition to those outlined above. Their responses are summarised by stakeholder category in the points below:

Academic/research institutions:

- Availability of water for aquaculture;
- Protection of water from over-fishing;
- Protection of wetlands;
- Protection of groundwater.

Industry/economic organisations/trade unions:

- Climate change adaptation (adapting to floods and droughts);
- Rainwater harvesting for domestic hot water use and also use for industrial purposes;
- Surface rainwater retention;
- Use of water for hydroelectric power.

NGOs and environmental organisations:

- Modernisation of sewage treatment facilities;
- Reuse of nutrients from wastewater;
- Protection of wetlands;
- Use of water for recreational purposes like canoeing;
- Surface rainwater retention.

Public authorities:

- Protection of marine environment;
- Use of water for tourism purposes.

Citizens (EU and non-EU):

- Protection of groundwater
- Rainwater harvesting
- Maintenance and inspection of sewer pipes and modernisation of wastewater treatment facilities
- Protection of water from micropollutants
- Prevention of privatisation of the water sector
- Protection of groundwater
- Climate change adaptation
- Use of water for hydroelectric power
- Use of water for recreational purposes

5.4 Management of water resources

Question 3 - Do you feel that water is presently managed and used sustainably?

A total of 1,784 respondents provided a response to this question, out of which 74 (4%) responded “I don’t know”. Out of the 1,710 respondents that knew the answer to this question, the majority (68%) indicated that in their view, water is not managed nor used sustainably. Of the respondents that felt that water is not managed or used sustainably, between nearly a quarter to a half reported low familiarity with the Directives: 23% were unfamiliar with the WFD, 38% were unfamiliar with the GD, 41% were unfamiliar with the EQSD and 46% were unfamiliar with the FD. This indicates that a nearly a quarter to a half of the respondents that held this view were unaware of the Directives responsible for the good management of water in the EU.

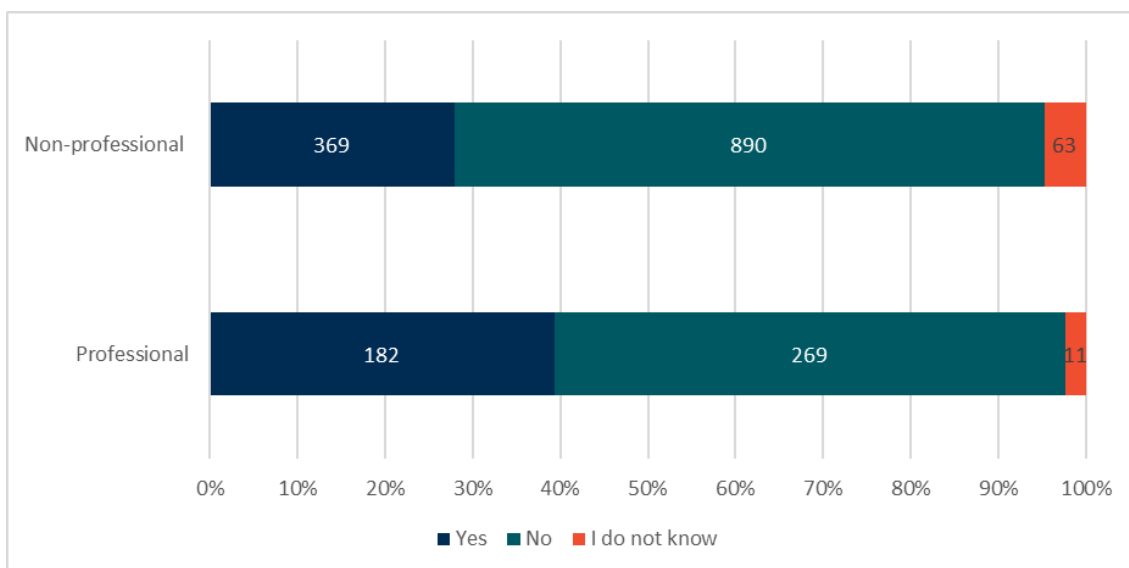
Yes	No	Total
551	1,159	1,710
32%	68%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-4 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens).

Figure E.5-5 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-4 shows that a greater proportion of non-professional stakeholders consider that water is currently not managed and used sustainably compared to professional stakeholders.

Figure E.5-4 Views from professional and non-professional stakeholders on the management of water resources



It can be observed in the figure below that business and industry organisations are much more positive on the way water is managed than all the other categories of stakeholders.

Figure E.5-5 Views from specific categories of stakeholders on the management of water resources

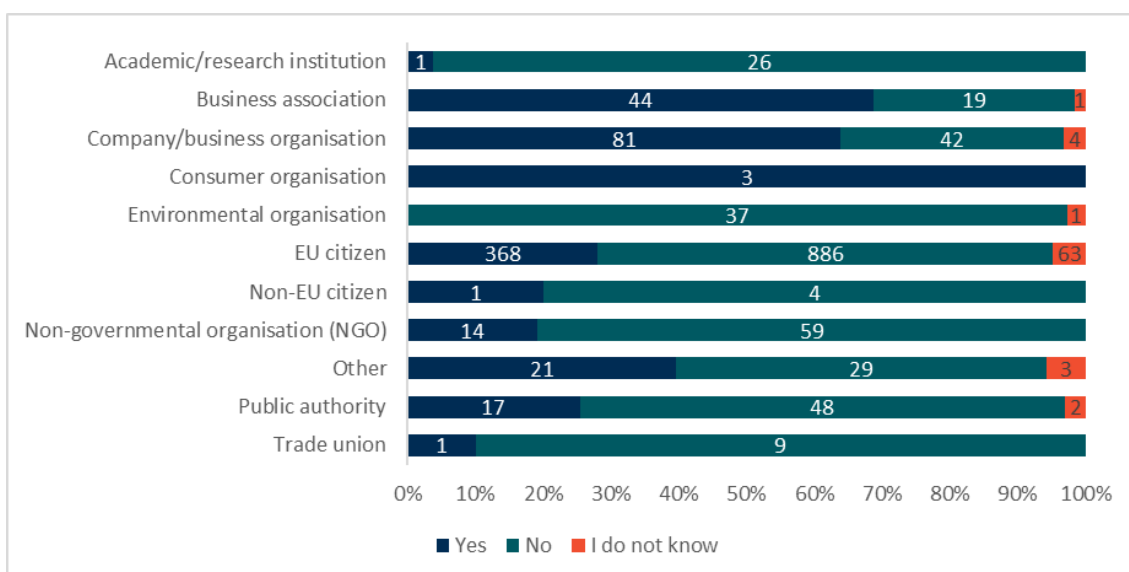
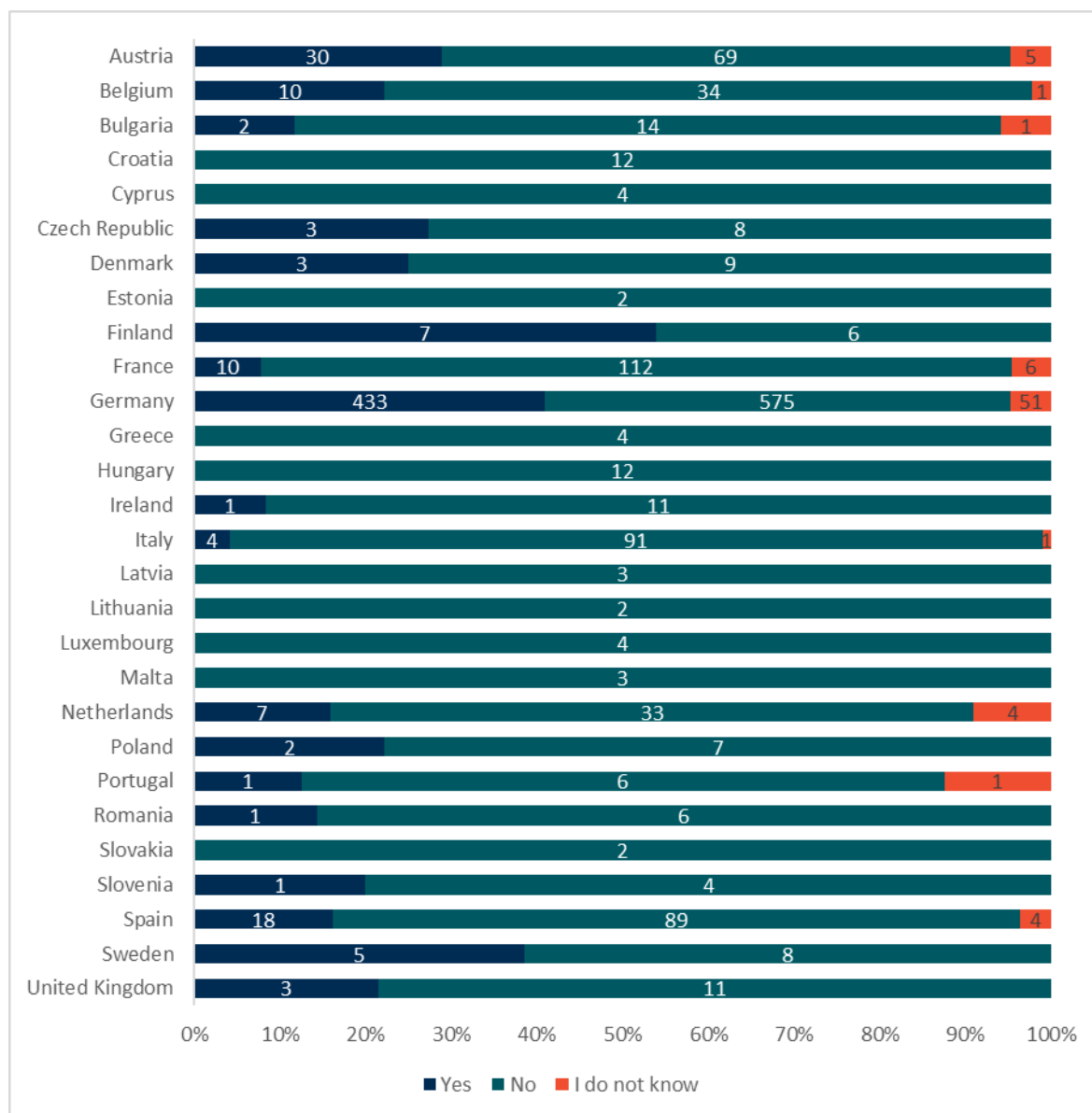


Figure E.5-6 Views from MS on the management of water resources



Question 4 - Do you know where to find up to date information on the quality of surface and groundwater in your region/country?

A total of 1,768 respondents provided a response to this question. The majority (83%) indicated that they knew where to find up to date information of quality of surface and groundwater in their region/country.

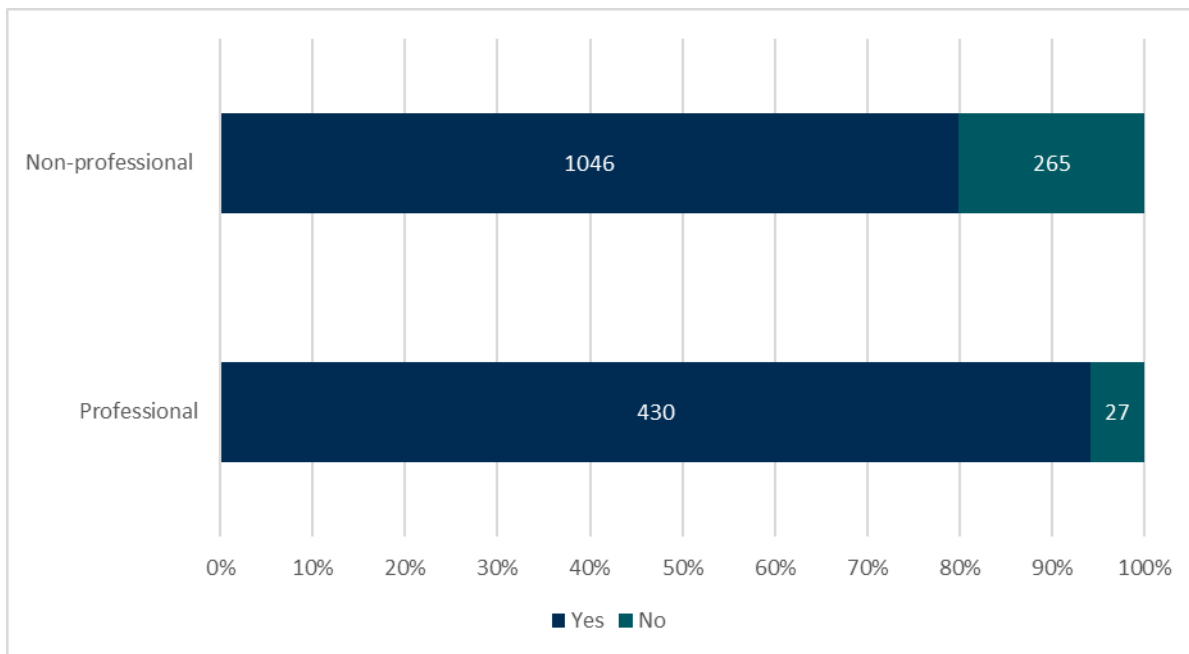
Yes	No	Total
1,476	292	1,768
83%	17%	100%

The figures below present the results of this question by category of stakeholders.

Figure E.5-11 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-13 presents the results by specific categories of stakeholders.

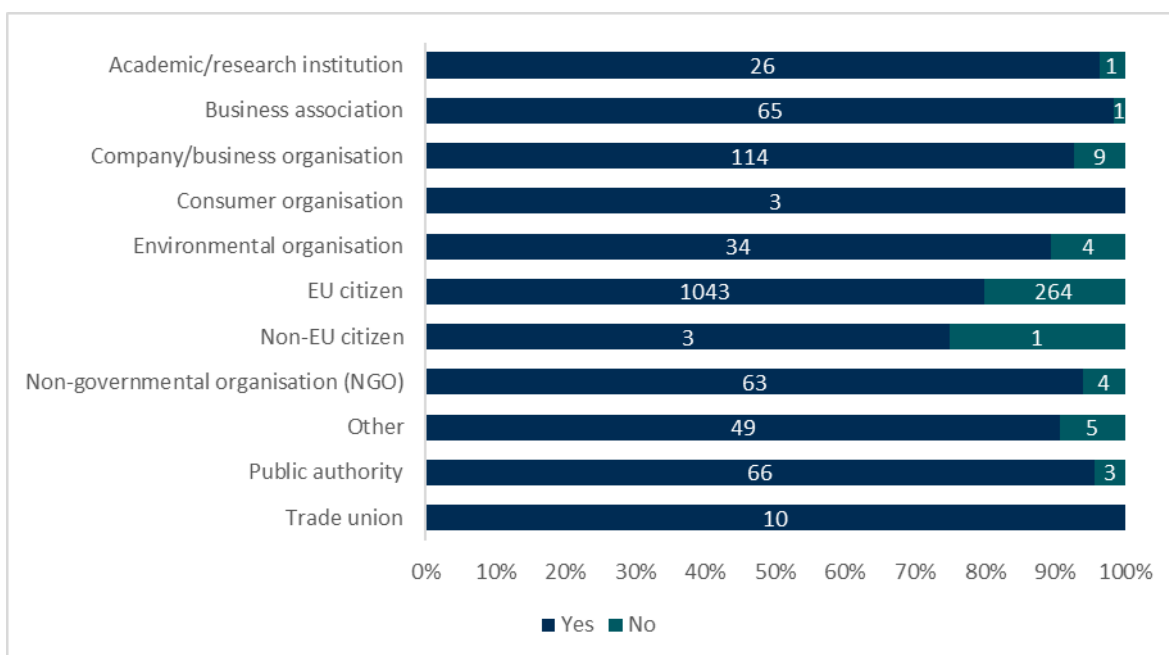
Figure E.5-11 shows that a greater proportion on non-professional stakeholders don't know where to find up to date information on the quality of surface and groundwater in their region/country compared professional stakeholders.

Figure E.5-7 Views from professional and non-professional stakeholders on source of information



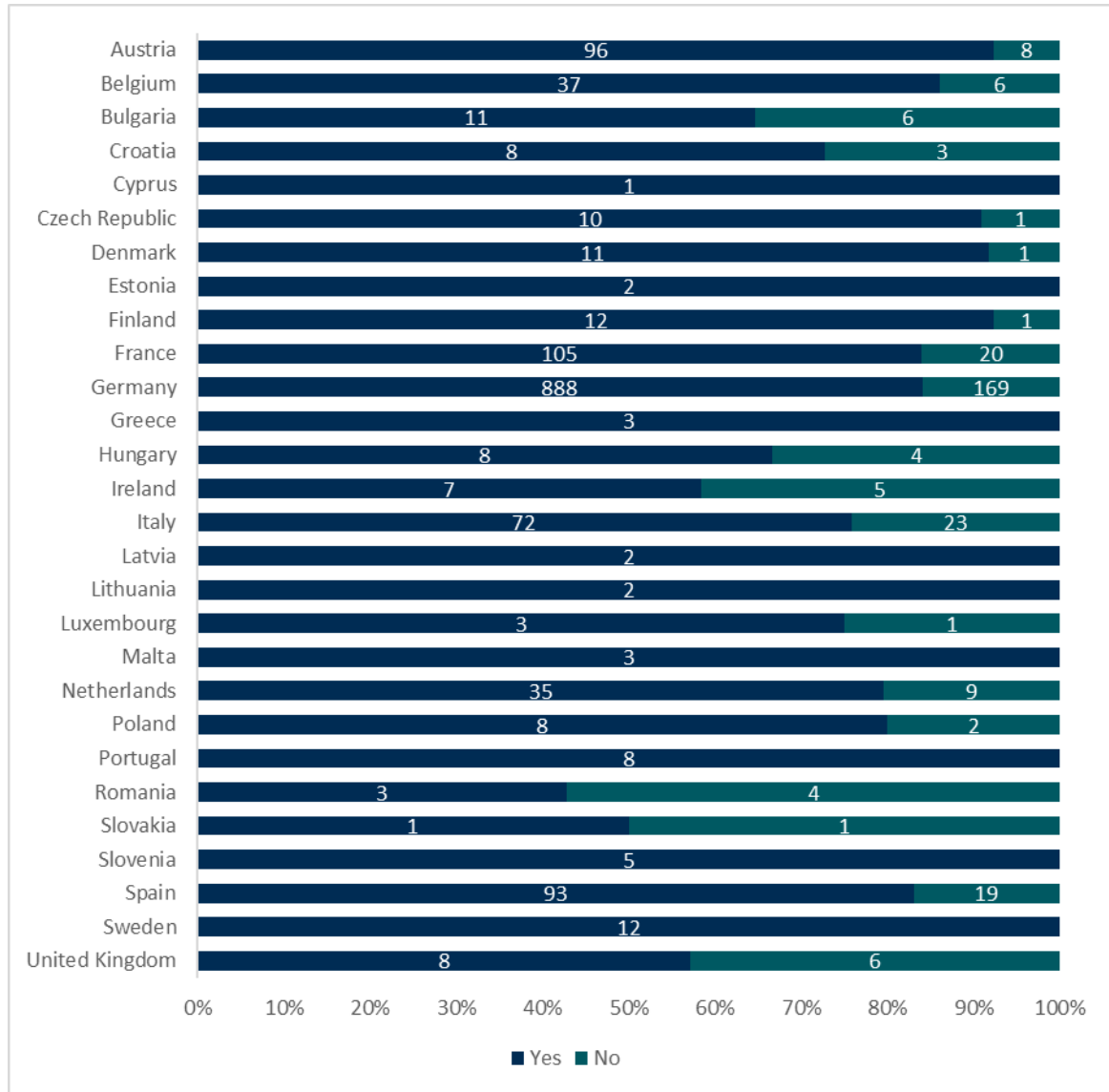
The figure below shows that for all stakeholders, the majority knew where to find up to date information on the quality of surface and groundwater. Trade unions, business organisations, research institutions and public authorities answered the most positively in terms of knowing where to find this information.

Figure E.5-8 Views from specific categories of stakeholders on source of information



A comparison of results by Member State was undertaken to identify regional trends. Figure E.5-9 shows that apart from Romania, the majority of the respondents from each Member State responded that they knew where to find up to date information on the quality of surface and groundwater.

Figure E.5-9 Views from MS on source of information



Question 5 - Are you aware of which authorities manage the surface and groundwater in your region?

A total of 1,776 respondents provided a response to this question, out of which 5 (0.3%) responded “I don’t know”, i.e. they did not know whether or not they were aware of which authorities manage the surface and groundwater in their region. Of the respondents that knew the answer to this question (99.7%), the majority (67%) answered that they are aware of which authorities manage the surface and groundwater in their region.

Of the 80 respondents that answered that they did not know which authorities manage the surface and groundwater in their region, the vast majority also reported low familiarity with the Directives: 66% were unfamiliar with the WFD, 75% were unaware of the GD, 80% were unaware of the EQSD and 78% were unaware of the FD. This indicates consistency in the responses provided in the survey because it

would be expected that those respondents that are unfamiliar with the Directives would also be likely to be unfamiliar with the authorities that manage the surface and groundwater in their region.

Yes	To some extent	No	Total
1,183	508	80	1,771
67%	29%	5%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-10 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens).

Figure E.5-11 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-10 shows that a far greater proportion of non-professional stakeholders don’t know which authorities manage the surface and groundwater in their region compared to professional stakeholders.

Figure E.5-10 Views from professional and non-professional stakeholders on awareness of authorities in charge of management

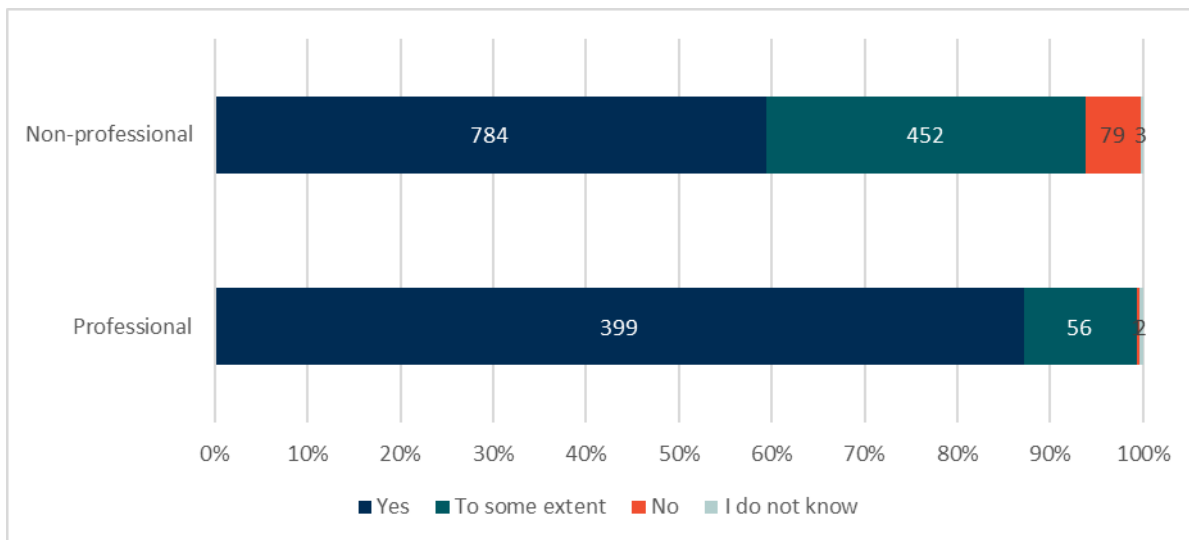
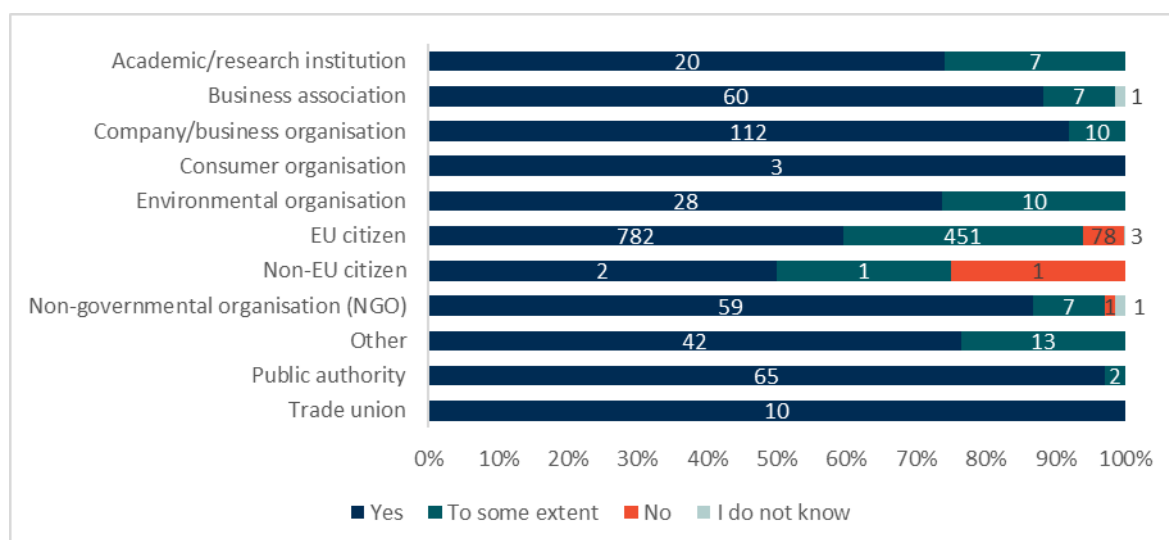


Figure E.5-11 shows that all consumer organisations and trade unions that provided an answer responded that they are aware of which authorities' manage the surface and groundwater in their region. Non-EU citizens and EU citizens had the highest proportion of respondents that answered that they are not aware of which authorities manage the surface and groundwater in their region.

Figure E.5-11 Views from specific categories of stakeholders on awareness of authorities in charge of management



Question 6 - Do you think the management of water resources in your country has improved since the introduction of the Water Framework Directive (2003) and the Floods Directive (2009)?

A total of 1,784 respondents provided a response to this question, out of which 172 (10%) responded “ I don’t know” . Out of the respondents that knew the answer to this question (90%), The majority (61%) indicated that the management of water resources has improved to some extent in their country since the introduction of the Water Framework Directive (2003) and the Floods Directive (2009). The smallest proportion of respondents (6%) answered that management has worsened since the introduction of the Water Framework Directive (2003) and the Floods Directive (2009).

Yes, to a large extent	Yes, to some extent	No, it has stayed the same	No, it has got worse	Total
283	978	258	93	1,784
18%	61%	16%	6%	100%

The figures below present the results of this question by category of stakeholders.

Figure E.5-12 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-13 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-12 shows that a much greater proportion of non-professional stakeholders think that the management of water resources in their country has stayed the same despite the introduction of the Water Framework Directive and the Floods Directive, compared to the professional stakeholders.

Figure E.5-12 Views from professional and non-professional stakeholders on improvement of water resources since the introduction of the legislation

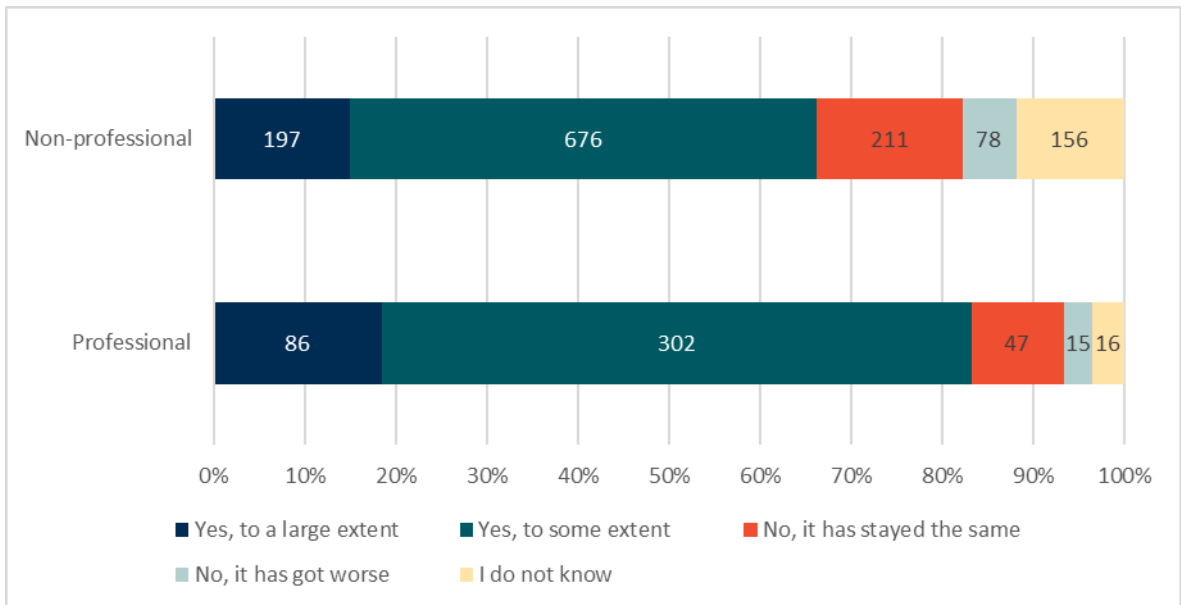
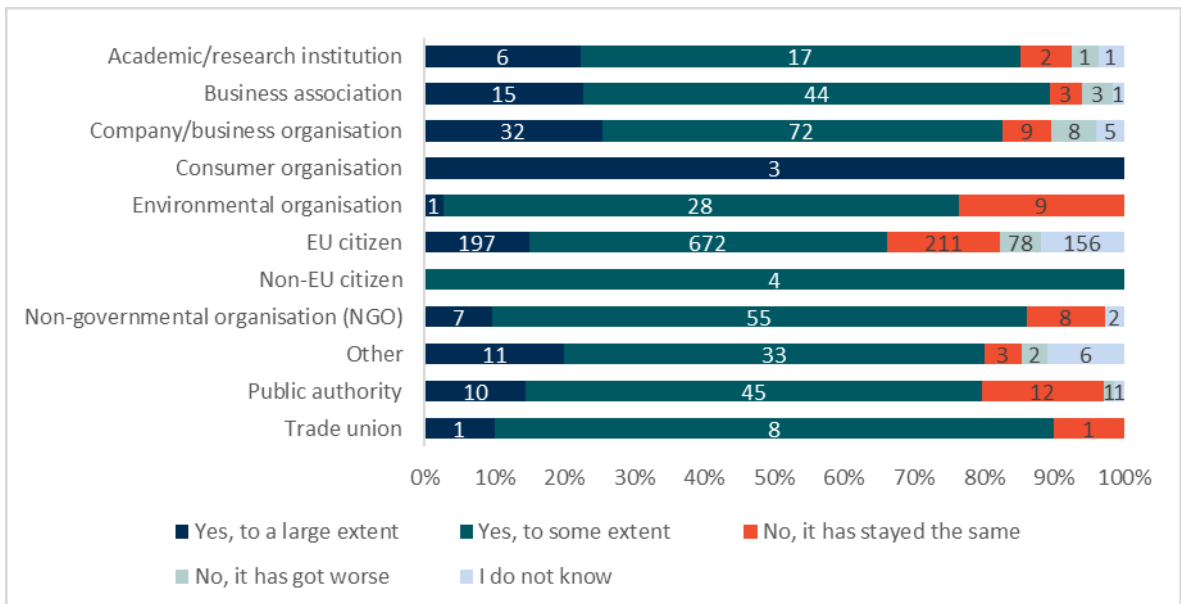


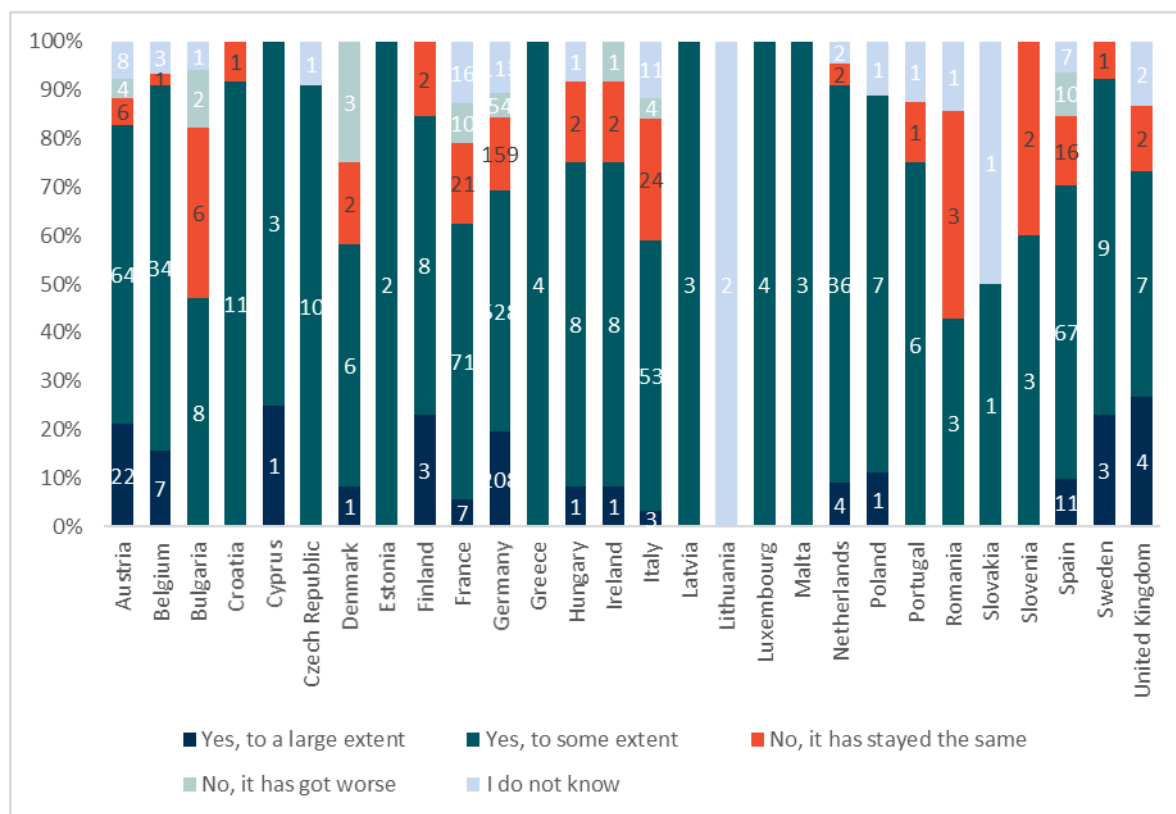
Figure E.5-13 shows that all the respondents from consumer organisations, followed by the majority of respondents from business organisations, business associations and research institutions indicated that the management of water resources has improved to a large extent in their country since the introduction of the Water Framework Directive (2003) and the Floods Directive (2009).

Figure E.5-13 Views from specific categories of stakeholders on improvement of water resources since the introduction of the legislation



The figure below presents the results by Member State. Comparatively, the Member States with the highest proportion of respondents which answered that the management of water resources has worsened in their country since the introduction of the Water Framework Directive (2003) and the Floods Directive (2009) are Denmark (25%) and Bulgaria (12%).

Figure E.5-14 Views from MS on improvement of water resources since the introduction of the legislation



Question 7 - Do you think the quality of surface and groundwater in your country or region has improved since the introduction of the Water Framework Directive?

A total of 1,788 respondents provided a response to this question, out of which 123 (7%) responded “I don’t know”. Out of the respondents that knew the answer to this question (93%), the majority (56%) indicated that the quality of surface and groundwater in their country has improved to some extent since the introduction of the Water Framework Directive.

Yes, to a large extent	Yes, to some extent	No, it has stayed the same	No, it has got worse	Total
229	926	359	151	1665
14%	56%	22%	9%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-15 shows that a greater proportion of non-professional stakeholders believe that the quality of surface and groundwater in their country or region has gotten worse since the introduction of the Water Framework Directive, compared to professional stakeholders.

Figure E.5-15 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens).

Figure E.5-16 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-15 shows that a greater proportion of non-professional stakeholders believe that the quality of surface and groundwater in their country or region has gotten worse since the introduction of the Water Framework Directive, compared to professional stakeholders.

Figure E.5-15 Views from professional and non-professional stakeholders on improvement of surface and groundwater

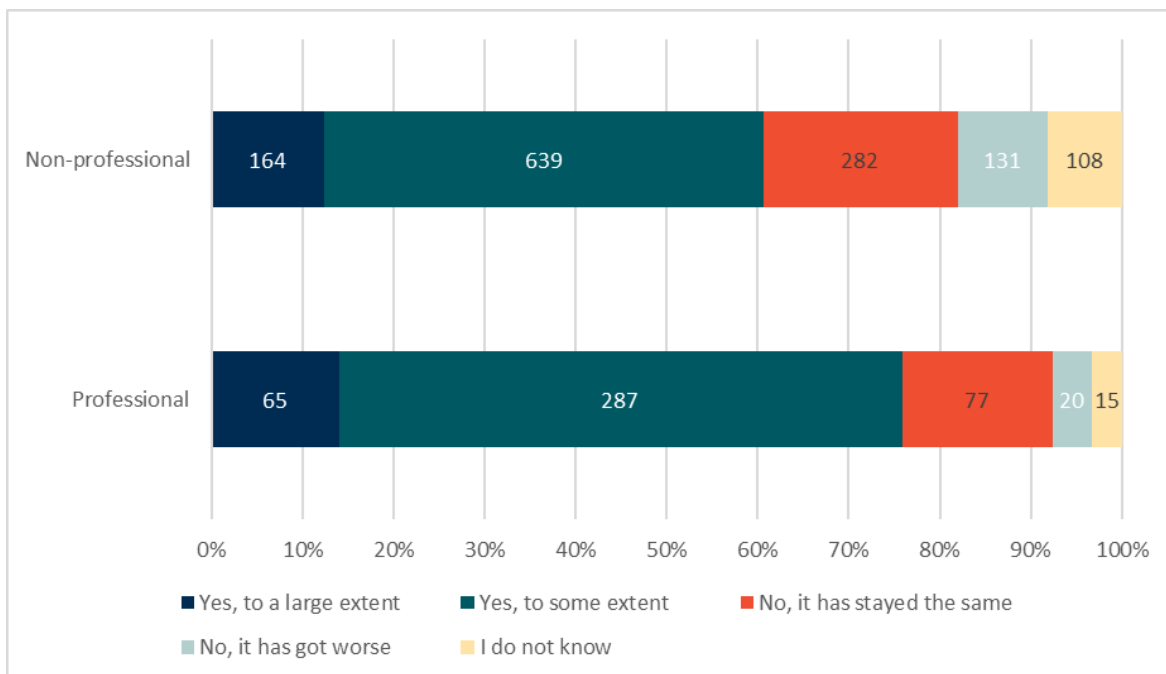
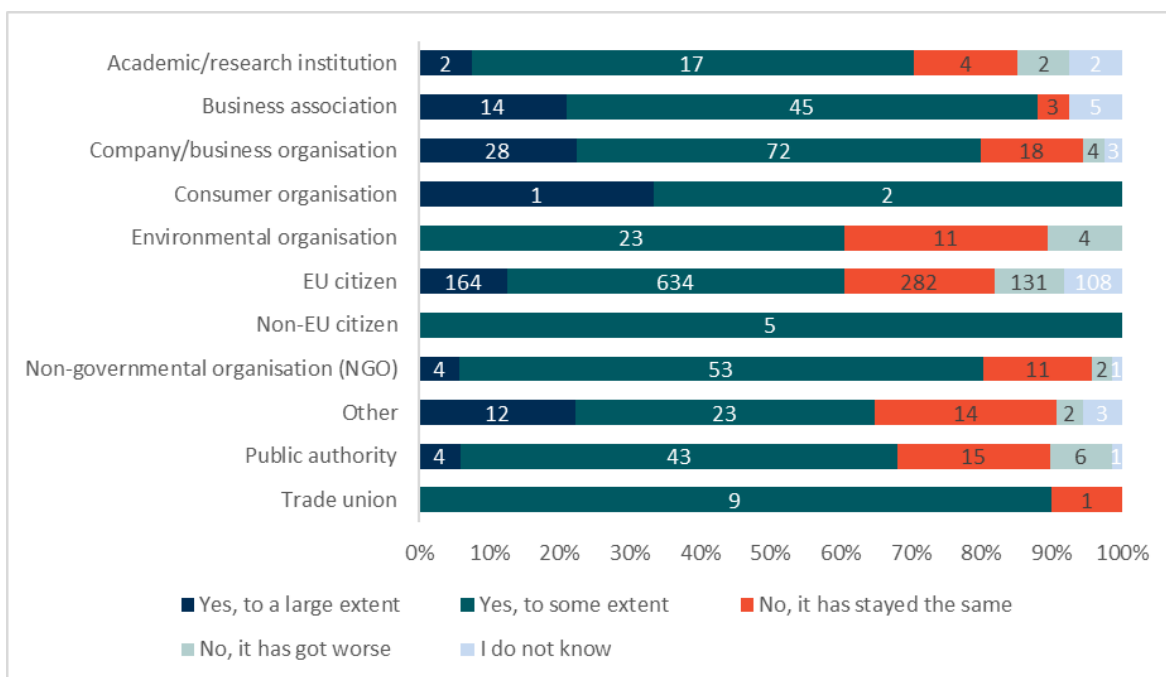


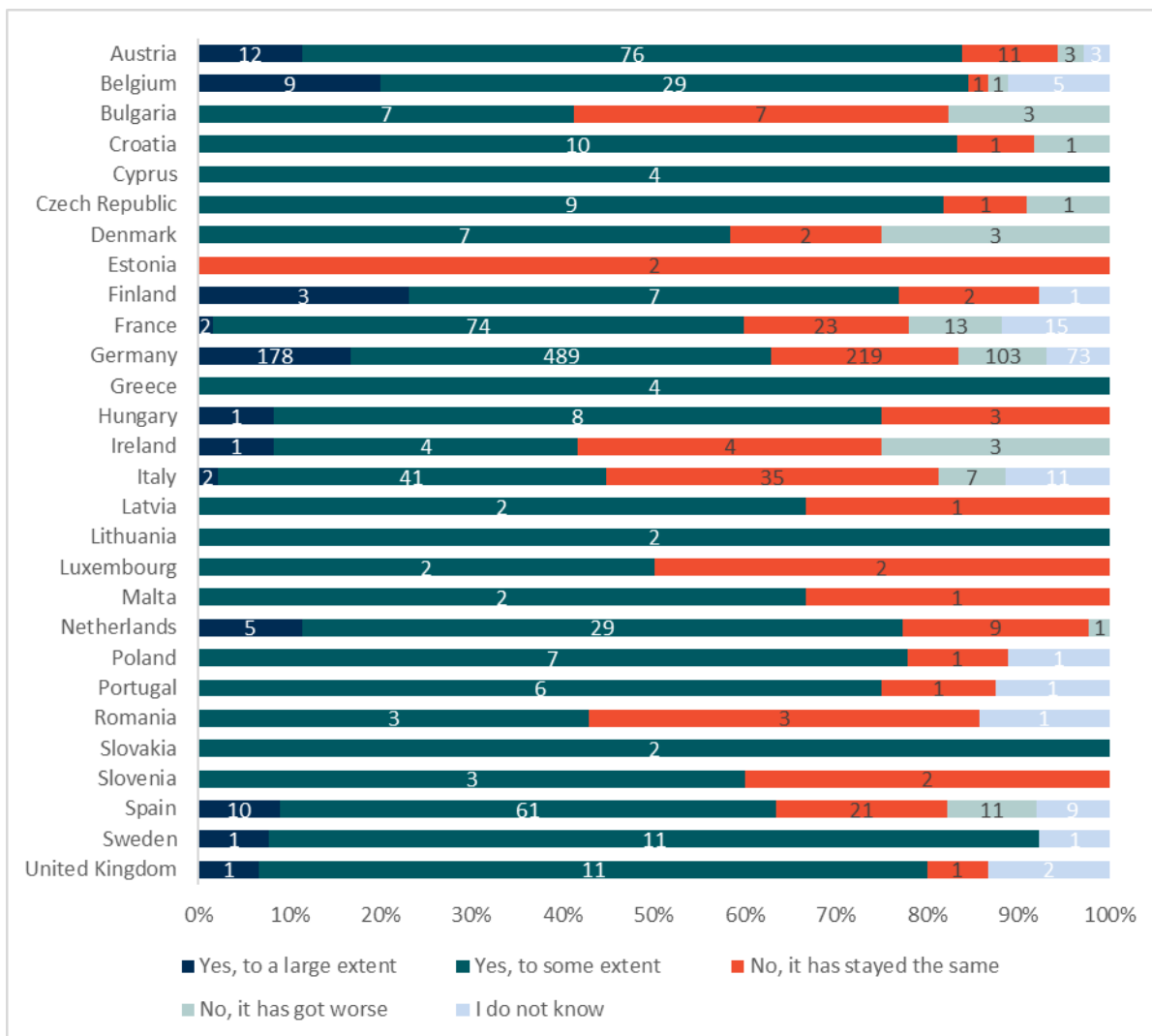
Figure E.5-16 shows that for all the stakeholders, the majority responded that the quality of the surface and groundwater in their country has improved to some extent since the introduction of the Water Framework Directive. The stakeholders that mostly answered that the quality of surface and groundwater in their country has improved to a large extent since the introduction of the Water Framework Directive are consumer organisations, business organisations, “other” organisations and business associations.

Figure E.5-16 Views from specific categories of stakeholders on improvement of surface and groundwater



A comparison of results by Member States was also undertaken to identify regional patterns. Estonia is the only Member State that answered that the quality of surface and groundwater in their country has stayed the same since the introduction of the Water Framework Directive. However, there were only two responses from Estonia, so these views cannot be considered representative.

Figure E.5-17 Views from MS on improvement of surface and groundwater



Question 8 - Which of the following do you consider to be challenges to achieving good qualitative and/or quantitative status of surface/groundwater?

Table E.5-7 below shows the level of knowledge of respondents regarding quantitative challenges to achieving good status of surface/groundwater by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.5-7 Level of knowledge of respondents regarding quantitative challenges to achieving good status of surface/groundwater

	% Know	% Don't know	Total number of respondents
Growing demand for drinking water / increasing population	99%	1%	1,764
Growing demand for water in energy production, industry and agriculture	99%	1%	1,763
Growing demand for water in industrial activities	96%	4%	1,755
Growing demand for water for irrigation in agriculture	99%	1%	1,758
Intensified droughts (leading to decrease in water availability) resulting from climate change	99%	1%	1,758

The table below presents the responses received with regards to the main challenges to achieving good qualitative and quantitative status of surface and groundwater.

With regard to quantitative status, the main obstacle identified is the increasing frequency and importance of droughts, linking to the effects from climate change. This is followed by effects of competing uses of water from energy, industry and agriculture.

Table E.5-8 Overview of challenges to achieving good status - quantitative issues

	1 (Not an obstacle)	2 (Slight obstacle)	3 (Moderate obstacle)	4 (Major obstacle)	5 (Very significant obstacle)	Total
Growing demand for drinking water / increasing population	255	579	459	299	146	1,738
Growing demand for water in energy production, industry and agriculture	121	243	415	508	460	1,747
Growing demand for water in industrial activities	115	305	542	461	257	1,680
Growing demand for water for irrigation in agriculture	110	270	396	497	460	1,733
Intensified droughts (leading to decrease in water availability) resulting from climate change	55	168	347	508	657	1,735

Table E.5-9 below shows the level of knowledge of respondents regarding pollution related challenged to achieving good status of surface/groundwater by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.5-9 Level of knowledge of respondents regarding pollution related challenges to achieving a good status of surface/groundwater

	% Know	% Don't know	Total number of respondents
Inadequate regulation of pollution emissions	95%	5%	1,745
Emerging contaminants (e.g. microplastics, pharmaceuticals)	95%	5%	1,487
(a) microplastics	95%	5%	1,741
(b) pharmaceuticals	97%	3%	1,741
(c) other emerging pollutants	81%	19%	1,698
Persistent pollution by organic chemicals now banned in the EU	90%	10%	1,748
Heavy-metal pollution from any source, including historical mining	96%	4%	1,756
Nutrients from urban and industrial waste water treatment plant effluents	98%	2%	1,756
Pollution of water from use of pesticides in agriculture	99%	1%	1,764

With regard to pollution issues, the most important challenges identified are linked to pollution from agriculture and emerging contaminants (in particular microplastics and pharmaceuticals).

Table E.5-10 Overview of challenges to achieving good status - pollution issues

	1 (Not an obstacle)	2 (Slight obstacle)	3 (Moderate obstacle)	4 (Major obstacle)	5 (Very significant obstacle)	Total
Inadequate regulation of pollution emissions	71	234	335	432	580	1,652
Emerging contaminants (e.g. microplastics, pharmaceuticals)	4	43	186	404	775	1,412
(a) microplastics	14	100	230	458	847	1,649
(b) pharmaceuticals	12	69	265	499	838	1,683
(c) other emerging pollutants	13	75	246	465	575	1,374
Persistent pollution by organic chemicals now banned in the EU	34	255	417	491	368	1,565
Heavy-metal pollution from any source, including historical mining	21	195	467	425	582	1,690
Nutrients from urban and industrial waste water treatment plant effluents	25	338	534	425	404	1,726
Pollution of water from use of pesticides in agriculture	122	209	179	372	861	1,743

Table E.5-11 below shows the level of knowledge of respondents regarding biodiversity related challenges to achieving good status of surface/groundwater by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don't know”.

Table E.5-11 Level of knowledge of respondents regarding biodiversity related challenges to achieving good status of surface/groundwater

	% Know	% Don't know	Total number of respondents
Negative impact on aquatic ecosystems	91%	9%	1,746
Negative impact on terrestrial ecosystems that are water-dependent	90%	10%	1,740

With regard to biodiversity the main challenge identified is due to the negative impact of aquatic ecosystems.

Table E.5-1 Overview of challenges to achieving good status - biodiversity

	1 (Not an obstacle)	2 (Slight obstacle)	3 (Moderate obstacle)	4 (Major obstacle)	5 (Very significant obstacle)	Do not know / No opinion	Total
Negative impact on aquatic ecosystems	66	166	276	381	701	156	1,590
Negative impact on terrestrial ecosystems that are water-dependent	81	182	315	427	567	168	1,572

Table E.5-2 below shows the level of knowledge of respondents regarding infrastructure related challenges to achieving good status of surface/groundwater by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don't know”.

Table E.5-2 Level of knowledge of respondents regarding infrastructure related challenges to achieving good status of surface/groundwater

	% Know	% Don't know	Total number of respondents
Physical changes to water bodies (e.g. river straightening, dam construction, flood protection, mining)	99%	1%	1,755
Sewage system under-capacity (leading to overflow)	96%	4%	1,755
Inadequate or limited reservoir storage (irrigation, energy generation, etc.)	91%	9%	1,734
Leaking drinking-water supply networks	94%	6%	1,759

With regard to infrastructure, the main challenge identified is physical changes to water bodies.

Table E.5-3 Overview of challenges to achieving good status - infrastructure

	1 (Not an obstacle)	2 (Slight obstacle)	3 (Moderate obstacle)	4 (Major obstacle)	5 (Very significant obstacle)	Total
Physical changes to water bodies (e.g. river straightening, dam construction, flood protection, mining)	68	196	392	426	652	1,734
Sewage system under-capacity (leading to overflow)	88	344	578	439	239	1,688
Inadequate or limited reservoir storage (irrigation, energy generation, etc.)	117	369	558	344	184	1,572
Leaking drinking-water supply networks	220	443	502	315	168	1,648

Table E.5-4 below shows the level of knowledge of respondents regarding abstracting related challenges to achieving good status of surface/groundwater by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.5-4 Level of knowledge of respondents regarding abstracting related challenges to achieving good status of surface/groundwater

	% Know	% Don't know	Total number of respondents
Illegal or unregulated abstraction	94%	6%	1,757
Regulated but unsustainable extraction rates	95%	5%	1,755
Low abstraction fees (encouraging wastefulness and/or failure to collect/reuse water)	96%	4%	1,754

With regard to abstraction, the main challenge identified is regulated but unsustainable extraction rates.

Table E.5-5 Overview of challenges to achieving good status - abstraction

	1 (Not an obstacle)	2 (Slight obstacle)	3 (Moderate obstacle)	4 (Major obstacle)	5 (Very significant obstacle)	Total
Illegal or unregulated abstraction	196	487	383	291	293	1650
Regulated but unsustainable extraction rates	128	332	415	416	373	1664
Low abstraction fees (encouraging wastefulness and/or failure to collect/reuse water)	251	299	463	367	301	1681

Respondents were asked if they knew of any other challenges, in addition to those in the tables above. Their responses are summarised in the points below:

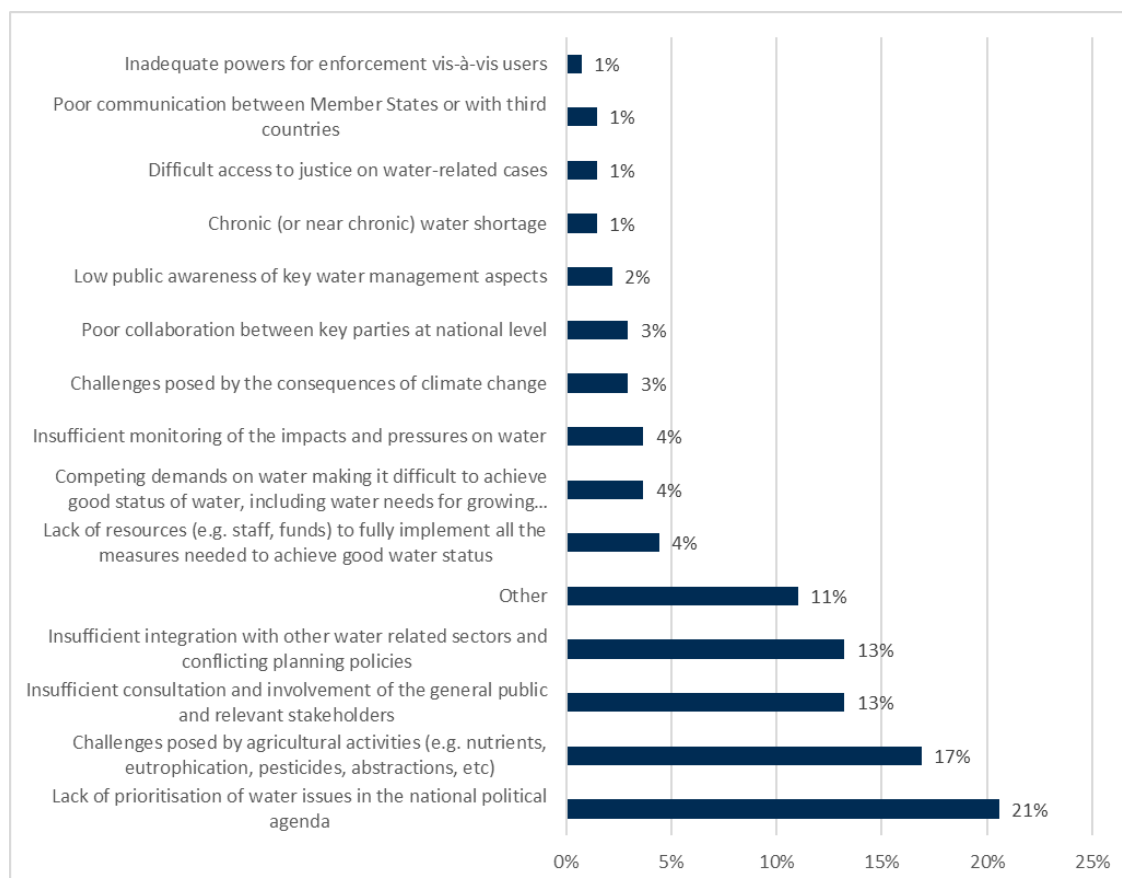
- Lack of coherence of public policies.
- Water wasted from recreational purposes.
- Corruption of politicians.

- Sedimentation of reservoirs.
- Lack of enforcement of the polluter pays principle.
- Political influence to maintain ecologically harmful impoundments that are maintained exclusively or mainly for aesthetic reasons.
- Hydromorphological changes to water bodies due to agricultural activities (e.g. water storage, abstraction, drainage, ditching).
- Lack of innovation and introduction of modern technologies for water treatment.
- Poor management and promotion of inefficient small hydropower by continuing subsidies.
- The lack of a water pricing policy with cost recovery of water services to ensure the adequate contribution of water users to meet environmental objectives and encourage the rational use of water resources.
- Bathing in the dams.
- Intense mass animal farming.
- Hydrological and morphological changes of water bodies due to dam construction.
- Fracking.
- Pollutants by traffic routes such as roads and rail networks, private property improper use of pesticides and fertilizers.

Question 9 - What are the key challenges to water management in your country or region?

A total of 136 respondents provided a response to this question. As can be seen in the figure below, the majority (21%) considered the lack of prioritisation of water issues in the national political agenda to be the biggest challenge, followed by challenges posed by agricultural activities (17%).

Figure E.5-18 Feedback on the key challenges to water management in respondents’ country or region



The respondents that answered “Other” were requested to provide details. Their responses are summarised by stakeholder category in the points below:

Academic/research institutions:

- Failure to consider the interactions between terrestrial and aquatic systems

Industry/economic organisations/trade unions:

- Poor economic and cost-benefit analysis
- Disproportionate and unclarities of the provisions of the EU-WFD
- Inadequate practicability of the target exemption regime of the EU-WFD
- Lack of incentive and obligation for stakeholders to implement measures
- WFD timescales for achievement of ‘good’ were from the outset (2000) too ambitious (being 2015 to 2027) given the initial state of the waters, the response time to measures, the technical feasibility and cost and in some cases limitations of fundamental science linking ‘problem’ to ‘cause’ and then between ‘effect’ and ‘measure’
- Insufficient research and poor scientific understanding have led to inadequate results and waste money

NGOs and environmental organisations

- Insufficient representative monitoring stations for groundwater monitoring
- One-sided focus on nutrient inputs from agriculture
- Lack of funds being allocated for sustainable water management measures across Europe, indicating lack of political will
- “Politicisation” of water management at local and regional level
- Lack of proper RBMPs and FRMPs, not using the full potential of green and blue infrastructure and natural water retention measures

Public authorities:

- Failure to consider the watershed of a river as a management unit of the water cycle
- Lack of reservoirs to allow water to accumulate during flood periods

Citizens:

- Lack of political will by my government to deal with the main pressures on freshwater ecosystems, demonstrated also by the use of exemption and funds not being allocated for water management measures
- Priority of economic interests against environmental and water protection
- One-sided focus on agriculture
- Lack of adequate infrastructures which causes leak of drinking-water supply networks
- Privatisation of water sector

Question 10 - Water management includes planning, developing, and managing water resources, in terms of both water quantity and quality, across all water uses. How do you assess the overall water management in your country or region?

A total of 1,759 respondents provided an answer to this question, out of which 40 (2%) responded “I don’t know”.

These results present a stark contrast with the results of question 3 where 65% of respondents indicated that water was seen as not being managed sustainably. It is challenging to reconcile these results with the results to the earlier question. One possible interpretation would be that respondents here are providing feedback on the framework underpinning overall water management rather than its effectiveness.

Very good	Moderate	Poor	Total
470	971	278	1,719
27%	56%	16%	2%

The figures below present the results of this question by category of stakeholders.

Figure E.5-19 shows that a greater proportion of non-professional stakeholders did not know about the overall water management in their country or region, compared to professional stakeholders. Figure E.5-19 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-20 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-19 Views from professional and non-professional stakeholders on the assessment of overall water management

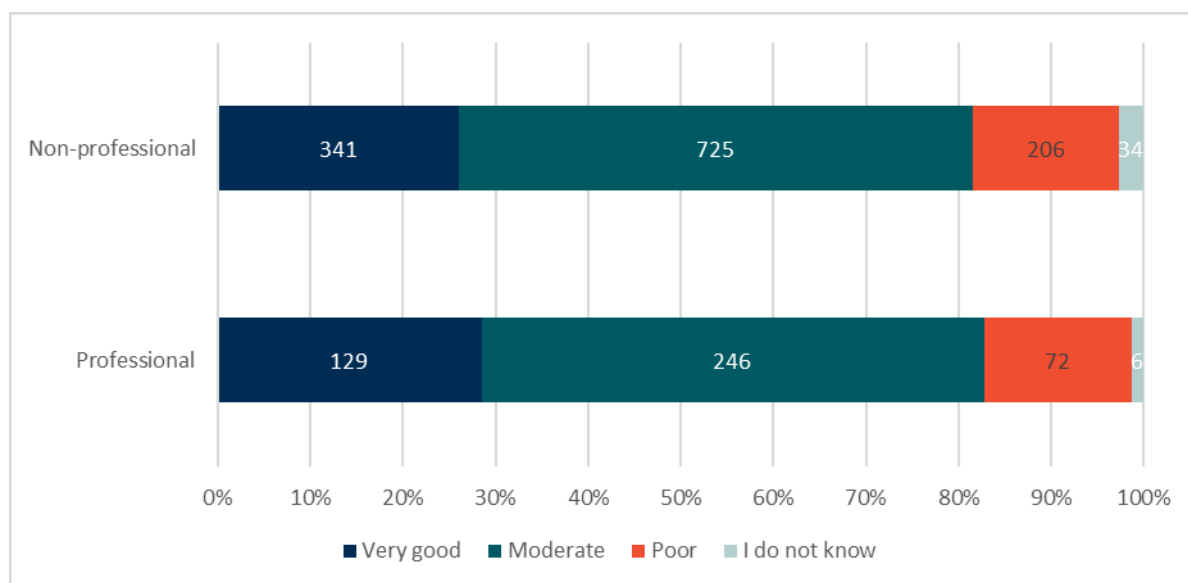
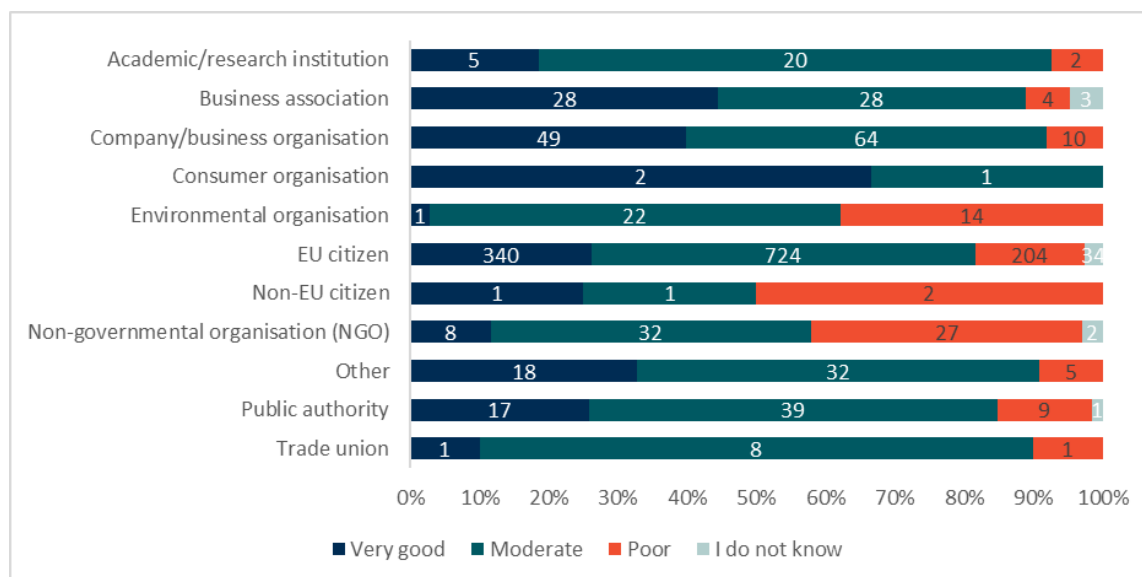


Figure E.5-20 shows that majority of non-EU citizens assess the overall management in their country/region as being poor. However, there are only four responses from non-EU citizens, therefore their responses cannot be considered as representative. Similarly, majority of consumer organisations assess the overall management in their country/region as very good, but as there are only three responses from consumer organisations their response cannot be considered as representative.

Figure E.5-20 Views from specific categories of stakeholders on the assessment of overall water management



Question 11 - What actions do you think have had the most impact on improving water quality and efficiency of water use since the Water Framework Directive was transposed into national legislation in 2003?

The table below presents the responses on which actions respondents believe have had the most impact on improving water quality and efficiency of water use since the Water Framework Directive was transposed into national legislation in 2003.

Table E.5-6 below shows the level of knowledge of respondents regarding each action by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.5-6 Level of knowledge of respondents regarding actions and their impact on improving water quality and efficiency of water use since the Water Framework Directive was transposed into national legislation in 2003

Action	% Know	% Don't know	Total number of respondents
Stricter regulation of environmental pollution	93%	7%	1,806
Stricter regulation to minimise the use of hazardous chemicals in industry, etc.	91%	9%	1,768
International co-operation to tackle pollution	94%	6%	1,732
Changing approaches to the use of water for energy generation/conversion (e.g. hydropower, water cooling systems, etc.)	97%	3%	1,699
More efficient waste water treatment technologies	92%	8%	1,772
Better technology in households/appliances to reduce water consumption (e.g. dual-flush toilets, shower-head flow controllers, eco-friendly washing machines)	96%	4%	1,825
Tariffs for water use (e.g. based on industrial, agricultural and domestic water metering)	96%	4%	1,725
More publicly available information on water quality, water availability and water allocation	96%	4%	1,799
More sustainable use of water in agriculture	94%	6%	1,760

	% Know	% Don't know	Total number of respondents
Changes in other agricultural practices that might affect water quality and its availability (e.g. reduced use of pesticides, organic farming, crop rotation, etc.)	93%	7%	1,701
Urban planning that "makes space for water"	90%	10%	1,696
Better integration of water protection and use of water for transport	97%	3%	1,622
Academic research and research and innovation activities related to improving efficiency in water use and addressing possible sources of contamination	95%	5%	1,717

According to the responses received, respondent believe that more efficient waste water treatment technologies have had the most impact on improving water quality and efficiency.

Table E.5-7 Overview of actions and their impacts on water quality

	No improvement	Slight improvement	Moderate improvement	Major improvement	Very significant improvement	Total
Stricter regulation of environmental pollution	190	131	391	526	433	1,671
Stricter regulation to minimise the use of hazardous chemicals in industry, etc.	198	136	382	525	375	1,616
International co-operation to tackle pollution	204	279	451	488	210	1,632
Changing approaches to the use of water for energy generation/conversion (e.g. hydropower, water cooling systems, etc.)	205	283	592	411	165	1,656
More efficient waste water treatment technologies	201	83	325	486	530	1,625
Better technology in households/appliances to reduce water consumption (e.g. dual-flush toilets, shower-head flow controllers, eco-friendly washing machines)	193	173	570	508	305	1,749
Tariffs for water use (e.g. based on industrial, agricultural and domestic water metering)	204	430	480	400	149	1,663
More publicly available information on water quality, water availability and water allocation	191	312	615	422	189	1,729
More sustainable use of water in agriculture	203	397	597	260	197	1,654
Changes in other agricultural practices that might affect water quality and its availability (e.g. reduced use of pesticides, organic farming, crop rotation, etc.)	375	511	318	231	150	1,585
Urban planning that "makes space for water"	353	550	375	181	75	1,534
Better integration of water protection and use of water for transport	229	369	580	265	134	1,577

	No improvement	Slight improvement	Moderate improvement	Major improvement	Very significant improvement	Total
Academic research and research and innovation activities related to improving efficiency in water use and addressing possible sources of contamination	221	147	542	462	258	1,630

Respondents were asked if there were any other actions, that have had the most impact on improving water quality and efficiency of water use since the Water Framework Directive was transposed into national legislation in 2003. Their responses are outlined below:

- Integrated river basin management.
- Extension of state advisory and information services for farmers.
- Cooperation agreements between water companies and farmers.
- Increased accountability.
- Waste water discharge regulations.

Question 12 - Do you consider that the way of conveying information on water management to the public has been sufficiently adapted to the demands of the digital era, both at national and/or EU level?

A total of 1,768 respondents provided a response to this question, out of which 359 (20%) responded “I don’t know”. Of the respondents that answered “I don’t know”, a moderate to large proportion also reported low levels of familiarity with the Directives: 29% were unaware of the WFD, 49% were unaware of the GD, 58% were unaware of the EQSD and 61% were unaware of the FD. This indicates consistency in the responses provided in the survey because those respondents that claim to have a low familiarity with the Directives would also be expected to have low familiarity of how information on water management in conveyed to the public.

Of the respondents that knew the answer to this question (80%), the majority (45%) indicated that they do not consider the way of conveying information on water management to the public has been sufficiently adapted to the demands of the digital era, both at national and/or EU level.

Yes, for both EU and my country/region	Yes, but only at EU level	Yes, but only for my country/region	No	Total
466	141	168	634	1,409
33%	10%	12%	45%	100%

Figure E.5-21 Views from professional and non-professional stakeholders on the suitability of the way of conveying information on water management - view by respondent category

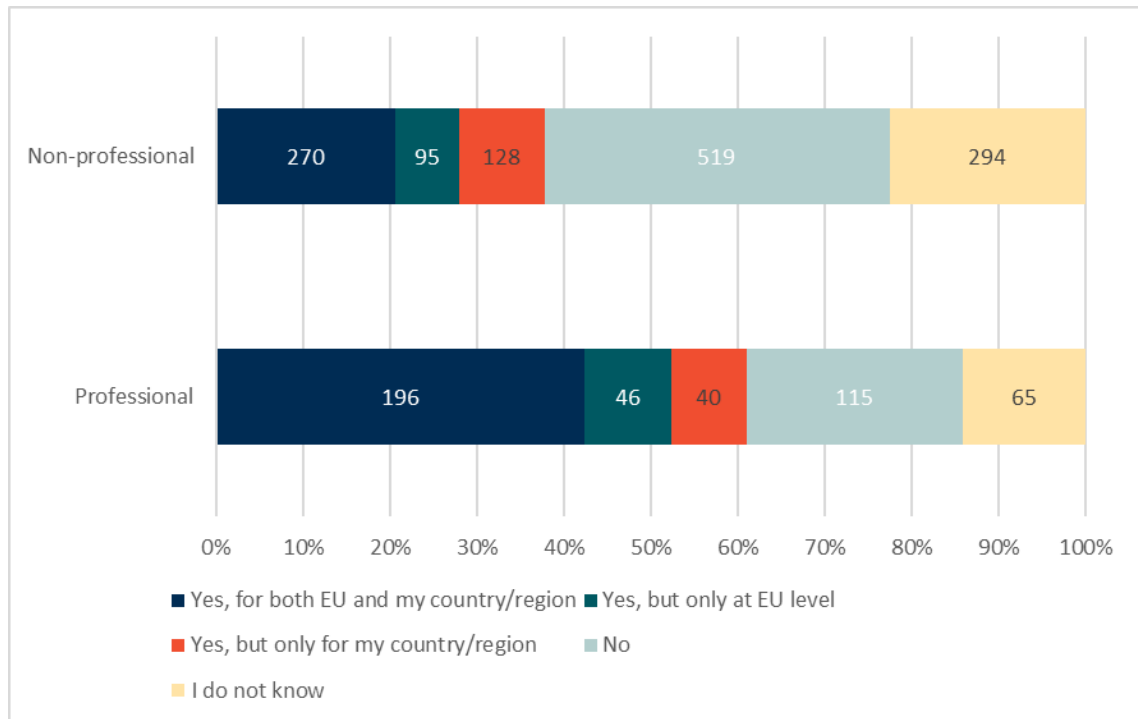


Figure E.5-22 shows that the majority of respondents from NGOs and business associations consider that the way of conveying information on water management to the public has been sufficiently adapted to the demands of the digital era, for both the EU and their country/region.

Figure E.5-22 Views from specific categories of stakeholders on the suitability of the way of conveying information on water management - view by respondent category

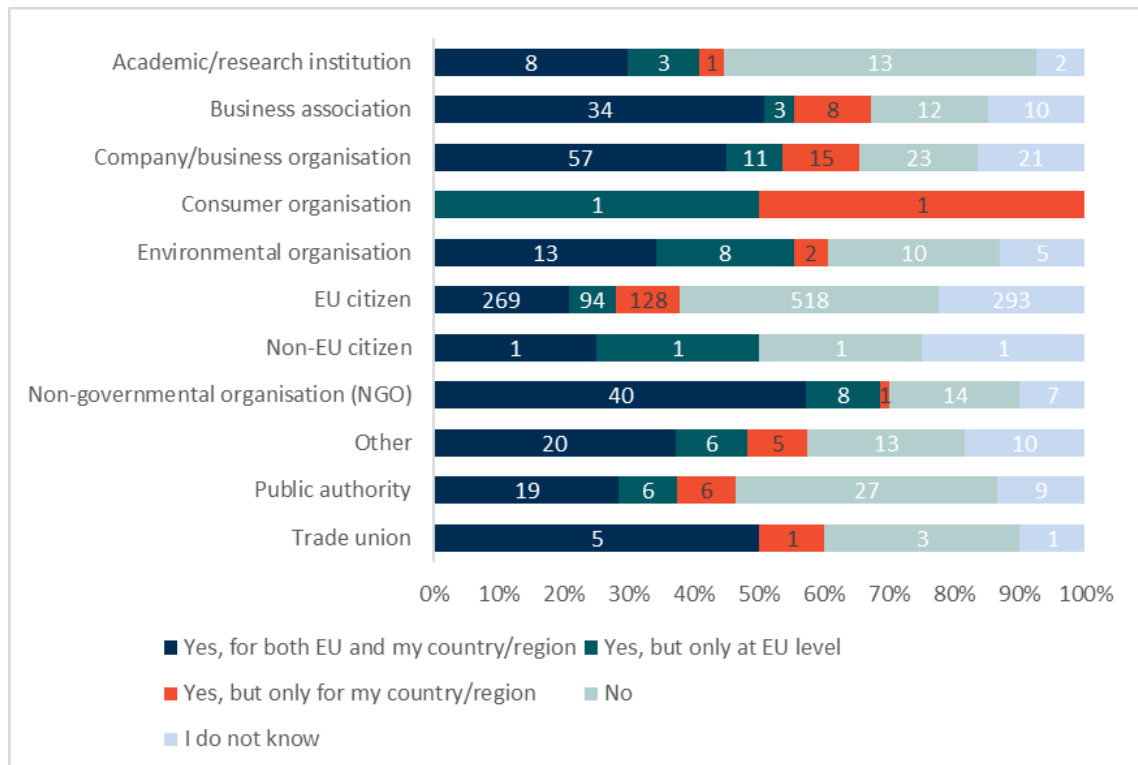
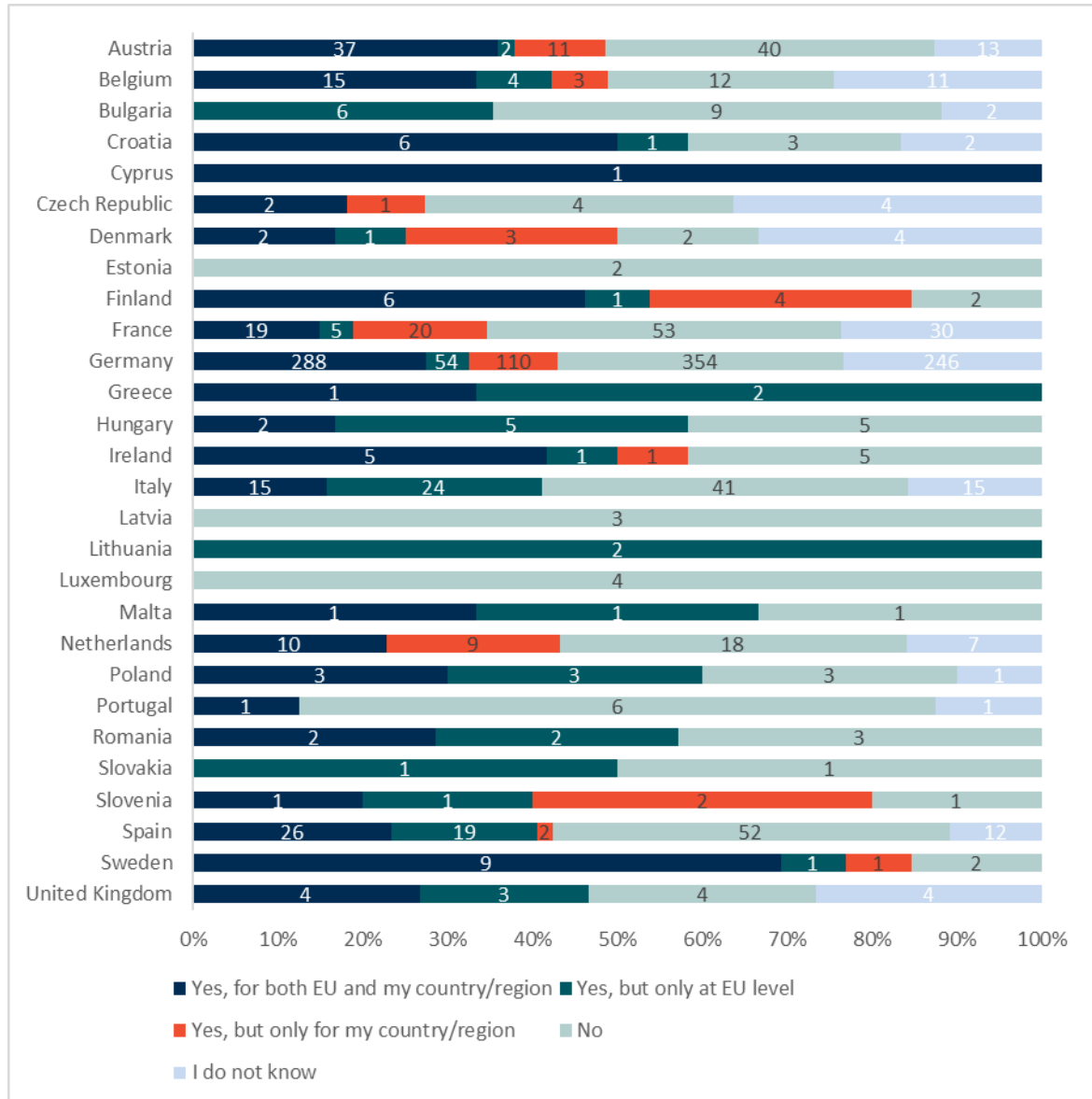


Figure E.5-23 presents the results by Member State. Estonia, Latvia, Luxembourg were the only for which all respondents answered that they don't consider the way of conveying information on water management to the public has been sufficiently adapted to the demands of the digital era, both at national and/or EU level. However, the number of responses from these countries are very low so they cannot be considered representative. Similarly, Cyprus is the only Member State for which all responses answered that the way of conveying information on water management to the public has been sufficiently adapted to the demands of the digital era, for both the EU and their country/region. However, as there is only one response from Cyprus, this cannot be considered representative.

Figure E.5-23 Suitability of the way of conveying information on water management - view by MS



Question 13 - Are you concerned about the potential effects of climate change on water quality and water availability?

A total of 1,780 respondents provided responses for this question, out of which 21 (1%) responded “I don't know”. Of the respondents that knew the answer to this question (99%), majority (62%) indicated

that they are concerned about both the potential effects of climate change on water quality and water availability.

Yes, for both	Yes, mainly about water availability	Yes, mainly about water quality	No	Total
1,100	425	89	145	1,780
62%	24%	5%	8%	1%

The figures below present the results of this question by category of stakeholders. Figure E.5-24 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-25 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-24 Views from professional and non-professional stakeholders on concern on climate change

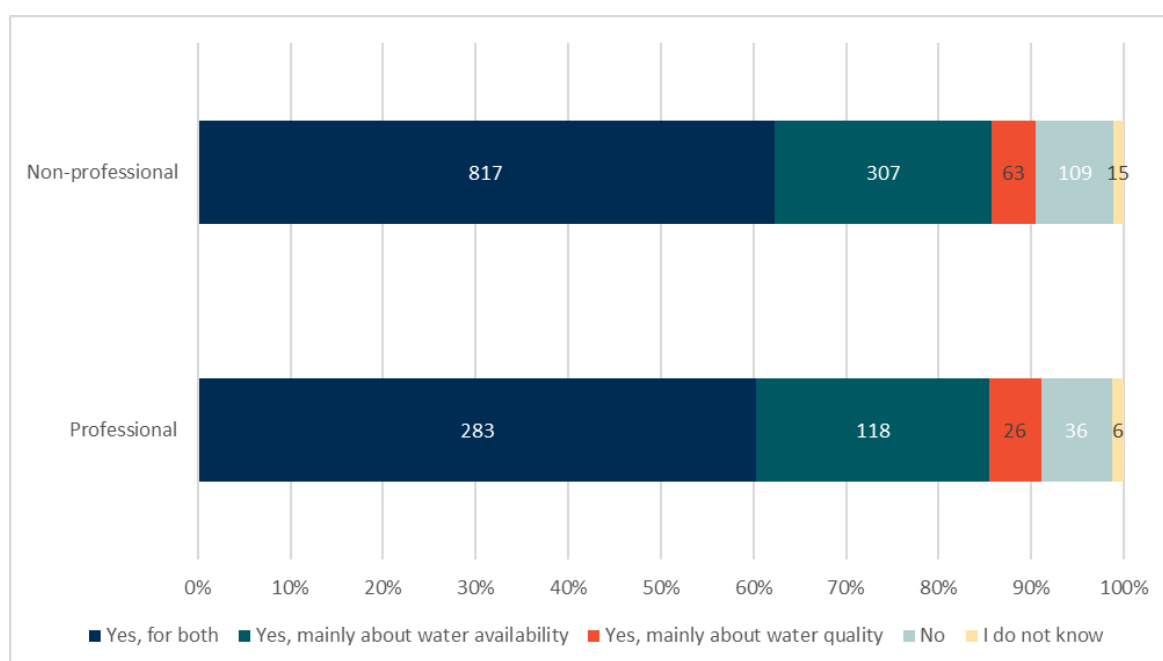
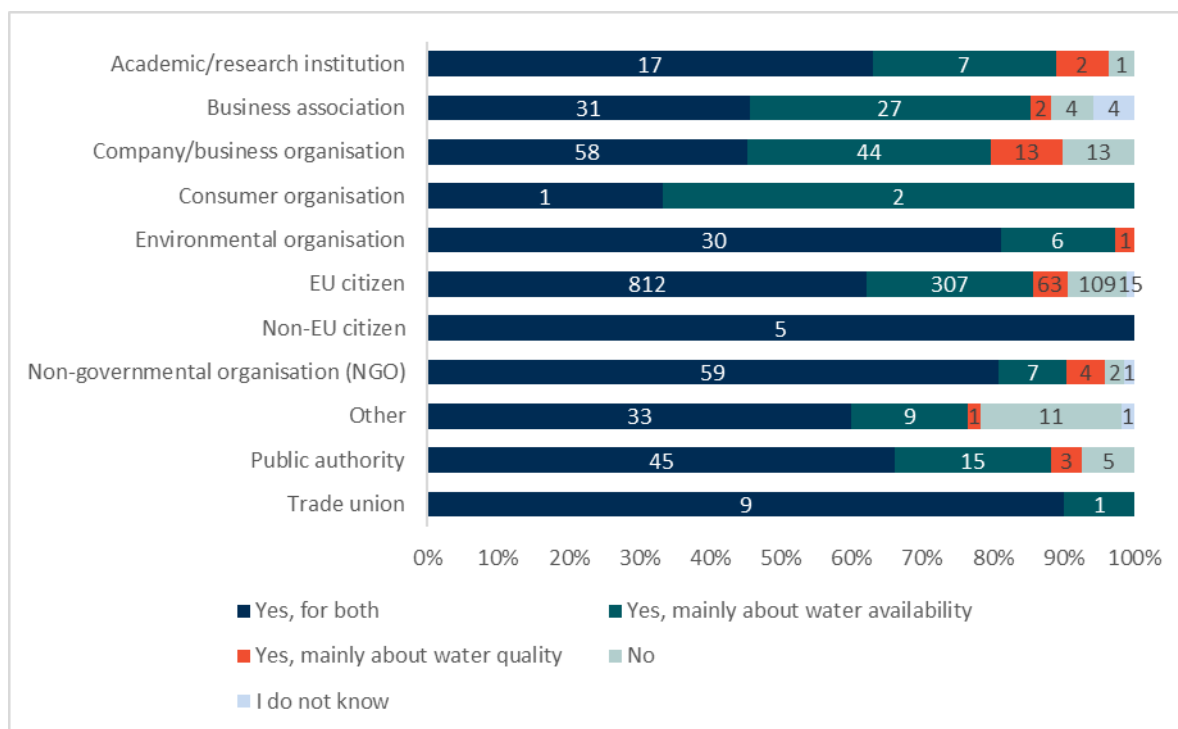


Figure E.5-25 shows that apart from consumer organisations, the majority of respondents from each category of stakeholders indicated that they are concerned about both the potential effects of climate change on water quality and water availability. Since there are only three responses in total from consumer organisations, their responses cannot be considered as being representative.

Figure E.5-25 Views from specific categories of stakeholders on concern on climate change



Question 14 - Do you consider that enough is being done to counteract the effects of climate change on water quality and availability?

A total of 1,781 respondents provided a response to this question, out of which 54 (3%) responded “I don’t know”. Of the respondents that knew the answer to this question (97%), the majority (57%) consider that enough is not being done to counteract the effects of climate change on water quality and availability. Of the respondents that consider that enough is not being done to counteract the effects of climate change, between nearly a quarter to a half reported low familiarity with the Directives: 22% were unaware of the WFD, 38% were unaware of the GD, 42% were unaware of the EQSD and 46% were unaware of the FD.

Yes, fully	Yes, mainly about water availability	Yes, mainly about water quality	To some extent	No	Total
86	31	66	557	987	1,727
5%	2%	4%	32%	57%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-26 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens).

Figure E.5-27 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-26 shows that a greater proportion of non-professional stakeholders think that enough is not being done to counteract the effects of climate change on water quality and availability compared to professional stakeholders.

Figure E.5-26 Views from professional and non-professional stakeholders on action on climate change

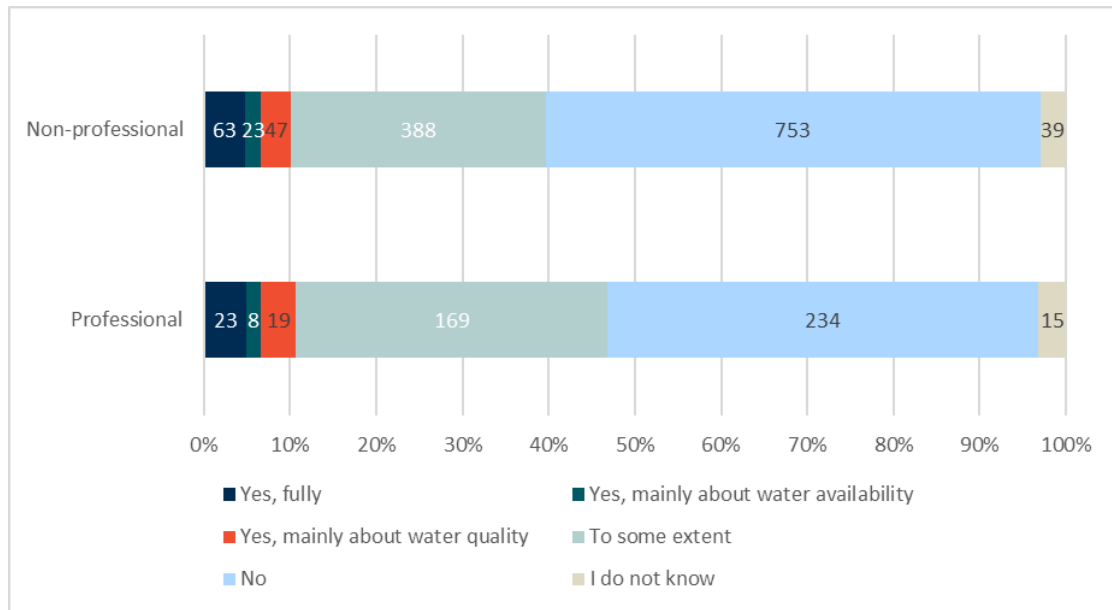
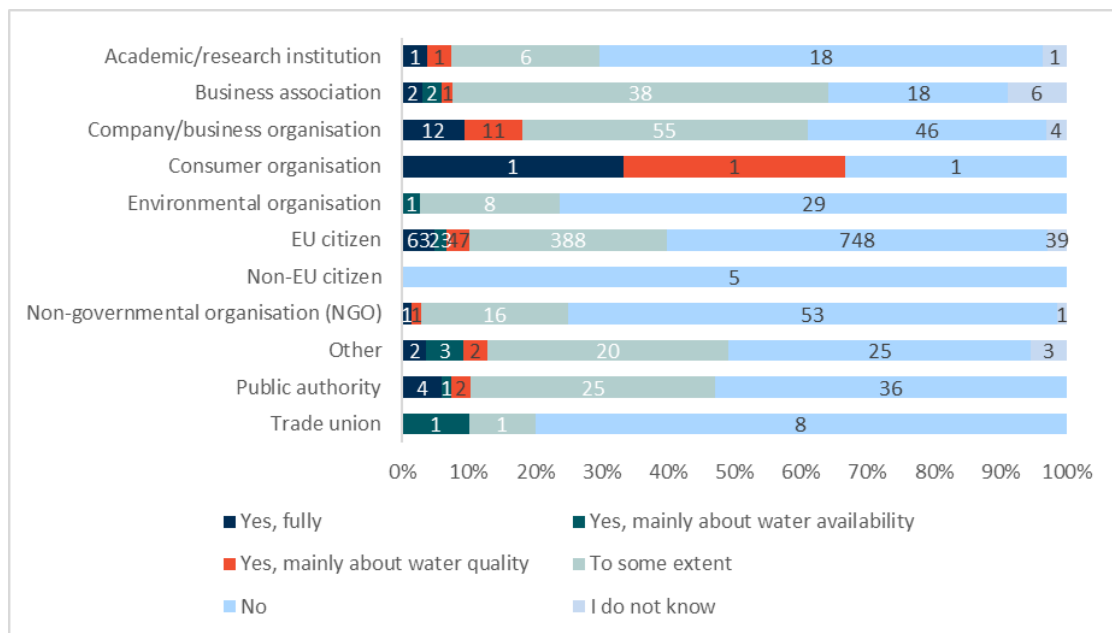


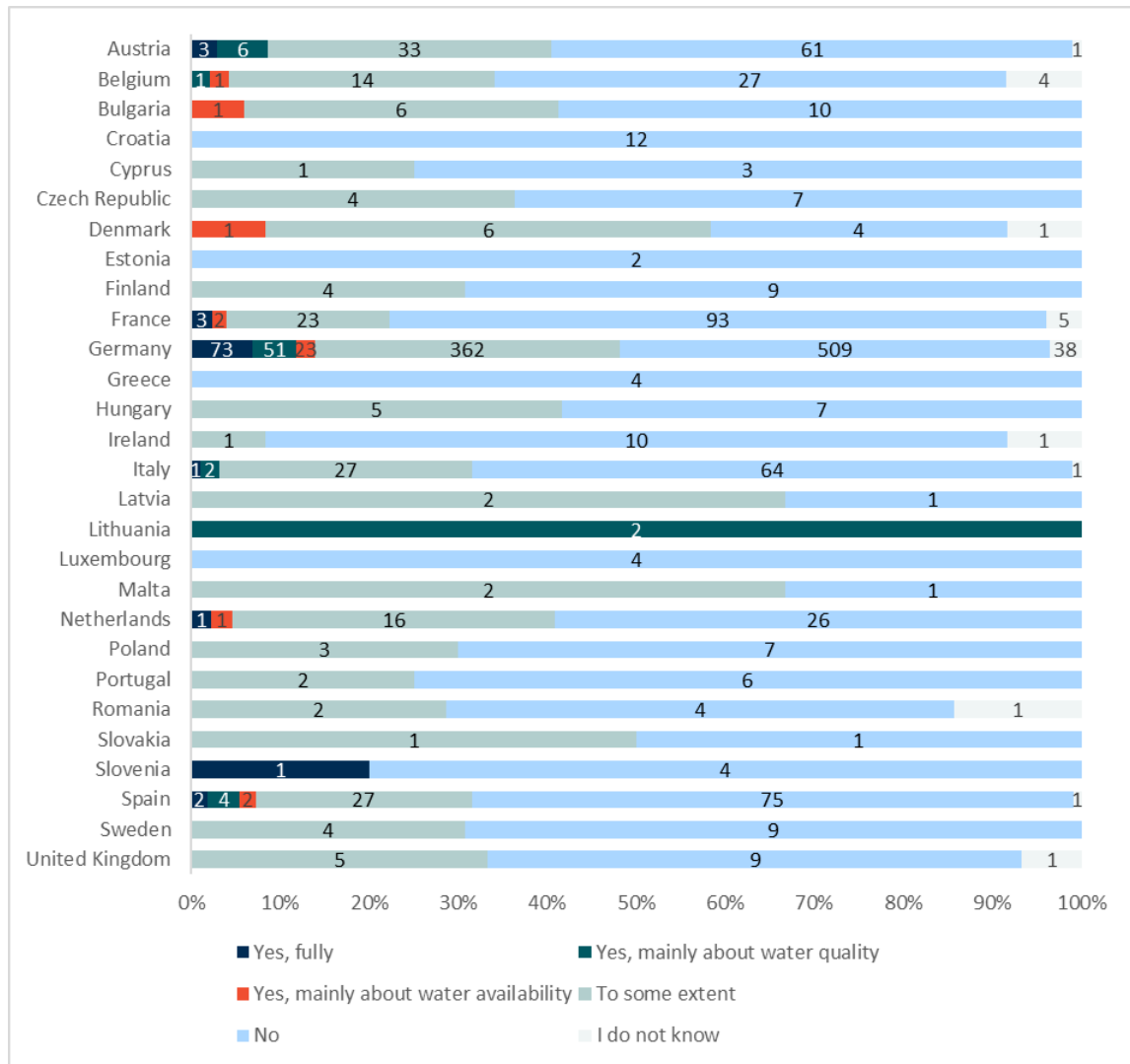
Figure E.5-27 shows that apart from business associations, business organisations and consumer organisations, majority of respondents from all stakeholder groups consider that enough is not being done to counteract the effects of climate change on water quality and availability.

Figure E.5-27 Views from professional and non-professional stakeholders on action on climate change



Comparison of responses by Member States was also undertaken in the figure below. Figure E.5-28 shows that apart from Denmark, Latvia, Lithuania, Malta and Slovakia, majority of respondents from all Member States consider that enough is not being done to counteract the effects of climate change on water quality and availability.

Figure E.5-28 Action on climate change - view by MS



5.5 Floods management

Question 15 - Do you think that flood risk is a problem that needs to be tackled in your country or region?

A total of 1,755 respondents provided a response to this question. The majority (73%) indicated that they believe flood risk to be a problem that needs to be tackled in their country or region.

Yes	No	Total
1,279	476	1,755

The figures below present the results of this question by category of stakeholders. Figure E.5-43 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure 5.30 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-43 shows that a greater proportion of professional stakeholders think flood risk is a problem that needs to be tackled in the country or region compared to non-professional stakeholders.

Figure E.5-29 Importance of flood risk - view by respondent category

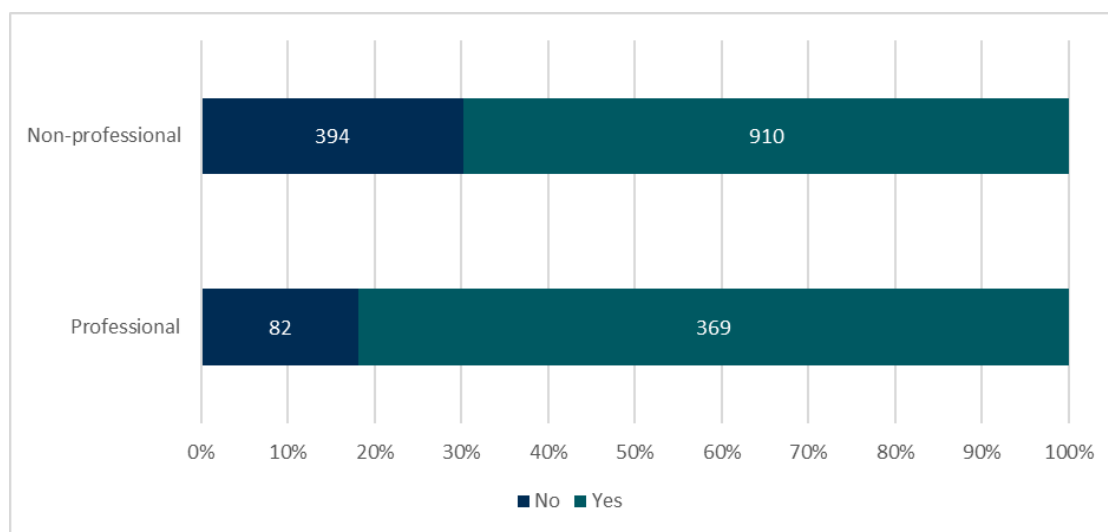


Figure 5.30 shows that apart from non-EU citizens, the majority of all stakeholders consider flood risk to be a problem that needs to be tackled in their country or region. As only four responses were received from non-EU citizens, their views cannot be considered as being representative.

Figure 5.30 Importance of flood risk - view by respondent category

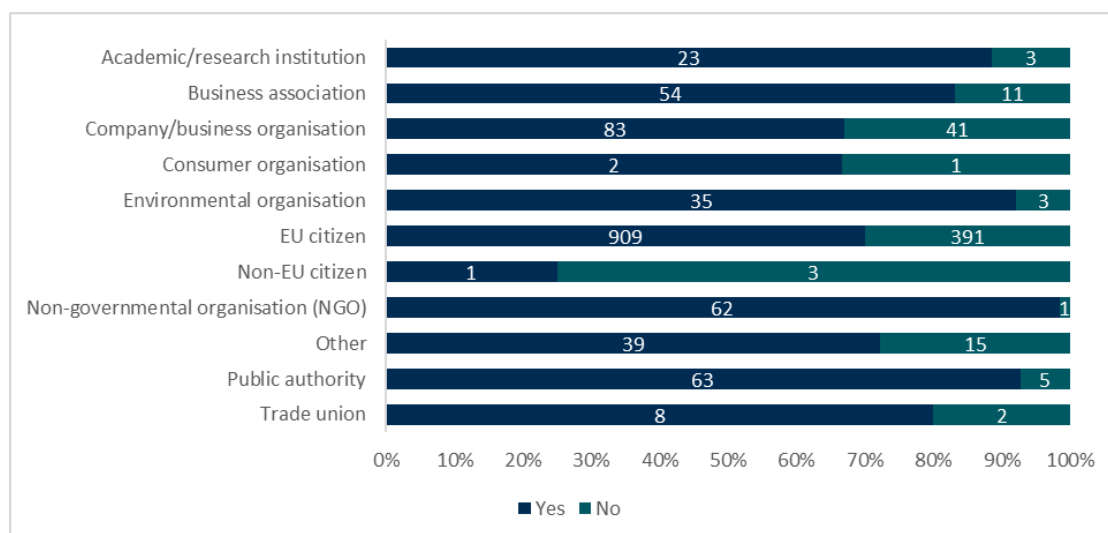
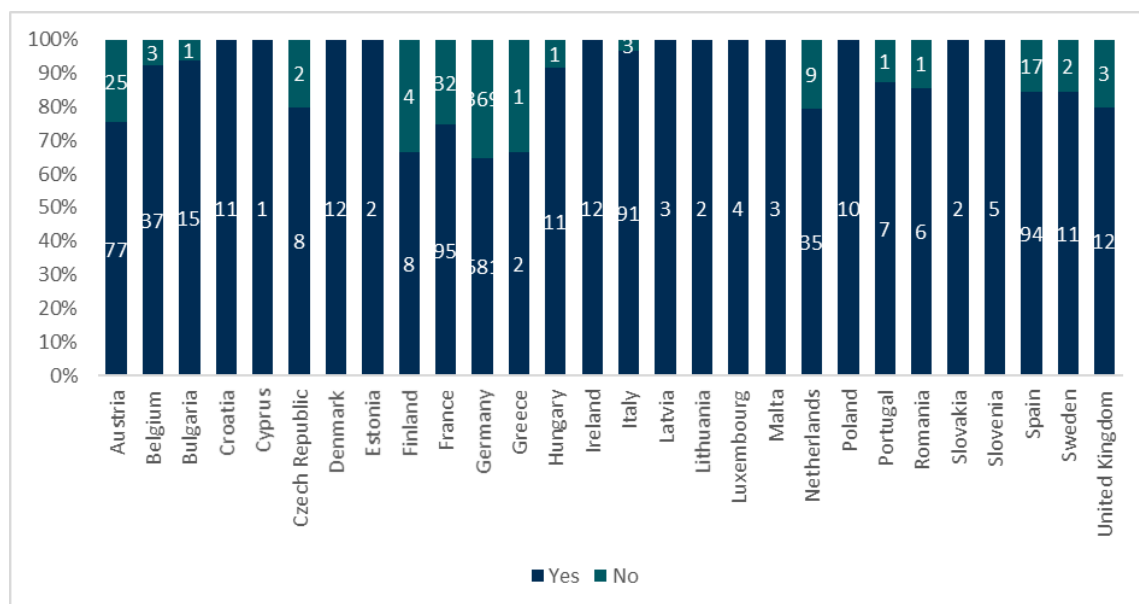


Figure E.5-31 presents the results by Member States. The majority of respondents from all Member States consider flood risk to be a problem that needs to be tackled in their country or region.

Figure E.5-31 Importance of flood risk - view by MS



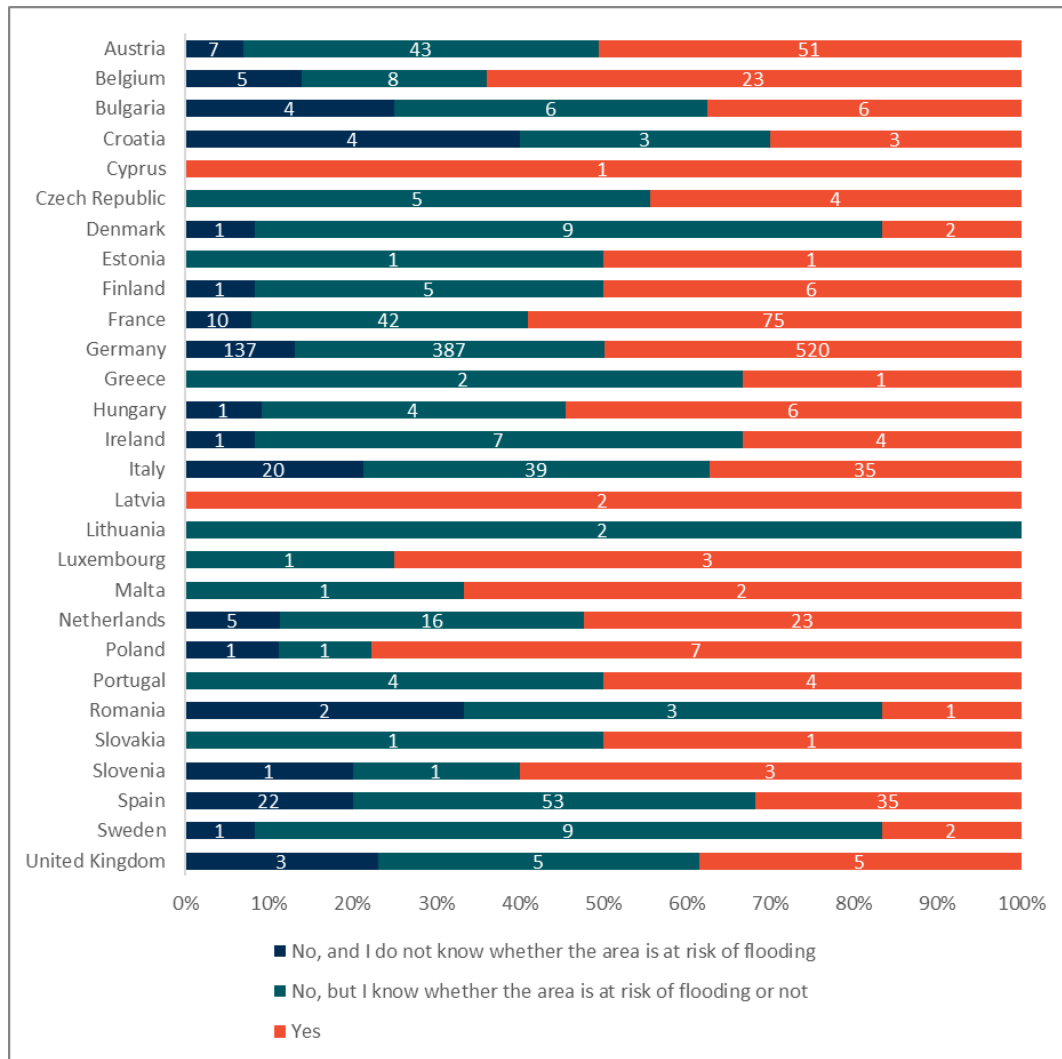
Question 16 - Have you been directly or indirectly informed (e.g. via the authorities, your friends or colleagues, the media, the internet etc.) of potential flood risk in your area and/or on how to prepare to reduce your exposure to flooding?

A total of 1,734 respondents provided a response to this question. The majority (49%) indicated that they have been directly or indirectly informed (e.g. via the authorities, your friends or colleagues, the media, the internet etc.) of potential flood risk in your area and/or on how to prepare to reduce your exposure to flooding

Yes	No, but I know whether the area is at risk of flooding or not	No, and I do not know whether the area is at risk of flooding	Total
842	666	226	1,734

Figure E.5-32 presents the results by Member State. The figure below shows that all respondents from Cyprus and Latvia responded that they have been directly or indirectly informed (e.g. via the authorities, your friends or colleagues, the media, the internet etc.) of potential flood risk in your area and/or on how to prepare to reduce your exposure to flooding. Similarly, all respondents from Lithuania responded that they have not been directly or indirectly informed (e.g. via the authorities, your friends or colleagues, the media, the internet etc.) of potential flood risk in your area and/or on how to prepare to reduce your exposure to flooding. However, very few responses were received from these Member States, and so their views cannot be considered as being representative.

Figure E.5-32 Information on flood risk - view by MS



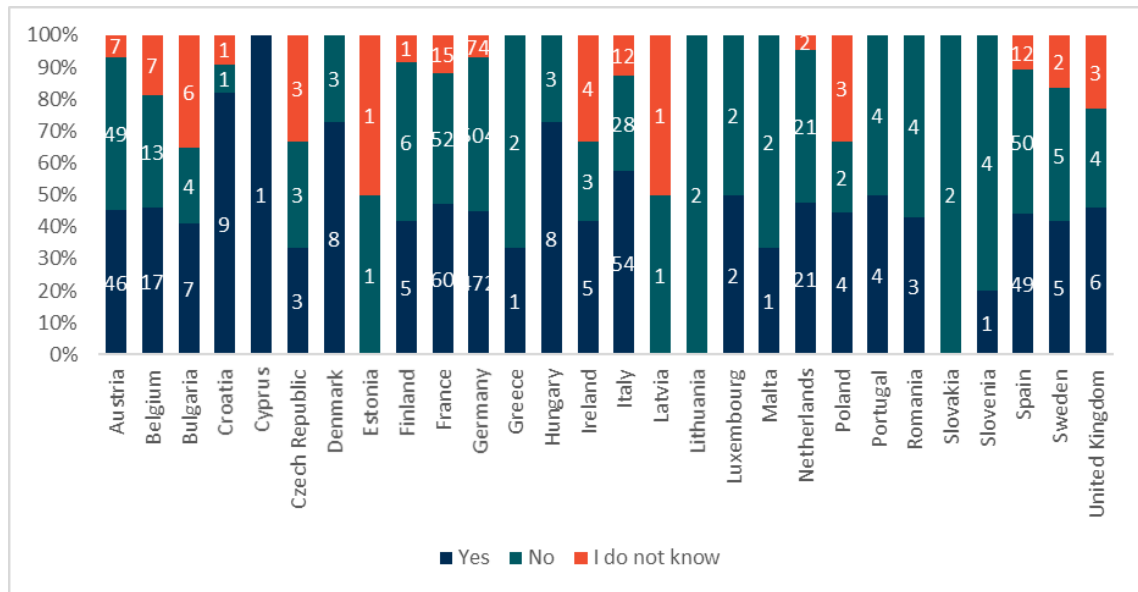
Question 17 - Do you think that the risk of flooding is higher in your area than it was a decade ago?

A total of 1,745 respondents provided a response to this question, out of which 154 (9%) responded “I don’t know”. Of the respondents that knew the answer to this question (91%), the majority (51%) think that the risk of flooding is higher in their area than it was a decade ago.

Yes	No	Total
805	786	1,591
51%	49%	100%

Figure E.5-33 presents the results by Member State. The figure shows that all respondents from Lithuania and Slovakia indicated that the risk of flooding is not higher in their area than it was a decade ago. However, very few responses were received from these countries, so their views cannot be considered as being representative.

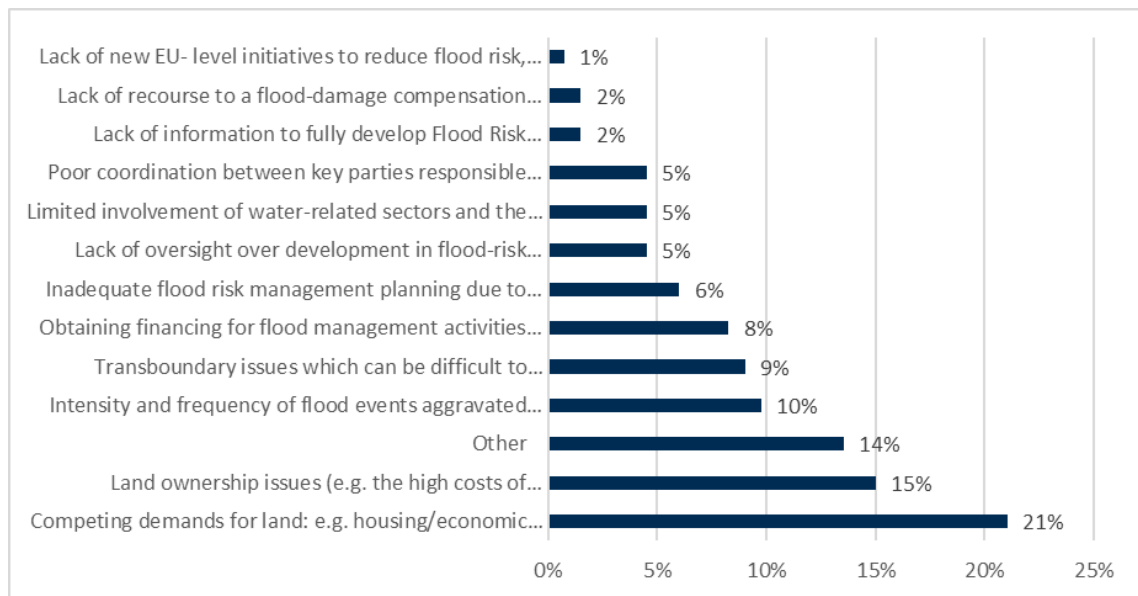
Figure E.5-33 Evolution of risk of flooding - view by MS



Question 18 - What are the key challenges to the effective management of floods in your area or in your country? Tick relevant challenges.

Figure E.5-34 presents the responses received with regards to the key challenges to the effective management of floods in the respondent’s area/country. The majority (21%) consider competing demands for land to the most serious challenge, followed by land ownership issues (15%) and “other” issues (14%).

Figure E.5-34 Feedback on key challenges to the effective management of floods



The respondents that answered “Lack of new EU-level initiatives” were requested to provide details. Their responses are summarised by stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The EU has not taken much care to put the implementation of Art.9 WFD into practice. The EU only watches when incentives are poorly implemented by Member States. The EU tolerates that polluters are subsidised by non-polluters
- Lack of cross-border management of watercourses

NGOs and environmental organisations:

- The EU has not taken much care to put the implementation of Art.9 WFD into practice. The EU only watches when incentives are poorly implemented by Member States. The EU tolerates that polluters are subsidised by non-polluters
- In Europe, there is a heavy reliance on unsustainable grey infrastructure development to manage flood risks and a low uptake of nature-based solutions providing natural water retention. Dedicated funding for the necessary (large-scale) river restoration and on measures ensuring synergies with Floods Directive and Habitats Directive, such as Natural Water Retention Measures, is lacking

Citizens:

- The cooperation between the neighbouring countries should be improved. International Commissions, etc. should be available for any large bodies of water in order to operate jointly preventive flood protection
- The EU has not taken much care to put the implementation of Art.9 WFD into practice. The EU only watches when incentives are poorly implemented by Member States. The EU tolerates that polluters are subsidised by non-polluters
- Implementation of achieving good status of water (inland or marine) and flood prevention should be achieved through a single framework directive which would provide funding to prevent / compensate for the damage (whether to fight against degradation of aquatic environments or against flooding)

The respondents that answered “Other” were requested to provide details. Their responses are summarised by stakeholder category in the points below:

Academic/research institutions:

- Soil sealing
- Lack of linkage between terrestrial and aquatic ecology

Industrial/economic organisations/trade unions:

- Sedimentation of flood shelters
- Lack of storage capacity for better use of water
- Poor survey data and technical planning priorities
- Too much reliance on hard-engineering structures to mitigate flood risk and not enough reliance on natural flood management (NFM) approaches
- Lack of political will

Public authorities:

- Poor financing of preventative measures
- Inadequate drainage measures

Citizens:

- Construction in flood plains
- Large-scale intensive agriculture prevents river restoration and re-creation of natural retention area and water retention in the area
- Reliance on grey, structural measures, lack of use of nature-based solutions (NWRMs)
- Deforestation

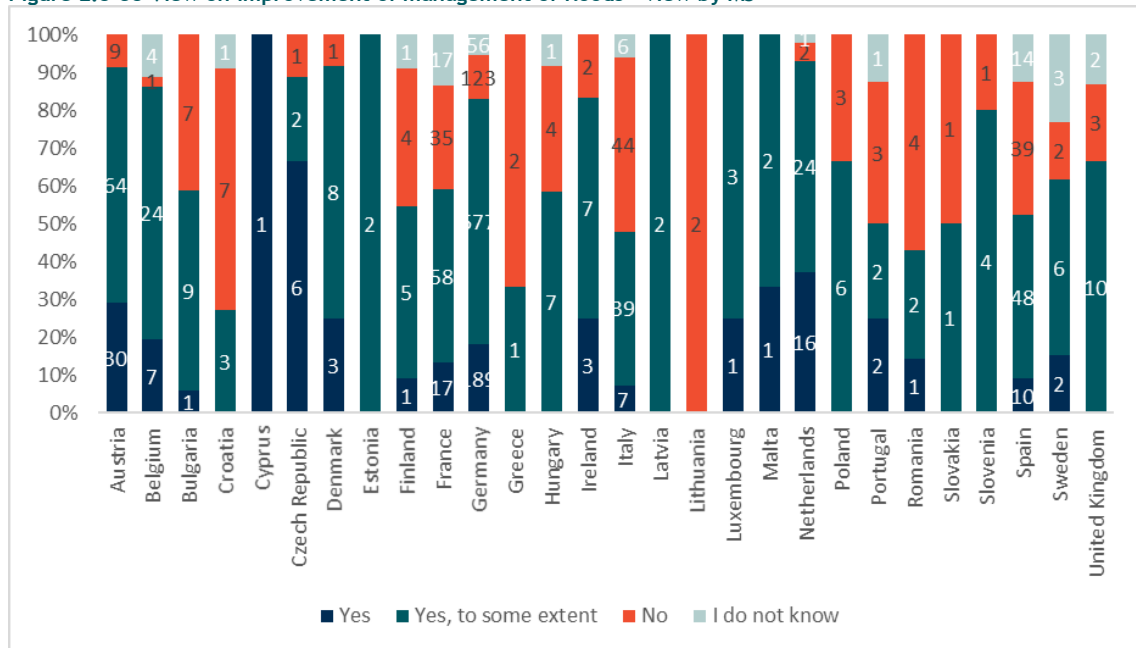
Question 19 - Do you think the management of floods in your country has improved since 2009 in general?

A total of 1,745 respondents provided a response to this question, out of which 108 (6%) responded “I don’t know”. Of the respondents that had answer to this question (94%), the majority (63%) indicated that they think the management of floods in their country has improved since 2009 in general to some extent.

Yes	Yes, to some extent	No	Total
300	1,031	306	1,637
18%	63%	19%	100%

Figure E.5-35 presents the results by Member States. Apart from Croatia, Cyprus, the Czech Republic, Greece, Italy, Lithuania, Portugal, Romania and Slovakia, majority of respondents from all Member States responded that they think the management of floods in their country has improved since 2009 in general to some extent.

Figure E.5-35 View on improvement of management of floods - view by MS



The figures below present the results of this question by category of stakeholders. Figure E.5-55 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-57 presents the results by specific categories of stakeholders.

The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-55 shows that a greater proportion of professional stakeholders consider that the management of floods in their country has improved since 2009 compared to non-professional stakeholders.

Figure E.5-36 View from professional and non-professional stakeholders on improvement of management of floods

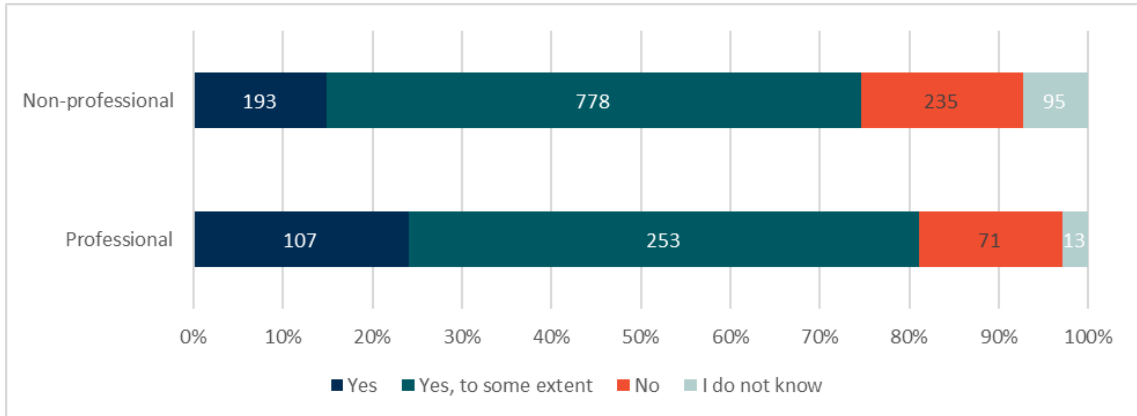
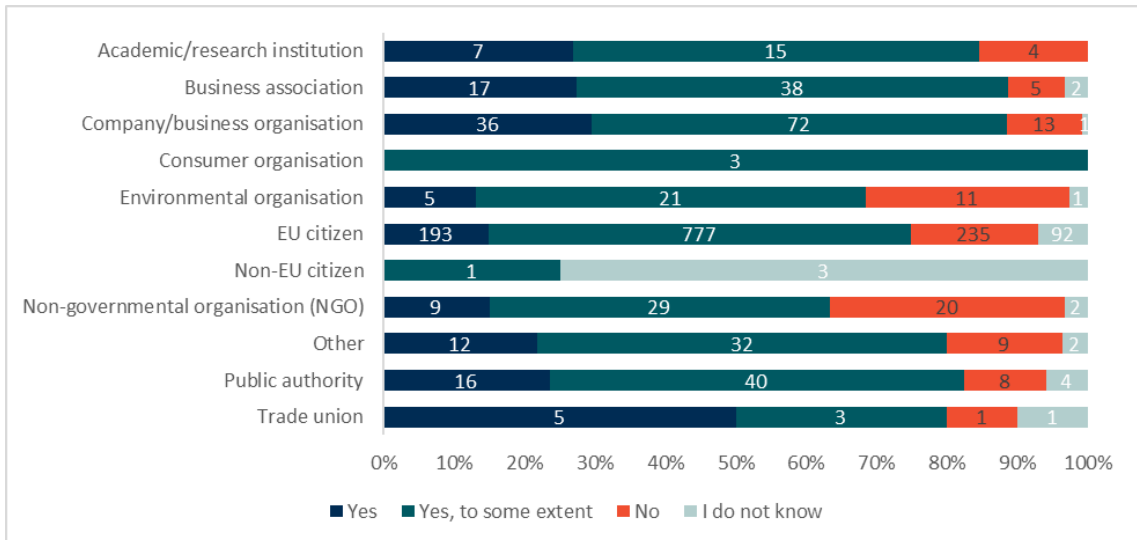


Figure E.5-37 shows that apart from trade unions and non-EU citizens, majority of the responses from all stakeholders indicate that they think the management of floods in their country has improved since 2009 in general to some extent. As only four responses were received from non-EU citizens, their views cannot be considered as being representative.

Figure E.5-37 Views from specific categories of stakeholders on improvement of management of floods



Question 20 - How do you assess your familiarity with the management of flood risks in your country or region?

A total of 1,734 individual provided a response to this question, out of which 98 (6%) responded “I don’t know”. Of the respondents that knew the answer to this question (94%), the majority (47%) have only a moderate familiarity with the management of flood risks in their country. This is followed by 40% of

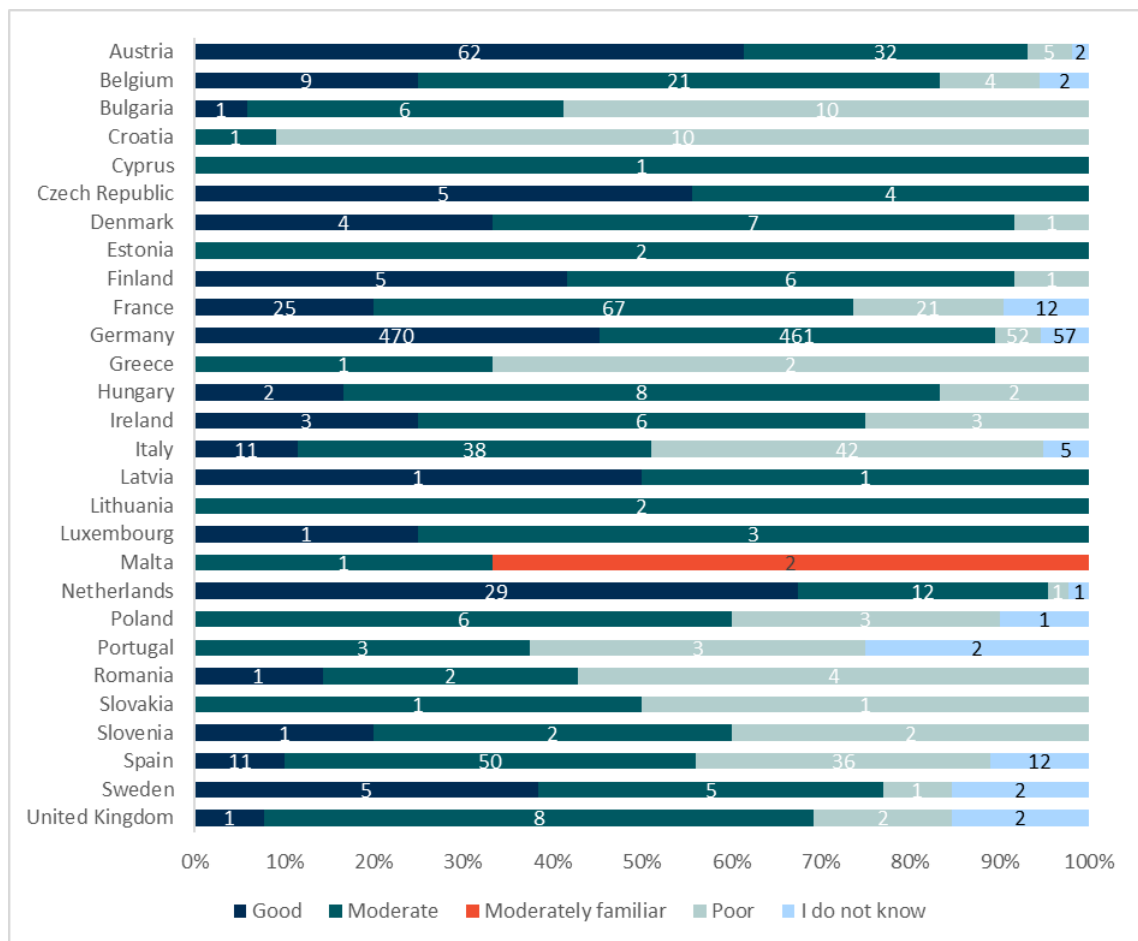
respondents considering their level of familiarity is good. It should also be noted that of those respondents that answered that they assess their familiarity with the management of flood risks in their country to be good, nearly half (41%) answered they were unaware of the FD. A potential explanation for this could be that respondents are more familiar with regional and national level flood risk management measures and less familiar with EU level measures.

It is quite positive to see that only a small share of the respondents has poor familiarity, this seems to imply that the management of flood risks is a topic on which communication is available.

Good	Moderate	Moderately familiar	Poor	Total
659	764	2	211	1,636
40%	47%	0%	13%	100%

Figure E.5-38 shows the results by Member States. It is interesting to note some variations from the overall trend with some Member States where the respondents' familiarity is rated 'good' as a majority including the Netherlands, Austria and Czech Republic. Similarly, there are a few Member States where 'poor' familiarity response is the majority, these include Bulgaria, Croatia, Greece, Romania and Slovakia. The figure below highlights the variability of situations at Member State's level.

Figure E.5-38 Familiarity with management of floods - view by Member State



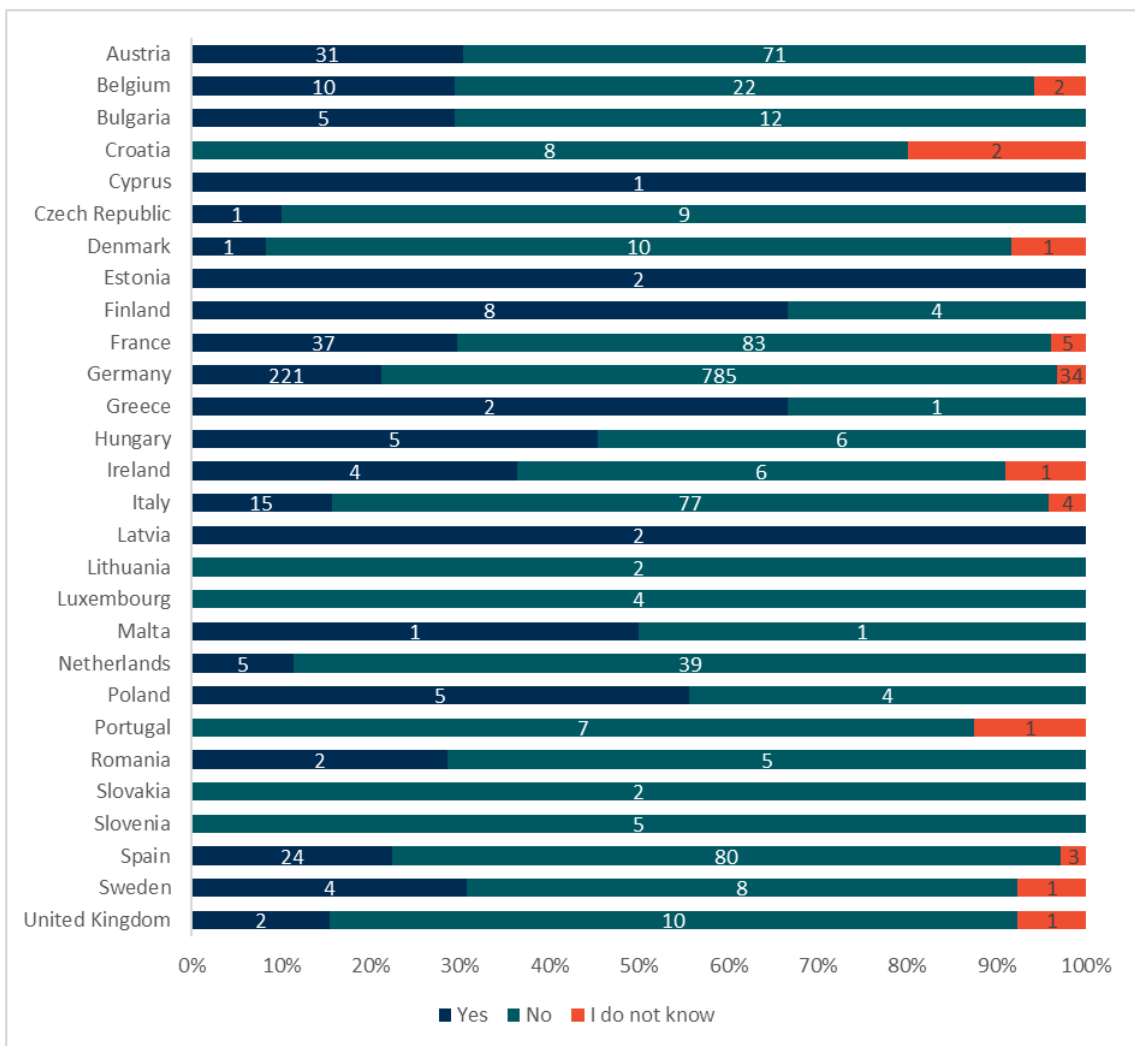
Question 21 - Have you ever been called to participate, or proactively participated, in your areas flood risk management planning?

A total of 1,728 respondents provided a response to this question, out of which 55 (3%) responded “I don’t know”. Of the respondents that knew the answer to this question (97%), 76%of respondents answered that they have not been called to participate or proactively participated in flood risk management planning.

Yes	No	Total
397	1,276	1,673
24%	76%	100%

Figure E.5-39 shows the results by Member States, considering it is interesting to consider whether Member States are more pro-active in involving citizens in the flood’s planning than others. From the results, it seems that all Member States have very similar trends as the average. The only exception identified is Finland where almost half of the respondents have been involved in flood planning activities.

Figure E.5-39 Participation in flood risk management planning - view by MS



The figures below present the results of this question by category of stakeholders. Figure E.5-41 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-41 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-41 shows that a greater proportion of professional stakeholders have been called to participate, or proactively participate in flood risk management plans in their areas compared to non-professional stakeholders.

Figure E.5-40 Views from professional and non-professional stakeholders on participation in flood risk management planning

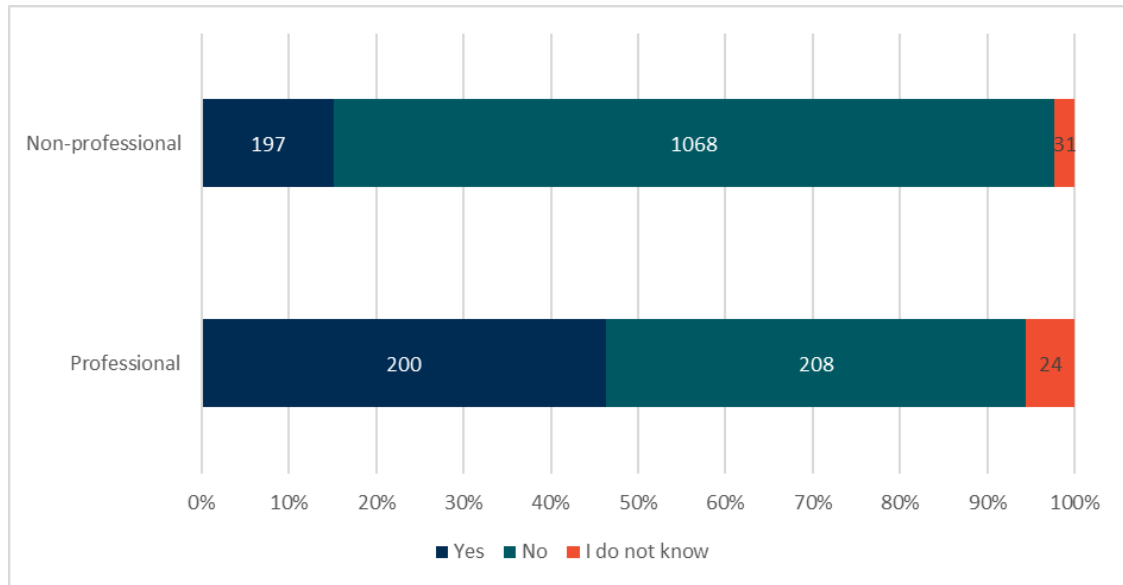
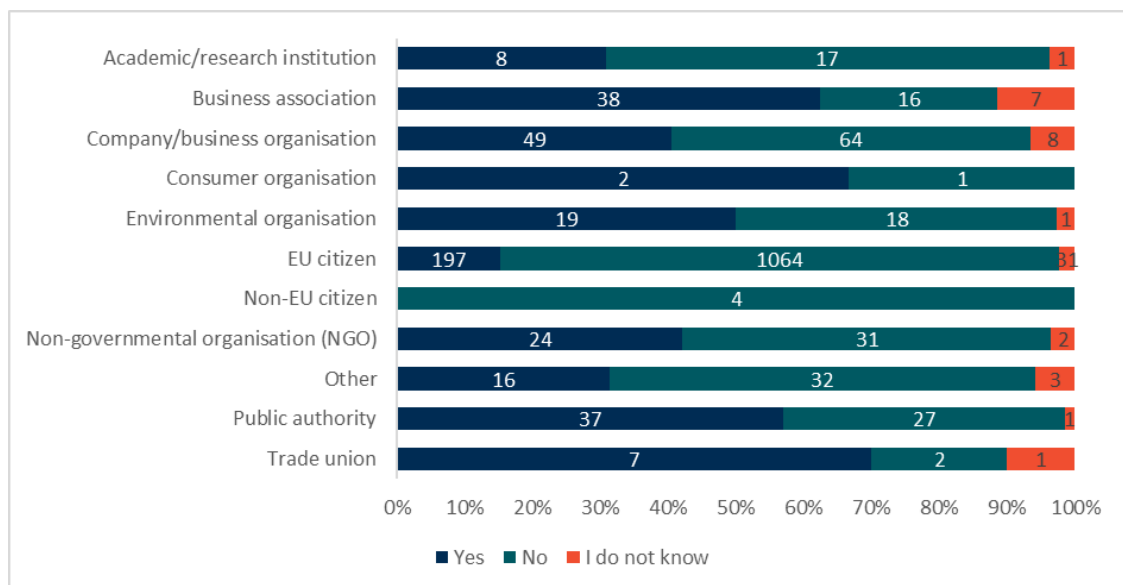


Figure E.5-41 show that the split is different from the EU average for some of the categories in particular: business association, public authorities and trade unions. It is logical that public authorities are involved in the flood risk planning. For the other two categories it might reflect some awareness from business of the risks of floods.

Figure E.5-41 Views from specific categories of stakeholders on participation in flood risk management planning



5.6 Your awareness of EU water law

The aim of this section was to gain an understanding of the level of knowledge held on specific pieces of legislation and views on their contributions to the protection of the environment.

Question 22 - How familiar are you with the following pieces of EU law and the requirements they entail?

From the responses received to this question, the WFD is the one with which the respondents are the most familiar, however for all Directives, the majority of respondents are ‘moderately familiar’ with their requirements. In particular, for the Floods Directive, the majority of respondents are ‘unaware’ of its requirements.

	Very familiar	Moderately familiar	Unaware	Total
Water Framework Directive	649	775	355	1,779
Groundwater Directive	307	865	596	1,768
EQS Directive	274	779	714	1,767
Floods Directive	258	721	774	1,753

The figures below present the familiarity of stakeholders with Directives. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-42 presents the familiarity of professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens) with the Water Framework Directive. Figure E.5-43 presents the familiarity of specific categories of stakeholders with the Water Framework Directive.

Figure E.5-42 shows that a greater proportion of non-professional stakeholders are unaware of the Water Framework Directive compared to professional stakeholders.

Figure E.5-42 Familiarity of professional and non-professional stakeholders with the Water Framework Directive

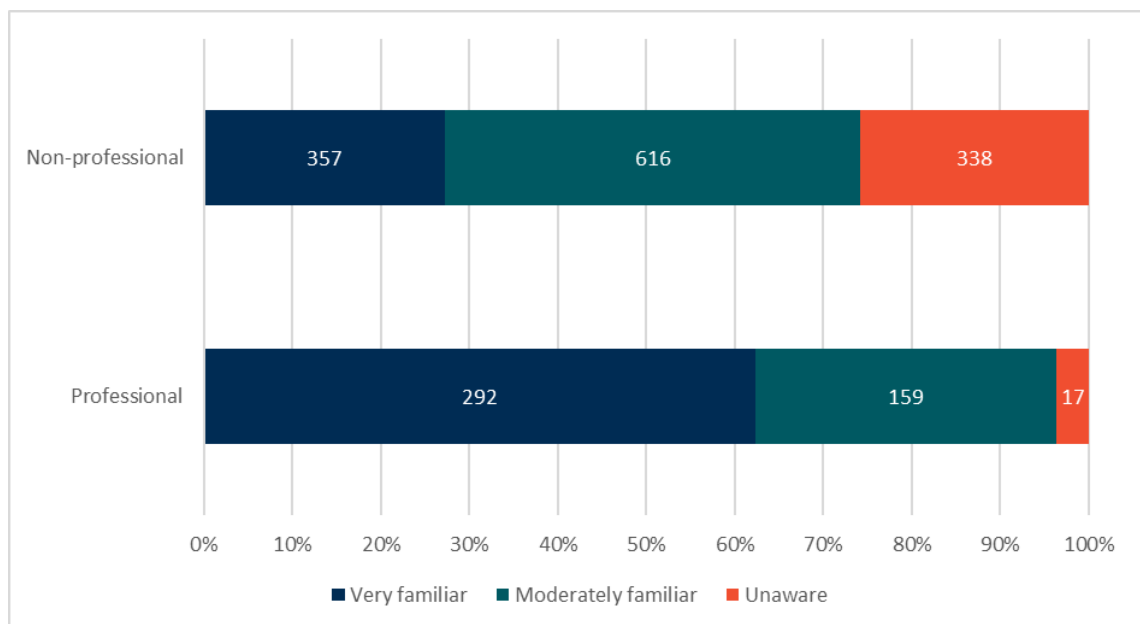


Figure E.5-43 shows that for all categories, more than 50% of the respondents are very familiar with the Directive, whereas for general public this falls to 30%. This finding is logical, and general citizen are less likely to know about specific legislation.

Figure E.5-43 Familiarity of specific categories of stakeholders with the Water Framework Directive

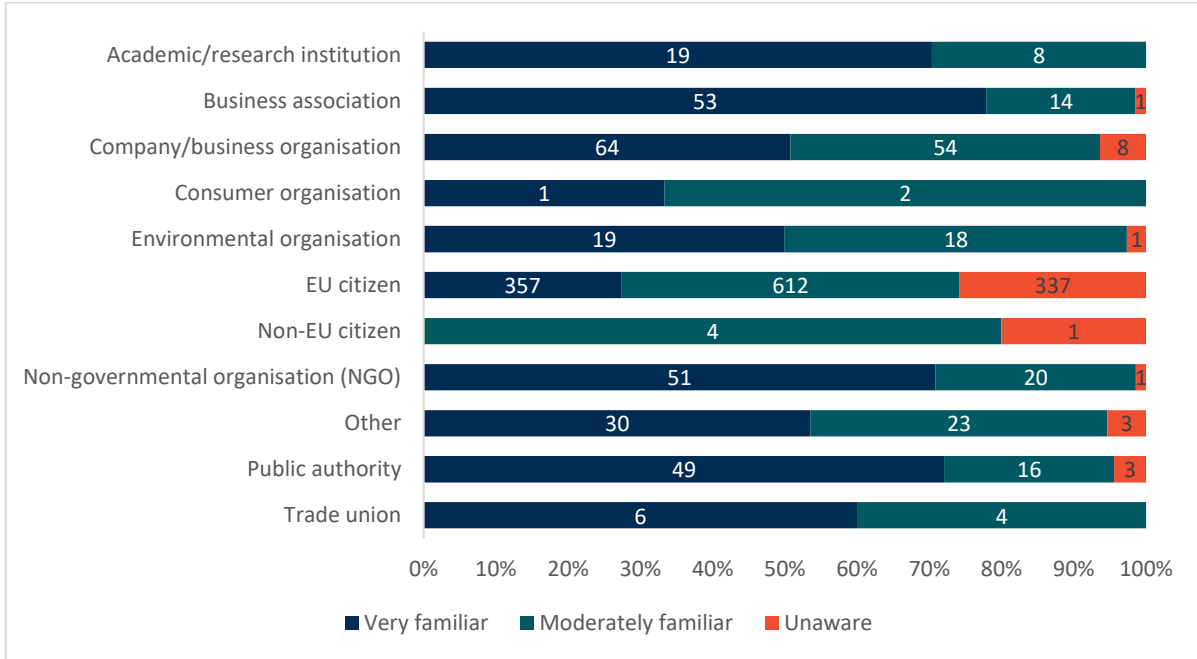


Figure E.5-44 presents the familiarity of professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens) with the Groundwater Directive. Figure E.5-45 presents the familiarity of specific categories of stakeholders with the Groundwater Directive.

Figure E.5-44 shows that a greater proportion of non-professional stakeholders are unaware of the Groundwater Directive compared to the professional stakeholders.

Figure E.5-44 Familiarity of professional and non-professional stakeholders with the Groundwater Directive

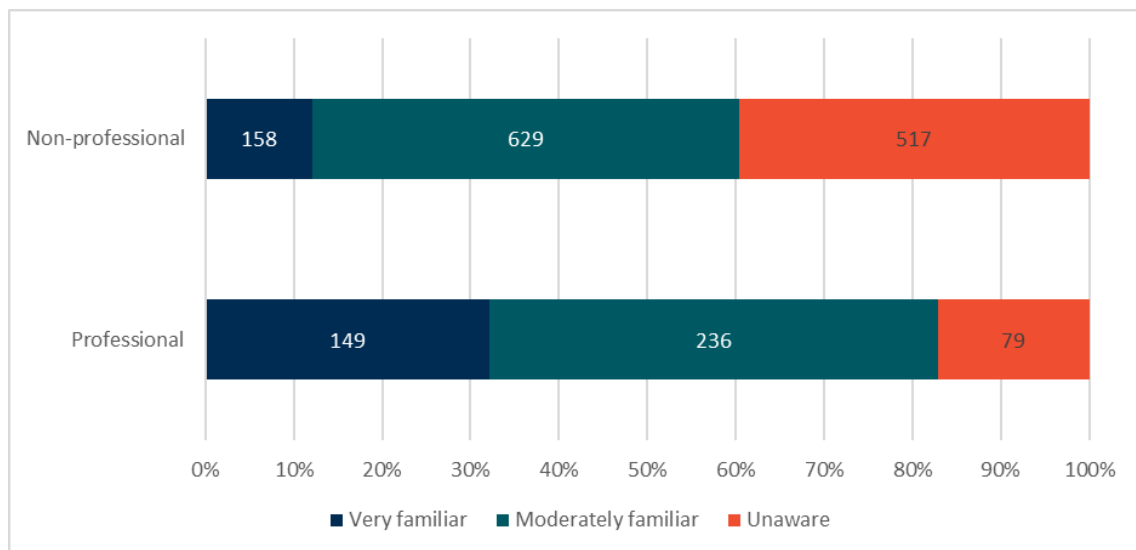


Figure E.5-45 shows that business associations and NGOs are the respondents' categories which are most familiar with the piece of legislation. It is surprising to see only 30% of public authorities' respondents being 'very familiar' with the legislation, this might reflect a slightly siloed approach to water management in some Member States. EU citizen are mostly moderately familiar with the legislation, and surprisingly more citizens have chosen this option for the Groundwater Directive than for the WFD.

Figure E.5-45 Familiarity of specific categories of stakeholders with the Groundwater Directive

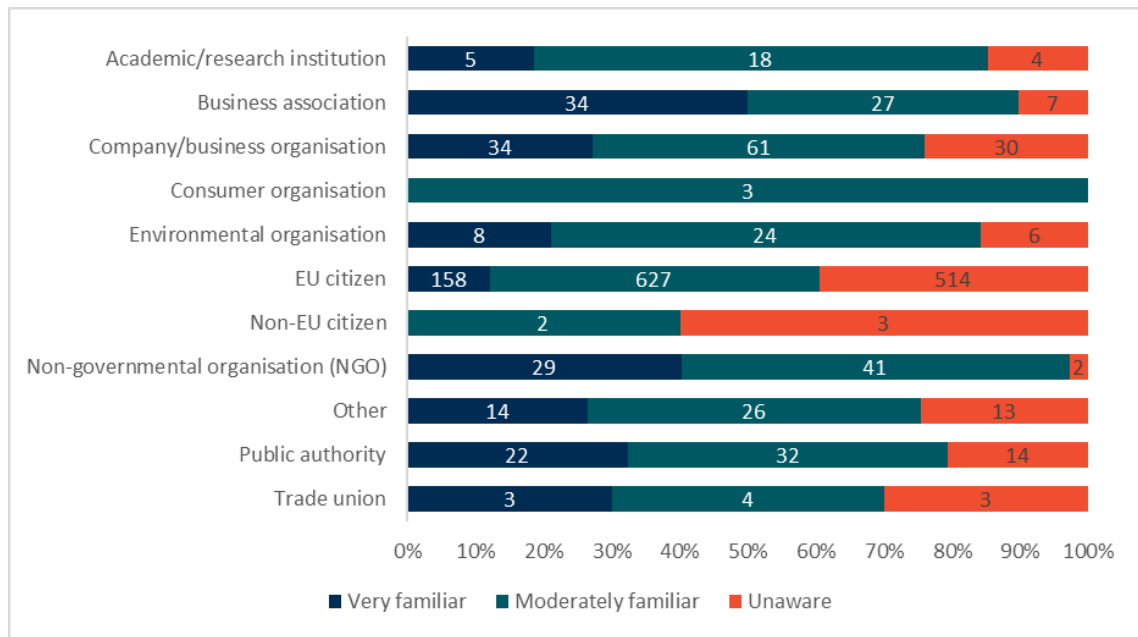


Figure E.5-46 presents the familiarity of professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens) with the EQS Directive. Figure E.5-47 presents the familiarity of specific categories of stakeholders with the EQS Directive.

Figure E.5-46 shows that a greater proportion of non-professional stakeholders are unaware of the Groundwater Directive compared to the professional stakeholders.

Figure E.5-46 Familiarity of professional and non-professional stakeholders with the EQS Directive

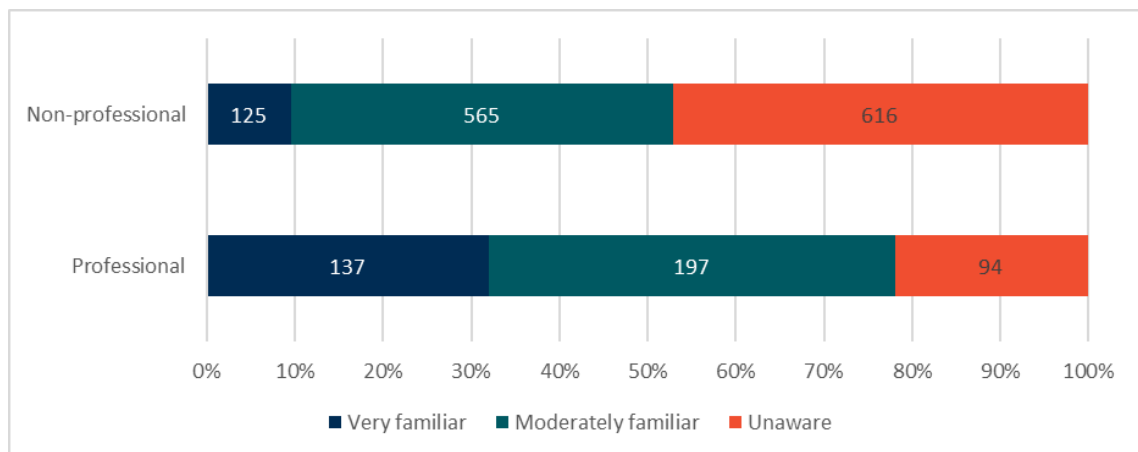


Figure E.5-47 shows that a very similar pattern to the Groundwater Directive can be observed. The main difference relates to a slightly higher number of EU citizen being unfamiliar with the Directive. This might reflect on the Directive being rather technical and on topics that the general public might not be aware of.

Figure E.5-47 Familiarity of specific categories of stakeholders with the EQS Directive

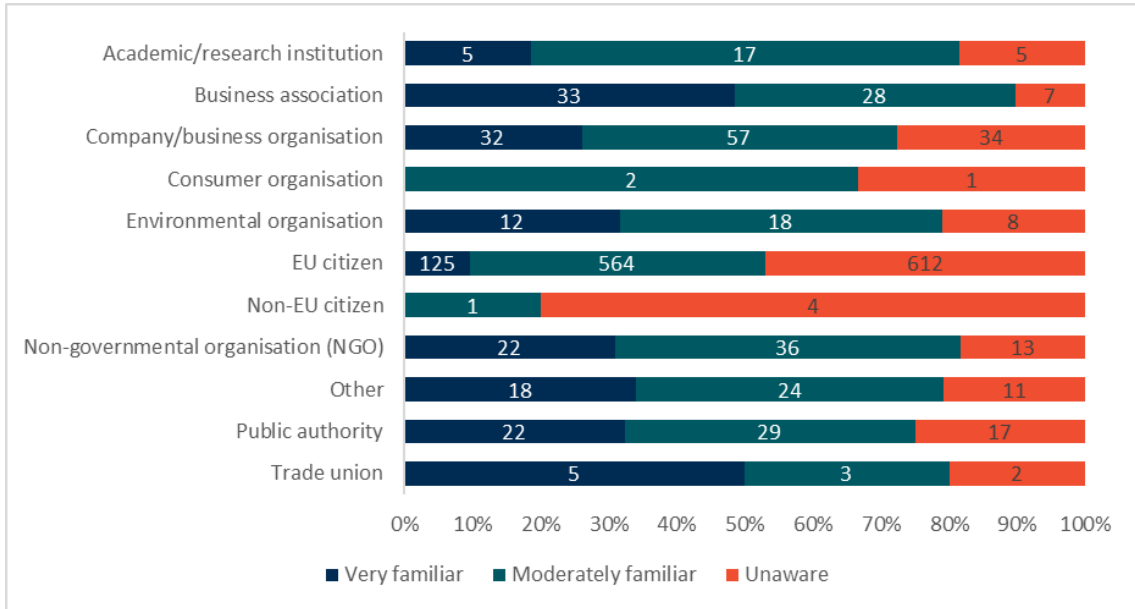


Figure E.5-48 presents the familiarity of professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens) with the Floods Directive. Figure E.5-49 presents the familiarity of specific categories of stakeholders with the Floods Directive.

Figure E.5-48 shows that a greater proportion of non-professional stakeholders are unaware of the Groundwater Directive compared to the professional stakeholders.

Figure E.5-48 Familiarity of professional and non-professional stakeholders with the Floods Directive

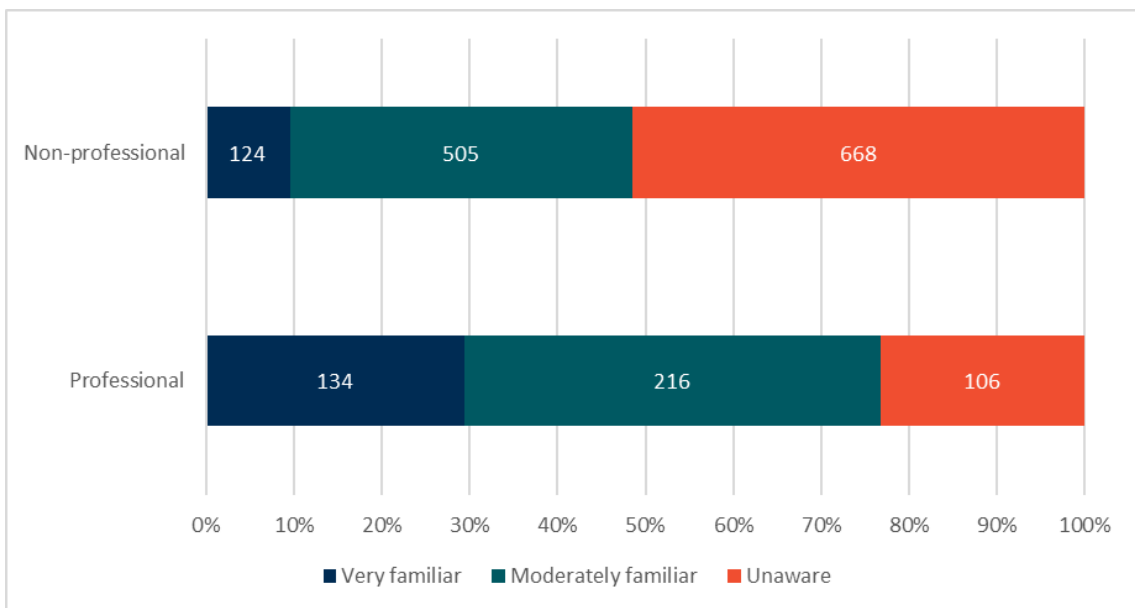
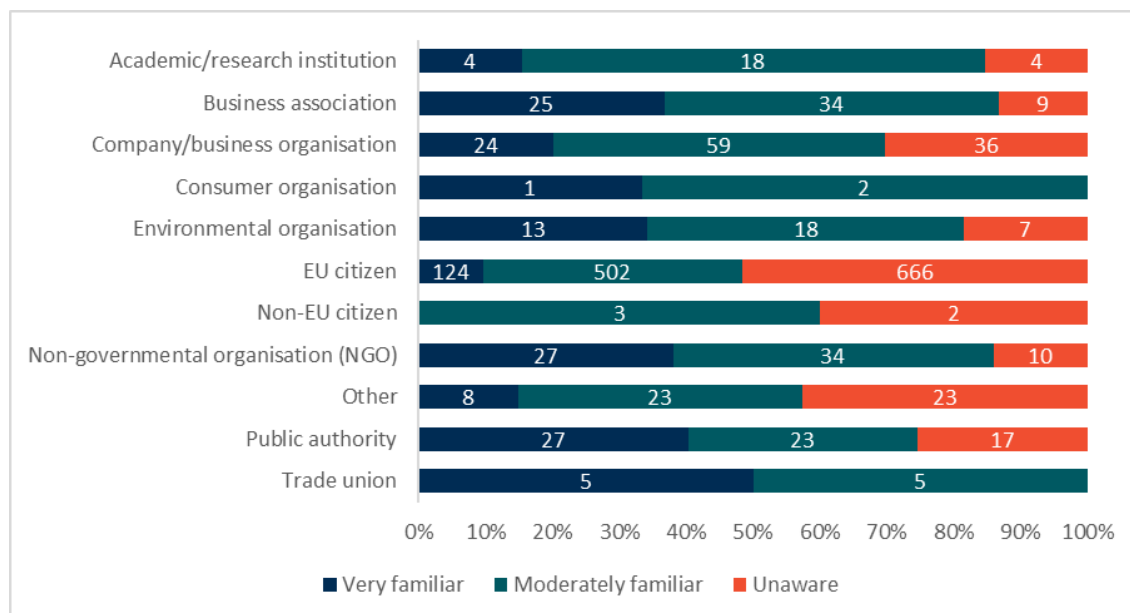


Figure E.5-49 shows that the share of ‘unaware’ respondents is the highest for EU citizens. Considering the consequences of floods are highly visible and generally well publicised (e.g. in news) it is surprising that the Directive appears to be the least known of the four instruments considered under the Fitness Check.

Figure E.5-49 Familiarity of specific categories of stakeholders with the Floods Directive



Question 23 - Have the above pieces of EU law contributed to the rivers and lakes being less polluted and safer than they were a decade ago?

A total of 1,774 respondents provided a response to this question out of which 218 (12%) responded “I don’t know”. The vast majority of respondents that responded “I don’t know”, also reported low levels of familiarity with the Directives: 76% were unaware of the WFD, 84% were unaware of the GD, 84% were unaware of the EQSD and 88% were unaware of the FD. This indicates consistency in the responses provided in the survey.

Of the respondents that knew the answer to this question (88%), majority of the respondents (66%) consider that the legislation has contributed ‘to some extent’ to rivers and lakes being less polluted and safer. This is completed by a further 21% who consider that the contribution has been ‘to a large extent’. The share of respondents disagreeing with this view is rather small and as can be seen below, is mostly made up of EU citizens.

Yes, to a large extent	Yes, to some extent	No	Total
331	1,032	193	1,556
21%	66%	12%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-50 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-51 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-50 shows that greater proportion of non-professional stakeholders think that the above Directives have not contributed to the rivers and lakes being less polluted and safer than they were a decade ago compared to professional stakeholders. However, a greater proportion of non-professional stakeholders also answered “I don’t know”, so they are not as familiar with the Directive as the professional stakeholders.

Figure E.5-50 Views from professional and non-professional stakeholders on contribution of the Directives to the reduction of pollution to rivers and lakes

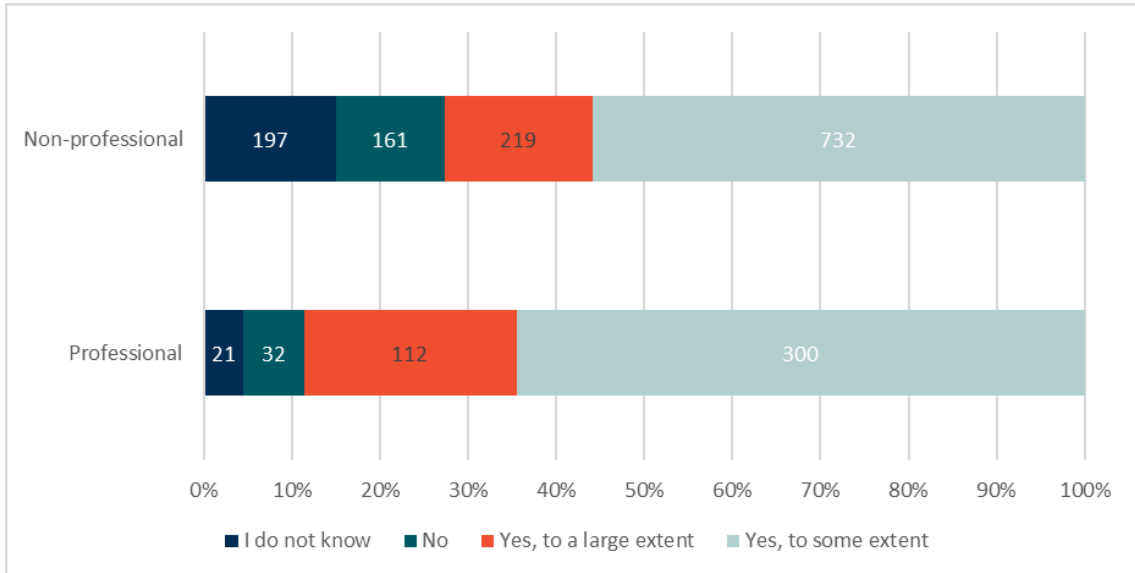
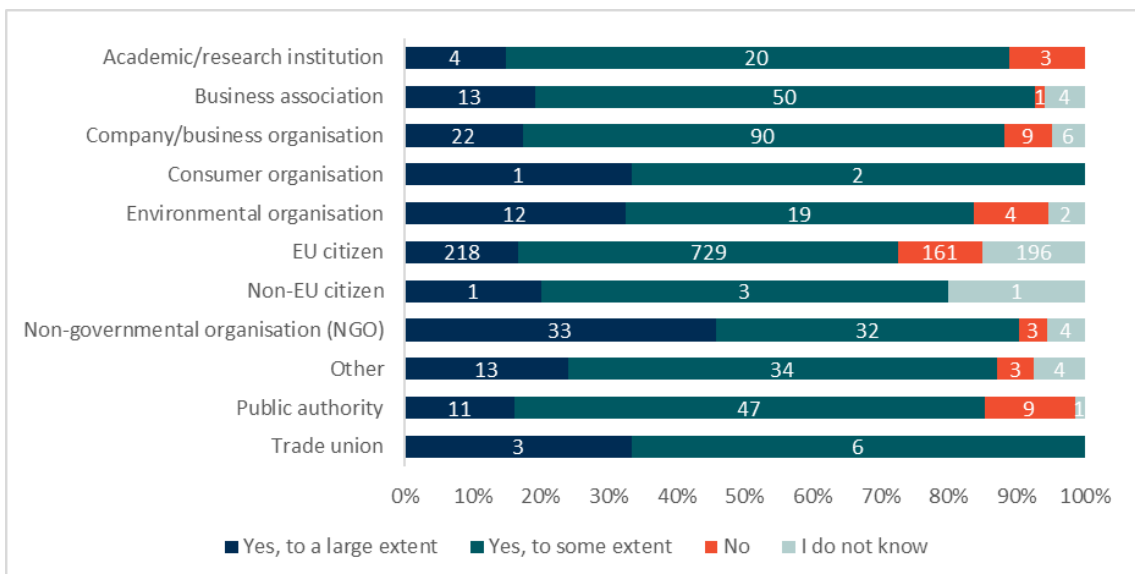


Figure E.5-51 shows the views on the contribution of the Directive based on categories of respondent. It can be seen that the general trend is reflected through all the categories, with NGOs being slightly more positive regarding the contributions of the Directives than average respondents.

Figure E.5-51 Views from specific categories of stakeholders on contribution of the Directives to the reduction of pollution to rivers and lakes



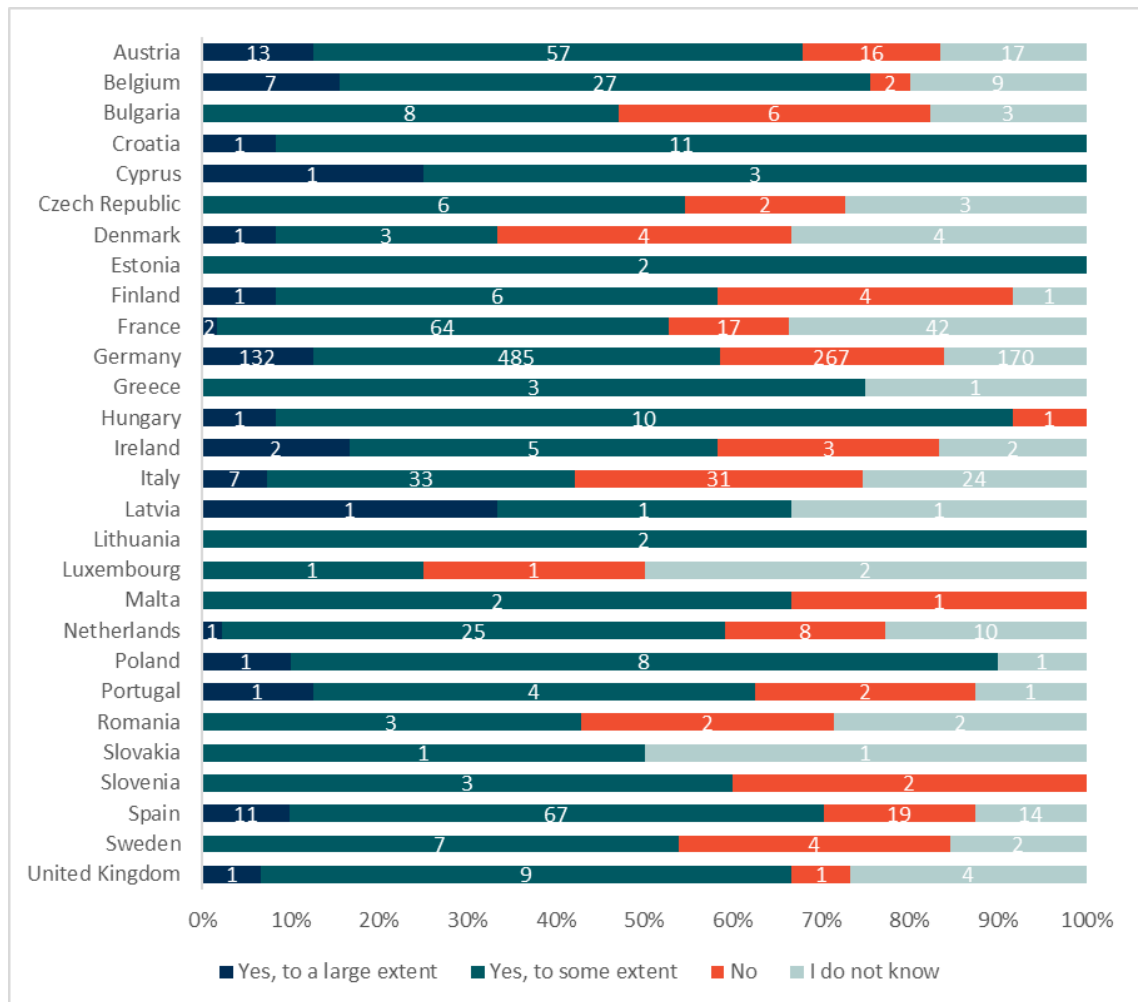
Question 24 - Have the above pieces of EU law contributed to the groundwater in your country being less polluted and safer than it was a decade ago?

A total of 1,773 respondents provided a response to this question, out of which 324 (18%) responded “I don’t know”. Out of the respondents that knew the answer to this question (82%), more than half of the respondents (59%) consider that the legislation has contributed to some extent to groundwater being less polluted and safer. However, a higher share of respondents is critical of its contribution (28% ‘no’ vs 13% of ‘to a large extent’).

Yes, to a large extent	Yes, to some extent	No	Total
187	862	400	1,449
13%	59%	28%	100%

Figure E.5-52 presents the view by Member State on the contribution of the legislation to groundwater protection. Similar results than average can be observed.

Figure E.5-52 Contribution of the legislation to groundwater protection - view by MS



Question 25 - How do you assess the overall contribution of the above pieces of EU law to better management of water resources, including water quantity and availability?

A total of 1,771 respondents provided a response to the question, out of which 252 (14%) responded “I don’t know”. Of the respondents that knew the answer to this question (86%), the majority (55%) consider that the legislation has made ‘moderate’ contribution to the management of water resources. This is supplemented by 37% of respondents that consider the contribution to be high. Only 7% of respondents consider the legislation has not contributed to better management of water resources.

High contribution	Moderate contribution	No contribution	Total
564	842	113	1,519
37%	55%	7%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-53 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-54 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-53 shows that a greater proportion of professional stakeholders assess the overall contribution of the above pieces of EU law to better management of water resources to be high compared to non-professional stakeholders.

Figure E.5-53 Views from professional and non-professional stakeholders on contribution of the legislation to better water quantity and availability

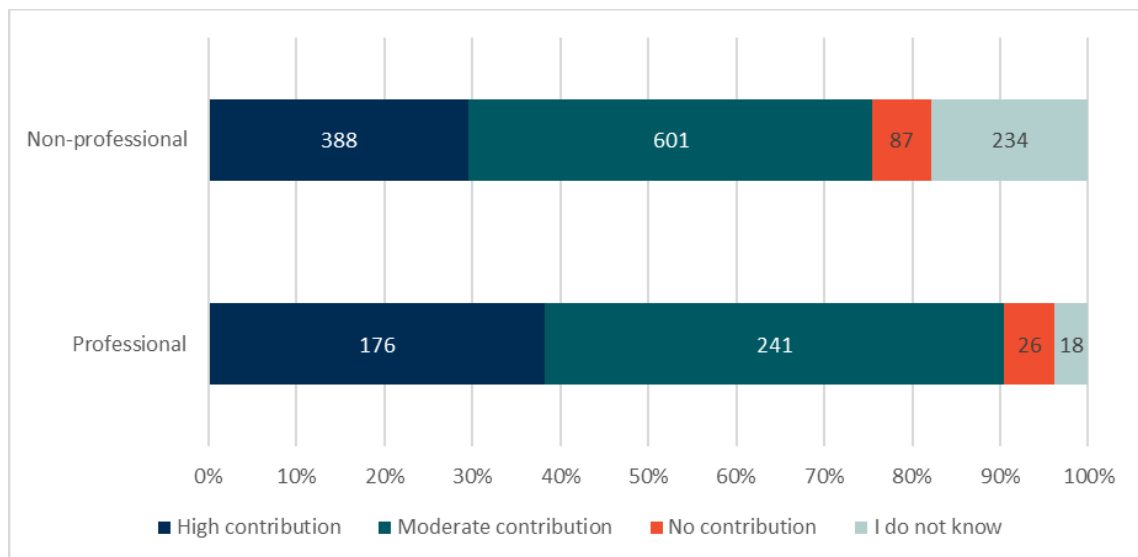
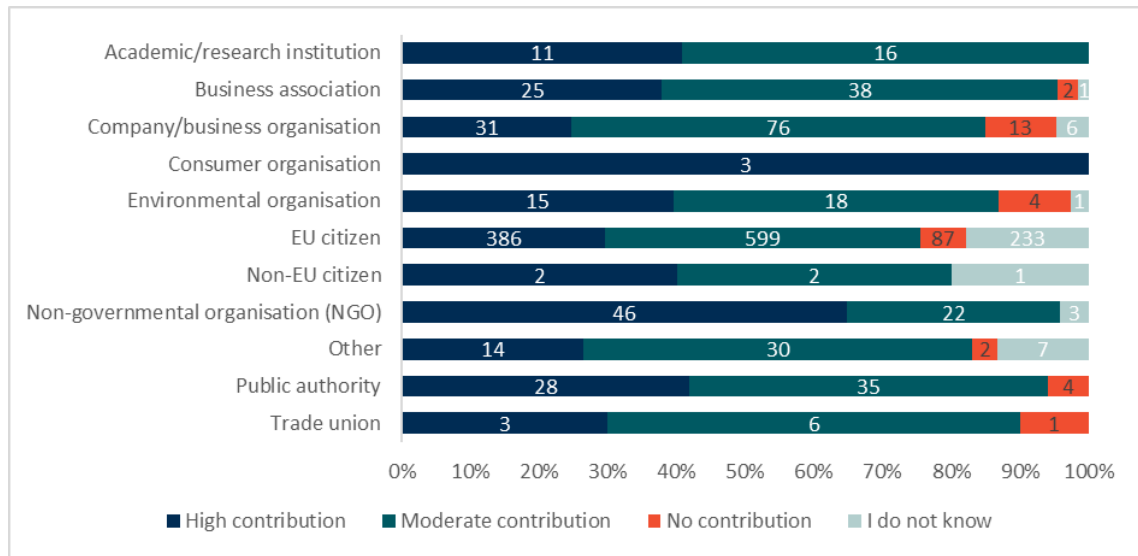


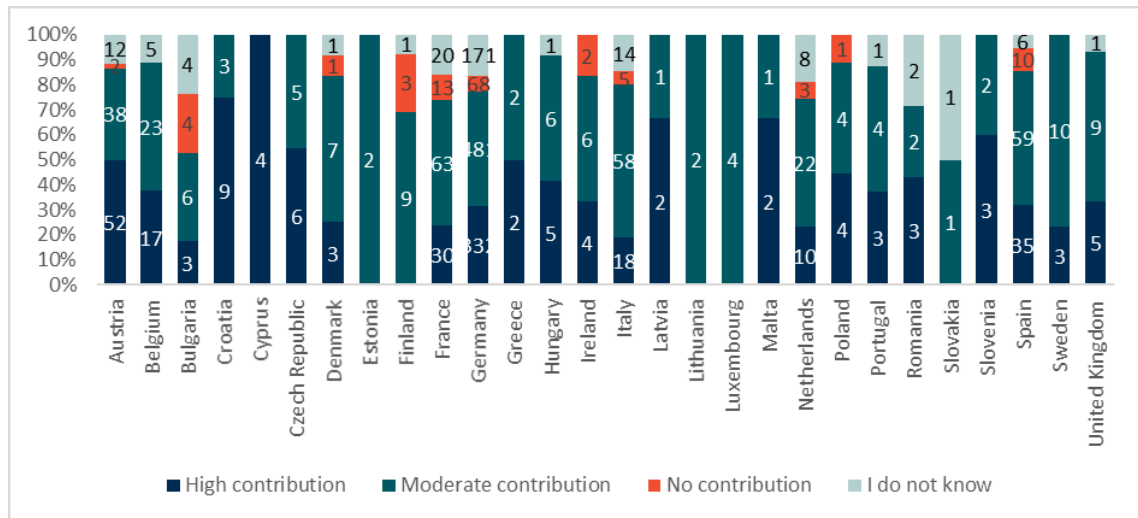
Figure E.5-54 show that NGOs and public authority are more positive on the level of contribution of the legislation, both providing higher than average ‘high contribution’.

Figure E.5-54 Views from specific categories of stakeholders on contribution of the legislation to better water quantity and availability



The results were presented by Member State in order to assess whether the contribution of the legislation in terms of water management differs nationally. However, a similar trend to EU wide trends can be observed for those Member States with sufficient number of respondents.

Figure E.5-55 Contribution of the legislation to better water quantity and availability - view by MS



Question 26 - How do you assess the overall contribution of the above pieces of EU law to the prevention of pollution of transitional and coastal waters (including fjords, estuaries, lagoons, deltas)?

In total, 1,759 respondents provided their views on the contribution of the Directives to reducing pollution of transitional and coastal waters, out of which 505 (29%) responded “I don’t know”. It is noticeable that in comparison to other similar questions, this has the highest share of respondents ‘not knowing’ about the contributions. Of the respondents that answered “I don’t know”, a moderate to large proportion also reported low levels of familiarity with the Directives: 39% were unaware of the WFD, 57% were unaware of the GD, 62% were unaware of the EQSD and 65% were unaware of the FD. This shows consistency in the responses provided in the survey because those respondents that are

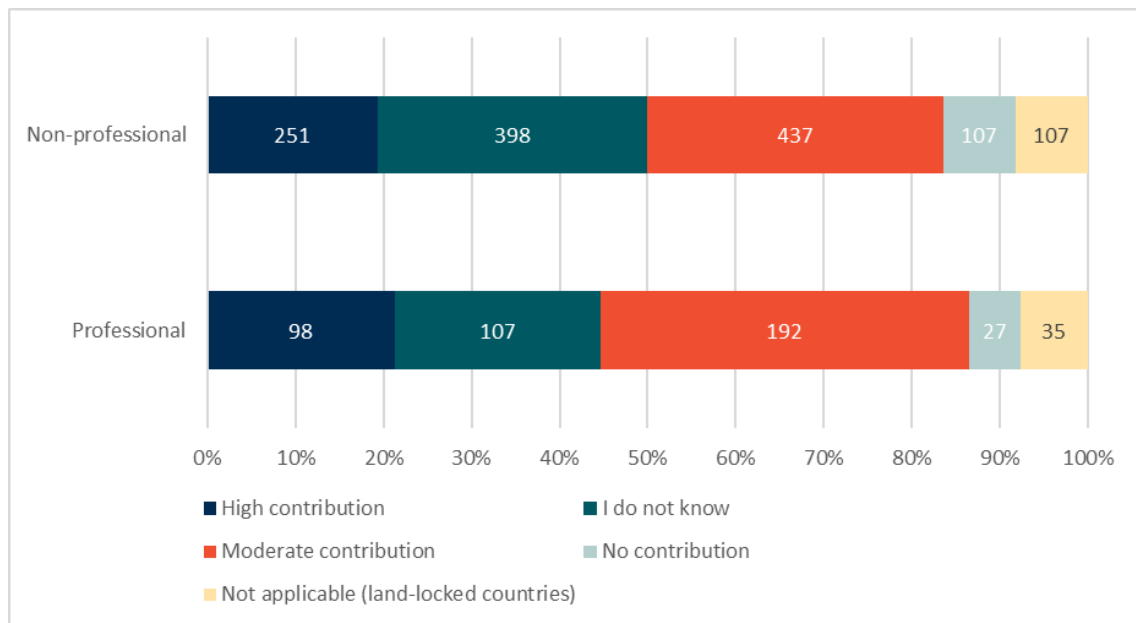
unaware of the Directives would also be expected to have a low familiarity with how the Directives have contributed to the prevention of transitional and coastal waters.

High contribution	Moderate contribution	No contribution	Not applicable (land-locked countries)	Total
349	629	134	142	1,254
28%	50%	11%	11%	100%

The figures below present the results of this question by category of stakeholders. Figure E.5-56 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-57 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

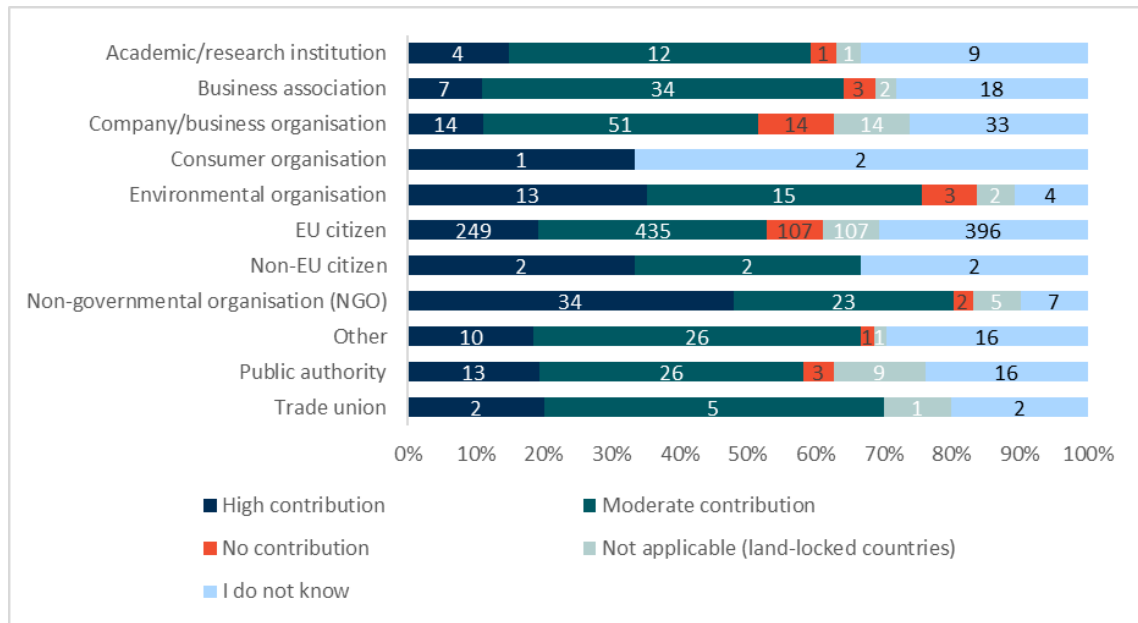
Figure E.5-56 shows that a relatively large proportion of about professional and non-professional stakeholders answered “I don’t know”, indicating low levels of familiarity with the subject of this question.

Figure E.5-56 Views from professional and non-professional stakeholders on contribution of the legislation to transitional and coastal waters



As with other questions on the contribution of the legislation, NGOs respondents are more positive on the level of contribution, rating it higher than the average respondent, as shown in Figure E.5-57.

Figure E.5-57 Views from specific categories of stakeholders on contribution of the legislation to transitional and coastal waters



Question 27 - Have you ever experienced a problem with water quality or quantity in your area?

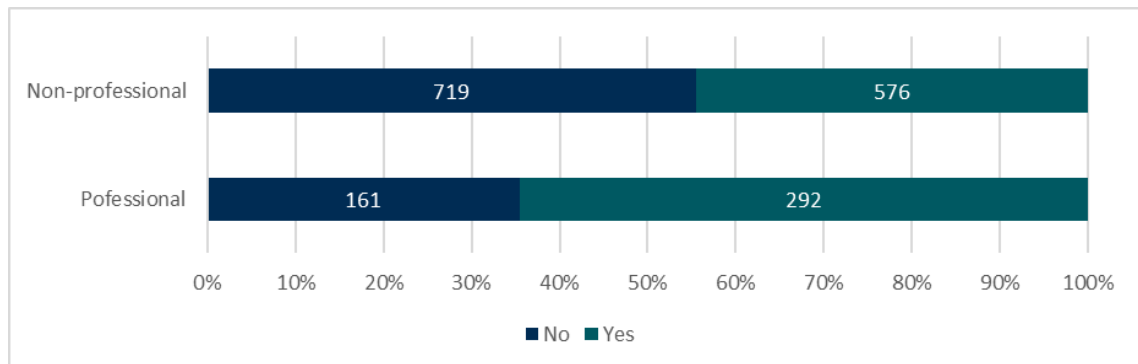
A total of 1,748 respondents provided a response. The responses are almost split identically, with 50% responding ‘yes’ and the other half ‘no’.

Yes	No	Total
868	880	1,748

The figures below present the results of this question by category of stakeholders. Figure E.5-58 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.5-59 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.5-58 shows that a greater proportion of non-professional stakeholders answered that they have experienced a problem with water quality and quantity compared to professional stakeholders.

Figure E.5-58 Feedback from professional and non-professional stakeholders on experiencing issue with water quality or quantity



It is interesting to note the categories of respondents which are differ from the average in Figure E.5-59. In particular, fewer EU citizens than the average have reported having experienced an issue with water quality or quantity. In contrast, more public authorities, NGOs and environmental organisation respondents have reported having experienced issues. This could reflect these respondents being more aware of issues than the general public.

Figure E.5-59 Feedback from specific categories of stakeholders on experiencing issue with water quality or quantity

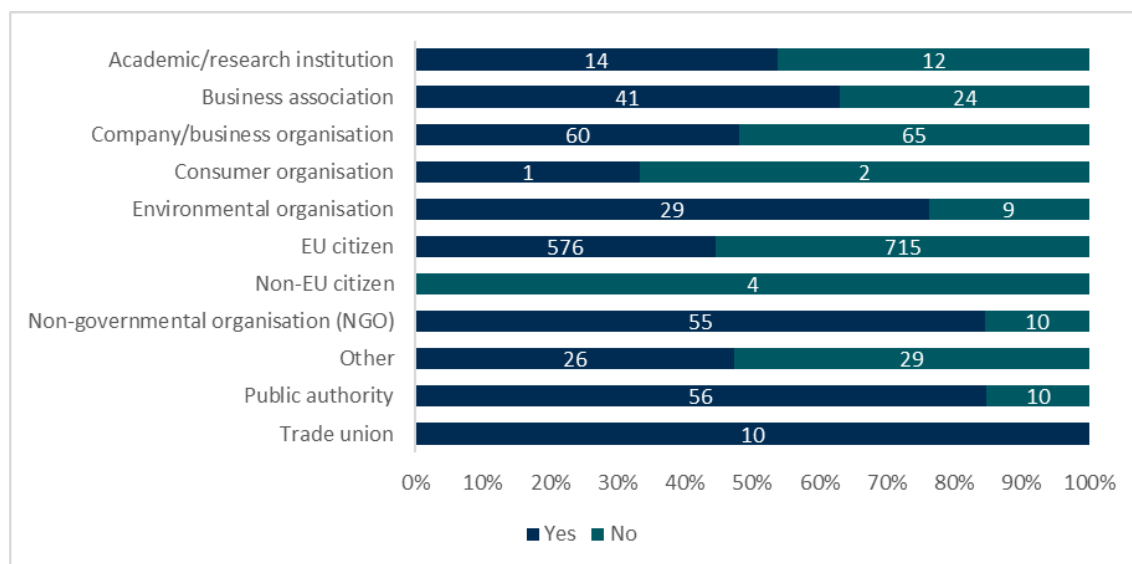
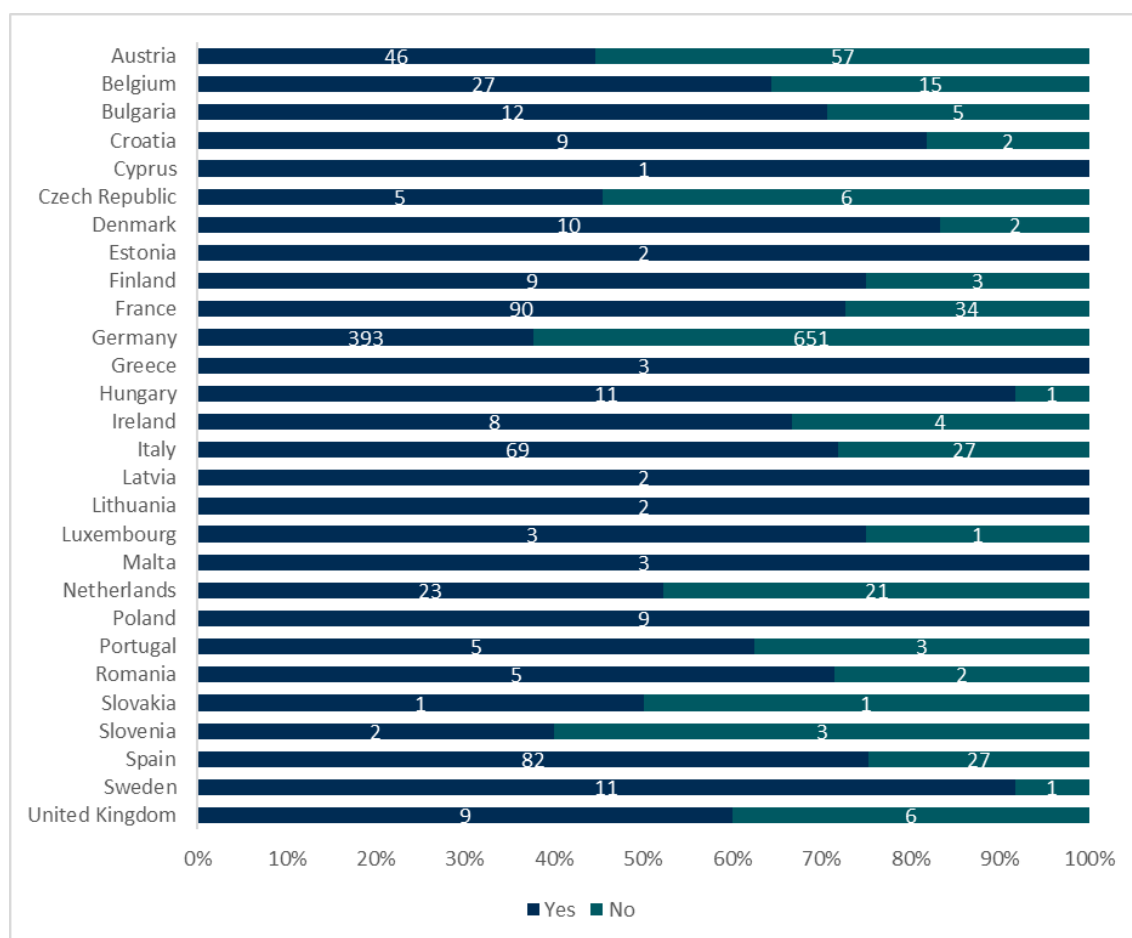


Figure E.5-60 shows Member States’ views on experiencing issues. It can be observed that for several, more than half of the respondents indicated ‘yes’. However, a large number of German respondents indicated ‘no’ which influences the average results. The overwhelming majority of respondents from Poland, Sweden and Hungary indicated having experienced issues with water quantity or quality.

Figure E.5-60 Feedback on issue with water quality or quantity - view by MS



If respondents responded “yes” to this question, they were asked to provide an explanation of the problem. Their responses are summarised by stakeholder category in the points below:

Academic/research institutions:

- Eutrophication due to nutrients enrichment
- PFAS pollution making it impossible to use water distributed through aqueduct networks
- Drought resulting in lack of irrigation water

Industry/economic organisation/trade unions:

- Coastal pollution due to uncontrolled waste
- Low water levels due to drought having an impact on inland waterway transport
- High nitrate levels in water
- Biodiversity loss linked to the modification of rivers and changes in farming practices
- Water restriction are more and more frequent, which could have possible impacts on nuclear energy generation
- High levels of pesticide in water
- Over-allocation of water to some uses, in particular for agriculture, with the effect of limiting the hydropower production

NGOs and environmental organisations:

- Groundwater nitrate pollution due to agricultural practices
- Bacteriological impact following floods
- Falling groundwater levels due to drought
- Inadequate maintenance of water supply systems in settlement

Public authorities:

- River flooding resulting from heavy rain
- Groundwater nitrate pollution
- Low water levels due to drought
- Water overuse for energy production

Citizens:

- Insufficient water due to agricultural use
- Groundwater nitrate pollution
- Low water levels due to drought
- Pollution of water due to industry activity
- Water use restrictions in summer
- Pollution of rivers and lakes making them unsuitable for swimming

Question 28 - Have you provided views/feedback on water quality/quantity issues? If yes, to whom have you provided them/it?

Respondents were asked to provide information on whether they provided feedback on water quality and quantity. The responses received are presented in Figure E.5-61. It can be seen that the majority of respondents are not aware of opportunities to provide views. This confirms the responses provided with regards to inputs into the flood planning process identified in an earlier question.

Figure E.5-61 Feedback on whether respondents have provided views on water quality/quantity issues

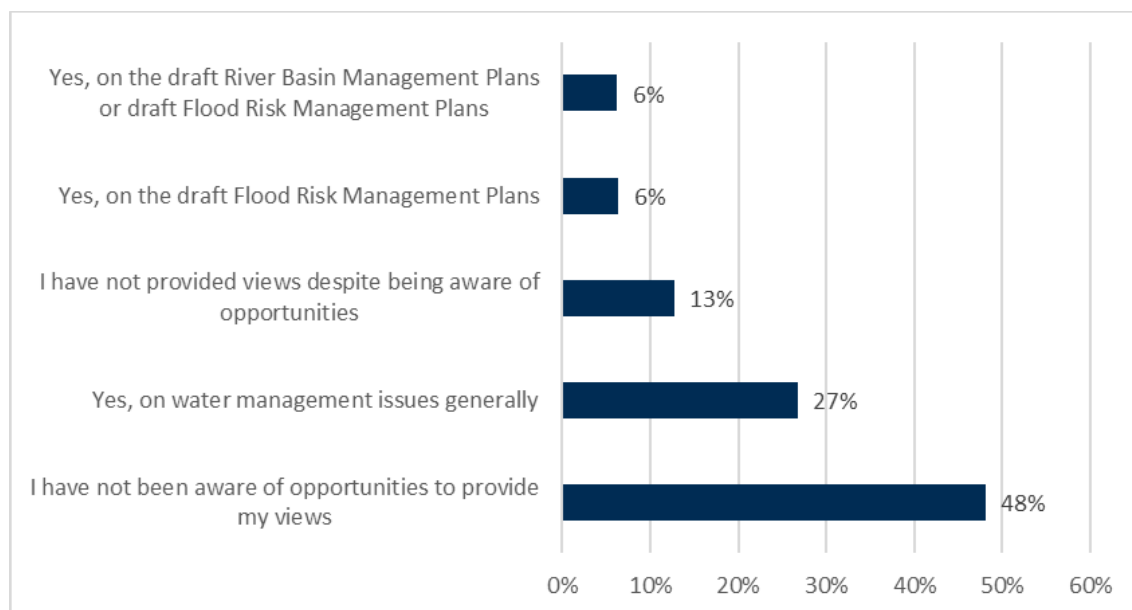
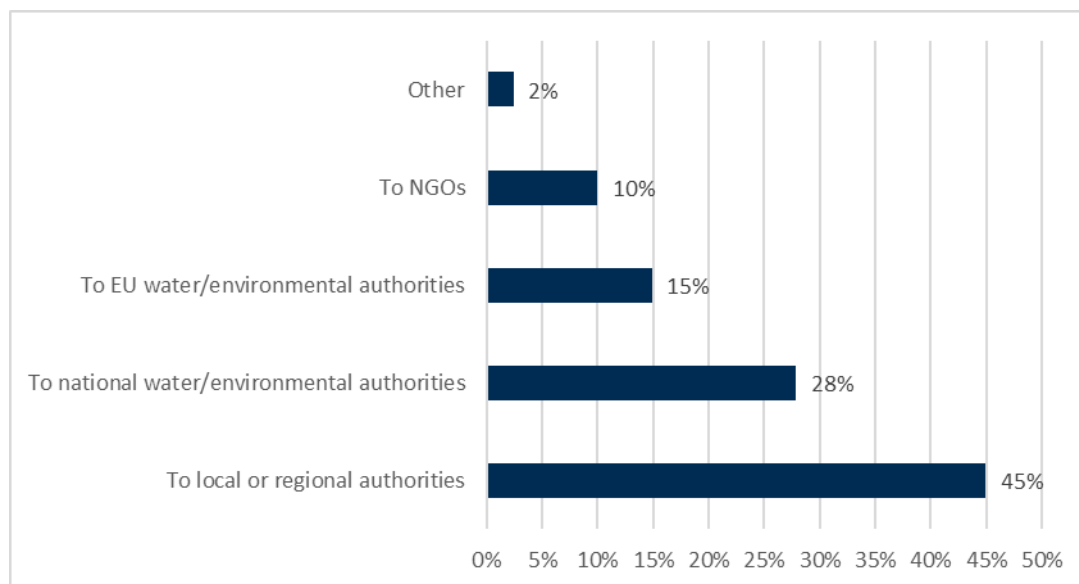


Figure E.5-62 presents an overview of the entities to which feedback was provided to when it was provided. The majority of the respondents provided feedback to local or regional authorities, followed by national water or environmental authorities.

Figure E.5-62 Feedback on who the views were provided to



If respondents selected “Other”, they were requested to specify who they provided the feedback to. Their responses are summarised by stakeholder category in the points below:

NGOs and environmental organisations:

- Local press
- Politicians
- Local stakeholders
- European Commission, EC JRC and ECHA

Citizens:

- Social media outlets like Twitter and blogs
- To universities for research purposes
- International River Commission
- District Court

5.7 Other comments

A last question provided respondents with the opportunity to submit additional views, feedback or documents to supplement their responses.

A total of 412 comments were made, of which the similarity of some suggested some coordination between respondents, if not to the extent observed for a campaign.

- These comments are presented in the points below and are not presented per stakeholder category as they were selected on the basis of being the most commonly occurring comments across stakeholder groups: Views are that the Directive needs to be better implemented and enforced.

- Some respondents call for the involvement of all relevant stakeholders in the development of the WFD to ensure a fair sharing of responsibilities and costs when defining and implementing mitigation measures to reach the Directive’s goals.
- Fully recognise the subsidiarity principle and allow Member States to take into account their specificities when implementing the WFD. Therefore, propose best practice procedures rather than the current approach of guidance documents from the Common Implementation Strategy.
- Keep Heavily Modified Water Bodies (HMWB) designation as a key category for the integration of ecological, human and economic aspects.
- Implement the “non-deterioration” principle in a practicable and integrated way when applying the WFD exemption for projects.
- Only implement cost-effective measures to prevent ecologically unsatisfactory solutions and unnecessary costs.
- Increase the coherence of the water legislation with other sectors including in particular agriculture, climate change, energy and transport.
- The Directive is fit for purpose, more ambition is needed in the measures adopted to improve the ecological status of water bodies.
- The use of exemption is made too ‘freely’ in some instances which are obstacles to achieving the Directive’s objectives.
- Water is essential to life, it needs to be preserved and the EU is trusted to lead.

6 Overview of the results to Part II

6.1 Overview

This section presents the responses received to Part II of the public consultation which targeted more knowledgeable stakeholders. Despite this targeted approach being explained at the start of the online questionnaire, a large number of members of the public completed responses to at least one of the questions. The extent to which such stakeholders may be considered knowledgeable may be, in some cases, questionable.

The total number of respondents vary from question to question with a maximum of 700 of respondents.

Note that campaign’s responses are excluded from this analysis.

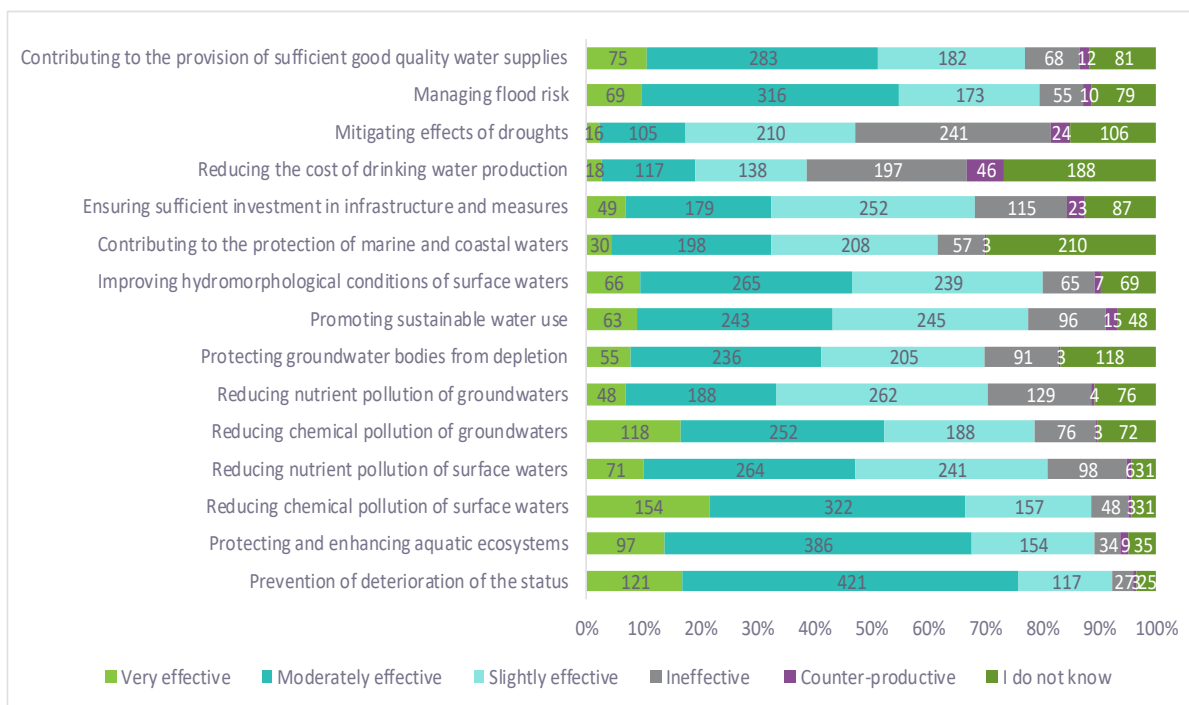
6.2 Effectiveness

Question 1 - To what extent has the implementation of the above Directives been effective in achieving the following objectives?

Figure E.6-1 presents the views of the respondents with regards to the achievements of the objectives of the water legislation. It can be seen that the Directives are seen as most effective for reducing chemical pollution in surface water and groundwater and preventing deterioration of the water status. The Directives are seen ‘moderately effective’ against most of the objectives and in particular for managing flood risks, improving hydromorphological conditions of surface waters and protecting and enhancing aquatic ecosystems.

In contrast, the two objectives against which the Directives are the most seen as either ineffective or counter-productive are managing the effects of droughts and reducing the cost of water production.

Figure E.6-1 Views on the effectiveness of the legislation in achieving its objectives



Respondents were asked if there are any other objectives that the implementation of the Directive has been effective in achieving. Their responses are summarised by stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The WFD is a very useful monitoring and planning instrument but still weak when it comes to translating the set objectives into actions and delivering results
- Water scarcity and droughts have also been better managed across Europe since the implementation of the WFD
- The EQS for surface water and groundwater together with the watch list are extremely useful to fight against micropollutants at source
- The Urban Waste Water Treatment Directive has been very effective to tackle point source pollution
- The Directives are moderately effective in increasing consideration for environmental aspects in planning and operation of water infrastructure
- The Directives have been effective in raising awareness that water is an important societal resource, also raising awareness at company management level

NGOs and environmental organisations:

- The WFD was effective into giving boost to the water sector. For e.g. restoration projects and flood management projects are being implemented as well as awareness surrounding water use and public campaigns against water pollution
- The WFD and its daughter directives have been effective in establishing for the first time a comprehensive framework, a set of common rules at European level, aimed at restoring the

good status of water bodies both in terms of quantity and in quality aspects associated to anthropogenic pressures

Public authorities:

- The WFD has led to major water bodies have a visibility in the community planning and stronger protection

Citizens:

- Promotion of water reuse
- Preservation of existing flood measures

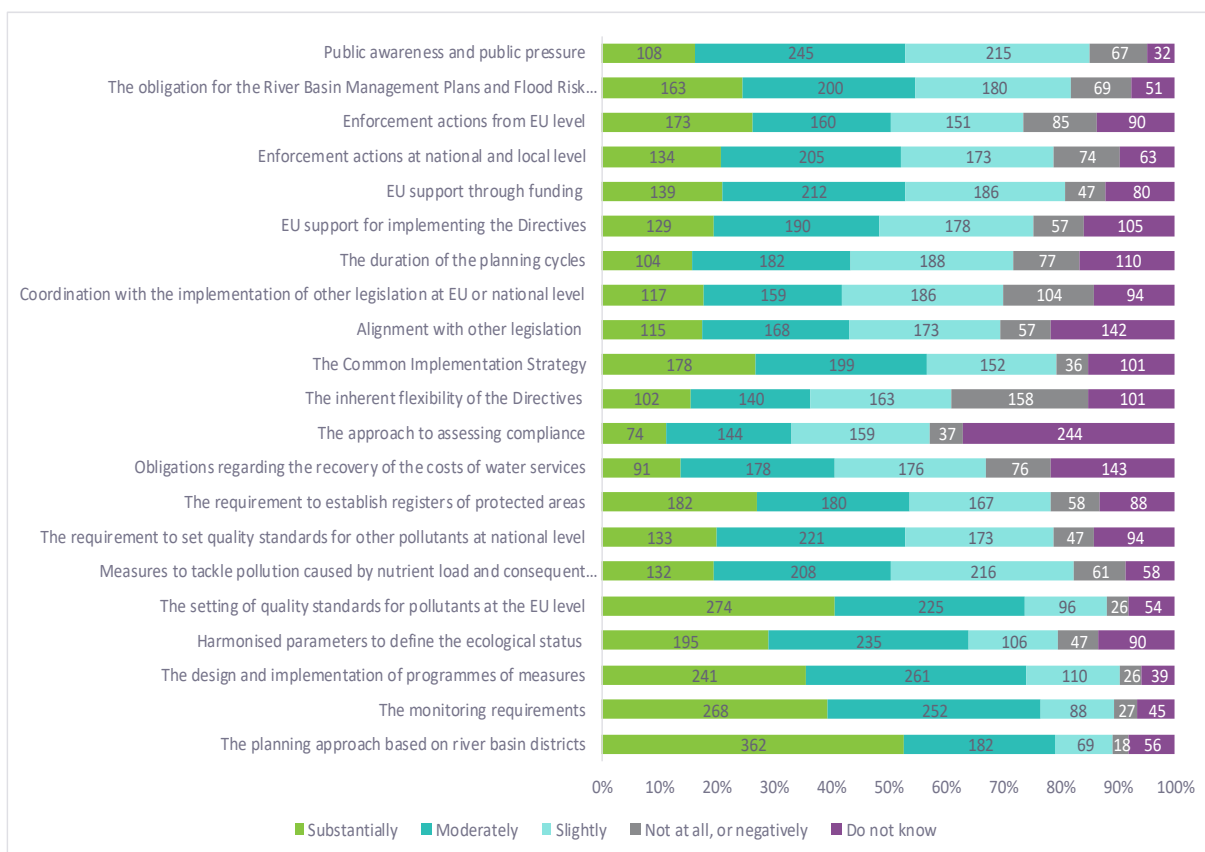
Question 2- How far have the following factors contributed towards achieving the objectives of the Directives?

The aim of this question was to understand which factors, either internal or external, have contributed to the achievements of the objectives of the Directives. These can be distinguished between internal factors (i.e. features of the Directives themselves) and external factors (i.e. beyond the legislations' requirements).

The internal factors that are the most highly rated are the planning approach based on river basin districts (nearly 80% of respondents consider this is either substantially or moderately instrumental in meeting the Directives' objectives), closely followed by the setting of quality standards for pollutants at EU level, the monitoring requirements and the design and implementation of Programmes of Measures.

The external factors that are the most highly rated are the EU support through funding and the enforcement at EU and national level. These three factors received similar ratings with almost 50% of respondents considering they either substantially or moderately instrumental in meeting the Directives' objectives.

Figure E.6-2 Views on factors that have contributed towards achieving the objectives of the Directives



Respondents were asked if there were any other factors that contributed towards achieving the objectives of the Directive. These other factors identified by respondents are summarised in the points below per stakeholder category:

Industry/economic organisations/trade unions:

- Inherent flexibility of the directives is a key component in achieving the objectives of the WFD (extended deadlines, less stringent objectives)
- IPPC / IED for industrial emissions
- There is a lot of coordination/harmonization between MS concerning the implementation of the WFD (e.g. intercalibration of standards, common guidelines instead of necessary case-by-case assessment of different problem categories)
- When applied, active involvement of hydropower operators by the river basin authorities has shown to be an effective tool to rationalize proportionality on measures regarding Heavily Modified Water Bodies

Question 3 - To the best of your knowledge, are all the requirements of the Directives effectively implemented and enforced in your country?

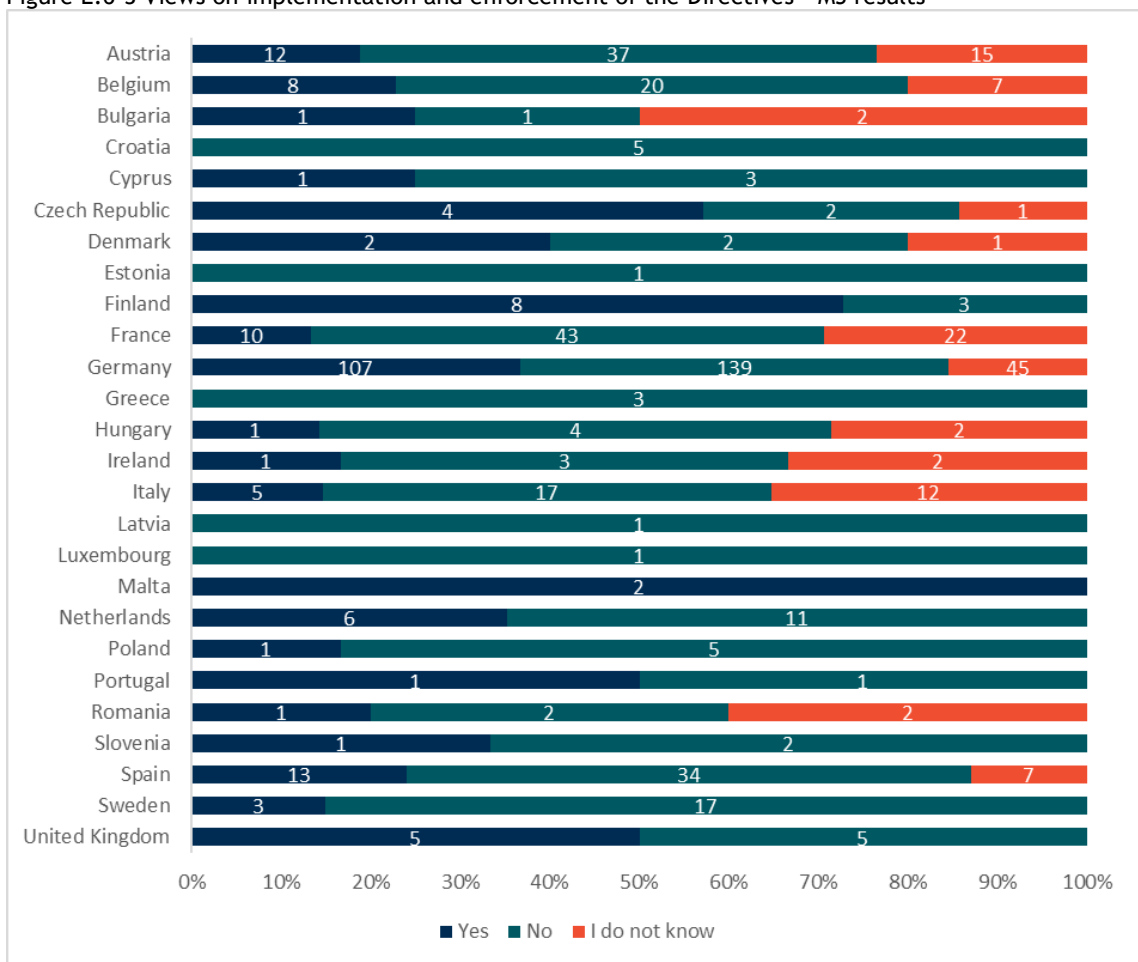
A total of 673 respondents provided a response to this question, out of which 118 (18%) responded “I don’t know”. Out of the respondents that knew the answer to this question (92%), It is interesting to see that the majority of the respondents (65%) consider that the Directives are not effectively enforced and implemented in their country.

Yes	No	Total
193	362	555
35%	65%	100%

Out of the 362 respondents that answered “no”, 1% answered that they were unfamiliar with the WFD, 12% answered they were unfamiliar with the GD, 15% answered they were unfamiliar with the EQSD and 17% answered they were unfamiliar with the FD. Overall, majority of respondents who answered “no” claim to have a good understanding of the Directives.

Figure E.6-3 shows that the views are quite varied based on the Member States. In some Member States, the level of implementation is deemed to be worse - Austria, France, Germany, Italy, Sweden and Spain. In Czech Republic, Finland and the UK, the views are more positive with nearly 50% saying ‘yes’.

Figure E.6-3 Views on implementation and enforcement of the Directives - MS results



Question 4 - According to the WFD, a water body is considered to be in good status only when all the relevant quality elements are in good status and the relevant quality standards for good status are met (the “one-out-all-out” principle).

Questions were included on the respondents’ views of the ‘one out all out’ principle. A total of 673 respondents provided an answer to this question, out of which 262 respondents (39%) responded “I don’t know”. It is quite striking to note that 39% ‘do not know’ this seems to question the level of

expertise of some of the respondents to these questions. Of the respondents that knew the answer to this question (61%), more than half (51%) did not agree with the principle.

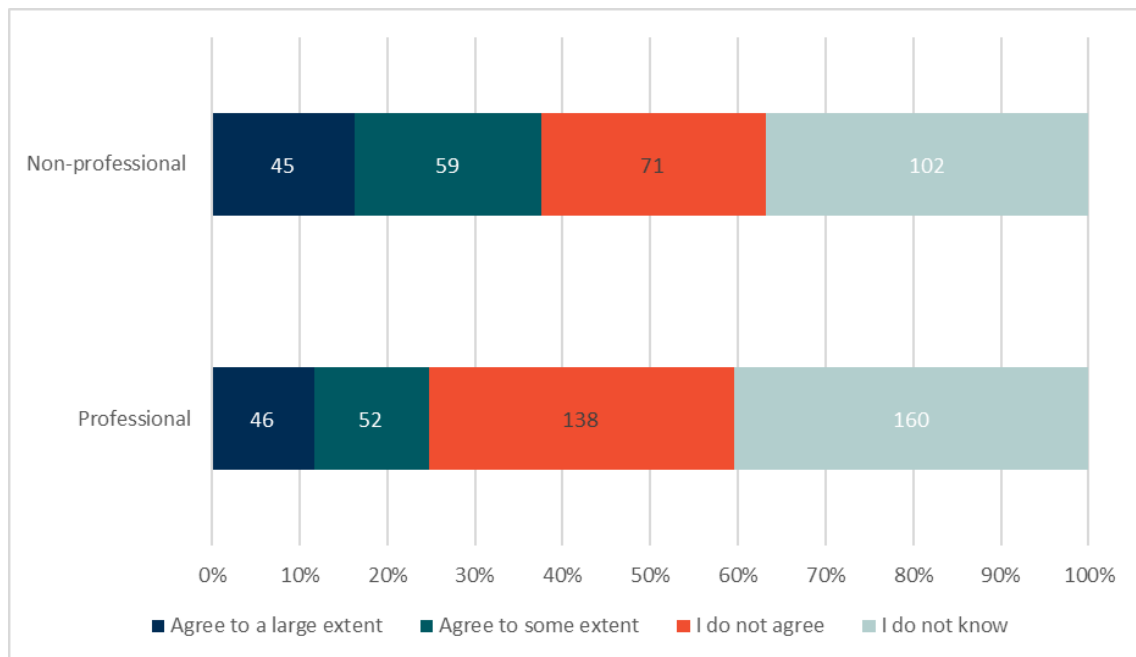
Agree to a large extent	Agree to some extent	I do not agree	Grand Total
91	111	209	411
22%	27%	51%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-4 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens).

Figure 5-10 figure below presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

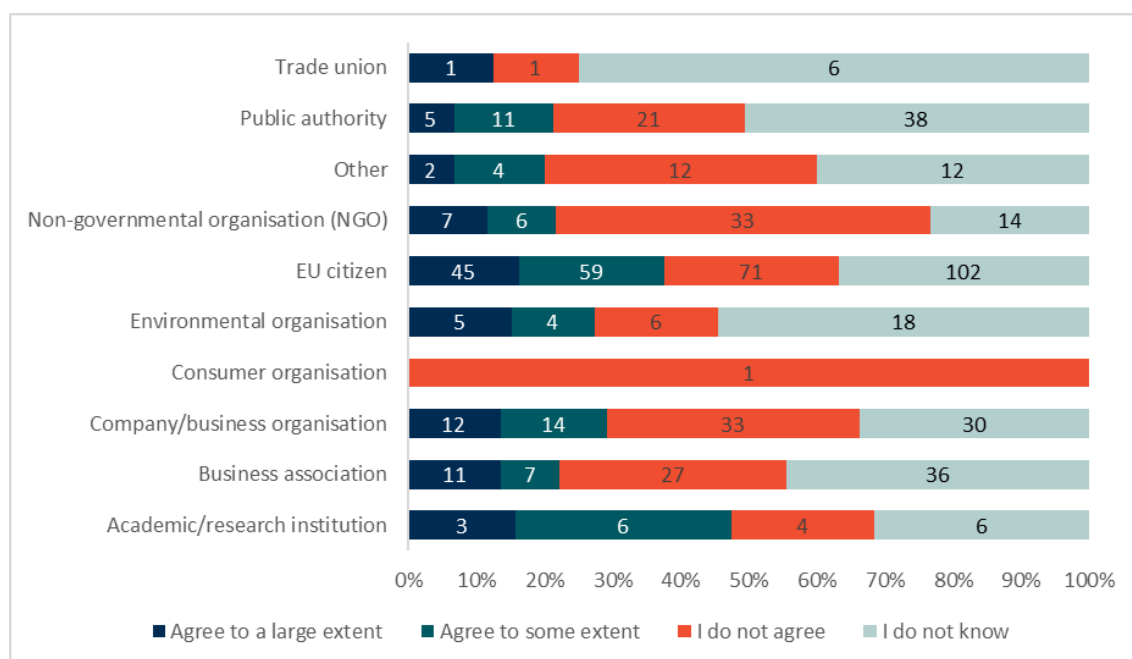
Interestingly, Figure E.6-4 shows that a greater proportion of professional stakeholders responded they don’t know about the ‘one out all out’ principle compared to non-professional stakeholders.

Figure E.6-4 Views from professional and non-professional stakeholders on the appropriateness of the application of the ‘one out all out’



The figure below shows that the overall average views are replicated throughout the categories. It can be observed that the share of business organisations not agreeing with the principle being appropriate is higher than the EU average. Similarly, the share of citizens and academic considering it is at least to some extent appropriate is slightly higher than the EU average.

Figure E.6-5 Views from specific categories of stakeholders on the appropriateness of the application of the ‘one out all out’



Views from respondents were sought on specific aspects of the ‘one out all out’ principle. Table E.6-1 shows the level of knowledge of respondents on specific aspects of the ‘one out all out’ principle by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.6-1 Level of knowledge of respondents on specific aspects of the ‘one out all out’ principle

	% Know	% Don't know	Total number of respondents
The one out all out principle is implemented consistently in all Member States	61%	39%	673
In your country, the one-out-all-out principle is applied in relation to the concentrations of the individual priority substances	83%	17%	639
In your country, the one-out-all-out principle is applied in relation to the concentrations of the individual river basin specific pollutants when assessing ecological status	80%	20%	636
In your country, the other physico-chemical elements, including temperature, pH and nutrient concentrations, are considered separately from the biological quality elements in the assessment of ecological status	80%	20%	632
The one-out-all-out principle ensures that all relevant pressures are adequately covered in your country’s methods to assess ecological status	87%	13%	636
The one-out-all-out approach results in a clear picture of where improvements are needed	92%	8%	661
The consideration of assessment results according to the one-out-all-out principle allows for appropriate prioritisation of measures	90%	10%	657

	% Know	% Don't know	Total number of respondents
It would be easier to explain to the public where progress has been made if the published official status did not have to be based on the one-out-all-out principle	87%	13%	661
The one-out-all-out approach to classification encourages Member States to focus on improving water bodies that are close to good status rather than those in the worst condition	82%	18%	651
It would be worth looking at how to complement the one-out-all-out assessment with more detail on progress made on the ecological status	89%	11%	654
Moving away from an assessment based on the one-out-all-out principle would risk losing sight of the outstanding issues	86%	14%	646

The statements that are the most disagreed with are: ‘the one out all out principle is implemented consistently in all Member States’, ‘The one-out-all-out approach results in a clear picture of where improvements are needed’ and ‘The consideration of assessment results according to the one-out-all-out principle allows for appropriate prioritisation of measures’. This seems to indicate that the main issues with regards to the principle is the level of variation in its implementation and the message that it communicates.

The statements that were the most supported by the respondents are: ‘In your country, the one-out-all-out principle is applied in relation to the concentrations of the individual priority substances’, ‘In your country, the one-out-all-out principle is applied in relation to the concentrations of the individual river basin specific pollutants when assessing ecological status’ and ‘It would be worth looking at how to complement the one-out-all-out assessment with more detail on progress made on the ecological status’.

Table E.6-2 Views from respondents on the ‘one out all out’ principle

	Agree to a large extent	Agree to some extent	I do not agree	Total
The one out all out principle is implemented consistently in all Member States	91	111	209	411
In your country, the one-out-all-out principle is applied in relation to the concentrations of the individual priority substances	378	119	36	533
In your country, the one-out-all-out principle is applied in relation to the concentrations of the individual river basin specific pollutants when assessing ecological status	329	127	51	507
In your country, the other physico-chemical elements, including temperature, pH and nutrient concentrations, are considered separately from the biological quality elements in the assessment of ecological status	305	132	70	507
The one-out-all-out principle ensures that all relevant pressures are adequately covered in your country’s methods to assess ecological status	199	185	167	551

	Agree to a large extent	Agree to some extent	I do not agree	Total
The one-out-all-out approach results in a clear picture of where improvements are needed	173	189	247	609
The consideration of assessment results according to the one-out-all-out principle allows for appropriate prioritisation of measures	167	170	255	592
It would be easier to explain to the public where progress has been made if the published official status did not have to be based on the one-out-all-out principle	276	124	176	576
The one-out-all-out approach to classification encourages Member States to focus on improving water bodies that are close to good status rather than those in the worst condition	125	168	240	533
It would be worth looking at how to complement the one-out-all-out assessment with more detail on progress made on the ecological status	346	128	105	579
Moving away from an assessment based on the one-out-all-out principle would risk losing sight of the outstanding issues	203	138	215	556

Question 5 - How do you rate the significance of the following obstacles to full implementation of the Directives?

The aim of the question was to identify the most significant obstacles to the implementation of the Directive.

Table E.6-3 shows the level of knowledge of respondents on the obstacles towards full implementation of the Directives by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.6-3 Level of knowledge of respondents on the obstacles towards full implementation of the Directives

	% Know	% Don't know	Total number of respondents
Unrealistic expectations of the achievability of the environmental objectives in the time scales required by the Directives	96%	4%	662
Lack of governance structure to allow for an integrated approach to water management at national level	90%	10%	656
Lack of political will to prioritise water issues at national level	96%	4%	664
Lack of appropriate revision of permitting systems	88%	12%	649
Lack of funding to implement the measures required to meet the objectives of the Directives	95%	5%	658
Poor cross-sectoral coordination in implementing the Directives	92%	8%	661
Poor enforcement of the Directives by the European Commission	89%	11%	653
Lack of public information and consultation/opportunity to express views/access to justice	94%	6%	655
Complexity of the implementation and reporting requirements	91%	9%	653
Competition for the use of water (e.g. agriculture, domestic use, industry, recreation, navigation and energy), and conflict with flood protection, drought management, etc.	97%	3%	661

	% Know	% Don't know	Total number of respondents
Differences in interpretation of key provisions between Member States	83%	17%	653
Opposition from domestic users (the public)	94%	6%	648
Opposition from industrial/agricultural users	96%	4%	658
Lack of real-time data on the state of waters to facilitate identification of key sources/actors of pollution	91%	9%	652
Lack of sanctioning mechanism at national/local level to implement the polluter pays principle	93%	7%	656

Table E.6-4 Ratings of significance of obstacles to full implementation

	Very significant obstacle	Moderate obstacle	Not an obstacle	Total
Unrealistic expectations of the achievability of the environmental objectives in the time scales required by the Directives	295	189	151	635
Lack of governance structure to allow for an integrated approach to water management at national level	172	252	164	588
Lack of political will to prioritise water issues at national level	340	178	122	640
Lack of appropriate revision of permitting systems	192	212	168	572
Lack of funding to implement the measures required to meet the objectives of the Directives	326	221	81	628
Poor cross-sectoral coordination in implementing the Directives	294	253	62	609
Poor enforcement of the Directives by the European Commission	125	227	228	580
Lack of public information and consultation/opportunity to express views/access to justice	110	226	277	613
Complexity of the implementation and reporting requirements	152	276	165	593
Competition for the use of water (e.g. agriculture, domestic use, industry, recreation, navigation and energy), and conflict with flood protection, drought management, etc.	352	203	87	642
Differences in interpretation of key provisions between Member States	193	246	101	540
Opposition from domestic users (the public)	75	223	308	606
Opposition from industrial/agricultural users	349	161	121	631
Lack of real-time data on the state of waters to facilitate identification of key sources/actors of pollution	148	211	234	593
Lack of sanctioning mechanism at national/local level to implement the polluter pays principle	332	118	158	608

The views from respondents were mixed on some of the proposed obstacles but those most consistently rated as 'very significant' are:

- Competition for the use of water (e.g. agriculture, domestic use, industry, recreation, navigation and energy), and conflict with flood protection, drought management, etc;

- Opposition from industrial/agricultural users;
- Lack of political will to prioritise water issues at national level;
- Lack of sanctioning mechanism at national/local level to implement the polluter pays principle;
- Lack of funding to implement the measures required to meet the objectives of the Directives.

Respondents were asked if there are any other obstacles to full implementation of the Directives. The other obstacles identified by the respondents are summarised per stakeholder category in the points below:

Academic/research institutions:

- Lack of funding.

Industry/economic organisations/trade unions;

- Lack of economic cost-benefit analysis;
- Complicated permitting processes ;
- Lack of coordination with climate and energy policies;
- ECJ interpretation of the non-deterioration principle;
- Lack of application of polluter-pays principle;
- Transparency is missing in water and energy industry;
- Non-harmonized implementation of basic and common concepts of the WFD by EU Member States.

NGOs and environmental organisations:

- New challenges such as emerging substances, climate change etc. were not anticipated at the genesis of WFD;
- Lack of appropriate and effective review of permitting systems;
- Opposition from hydropower industry;
- The lack of mandatory measures in agriculture, forest management, water power production and other exploitative activities to prevent biological damage and promote healthy water bodies.

Citizens:

- Lack of public engagement;
- No economic cost-benefit analysis;
- Lack of real-time data on the state of waters to facilitate the impact assessment of MS activities.

Question 6 - Do you think that there are enough quantifiable indicators of when the objectives of the Directives have been achieved?

The figures below present the results of this question by category of stakeholders for each Directive.

Figure E.6-6 Views from professional and non-professional stakeholders on indicators to assess objectives of the Water Framework Directive

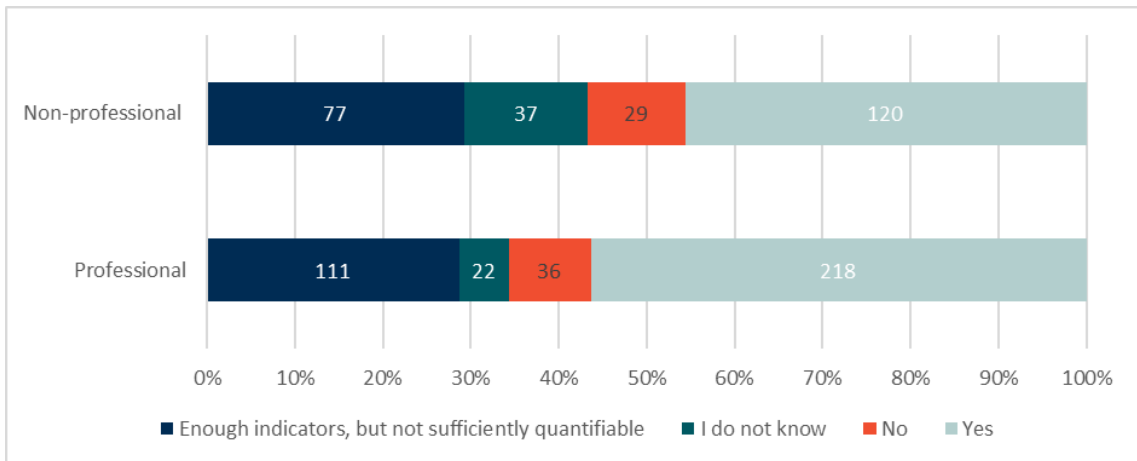


Figure E.6-7 Views from specific categories of stakeholders on indicators to assess objectives of the Water Framework Directive

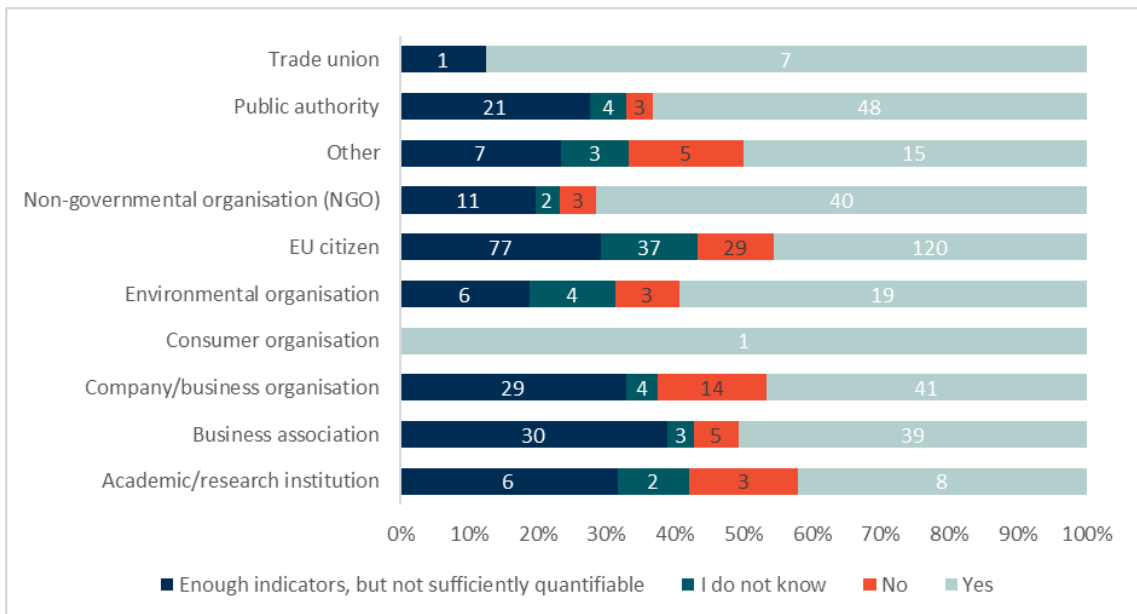


Figure E.6-8 Views from professional and non-professional stakeholders on indicators to assess objectives of the Groundwater Directive

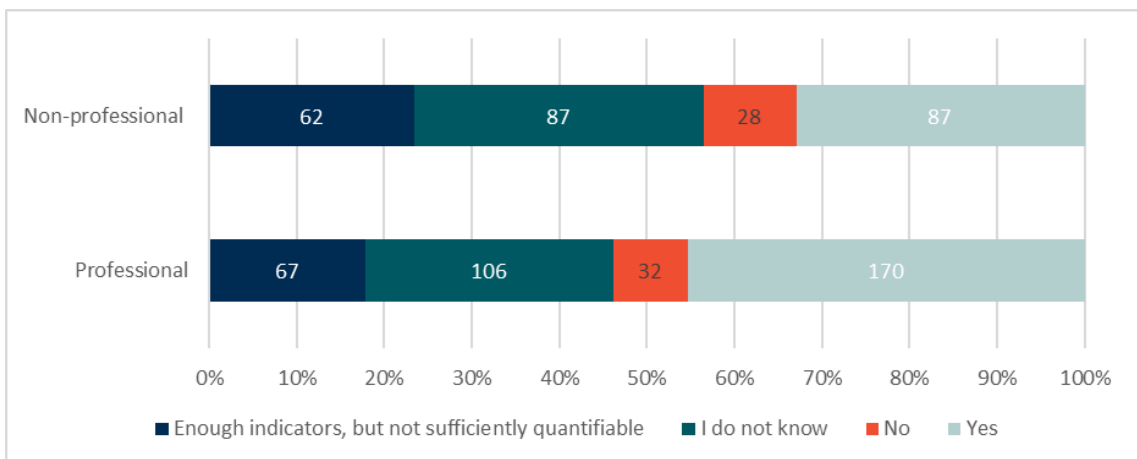


Figure E.6-9 Views from specific categories of stakeholders on indicators to assess objectives of the Groundwater Directive

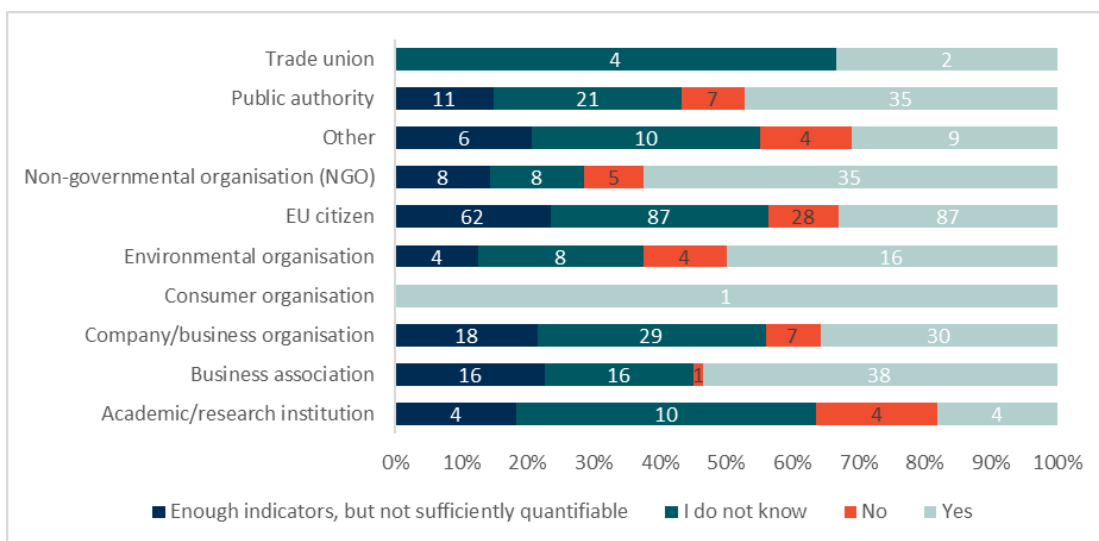


Figure E.6-10 Views from professional and non-professional stakeholders on indicators to assess objectives of the EQS Directive

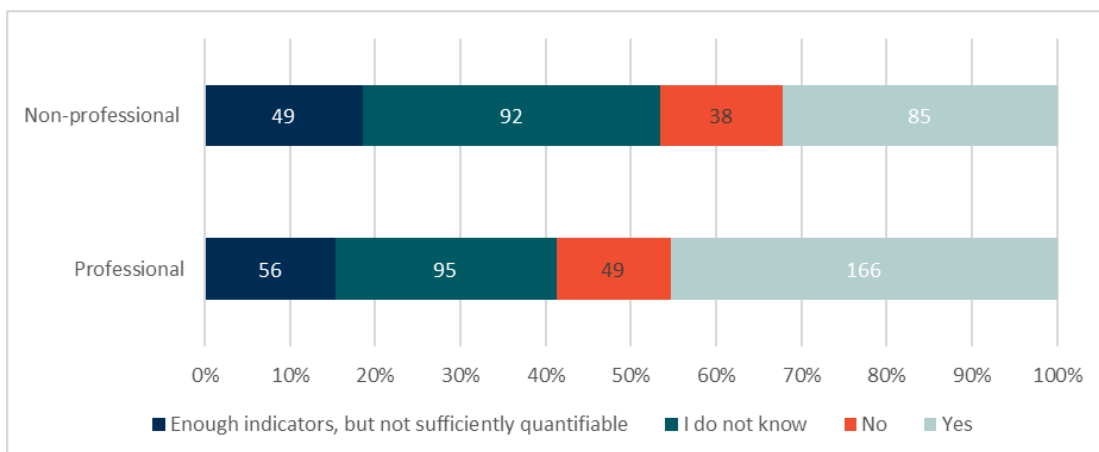


Figure E.6-11 Views from specific categories of stakeholders on indicators to assess objectives of the EQS Directive

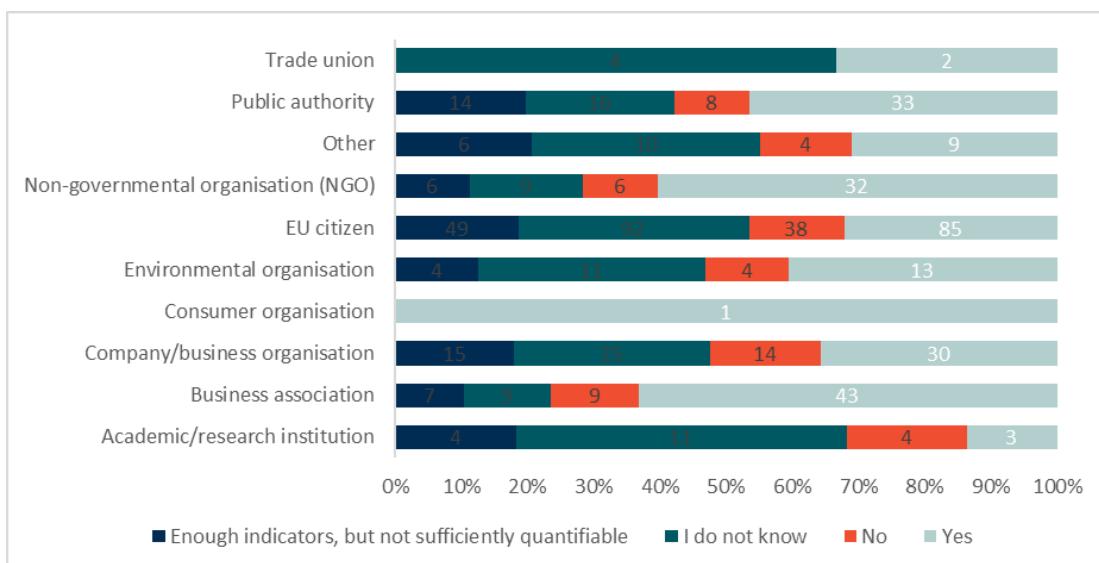


Figure E.6-12 Views from professional and non-professional stakeholders on indicators to assess objectives of the Floods Directive

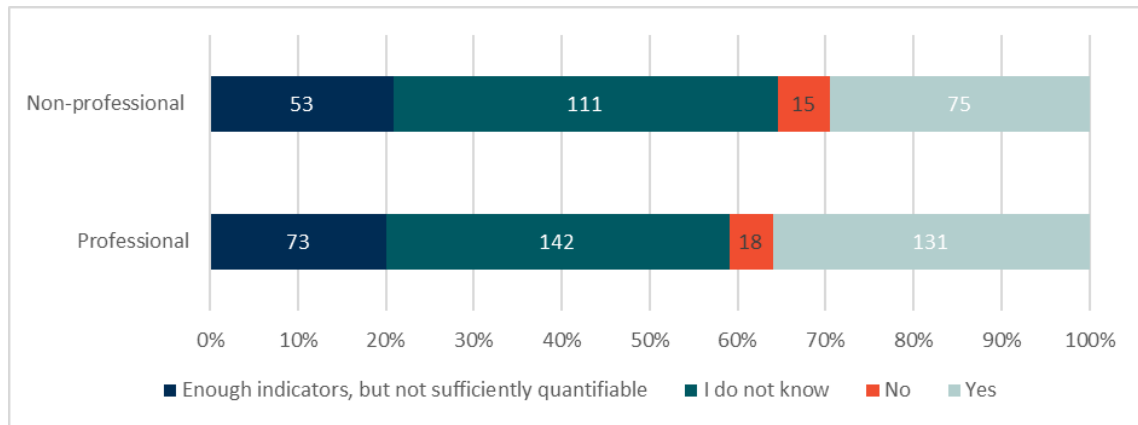
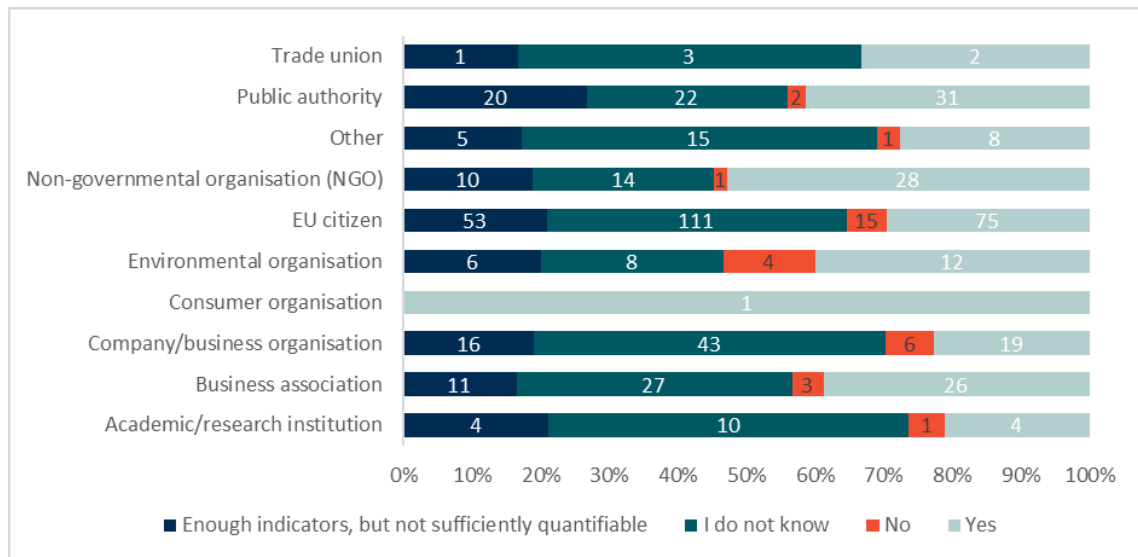


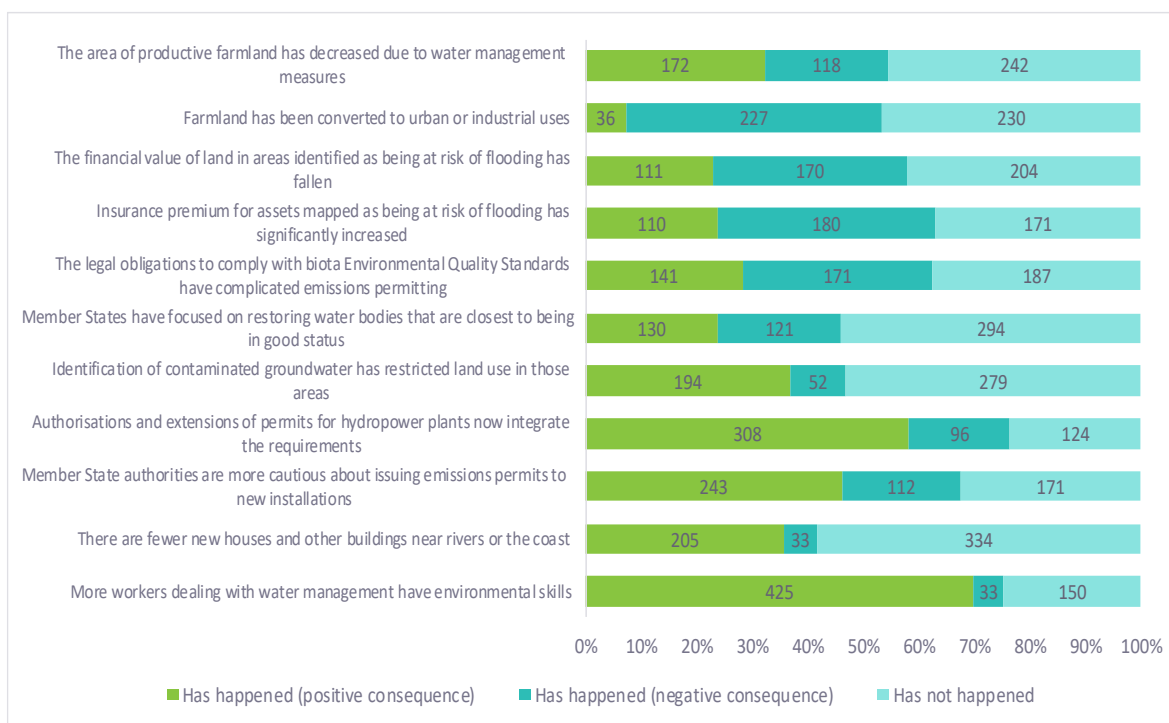
Figure E.6-13 Views from specific categories of stakeholders on indicators to assess objectives of the Floods Directive



Question 8 - Have the Directives had unintended effects (positive or negative)? For each of the following effects, please indicate: 1) whether you consider it has happened; 2) and, if yes, whether you consider it to be a positive or negative consequence of the implementation of EU water law. The aim of the question was to understand whether the legislation has some unintended effects. The responses are summarised in Figure E.6-14.

Unintended effects can be distinguished between positive and negative effects. The most reported positive unintended effect is the increase of environmental skills in workers involved in water sector and the review of permits for hydropower. The most reported negative unintended effect is the conversion of farmland to urban or industrial use and the increase of the premium value for insurance of assets mapped as being at risk of flooding.

Figure E.6-14 Views on unintended effects from the Directives



Respondents were asked if there have been any other unintended effects of the Directives. The other unintended effects identified by each stakeholder category are outlined in the points below:

Industry/economic organisations/trade unions:

- The Directives have had a negative impact on the development of renewable energy
- The EU Floods Directive has made insurance coverage easier to obtain for individuals and businesses than before the directive was introduced. The EU Floods Directive has resulted in existing flood hazard maps being updated and new maps created by the public sector. As a result, the insurance industry has followed the updated maps of the public sector, as far as they were available (comment made by the insurance industries);
- The WFD has caused long planning procedures;
- Permitting and monitoring costs have become more expensive;
- The WFD has prevented the development of water storage;
- New technologies have been developed as a result of the WFD, e.g. fish ladders.

NGOs and environmental organisations:

- Development of new technologies which have added economic, social and environmental value.

Citizens:

- Development of new technologies;
- The WFD has prevented the development of renewable energy;
- The dogmatic application of the non-deterioration principle means that you cannot increase the emissions or the groundwater use, as these are seen as deteriorating the quality status of the water body. This implicitly creates uncertainty and is blocking the economic growth;
- Better knowledge of waters and their condition.

Question 9 - The Floods Directive does not mention insurance, or more generally a risk transfer mechanism, as a means to compensate for the adverse consequences from flooding. In your opinion, would improved access to such a risk transfer mechanism, as part of a broad flood risk management strategy, be a useful measure?

A total of 621 respondents provided an answer to this question, out of which 311 (50%) answered “I don’t know”. This reflects on the lesser level of knowledge on the Floods Directive already identified, but this also reflects on the fact that those responsible for floods management are not necessarily those involved in water management.

Of the respondents that knew the answer to this question (50%), it can be observed that the majority (58%) consider that risk transfer mechanism to be integrated within flood risk management strategy would be useful.

Yes	No	Total
179	131	310
58%	42%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-15 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-16 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question

Figure E.6-15 shows that professional and non-professional stakeholders as a whole share very similar views regarding insurance provision.

Figure E.6-15 Views from professional and non-professional stakeholders on insurance provision

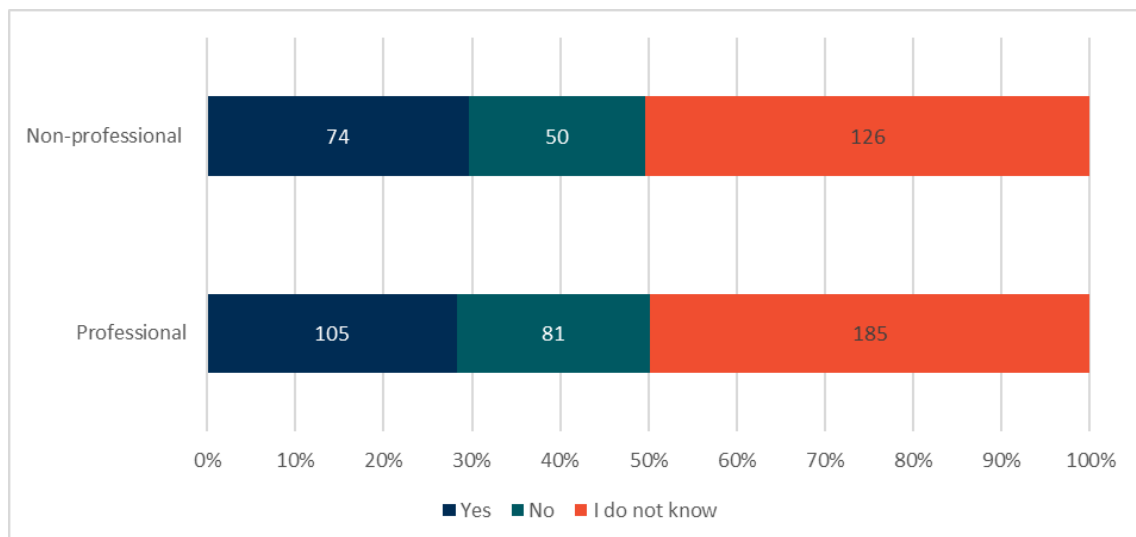
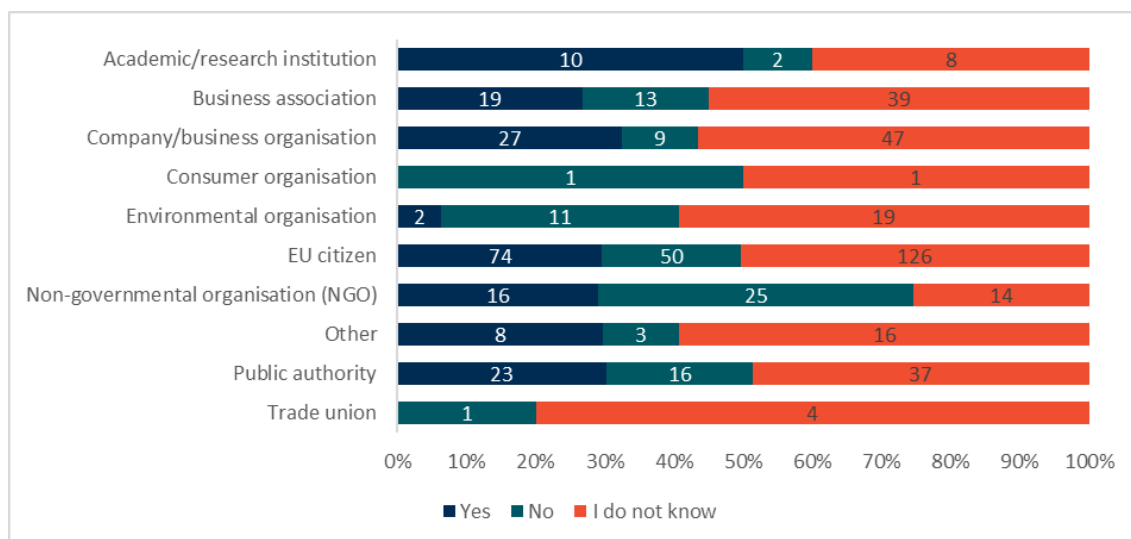


Figure E.6-16 shows that NGOs and environmental organisations do consider the role of insurance provision as less useful than the average respondent. However, academic respondents consider this more useful than the average respondent.

Figure E.6-16 Views from specific categories of stakeholders on insurance provision



Respondents were asked to elaborate on their replies. Their responses per stakeholder category are summarised in the points below:

Academic/research institutions:

- Insurance could be used as an incentive to promote decentralized flood adaptation measures at a household level.

Industry/economic organisations/trade unions:

- A lot of people who bought houses in flood plains were not aware of the risks at the time and now the risks are greater, their assets have depreciated, and insurance premiums have risen;
- Negative consequences of flood events should be borne by the state;
- Insurance can be seen as a substitute for proper flood risk management as it only transfer risks and rather than minimising them;
- Compensation must be considered separately to that of insurance. Compensation must be in place for land owners and farmers whose land is intentionally or regularly flooded;
- Member States should encourage citizens to purchase appropriate insurance cover against floods and natural perils from an insurer in their territory. However, in line with Article 21 of Directive 2009/138/EC, Member States shall abstain from defining appropriate insurance cover;
- It is more important that areas with flooding potential are mapped and that information about this will be disseminated to present and future owners.

NGOs and environmental organisations:

- The focus of the flood management should be on the management of flood risk and the prevention of effects of floods, rather than to compensate for flood damage. Especially if the building of new infrastructure is drawn into the flood-prone areas into consideration, insurance would not be considered as a sensible measure;
- This measure could risk reducing attention on taking positive actions to reduce flood risks.

Public authorities:

- Insurance premiums are determined by real risks and not due to any provisions of the Directive;

- The use of insurance could decrease the perception of risk.

Citizens:

- The reimbursement of damage with public money has proven time and again not to work;
- Insurance against flood damage should be mandatory;
- Insurance or risk transfer should go hand in hand with a risk reduction strategy to be meaningful from a socio-economic point of view.

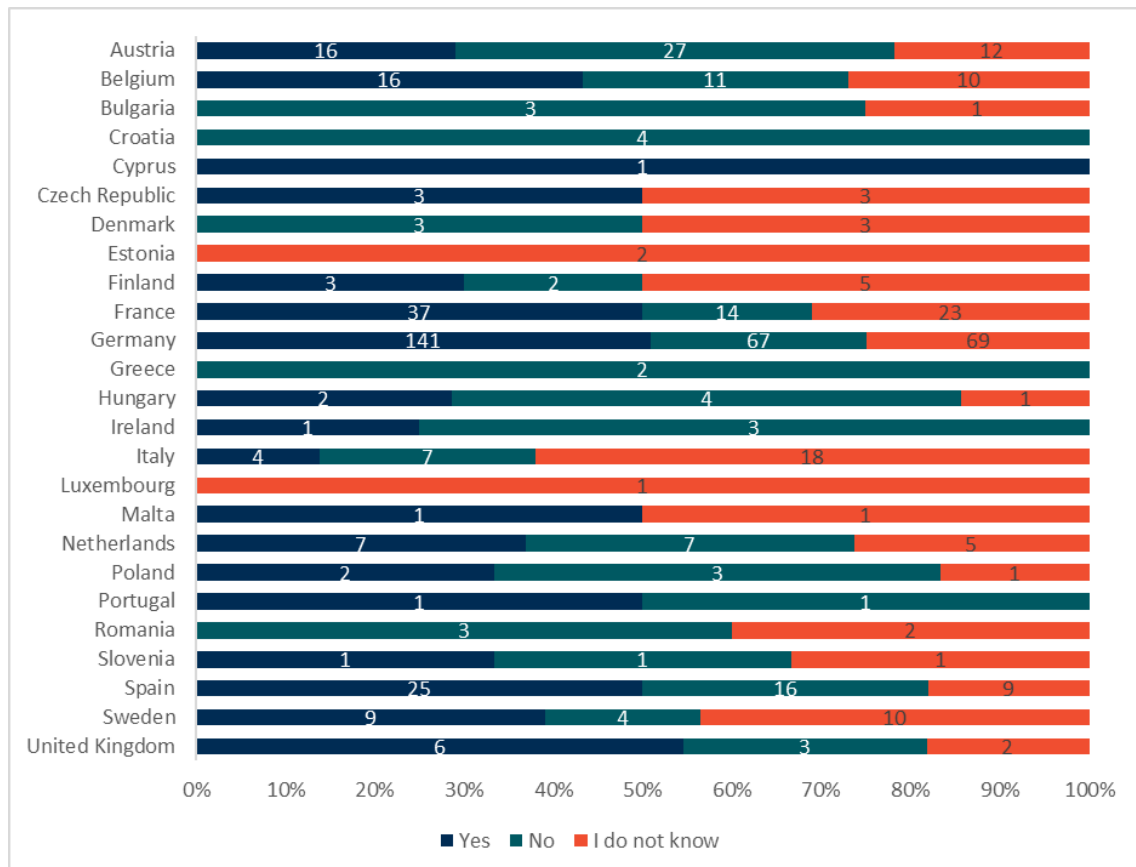
Question 10 - In your opinion, does the current reporting under the Water Framework Directive and the Floods Directive need to be revised, improved or simplified to allow for further reduction of administrative burden?

A total of 640 respondents provided an answer to this question, out of which 179 (28%) responded “I don’t know”. Of the respondents that knew the answer to this question (72%), the majority (60%) consider that the current reporting needs to be revised, improved or simplified.

Yes	No	Total
276	185	461
60%	40%	100%

Figure E.6-17 presents the feedback from respondents by Member States. It can be seen that for those Member States where sufficient number of respondents have provided views, the average trends are reflected.

Figure E.6-17 Feedback on the need to revise the reporting under the WFD and FD



Respondents were asked to provide an explanation for their answer. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- The obligation to submit a report must be improved;
- The reporting requirements are very detailed and demanding, and Member States don't have time to comply with all the requirements. As a result of this, Member States present aggregated information which is sometimes only partially true.

Industry/economic organisations/trade unions

- The complexity of the reporting system leads to governments hiding important information This means that real-time information on the condition of the waters is not always available, which is what the shellfish aquaculture industry needs. Without this it is impossible for the industry to run efficiently;
- Simplification is needed to reduce the administrative burden at national and regional levels and thus improve efficiency and effectiveness of the Directives' implementation;
- Administrative burden is too high for hydropower;
- Currently, there is a big administrative burden related to the reporting of the River Basin Management Plans;
- Reporting requirements under the WFD should be reduced especially for BQEs (obligatory only for those with clear causalities);
- Reporting should be summarized in a joint report that systematically evaluates and makes recommendations for a revision. A merger of the river basin management plans and plans for flood risk management would significantly reduce the administrative burden on Member States.

NGOs and environmental organisations

- Procedures are well established, due to CIS;
- The current reporting needs to be improved to obtain a better overview about on the contaminant load. This is especially true on the contamination by biocides, pesticides and veterinary drugs;
- There are significant differences between reporting in RBMPs and electronic reporting into WISE. WISE reporting should be improved and simplified.

Public authorities:

- The current reporting focuses on the wrong issues. Theoretical methodologies like economic analysis are overemphasized and too much detail is required (e.g. individual substances, monitoring sites, water body status) instead of statistics and information on larger scales (sub units, river basins). Sheets were available too late and were too complex. Required data was not covered by the directives. The quality of the assessment reports did not correspond to the amount of data reported and did not provide a realistic analysis. The published data are not useful to the wider public. Reporting is poorly implemented by the Commission;
- Coverage of reporting requirements is too extensive;
- Analysis of data on WISE lead to misinterpretation because background information is missing;
- Coordination of the various reports requires streamlining. Small discrepancies between the electronic reporting and management leads to unnecessary extra work.

Citizens:

- The electronic reporting is too extensive and goes beyond the requirements of the Commission and the requirements of the WFD;
- The reporting arrangements may need to change but not reduced. The reporting costs are marginal compared to the size of the externalities of water use and bad water management.

Question 11 - The Common Implementation Strategy (CIS) has supported the implementation of the Water Framework Directive and other related EU water policy. Has the Common Implementation Strategy addressed the right issues?

A total of 644 respondents provided a response to this question, out of which 137 (21%) responded “I don’t know”. Of the respondents that knew the answer to this question (79%), the majority (51%) consider that the CIS supports the implementation of the WFD to a large extent. It is noticeable that only a minority of respondents (2%) consider it is not supporting the implementation. A small share of respondents (10%) consider it is fully supported.

Yes, fully	Yes, to a large extent	To some extent	No	Total
50	259	186	12	507
10%	51%	37%	2%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-18 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-19 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-18 shows that a greater proportion of professional stakeholders consider that the CIS has fully or to some extent addressed the right issues compared to non-professional stakeholders.

Figure E.6-18 Views from professional and non-professional stakeholders on whether the CIS has addressed the right issues

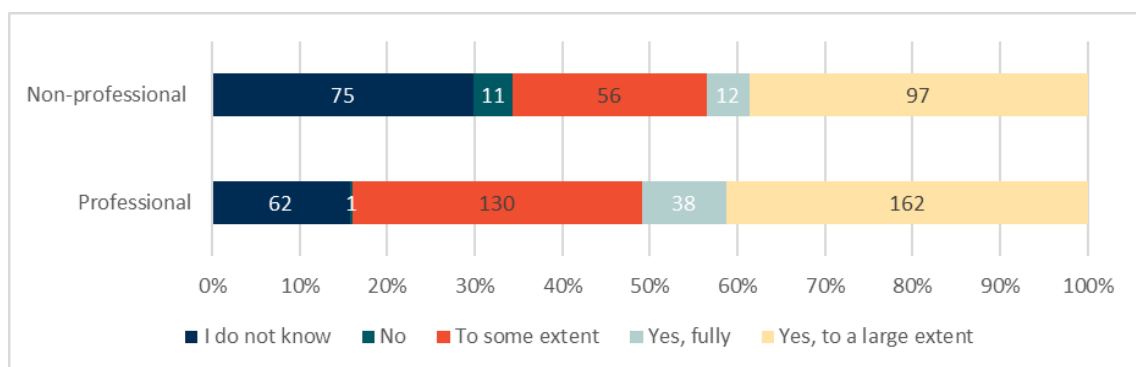
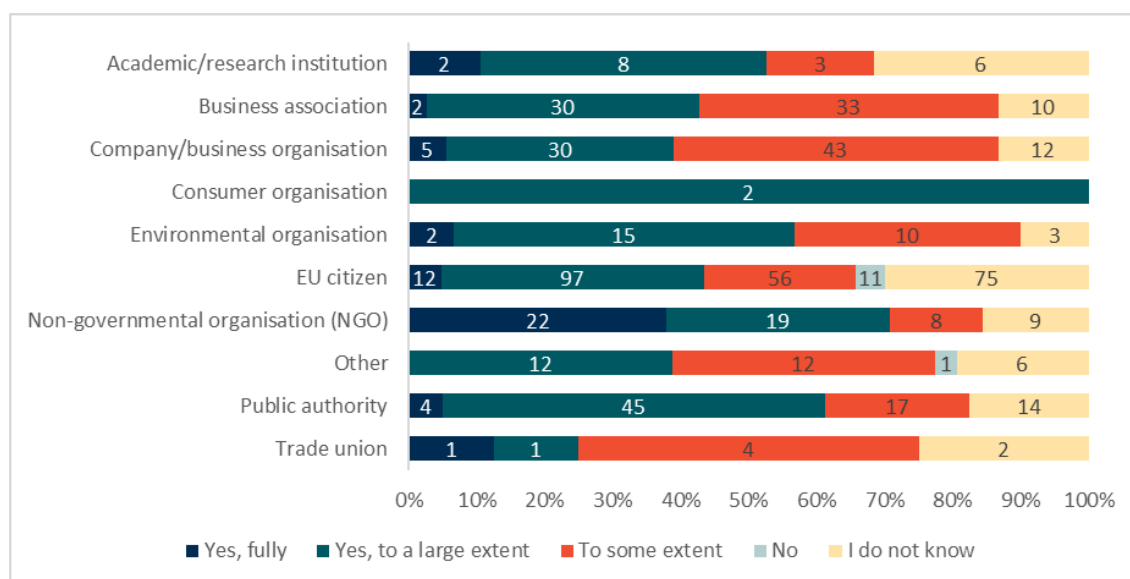


Figure E.6-19 shows that NGOs respondents have a higher than average views on the support provided by CIS with nearly 40% of respondents indicating it is ‘fully’ supporting. A higher share of business organisation and companies have indicated it supports only ‘to some extent’ with broadly 40% of responses.

Figure E.6-19 Views from specific categories of stakeholders on whether the CIS has addressed the right issues



If respondents answered “no” or “only to some extent”, they were requested to provide an explanation and to indicate which priority issues should be addressed via the Common Implementation Strategy. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions

- There is need to integrate other European priorities such as the fight against climate change;
- Mandatory targets for the reduction of nitrate pollution are missing. EU requirements for avoiding pesticides, drugs are largely absent;
- The CIS has been helpful in the implementation of the WFD but has mostly considered water management from an environmental perspective, whereas a more comprehensive approach to water issues is urgently needed putting in the balance climate and energy needs and benefits for each project, plans and programmes;
- CIS guidance papers should aim to levelize knowledge among MS in different topics of implementation - not all MS have the same levels of experience, either regarding administrative procedures or content-related assessments;
- The Common Implementation Strategy should address the coherence among water, climate and energy policies;
- CIS should also enhance cross-sectoral coordination with DG Energy and DG Climate as hydropower sits at the crossroads of climate change mitigation and adaptation. Moreover, clarification is needed on how WFD intends to achieve sustainable water use as there is a lack of comprehensive indicators integrating the consideration of environmental, social and economic aspects of sustainability .NGOs and environmental organisations.

Public authorities

- CIS should provide guidance on open questions of the WFD instead of extending the requirements to new fields. It should also be legally reliable and available early enough for management planning;
- The CIS results arrive too close to when the reports have to be submitted.

Citizens

- Important issues such as classification of water bodies, water height, evaluation of water bodies have been excluded and so there are large differences between Member States;
- There needs to be improved EU-wide cooperation on activities which, for example, deal with nutrient inputs.

Question 12 - Do you consider the Common Implementation Strategy to be a sufficiently inclusive framework? Can relevant stakeholders participate and provide input as they deem appropriate?

A total of 644 responses were provided to this question, out of which 145 (23%) answered “I don’t know”. Out of the respondents that knew the answer to this question (77%), it can be seen that the feedback on the inclusiveness of the CIS process is mostly positive, however only 16% of the respondents consider it as fully inclusive. A total of 9% of respondents consider that the process is not sufficiently inclusive.

Yes, fully	Yes, to a large extent	To some extent	No	Total
78	217	161	43	499
16%	43%	32%	9%	100%

Figure E.6-20 Views from professional and non-professional stakeholders on the inclusiveness of the CIS process

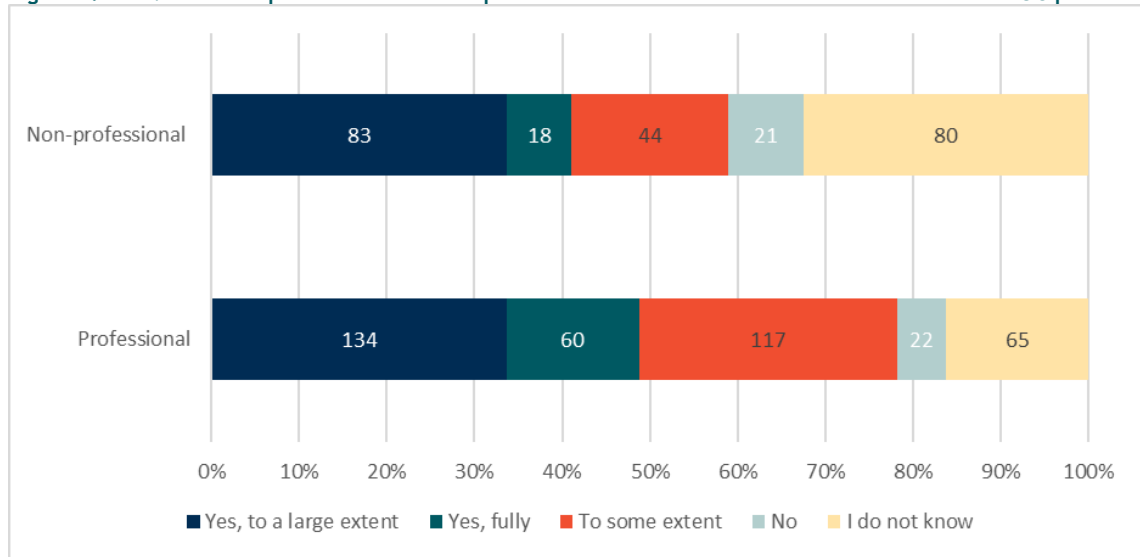
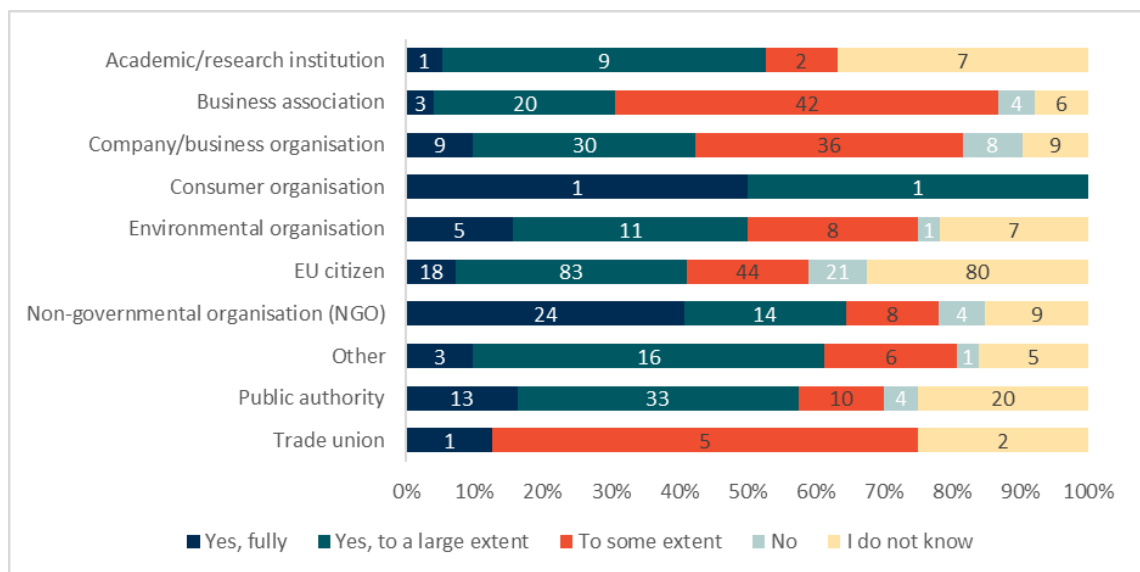


Figure E.6-21 Views from specific categories of stakeholders on the inclusiveness of the CIS process



If respondents answered “no” or “only to some extent” they were requested to provide an explanation. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The industrial and economic stakeholders are not sufficiently heard;
- Representatives of hydropower are not sufficiently heard;
- The CIS system is not a sufficiently open system as it does not allow national stakeholders to directly participate in the process. The admission of exclusively European associations leads to a "dilution" of the positions. The co-ordination of many different positions from the individual member states leads to a consensus that does not reflect the problems as clearly as it would be necessary;
- The inclusive aspect of CIS work has improved over time. However, it still needs to be enhanced as stakeholder participation could vary a lot from a group to another. Attention should also be given to the diversity of stakeholders attending. Involvement of stakeholders with knowledge on other European priorities such as climate measures, renewable needs and economic growth is highly recommended, avoiding as such silo working for the best of all;
- All intentions of the forest sector to demand the implementation of Art.9 EU WFD have not been successful. The polluter pays principle is not implemented with view to forestry;
- There should be introduced a rotation system, or the possibility of participation written to give smaller interest groups the possibility of participation;
- In principle, the process and participation mechanisms are rather open. However, it is not transparent whether and how stakeholder feed-back is taken into account.

NGOs and environmental organisations:

- NGOs are involved in the designing of CIS documents at the EU level but not at the national level;
- Stakeholders are involved at a very aggregate level (large organizations at European level);
- The NGOs participate technical committees and are regularly informed about work processes and empowerment. However, this active involvement often involves a lot of time and travel expenses which can be an inconvenience to NGOs.

Public authorities:

- Cities have never had the opportunity to add comments on the joint strategy.

Citizens:

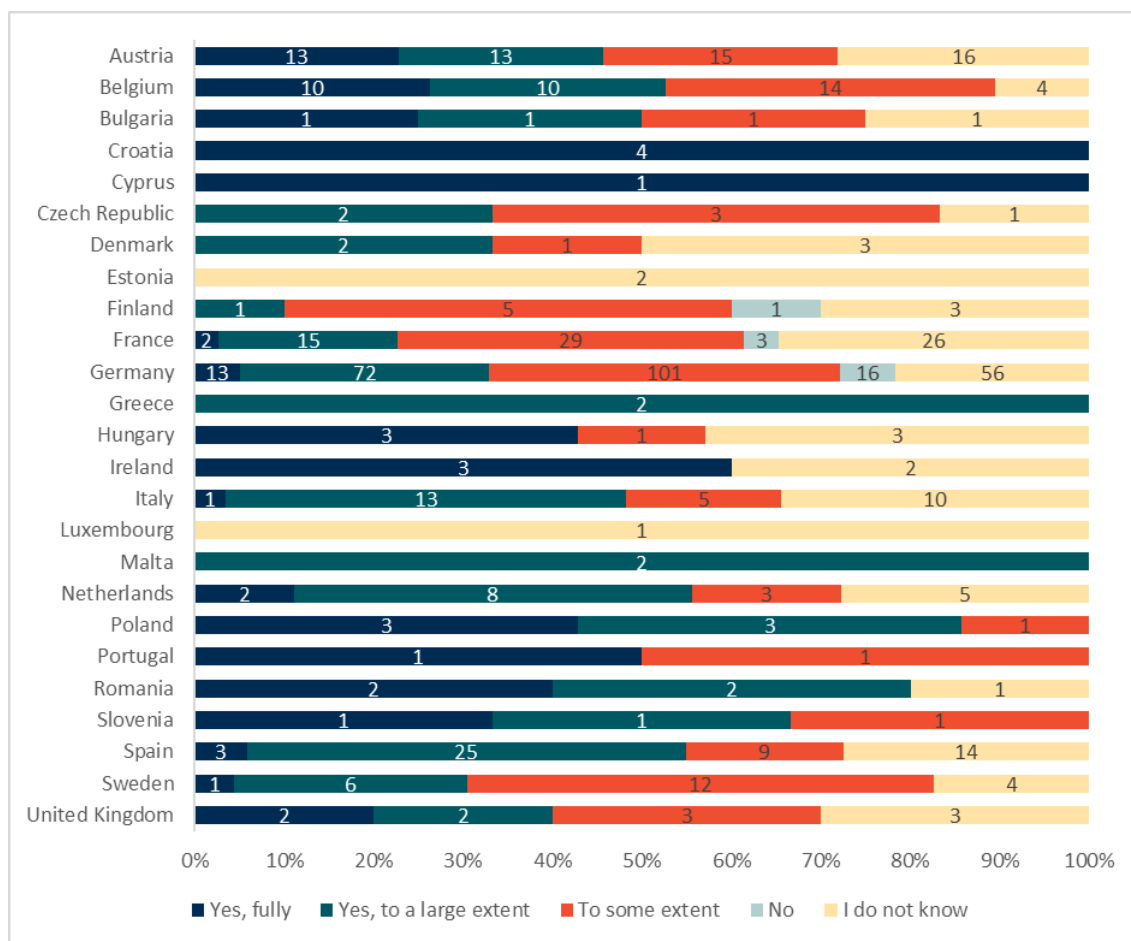
- Citizens are excluded from the decision-making. Landowners virtually have no rights;
- Although the website of the common implementation strategy is accessible to the public, it is quite complicated. It would be useful to have an additional channel of information, for example, to subscribe to a newsletter.

Question 13 - Have the guidance documents produced under the Common Implementation Strategy proved helpful in the practical implementation of EU water policy?

A total of 644 respondents have provided a response to this question, out of which 158 (25%) responded “I don’t know”. Out of the respondents that knew the answer to this question (75%), the majority consider that the documents produced are helpful in the implementation. Only a small share of respondents considers these as not helpful. All of these are EU citizens, most from Germany.

Yes, fully	Yes, to a large extent	To some extent	No	Grand Total
67	184	210	25	486
14%	38%	43%	5%	100%

Figure E.6-22 Views on the usefulness of guidance documents from CIS



If respondents answered “no” or “only to some extent” they were requested to provide an explanation. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions

- The guidelines are often difficult to understand and complicated to use;
- Guidance documents produced under the CIS Strategy are very useful in providing good practices and benchmarks;
- Guidance papers are by far too technical and scientific. They do not provide answers to precise questions arising from implementation. They are too long and use complicated language - this makes it hard to understand for stakeholders and even impossible to communicate to the broader public;
- Until now there is no serious consideration of Art. 9 EU WFD in the guidance documents. The acknowledgment of ecosystem services, the inclusion of "environmental and resource costs", the appropriate use of "adequate incentives" is not only not taken into account but thwarted. Because of that forest owners are paying flood protection for sealed and urbanised areas;
- Some guidelines are detailed and useful, while others leave room for interpretation;
- CIS documents should not be legally binding. Some suggestions from the CIS documents may conflict with the Framework Directive intentions.

NGOs and environmental organisations

- The guidance documents are very complicated;
- The guides are helpful, but known to few actors such as representatives of the authorities;
- The results of the CIS should be incorporated effectively into other sectoral policies;
- There is no uniform interpretation of the WFD by the authorities.

Public authorities

- The guides are often complex and extensive. They offer a good orientation framework but are often not very practical;
- There is very little communication surrounding these documents and so their utility is unfortunately marginal.

Citizens

- The usefulness of guidance varies, as some guidance documents still leave a lot of room for interpretation or do not actually provide guidance. On the other hand, some guidance documents - like the one on EQS derivation - are detailed and very practical. Nonetheless, they are not applied consistently by the Member States, which has led for example to a patchwork of EQS across MS for identical river basin specific pollutants. One of the reasons for not always be taken in by all the MS could be the fact that the guidance documents are produced by a smaller group of MS and stakeholders. Therefore, MS involved are typically more advanced, while others are lagging behind and need to catch up;
- The guidelines contribute to the understanding of important regulations. However, more positive examples are needed in these guidelines, and the formulation of practical tasks and projects on the various topics.

Question 14 - Do you consider that the non-mandatory nature of these guidance documents affects their effectiveness and that they should be made legally binding through EU implementing acts?

A total of 636 respondents have provided their views to this question, out of which 192 (30%) responded “I don’t know”. Out of the respondents that had an answer to this question (70%), more than half (52%) did not consider that the non-mandatory nature of the CIS guidance limits their effectiveness.

Yes	No	Total
114	330	444
26%	74%	100%

The figures below present the results of this question by category of stakeholders. The figure below presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-24 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

The figure below shows that a greater proportion of professional stakeholders think that the non-mandatory nature of these guidance documents does not affect their effectiveness and they should not be made legally binding through EU implementing acts compared to non-professional stakeholders.

Figure E.6-23 Views from professional and non-professional stakeholders on whether the effectiveness of the CIS guidance documents is affected by their non-mandatory nature

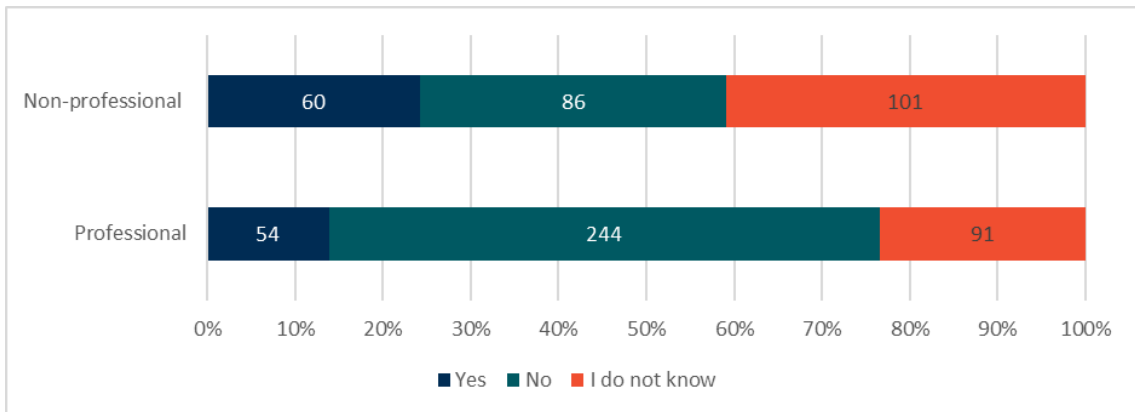
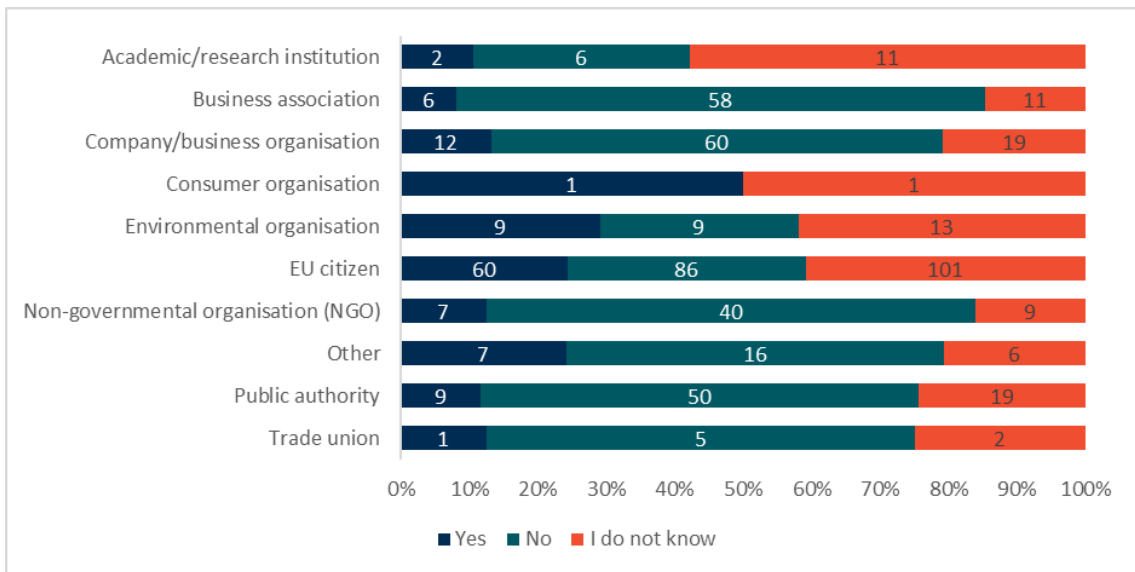


Figure E.6-24 shows that the average results can also be observed across the different categories of respondents. EU citizens is the category which is most critical on the effectiveness of the CIS guidance documents based on their non-binding nature.

Figure E.6-24 Views from specific categories of stakeholders on whether the effectiveness of the CIS guidance documents is affected by their non-mandatory nature



If respondents answered “yes” they were requested to indicate which document(s) should be made mandatory and to provide the reasons for their response. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The guidance documents on the integration of aquaculture are good but are rarely respected in terms of planning or provision of permits - since they are not mandatory, it is too easy to oppose and thus block developments;
- The documents on economic instruments should have been mandatory. In that case the MS would have asked for and worked for a comprehensive set of instruments and ways for derogations.;
- Not necessary legally binding but the documents should have a higher status and better incentives for adherence.

NGOs and environmental organisations:

- They should be made legally binding through EU implementing acts to get full effect.

Citizens:

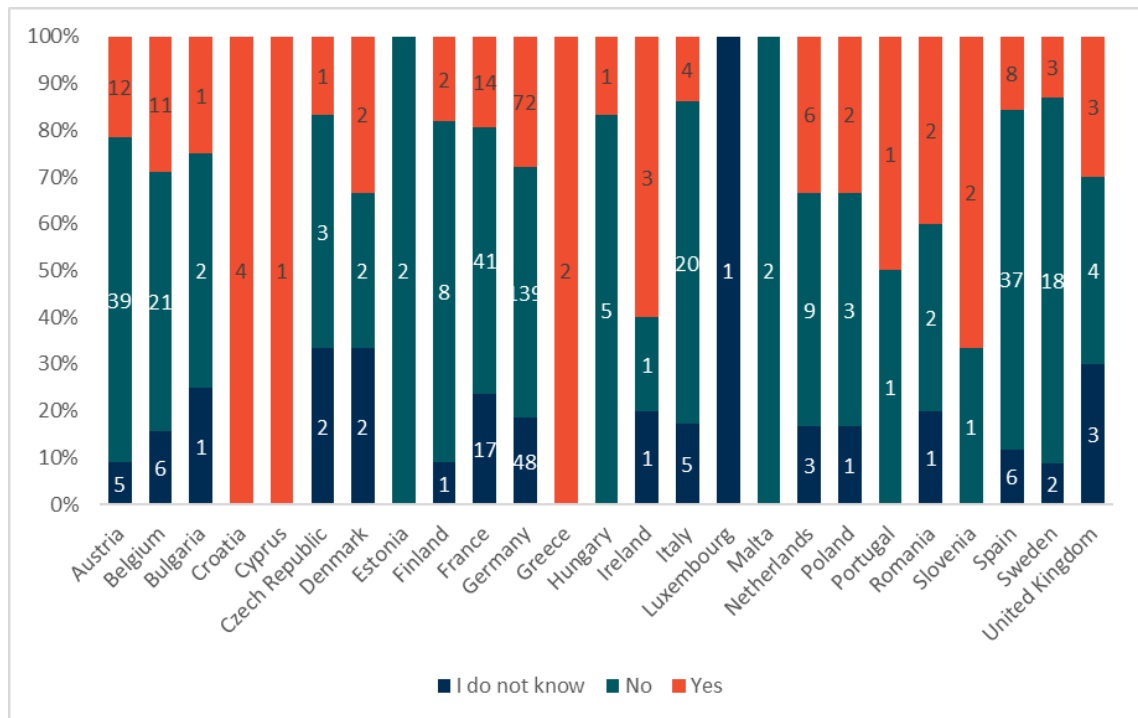
- The legal liability would improve the implementation of balance within the EU member states;
- Voluntary measures are often not implemented.

Question 15 - Do you consider that research and innovation in support of water policy implementation is receiving a high enough priority? The final question of the effectiveness part of the questionnaire is to consider whether research and innovation is receiving a high enough priority. A total of 622 respondents provided an answer to this question, out of which 105 (17%) answered “I don’t know”. Out of the respondents that had an answer to this question (83%), the majority (70%) do not think that a high enough priority is being given to research and innovation, out of which the majority were EU citizens (36%), business organisations (18%) and business associations (13%).

Yes	No	Total
157	360	517
30%	70%	100%

Figure E.6-25 presents an overview of the responses to this question by Member States. As it can be observed, the trends identified at EU level are also visible at Member State level.

Figure E.6-25 Views on whether prioritisation of research and innovation supporting water policy is sufficient



6.3 Efficiency

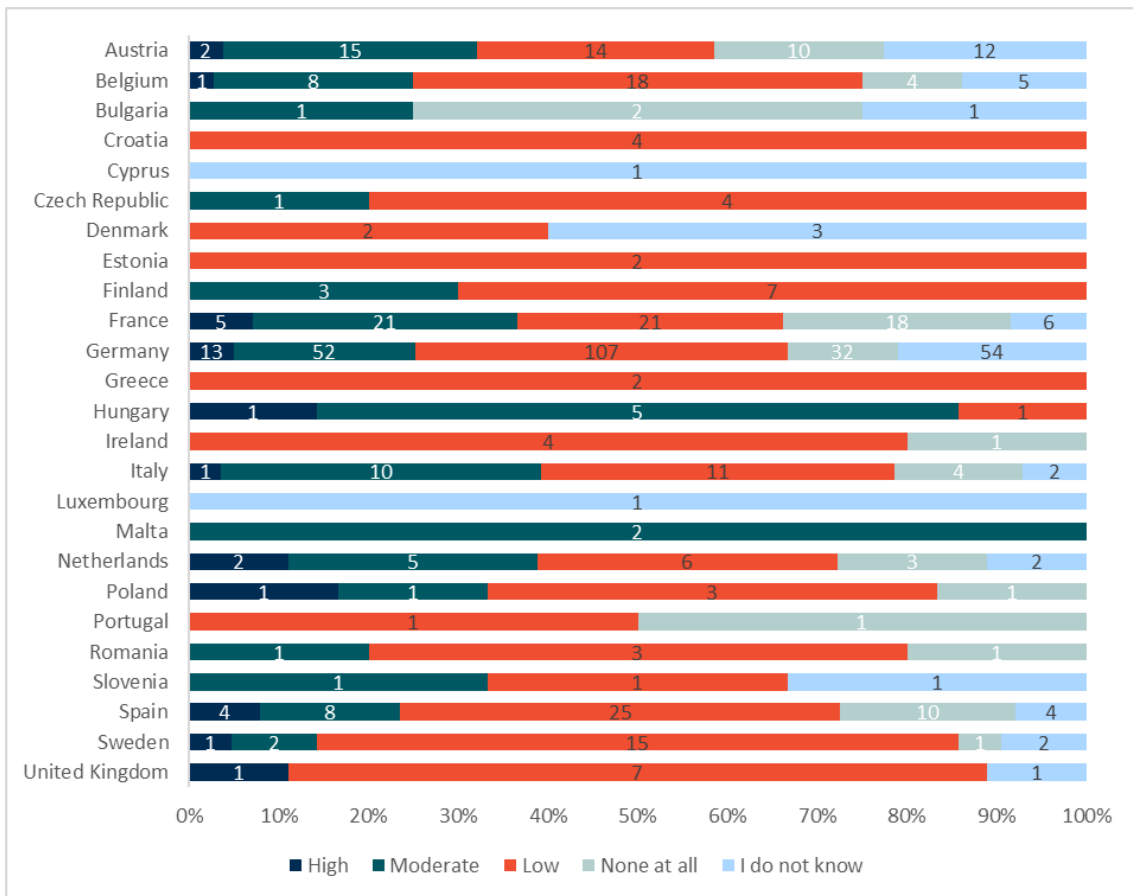
Question 16 - Please indicate how you perceive the availability of information on the costs of measures and the benefits deriving from their implementation.

A total of 610 respondents provided an answer to this question, out of which 95 (16%) responded “I don’t know”. Out of the respondents that had answer to this question (84%), half perceived the availability of information on the costs of measures and the benefits deriving from their implementation to be low.

High	Moderate	Low	None at all	Total
32	136	259	88	515
6%	26%	50%	17%	100%

Figure E.6-26 below presents the results by Member State. Figure E.6-26 shows that the majority of respondents from most Member States perceive the availability of information on the costs of measures and benefits deriving from their implementation to be low. There is no Member State for which majority of the respondents responded that they perceive the availability of information on the costs of measures and benefits deriving from their implementation to be high.

Figure E.6-26 Views on the availability of information on costs of measures and their benefits



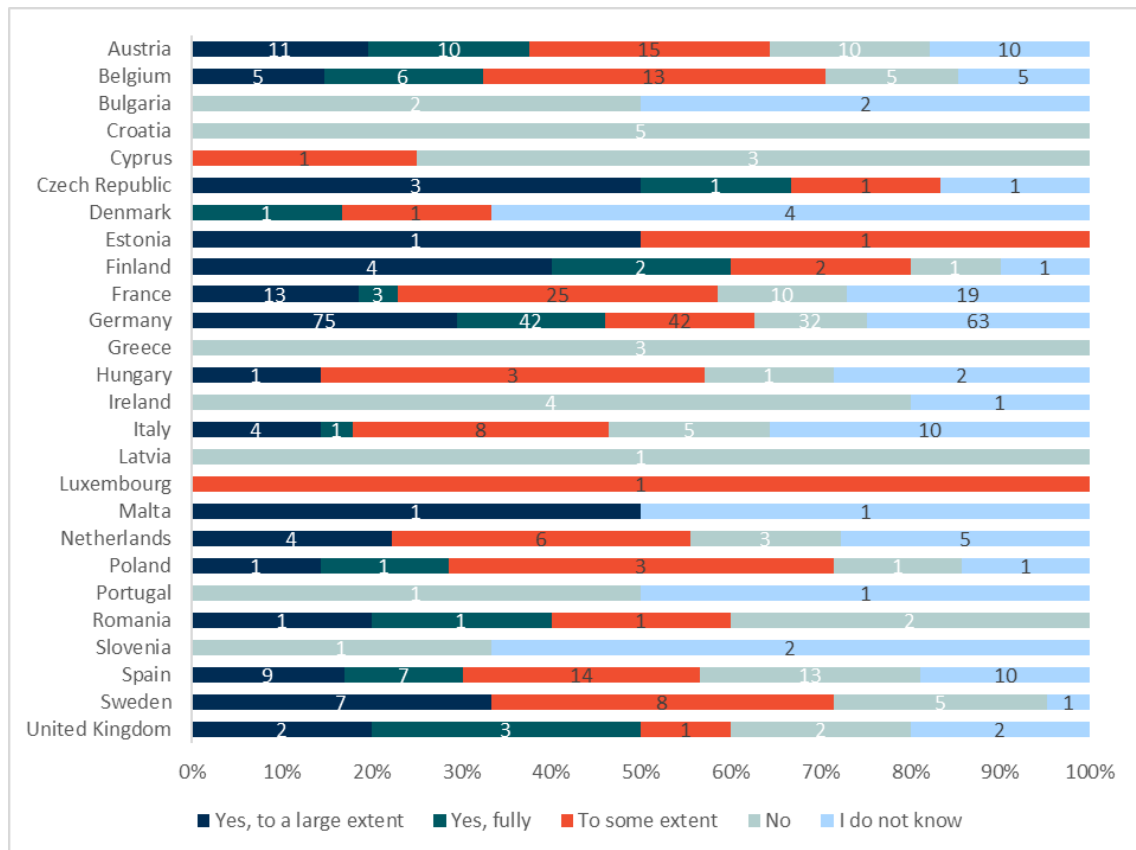
Question 17 - In your view, is the cost recovery principle (Article 9 of the Water Framework Directive) applied in your country?

A total of 614 respondents provided an answer to this question, out of which 141 (23%) responded “I don’t know”. Of the respondents that had an answer to this question (77%), most considered that the cost recovering principle is applied in their country either to some extent or to a large extent. Around 23% of respondents answered that it isn’t applied in their country.

Yes, fully	Yes, to a large extent	To some extent	No	Total
78	142	146	110	476
16%	30%	31%	23%	23%

The figure below presents the results by Member State. It shows that all respondents from Croatia, Greece and Latvia indicated that the cost recovery principle (Article 9 of the Water Framework Directive) is not applied in their country. However, the number of respondents from these countries was very low and so their views cannot be considered as being representative. The United Kingdom was the only Member State for which majority of the respondents indicated that the cost recovery principle is applied fully in the country.

Figure E.6-27 Views on application of the cost recovery principle



If respondents answered “no” or “only to some extent” they were requested to provide an explanation. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- So far polluters are not paying for the costs (Netherlands).

Industry/economic organisations/trade unions

- The shellfish aquaculture industry is at the mercy of polluters. Polluters have not been made to compensate the industry, or the government, for the pollution that affects shellfish waters (UK);
- Cost recovery is applied to water and sanitation, especially for households. There is a significant gap for industry and agriculture (Belgium);
- Since the polluter pays principle is not being implemented, many sources of pollution do not contribute to cover the costs of water services. An example is the cost caused by agriculture of the drinking water supply (Germany);
- In England & Wales, charging of domestic water customers by water companies for asset improvements to achieve environmental improvements is done on a cost reflective basis (UK).

NGOs and environmental organisations

- Polluter pays principle is not applied to diffuse sources from the agricultural sector (Netherlands);
- Water pricing has not been fully and adequately implemented across sectors and is instead often limited to wastewater treatment and provision of drinking water. Prices do not reflect the real cost, with environmental and/or resource costs rarely integrated in the pricing system. Environmental and resource costs are often not even calculated (Latvia);
- Belgium has introduced water pricing in its decrees to some extent, but not adequately. There has been an arrest against Flanders for not correctly implementing Article 9 as the result of a limited interpretation of the concept of ‘water services’ regarding the issue of water pricing. For instance, cost-recovery is mentioned in the measures program for RBMP’s, but limited to waste water treatment and provisions on drinking water (Belgium).

Public authorities:

- Cost recovery is not enough applied on diffuse pollution (France);
- We do not have coverage for flood protections measures or secure funding for reduction of pollutants in water bodies. Also, not all polluter sections can be charged with existing legislation (for example traffic or agriculture farmland) (Sweden).

Citizens:

- Cost recovery principle is not applied to groundwater uses (Spain);
- Most of the costs related to water management are actually transferred to domestic users rather than to polluters (France).

Question 19 - Please rate the extent to which implementation of the Directives has resulted in the following benefits.

Table E.6-5 shows the level of knowledge of respondents on benefits resulting from the implementation of the Directives by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.6-5 Level of knowledge of respondents on benefits resulting from the implementation of the Directives

	% Know	% Don't know	Total number of respondents
Improved wellbeing such as avoided health effects	89%	11%	621
Avoided or reduced emissions to the environment	96%	4%	630
Improved adaptation to climate change	95%	5%	625
Better coordination amongst different authorities in charge of water management issues	95%	5%	630
Better knowledge of water environments	98%	2%	630
Better integration of water with other or water-dependent sectors (e.g. nature, agriculture, transport, energy)	97%	3%	628
Improved cooperation at national level	93%	7%	619
Improved cooperation at transboundary/transnational level	83%	17%	622
Improved water quantity	85%	15%	615
Improved chemical status of water	97%	3%	623
Improved ecological status of water	96%	4%	625
Improved biodiversity in surface waters	93%	7%	622
Improved knowledge and consequent remedial action	95%	5%	618
Improved public information	96%	4%	626
Reduced risk of flood damage to human health and the economy	87%	13%	615
Reduced risk of flood damage to the environment and cultural heritage	86%	14%	607
Contribution to ecosystem services (e.g. provisioning of clean water, supporting nutrient cycles, recreational benefits)	93%	7%	607
Improved availability and quality of treated water for water reuse purposes	88%	12%	614
Improved economic growth and creation of jobs	85%	15%	613

Table E.6-6 presents respondents' views on the benefits resulting from the implementation of the Directives. According to Table E.6-6, the benefit that was rated highest was 'better knowledge of water environments', and the benefit that rated lowest was 'improved water quantity'.

Table E.6-6 Overall rating of potential benefits

	1 (No benefit)	2 (Slight benefit)	3 (Moderate benefit)	4 (Major benefit)	5 (Very significant benefit)	Total
Improved wellbeing such as avoided health effects	48	135	135	139	95	552
Avoided or reduced emissions to the environment	28	100	195	146	136	605
Improved adaptation to climate change	96	192	181	67	55	591
Better coordination amongst different authorities in charge of water management issues	37	95	193	186	88	599
Better knowledge of water environments	15	40	146	229	186	616

	1 (No benefit)	2 (Slight benefit)	3 (Moderate benefit)	4 (Major benefit)	5 (Very significant benefit)	Total
Better integration of water with other or water-dependent sectors (e.g. nature, agriculture, transport, energy)	68	150	189	118	83	608
Improved cooperation at national level	47	105	175	157	93	577
Improved cooperation at transboundary/transnational level	32	96	114	160	117	519
Improved water quantity	138	127	122	59	77	523
Improved chemical status of water	46	109	182	163	104	604
Improved ecological status of water	34	141	161	147	116	599
Improved biodiversity in surface waters	42	151	162	125	99	579
Improved knowledge and consequent remedial action	19	100	195	172	104	590
Improved public information	28	102	195	183	90	598
Reduced risk of flood damage to human health and the economy	45	107	174	125	83	534
Reduced risk of flood damage to the environment and cultural heritage	53	110	174	108	78	523
Contribution to ecosystem services (e.g. provisioning of clean water, supporting nutrient cycles, recreational benefits)	40	132	192	113	88	565
Improved availability and quality of treated water for water reuse purposes	116	130	123	101	68	538
Improved economic growth and creation of jobs	118	162	113	65	61	519

Respondents were asked if there are any other benefits that the Directive have resulted in. Their responses are summarised in the points below:

- Greater biodiversity in surface waters regarding fish fauna;
- Improved economic growth and more jobs through increased work for consultants, laboratories and government agencies.

Question 20 - To what extent do you agree with the following statements on the justification of costs and benefits of the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive?

Water Framework Directive

Table E.6-7 shows the level of knowledge of respondents on the justification of costs and benefits of the WFD by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.6-7 Level of knowledge of respondents on the justification of costs and benefits of the WFD

	% Know	% Don't know	Total number of respondents
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the short term	88%	12%	598
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the longer term	87%	13%	593
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the short to medium term	88%	12%	593
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the long term	88%	13%	592
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	87%	13%	589
Further simplification of the law is possible	91%	9%	595
Further optimisation of the law is possible	87%	13%	589
Further optimisation of the implementation of the Directive/s is possible	92%	8%	589
Stronger links could be made with technical, research and innovation progress	93%	7%	580
The benefits from the Directive/s have increased over time	89%	11%	581

Table E.6-8 presents the respondents’ views on the statements related to the justification of costs and benefits of the Water Framework Directive. The justification that respondents strongly agreed with the most was ‘further optimisation of the implementation of the Directive/s is possible (e.g. by instigating more sanctions in response to breaches of the Directives; by creating a cross-border network of authorities in charge of inspections and the instigation of sanctions)’. The justification that respondents strongly disagreed with the most was ‘further simplification of the law is possible (e.g. reducing monitoring and reporting requirements)’.

Table E.6-8 Views from respondents on relationship between costs and benefits - WFD

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the short term	102	180	119	107	17	525
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the longer term	129	191	108	74	12	514
The costs involved in relation to the Directive/s are justified given the	113	216	101	81	12	523

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
benefits that will be achieved in the short to medium term						
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the long term	196	181	75	55	11	518
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	132	139	80	127	32	510
Further simplification of the law is possible	98	182	59	93	109	541
Further optimisation of the law is possible	142	215	65	35	58	515
Further optimisation of the implementation of the Directive/s is possible	180	155	71	77	60	543
Stronger links could be made with technical, research and innovation progress	123	234	82	76	22	537
The benefits from the Directive/s have increased over time	104	245	115	34	17	515

EQS Directive

Table E.6-9 shows the level of knowledge of respondents on the justification of costs and benefits of the EQSD by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.6-9 Level of knowledge of respondents on the justification of costs and benefits of the EQSD

	% Know	% Don’t know	Total number of respondents
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the short term	73%	27%	531
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the longer term	72%	28%	530
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the short to medium term	72%	28%	525
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the long term	74%	26%	531

	% Know	% Don't know	Total number of respondents
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	68%	32%	526
Further simplification of the law is possible	73%	27%	528
Further optimisation of the law is possible	69%	31%	524
Further optimisation of the implementation of the Directive/s is possible	72%	28%	528
Stronger links could be made with technical, research and innovation progress	74%	26%	530
The benefits from the Directive/s have increased over time	73%	27%	510

The table below presents respondents' views on the statements related to the justification of costs and benefits of the EQSD. The justification that respondents strongly agreed with the most was 'the costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the long term'. The justification that respondents strongly disagreed with the most was 'further simplification of the law is possible (e.g. reducing monitoring and reporting requirements).

Table E.6-10 Views from respondents on relationship between costs and benefits - EQSD

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the short term	77	107	102	75	25	386
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the longer term	96	114	88	68	17	383
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the short to medium term	87	127	84	59	19	376
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the long term	126	131	67	49	18	391
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	92	90	82	66	27	357
Further simplification of the law is possible	60	118	59	65	83	385

Further optimisation of the law is possible	85	153	50	20	51	359
Further optimisation of the implementation of the Directive/s is possible	120	107	72	34	48	381
Stronger links could be made with technical, research and innovation progress	84	156	104	34	14	392
The benefits from the Directive/s have increased over time	83	142	102	30	14	371

Groundwater Directive

Table E.6-11 shows the level of knowledge of respondents on the justification of costs and benefits of the GD by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.6-11 Level of knowledge of respondents on the justification of costs and benefits of the GD

	% Know	% Don't know	Total number of respondents
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the short term	73%	27%	525
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the longer term	73%	27%	523
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the short to medium term	73%	27%	525
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the long term	73%	27%	524
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	69%	31%	520
Further simplification of the law is possible	70%	30%	523
Further optimisation of the law is possible	68%	32%	516
Further optimisation of the implementation of the Directive/s is possible	74%	26%	524
Stronger links could be made with technical, research and innovation progress	74%	26%	521
The benefits from the Directive/s have increased over time	73%	27%	513

Table E.6-12 presents respondents’ views on the statements related to the justification of costs and benefits of the Groundwater Directive. The justification that respondents strongly agreed with the most was ‘further optimisation of the implementation of the Directive/s is possible (e.g. by instigating more sanctions in response to breaches of the Directives; by creating a cross-border network of authorities in

charge of inspections and the instigation of sanctions). The justification that respondents strongly disagreed with the most was ‘further simplification of the law is possible (e.g. reducing monitoring and reporting requirements)’.

Table E.6-12 Views from respondents on relationship between costs and benefits - GD

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the short term	47	129	130	58	18	382
The costs involved in relation to the Directive/s are justified given the benefits that have already been achieved in the longer term	59	166	91	51	14	381
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the short to medium term	58	174	89	47	14	382
The costs involved in relation to the Directive/s are justified given the benefits that will be achieved in the long term	97	175	62	39	11	384
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	76	105	109	52	16	358
Further simplification of the law is possible	51	104	48	80	83	366
Further optimisation of the law is possible	60	161	88	26	17	352
Further optimisation of the implementation of the Directive/s is possible	131	102	65	44	44	386
Stronger links could be made with technical, research and innovation progress	112	160	66	34	14	386
The benefits from the Directive/s have increased over time	50	152	133	24	13	372

Question 21 - To your knowledge, does the cost-benefit ratio associated with implementing the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive differ between Member States, or between different regions in your or other countries?

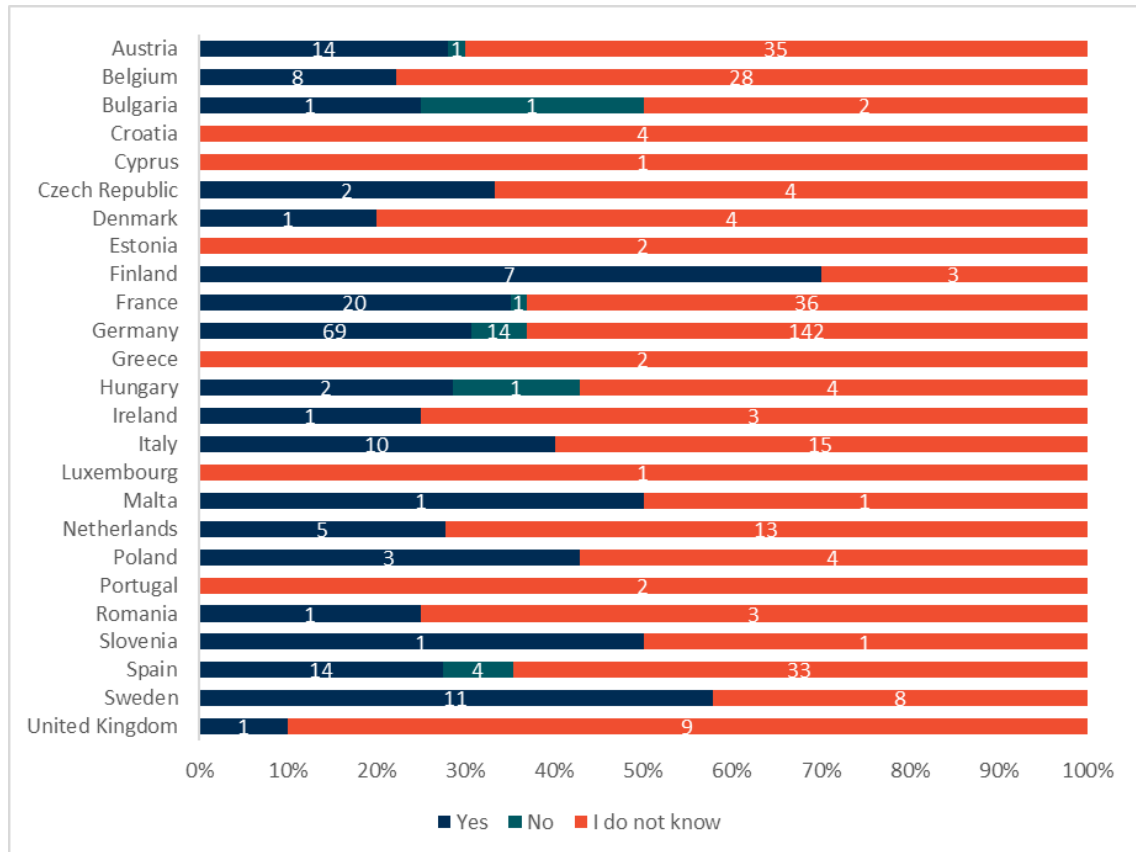
A total of 554 respondents provided a response to this question, out of which 360 (65%) responded “I don’t know”. Of the respondents that had an answer to this question (35%), the majority (89%)

answered that the cost-benefit ratio of implementing the Directives differs between Member States, or between different regions in their countries or other countries.

Yes	No	Total
172	22	194
89%	11%	65%

The figure below presents the results by Member State. It shows that majority of the respondents from most countries indicated that they did not know if the cost-benefit ratio associated with implementing the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive differs between Member States, or between different regions in their country. The majority of the respondents from Finland and Sweden indicated that the cost-benefit ratio associated with implementing the Water Framework Directive, the Environmental Quality Standards Directive and the Groundwater Directive does differ between Member States, or between different regions in their country.

Figure E.6-28 Views on the cost-benefit ratio associated with the implementation of the WFD, EQSD, GD



If respondents answered “yes” they were requested to provide some geographical examples if possible and describe the reasons for differences in the cost-benefit ratio (e.g. different monitoring costs). Their responses are summarised by stakeholder category in the points below:

Academic/research institutions:

- In Eastern Europe there are lower environmental quality standards and therefore costs are lower (Germany)

- Not all benefits are known everywhere (inside and between countries) and valued in monetary terms, thus the cost-benefit ratios are not all calculated on the same basis (Norway)

Industry/economic organisations/trade unions

- The Directives are implemented at a different level in the different Member States, and control and monitoring are different (Denmark)
- Population density and number of water bodies varies between countries. For e.g. Sweden has a large number of water bodies (as much as 20% of all European water bodies). This results in higher costs compared to other Member States (Sweden)
- In Germany there exist monopolies and oligopolies of water and energy industry. They have access to all relevant data. This means that they also decide which data are sent to Brussels to carry out a cost-benefit analysis (Germany)

NGOs and environmental organisations

- There is difference in capacity to have access to high tech labs, different approaches to implement the polluter pays principle and the cost-recovery principle that generates differences in the cost-benefit relation and capacity to act across Member States. Moreover, there are huge differences between regions and countries regarding hydrology/ geology, pressures on the environment and status of water bodies, and the associated costs and measures to reach the goals of the Directives (Austria)
- In Mediterranean areas a reliable monitoring network would require to be far more intense due to geographical variability of rainfall regime. Some management practices are less effective (if at all) in semiarid areas compared to continental areas (Italy)

Citizens:

- The different economic situation of each country and the difference in operating costs (and prices) makes the cost-benefit analysis are different. In addition to the inclusion of environmental externalities it is not quite widespread in the EU (Spain)
- In Italy the protection of waters is delegated to regional governments and each region is organized in a different way. Also, the financial resources between regions are not uniform (Italy)
- France already had much of the necessary tools for the implementation of the WFD especially with the existence of the relevant water agencies on grans watersheds. The polluter-pays system was already in place for several decades and a vast network of monitoring was in place. For other countries without these tools, the implementation was necessarily more expensive (France)

Question 22 - The costs of implementation may be linked to the achievement of the most significant benefits. To what extent do you agree with the following statements on the justification of costs and benefits of the Floods Directive?

The table below shows the level of knowledge of respondents on the justification of costs of benefits of the Floods Directive by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

	% Know	% Don't know	Total number of respondents
The costs involved in relation to the Directive are justified given the benefits that have already been achieved	67%	33%	518
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the short to medium term	69%	31%	512
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the long term	69%	31%	512
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	66%	34%	510
Further simplification of the law is possible (e.g. reducing monitoring and reporting requirements)	66%	34%	513
Further optimisation of the law is possible	64%	36%	512
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the short to medium term	69%	31%	512
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the long term	69%	31%	512
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	66%	34%	510
Further simplification of the law is possible	66%	34%	513
Further optimisation of the law is possible	64%	36%	512
Further optimisation of the implementation of the Directive is possible	67%	33%	509
Stronger links could be made with technical, research and innovation progress	68%	32%	508
The benefits from the Directive have increased over time	65%	35%	492

The table below presents respondents' views on statements related to this justification of costs and benefits of the Floods Directive. The justification that respondents strongly agreed with the most was 'the costs involved in relation to the Directive are justified given the benefits that will be achieved in the long term'. The justification that respondents disagreed with the most was 'further simplification of the law is possible (e.g. reducing monitoring and reporting requirements)'.

	Strongly agree	Agree	Neither agree nor disagree	Strongly disagree	Disagree	Total
The costs involved in relation to the Directive are justified given the benefits that have already been achieved	75	133	85	12	44	349
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the short to medium term	82	150	83	6	30	351

	Strongly agree	Agree	Neither agree nor disagree	Strongly disagree	Disagree	Total
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the long term	127	131	68	7	20	353
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	83	111	92	14	36	336
Further simplification of the law is possible (e.g. reducing monitoring and reporting requirements)	39	105	48	87	61	340
Further optimisation of the law is possible	55	117	92	17	48	329
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the short to medium term	82	150	83	6	30	351
The costs involved in relation to the Directive are justified given the benefits that will be achieved in the long term	127	131	68	7	20	353
When considering the administrative costs linked to the implementation, the costs are justified compared to the benefits achieved	83	111	92	14	36	336
Further simplification of the law is possible	39	105	48	87	61	340
Further optimisation of the law is possible	55	117	92	17	48	329
Further optimisation of the implementation of the Directive is possible	96	97	78	33	37	341
Stronger links could be made with technical, research and innovation progress	103	133	64	16	27	343
The benefits from the Directive have increased over time	42	160	87	8	21	318

Respondents that answered “Strongly Agree” or “Agree” to the statements regarding further simplification or optimisation were requested they provide specific suggestions. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- Smart management of ecosystem, network and infrastructure by the utilization of a historical and real time database can be used to build resilience and reduce need of additional investment in infrastructure and excessive costs in administrative burden. Case studies have demonstrated that such smart network management can reduce the implementation cost by more than 60%;
- Cost-efficiency in planning and implementing measures is important because of limited resources. It is important to allocate resources to where they are most beneficial;
- A stronger link with construction and land use regulations related to sanctions is necessary ;
- The implementation of the Flood Directive can be further optimised and deliver greater multiple benefits by Member States focusing more on green infrastructure and natural flood

management (NFM) approaches, as they have proven to be a cost-efficient means of reducing flood risks and by better integrating climate change and spatial planning and land-use policies into flood risk management.

NGOs and environmental organisations:

- Better inclusion of climate change and spatial planning in the context of flood management is required;
- It is proven that using Natural Water Retention Measures is more efficient than grey infrastructure, since it provides multiple benefits and needs less maintenance. There is thus a big opportunity for optimisation;
- The implementation of the Flood Directive can be further optimised and deliver greater multiple benefits by Member States focusing more on green infrastructure and natural flood management (NFM) approaches, as they have proven to be a cost-efficient means of reducing flood risks and by better integrating climate change and spatial planning and land-use policies into flood risk management.

Public authorities:

- Reducing reporting requirements, focusing on relevant issues instead of theoretical methodologies;
- In relation to reporting and cost-benefit analysis, the objective in the short-medium term should be tending to zero reporting, replacing direct access to the data generated by the competent authorities. In this regard strengthening the interoperability approach proposed by the INSPIRE Directive is the marked path.

Citizens:

- Align reporting requirements of INSPIRE, use remote sensing, standardize reporting requirements to various other Directives;
- Control of land designation in flood areas and targets for recovery of additional retention area in flood plains;
- The principle of "best available technology" should be extended.

Question 23 - To your knowledge, does the cost-benefit ratio associated with implementing the Floods Directive, differ between Member States, or between different regions in your or other countries?

A total of 539 respondents provided an answer to this question, out of which the 422 (78%) responded “I don’t know”. Of the respondents that had an answer to this question (22%), the majority (77%) answered that the cost-benefit ratio associated with implementing the Floods Directive differs between Member States, or between different regions in their or other countries

Yes	No	Total
90	27	117
77%	23%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-29 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). The figure below presents the results by specific categories of

stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-29 shows that a greater proportion of professional stakeholders do not know about the difference in cost-benefit ratio on implementation of the Floods Directive compared to non-professional stakeholders.

Figure E.6-29 Views from professional and non-professional stakeholders on difference in cost-benefit ratio on implementation of the Floods Directive

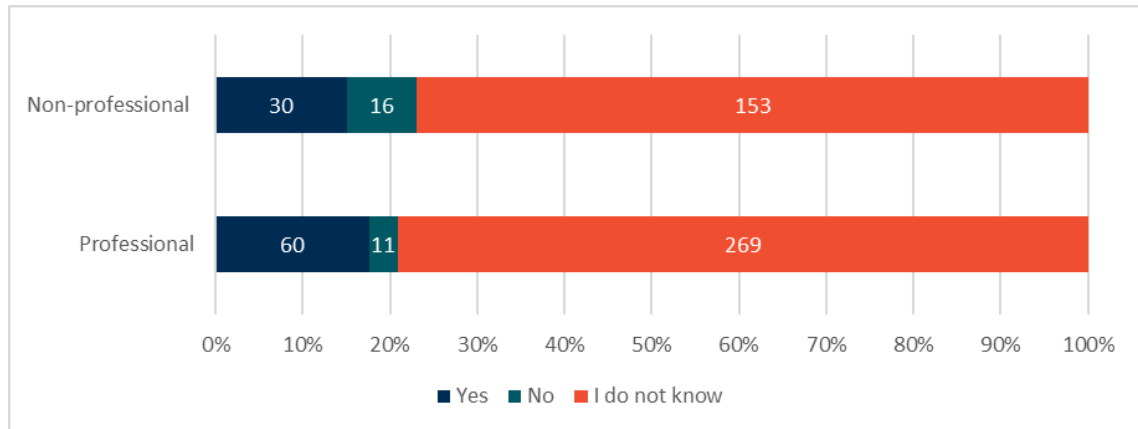
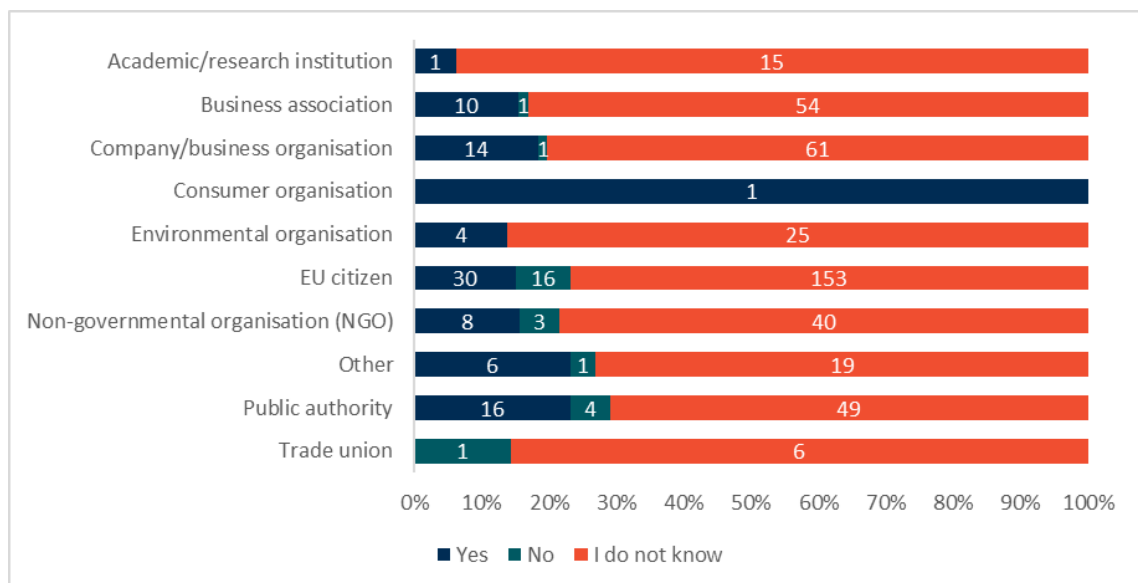


Figure 6-9The figure below shows that apart from consumer organisations, the majority of the respondents from the different stakeholder groups responded that they did not know if the cost-benefit ratio associated with implementing the Floods Directive, differs between Member States, or between different regions in their country. As only one response was received from consumer organisations, this view cannot be considered as being representative.

Figure E.6-30 Views from specific categories of stakeholders on difference in cost-benefit ratio on implementation of the Floods Directive



If respondents answered “yes” they were requested to provide some geographical examples if possible and describe the reasons for differences in the cost-benefit ratio (e.g. different monitoring costs).

Their responses are summarised per stakeholder category in the points below:

Public authorities:

- There are different criteria for efficient flood protection and different definitions for flooding events;

Different Member States have different implementation strategies.

Citizens:

- Awareness of floods in each country is different and therefore flood risk management plans vary too;
- The geographical distribution of risks is different across Member States;
- Given the absence of a harmonised objectives, the very different a risk levels in Member States and the differences in their approaches to flood risk prevention, there is no reason to expect similar levels of cost-benefit ratio across Member States.

Question 24 - Taking account of the objectives and benefits of the Water Framework Directive, is there evidence that the Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties?

A total of 594 respondents provided an answer to this question, out of which 123 (21%) answered “I don’t know”. Of the respondents that had answer to this question (79%), the majority (62%) answered there is no evidence that the Water Framework Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties.

The figures below present the results of this question by category of stakeholders.

Figure E.6-47 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens).

Figure E.6-49The figure below presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-47 shows that a greater proportion of professional stakeholders think that there is evidence that the Directive has imposed a disproportionate administrative burden on authorities and economic operators compared to non-professional stakeholders.

Figure E.6-31 Views from professional and non-professional stakeholders on disproportionate administrative burden of the WFD on authorities, economic operators or others

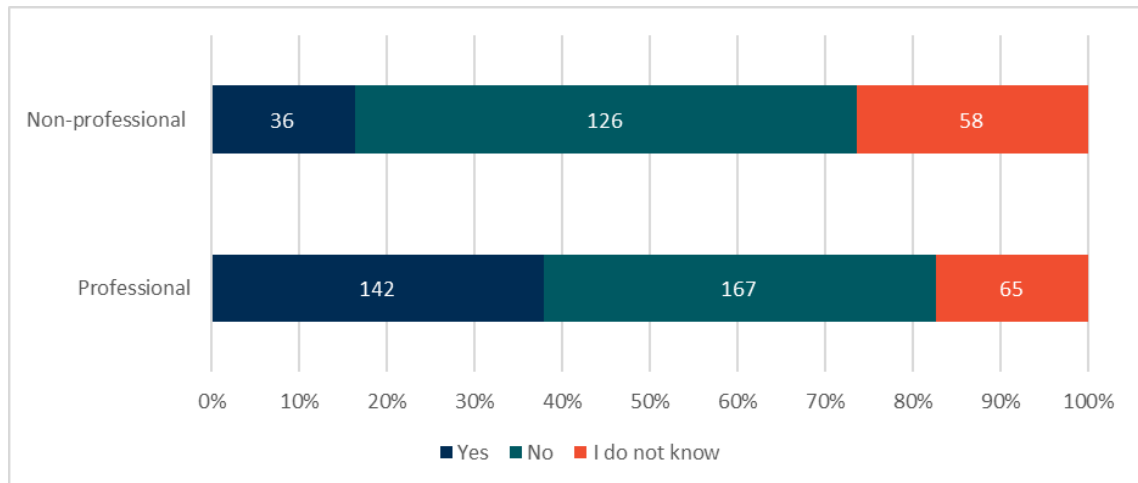
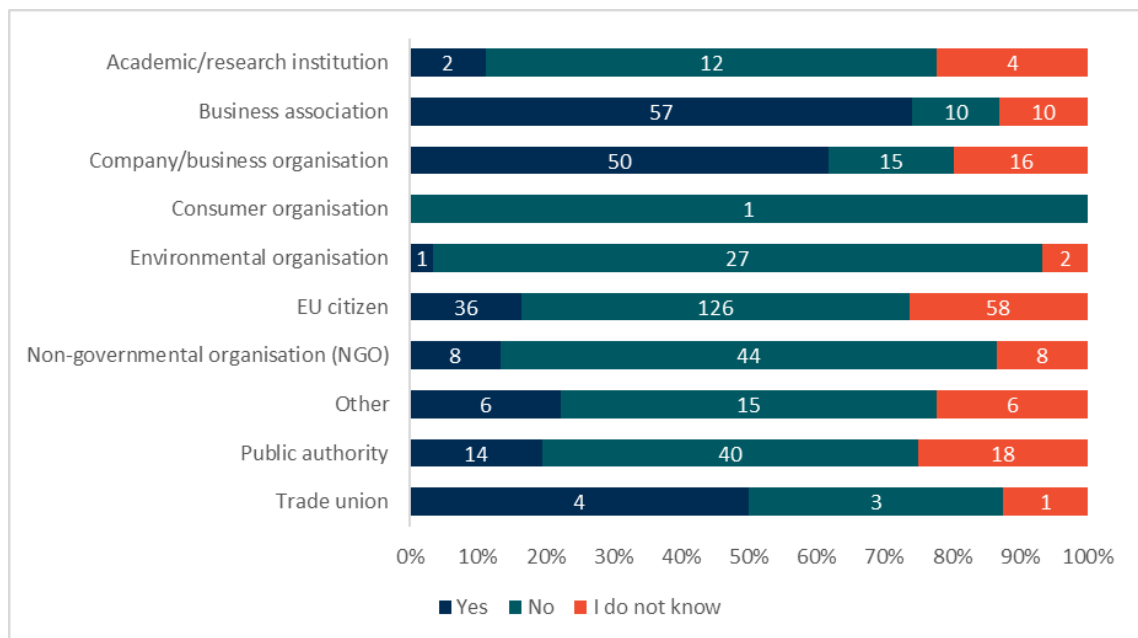


Figure E.6-323 shows that apart from business associations, business organisation and trade unions, the majority of the respondents from the different stakeholder categories responded that there is no evidence the Water Framework Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties. Majority of the respondents from business associations, business organisation and trade unions responded that there is evidence the Directive has imposed a disproportionate administrative burden.

Figure E.6-323 Views from specific categories of stakeholders on disproportionate administrative burden of the WFD on authorities, economic operators or others



Respondents that answered “Yes” were requested to describe the administrative procedures which they deem to have been excessive or disproportionate, the estimated (additional) costs (burden) and who has been subject to them. The responses are summarised in the points below:

Description of administrative procedures:

Academic/research institutions:

- The reporting requirements and large management plans pose an administrative burden but have little significance for the local implementation.

Industry/economic organisations/trade unions:

- Approval times for planning processes for major infrastructure projects;
- Requirements to monitor, analyse, study different contaminants in larger projects (involving high costs and, consultants, etc.) as a consequence of a classification, for example exceeding an EQS in sediments that at the end do not result in any measures taken. In content, it is the burden of proof required in excess because of a lack of prioritization of measure;
- Disproportionate costs also because of lengthy permit procedures;
- Extensive proof is requested to demonstrate that there is no deterioration to the water body. Sometimes these include long lasting studies, for example to assess biological components, and in some cases, operators are forced to do advanced research, e.g. to prove that proposed RBSP EQS are not scientifically appropriate;
- Poorly designed regulation of catchment level water risks, as well as the Weser Ruling have resulted in costly project delays;
- The strict application of the non-deterioration principle by the European Court of justice (switch from a broad vision of general condition of the water body to a detailed vision of individual elements or sub elements) is slowing economic initiatives, which wouldn't affect/deteriorate the overall quality of the water. And in any case, the situation has led and will continue to lead, if there is no change, to a more extensive need for request exemptions;
- There has been a huge administrative burden at all administrative levels and among stakeholders. The WFD has a long list of systems and obligations which are very detailed, and the system is tending to be more important than the purpose and objectives of the WFD. Complicated guidance, lack of integrated policies, unclear responsibilities and low flexibility in requirements add to the burden. There has been a huge administrative burden at all administrative levels and among stakeholders. The WFD has a long list of systems and obligations which are very detailed, and the system is tending to be more important than the purpose and objectives of the WFD. Complicated guidance, lack of integrated policies, unclear responsibilities and low flexibility in requirements add to the burden.

NGOs and environmental organisations:

- Planning processes are long and bureaucratic, and revisions are continuous;
- Due to the required time periods for administrative tasks such as planning, permits, land acquisition and also due to limited land availability, the pace of implementation has reduced.

Public authorities:

- Planning processes are long and bureaucratic, and revisions are continuous;
- Citizens: Reporting requirements are too formalized and require considerable staff resources;
- Extensive proof is requested to demonstrate that there is no deterioration to the water body. Sometimes these include long lasting studies, for example to assess biological components;
- The reporting obligations require considerable staff resources;
- Extensive proof is requested to demonstrate that there is no deterioration to the water body. Sometimes these include long lasting studies, for example to assess biological components, and

in some cases, operators are forced to do advanced research, e.g. to prove that proposed RBSP EQS are not scientifically appropriate;

- Very high costs associated with the design, administration and implementation.

(Additional) costs (burden) associated with the administrative procedures:

Industry/economic organisations/trade unions:

- Lengthy legal processes delaying and/or impeding decisions of investments in technology to improve environmental standards;
- Due to the extensive assessments industry has to deal with high costs i.e. for the modelling and the data requisition etc. There are also costs associated related to lack of legal certainty and vulnerability to appeal.

Public authorities:

- Many months spent on questionable reporting instead of improving water body status;
- The permits and notifications that a farmer needs to do in his business is often so complicated that they cannot do them on their own. Often, they require the farmer to hire an experienced advisor and all too often a legal advisor.

Bearer(s) of the administrative burden:

- Public authorities;
- Industry;
- Waste and wastewater utilities and energy suppliers;
- Farmers;
- Investors;
- Hydropower operators via license fees;
- Fishing federations;
- Citizens through water charges.

Question 25 - Taking account of the objectives and benefits of the Floods Directive is there evidence that the Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties?

A total of 548 respondents provided an answer to this question, out of which 268 (49%) answered “I don’t know”. Of the respondents that had an answer to this question (51%), the majority (86%) answered there is no evidence that the Floods Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties

Yes	No	Total
40	240	280
14%	86%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-33 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-34 presents the results by specific categories of stakeholders.

The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-33 shows that a greater proportion of professional stakeholders don’t know whether there is evidence that the Floods Directive has imposed a disproportionate administrative burden on authorities and economic operators compared to non-professional stakeholders.

Figure E.6-33 Views from professional and non-professional stakeholders on disproportionate administrative burden of the Floods Directive on authorities, economic operators or others

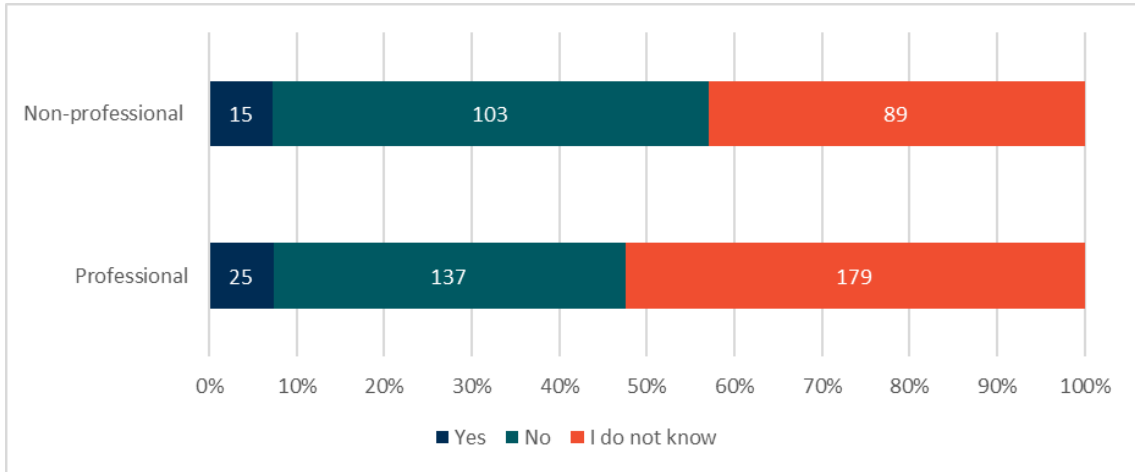
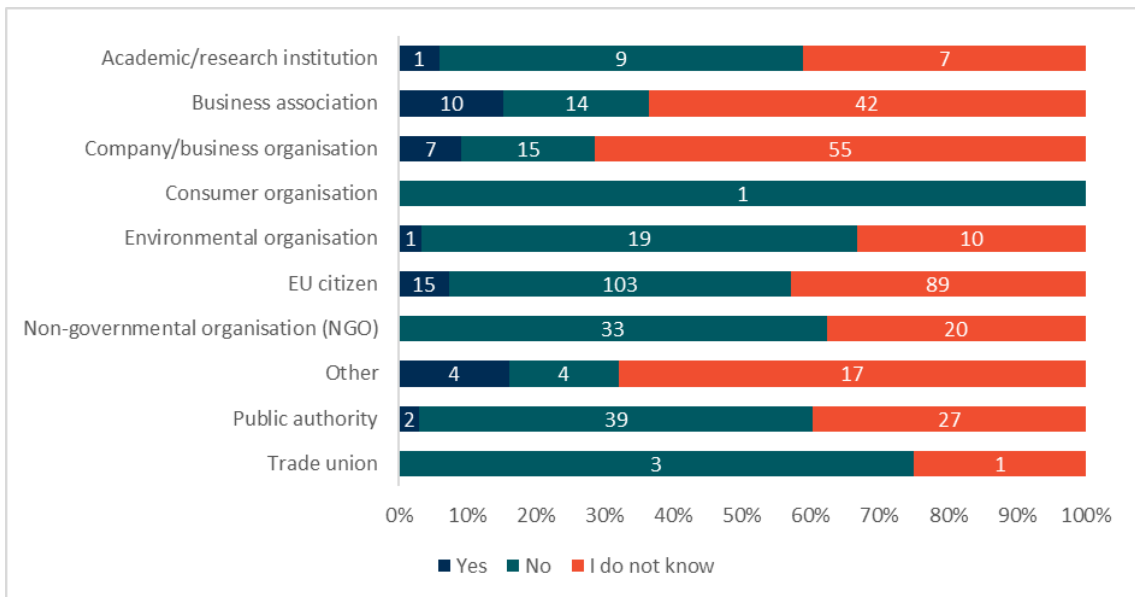


Figure E.6-34 shows that apart from business associations, business organisations and “other” stakeholders, majority of the respondents from the different stakeholder categories responded that there is no evidence that the Floods Directive has imposed a disproportionate administrative burden on authorities (national, regional or local), economic operators (e.g. industries, water companies), individual citizens or other parties. No category of stakeholder indicated that there was evidence that the Floods Directive has imposed a disproportionate administrative burden.

Figure E.6-34 Views from specific categories of stakeholders on disproportionate administrative burden of the Floods Directive on authorities, economic operators or others



Respondents that answered “Yes” were requested to describe the administrative procedures which they deem to have been excessive or disproportionate, the estimated (additional) costs (burden) and who has been subject to them. The responses are summarised in the points below:

Description of administrative procedures:

- The obligation to map flood hazards at the municipal level without such expertise in countless municipalities lead to exorbitant fees for external experts / consultants / engineering firms.
- Demanding reporting requirements.

(Additional) costs (burden) associated with the administrative procedures:

- Planning costs.

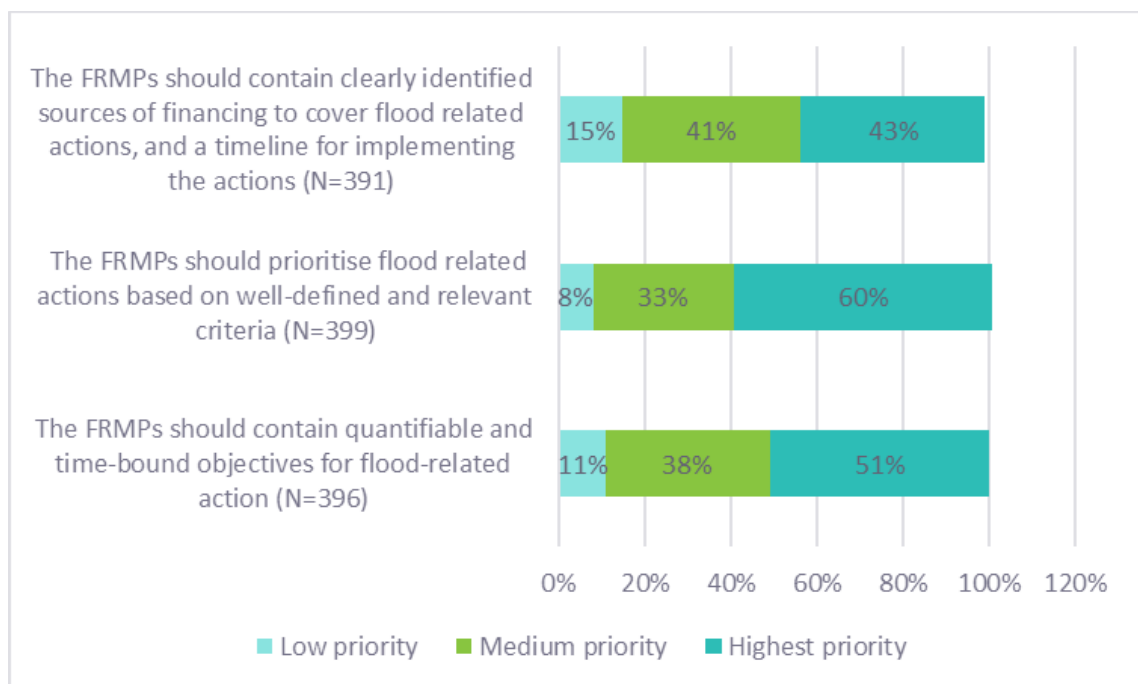
Bearer(s) of the administrative burden:

- Industry;
- Households;
- Public authorities.

Question 26 - When you think of the Flood Risk Management Plans (FRMPs) as tools for allocating resources efficiently, how do you prioritise the following statements (3 being the highest priority, 2 medium priority and 1 - low priority)?

Figure E.6-35 below presents respondents’ views on statements related to the Flood Risk Management Plans (FRMPs) as tools for allocating resources efficiently. It can be seen in Figure E.6-35 that the statement that was considered on highest priority was ‘the FRMPs should prioritise flood related actions based on well-defined and relevant criteria’. The statement that was considered of lowest priority was ‘the FRMPs should contain clearly identified sources of financing to cover flood related actions, and a timeline for implementing the actions.’

Figure E.6-35 Views on priorities for the FRMPs



Question 27 - EU water law is conceived in an integrated way: some of the requirements of the Water Framework Directive link closely with the requirements of other legislation (e.g. Urban Waste Water Treatment Directive, Bathing Water Directive, Drinking Water Directive, Nitrates Directive, Sewage Sludge Directive, etc.). To what proportion of the overall benefits stemming from EU water law have the Water Framework Directive and its daughter Directives (Groundwater and Environmental Quality Standards Directives) contributed?

A total of 590 respondents provided an answer to this question, out of which 184 (31%) responded “I don’t know”. Of the respondents that had an answer to this question (69%), the majority answered that the 50%-100% of the overall benefits stemming from EU Water law are a result of the Water Framework Directive and its daughter Directives (Groundwater and Environmental Quality Standards Directives).

0%	1%-25%	25%-50%	50%-75%	75%-100%	Total
4	16	90	154	142	406
1%	4%	22%	38%	35%	100%

Figure 6.36 Views from professional and non-professional stakeholders on the integration of the water law

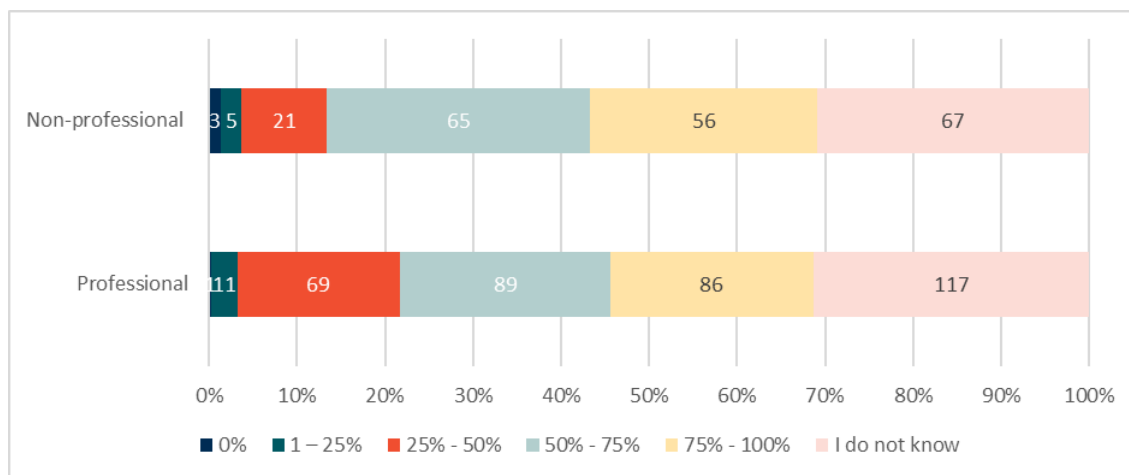
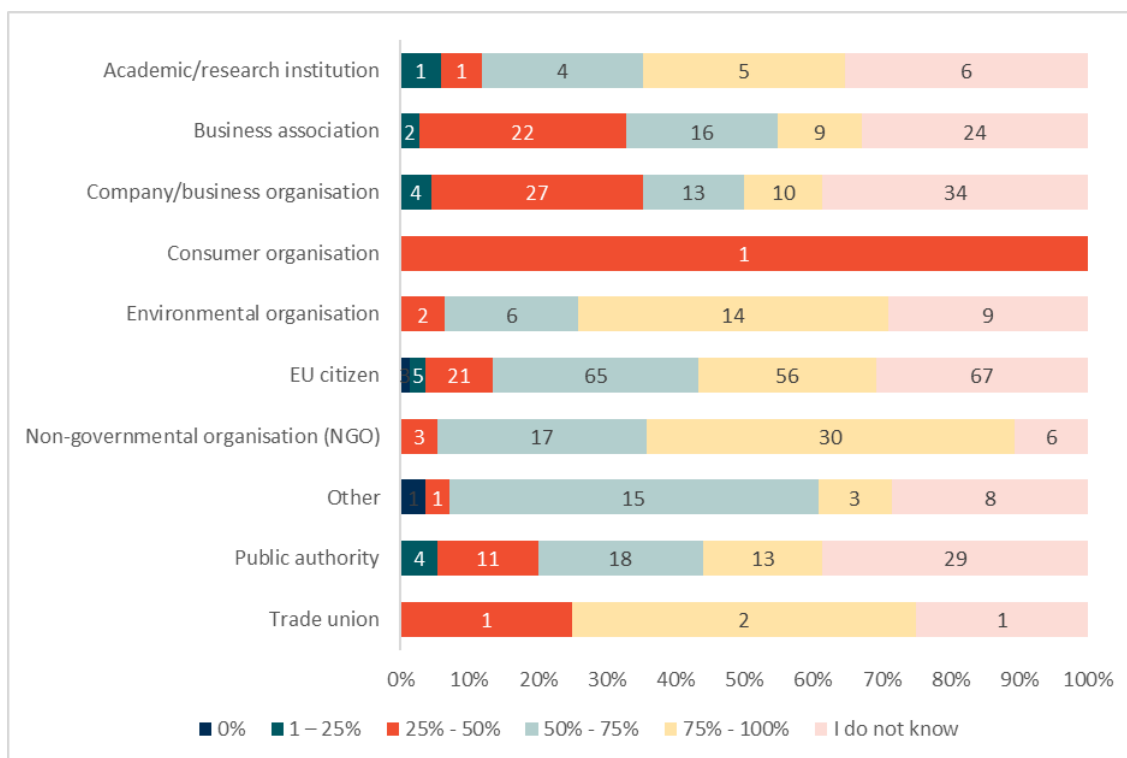


Figure E.6-37 presents the results by category of stakeholder. It can be observed from Figure E.6-37 that the majority of the respondents from environmental organisations, NGOs and trade unions considered the proportion of the overall benefits stemming from EU water law that the Water Framework Directive and its daughter Directives (Groundwater and Environmental Quality Standards Directives) have contributed to be 75%-100%. However, there was only one respondent from trade unions, so their view cannot be considered as being representative.

Figure E.6-37 Views from specific categories of stakeholders on the integration of the water law



Respondents were asked to explain their response. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- The WFD has been high on the agenda of the national WFD authorities in Norway and in most EU countries (judging from EU research projects, work for EEA in the ETC-ICM and collaborative work in ECOSTAT and other CIS groups). However, coordination of the EQSD to other highly relevant directives where PS is of relevance is to a large extent missing

Industry/economic organisations/trade unions:

- The WFD has made an effective contribution due to its mandatory environmental targets and because the Directive is based on the principles of ecosystem-based management
- IPPC and IED have had a major contribution to improve status of the EU water bodies
- Nitrate Directive and UWWTD are very relevant to reduce the most important emissions, but WFD also improves the status of waterbodies, especially the hydro morphological status
- The main WFD achievement so far was the introduction of coordination between various levels and bodies of governance in the implementation of the EU water policy.
- For the WFD daughter directives, the EQS allowed the monitoring and assessment of efficient measures and the GWD the protection of groundwater, despite the weak implementation of the Nitrates directive. The high compliance of Member States in the Drinking Water Directive shows the benefits of the EU integration process, although problems persist in the protection of water resources, due to the lack of implementation of art. 7.3 of the Water Framework Directive
- The WFD and its daughter Directives are good and effective tools for sustainable water protection. Thus, the high drinking water quality for future generations can be preserved

- Over the last thirty years, since the implementation of the UWWTD, along with earlier environmentally based Directive, such as the Freshwater Fish Directive and Bathing Water Directive, significant environmental improvements have already occurred as a consequence
- The WFD has certainly brought added value. However individual directives - in place before the WFD - already brought significant benefits and still have today their merits

NGOs and environmental organisations:

- The WFD and its daughter Directives contribute greatly to effective water protection
- While several of these Directives pre-date the WFD, the WFD has been a significant additional impetus in driving their implementation. Their implementation represents minimum requirements to be complied with in order to comply with the WFD. At the same time the WFD framework approach facilitates the implementation of the mentioned directives in a coherent way. A large proportion of the benefits achieved through those directives since 2000 can therefore also be attributed directly to the WFD
- Despite resistance to the implementation of the WFD and shortcomings of such implementation, the Directive has changed the public debate on water policy, offering a new vision and a set of useful tools for water management in its entirety
- The overall benefit of the WFD is high, in particular through its inclusive nature for other water-related regulations. However, there is very slow implementation of the requirements

Public authorities:

- Due to the integrated approach of the WFD almost all water issues are addressed
- WFD covers mostly ecological aspects, health aspects are covered by the Bathing Water Directive and Drinking Water Directive
- Important areas that have an impact on the water are not integrated (REACH, GAP, IED); the Urban Waste Water Treatment Directive has not been coordinated with the WFD and updated
- The UWWTD made more progress improving the sanitation system performance than the WFD. The WFD advances on specific issues (e.g. NO₂ or impact of pollution in rain)
- The Water Framework Directive and daughter Directives contribute to additionally enhance water status due to the fact that they take special attention to water ecosystems requirements and relationship between groundwater quality and terrestrial dependent ecosystem requirements

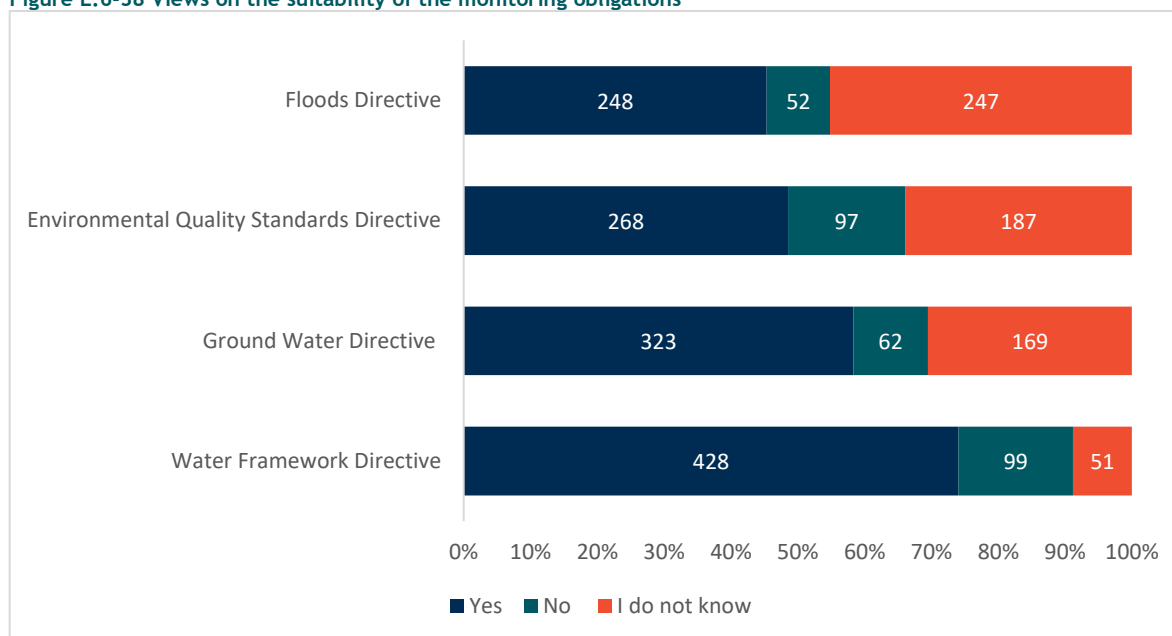
Citizens:

- The WFD comprehensively refers to all types of water bodies and tracks overall the sustainability principle
- The requirements of the Water Framework Directive are closely linked to the requirements of other legislation and thus have a high influence on the overall benefits of the EU water legislation
- The Water Framework Directive is the most important and most present public instrument of water policy

Question 28 - For the following Directives do you consider the monitoring obligations to be targeted at the right issues? If no, please explain why not.

The figure below presents respondents' views on the suitability of the monitoring obligations of the Directives. It can be observed from the figure that the majority of the respondents consider the monitoring obligations to be targeted at the right issues for each of the four Directives.

Figure E.6-38 Views on the suitability of the monitoring obligations



The respondents that answered “No” were requested to provide an explanation. Their responses are summarised by stakeholder category in the points below:

Academic/research institutions

- Groundwater biota need to be monitored. Environmental quality standards in groundwater should be estimated using groundwater dwelling species

Industry/economic organisations/trade unions:

- WFD has a nonsensical approach to shellfish waters protected area quality. It allows governments to let the waters deteriorate because it does not define deterioration. It also sets no aspirational standard for shellfish waters. All shellfish waters should be grade A to allow the production of safe, health food
- Rather than the monitoring, the concern related to EQSD is that it should reflect the objectives of art.7.3 of the WFD, namely that Member States shall ensure the necessary protection for the bodies of water with the aim of avoiding the deterioration of the quality of the water body used for drinking water abstraction in order to reduce the level of purification treatment required in the production of drinking water
- Already known relevant substances such as drugs are not yet monitored
- The substances regulated under the EQSD may not be those that are now most relevant and important - some or many are legacy substances with their use either banned or restricted. This is relevant to the one-out all-out principle as well - the key point being that compliance with EQSD seems poorly related to ecological quality, the result being a failure to achieve 'good' status overall

- To monitor the nitrate concentration in water bodies, a representative network of measurement stations is needed. This is important to help locate the original sources of nitrate and relative contributions made

NGOs and environmental organisations

- The monitoring obligations should also target aquatic waste
- The EQSD does not take into account substances which are relevant for the production of drinking water. Substances which are (very) mobile and (very) persistent can pass treatment steps in both waste water and drinking water purification. If those substances also have toxicological effects, they can have an impact on human health and the environment
- Indicators are missing for pharmaceutical substances

Public authorities:

- The following parameters allow a better assessment of groundwater and should therefore be mandatory: Alkalinity; sulfate; chloride; sodium; potassium; calcium; magnesium; iron; manganese, TOC or equivalent
- For EQSD, a revision of the list of priority substances is overdue - far too many substances that are no longer relevant are on the list - it is said that the wrong substances are often monitored. For example, pharmaceuticals are missing on the list. In addition, for many substances' biota EQS are now specified with corresponding monitoring obligations. For biota, however, there are far fewer monitoring points in Europe than for water, and implementation is much more time-consuming and assessment much more difficult.
- Some relevant substances are missing from the Groundwater Directive, e.g. drugs
- The Monitoring obligations of the WFD and the Environmental Quality Standards Directive do not consider pollutants in sediments

Citizens

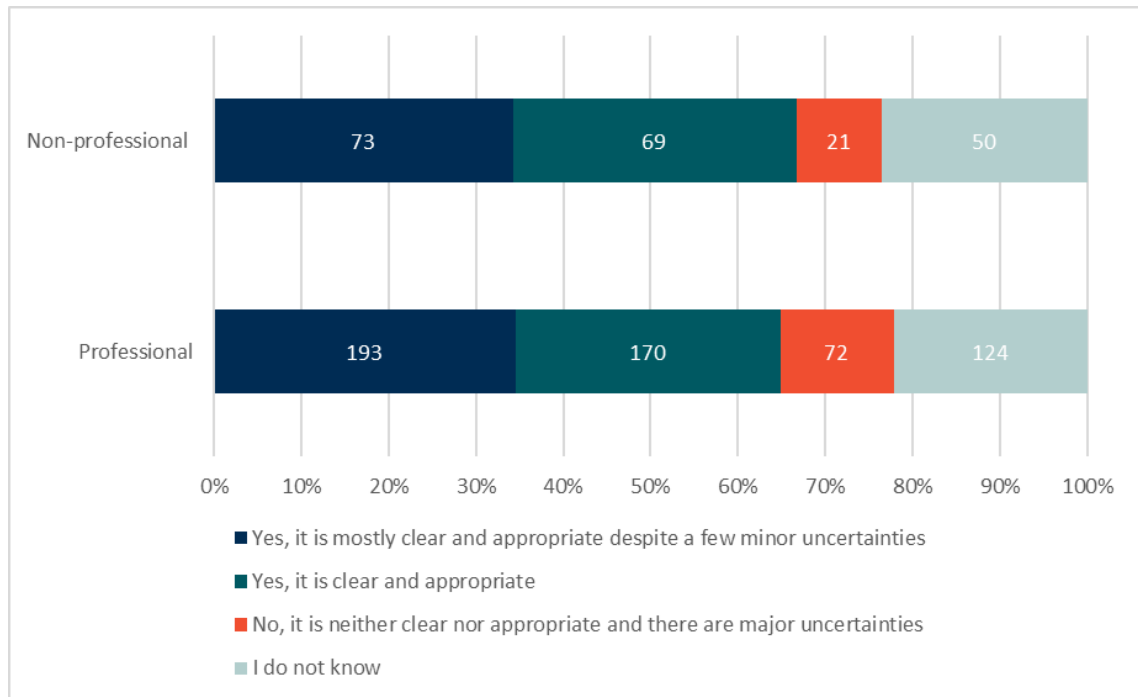
- The Flood Directive considers only environmental goals as accessories and only in far too small extent
- The EQSD is focused on many parameters that cover ubiquitous or historic contaminants, some of which already banned. Monitoring these will not lead to WFD objectives to reduce these

Question 29 - Do you consider the frequency specifications for monitoring sufficiently clear and appropriate in the Directives, including (where relevant) as regard to the monitoring of chemical pollutants in water, biota and sediment?

A total of 588 respondents provided an answer to this question, out of which 126 (21%) responded “I don’t know”. Of the respondents that had an answer to this question (79%),

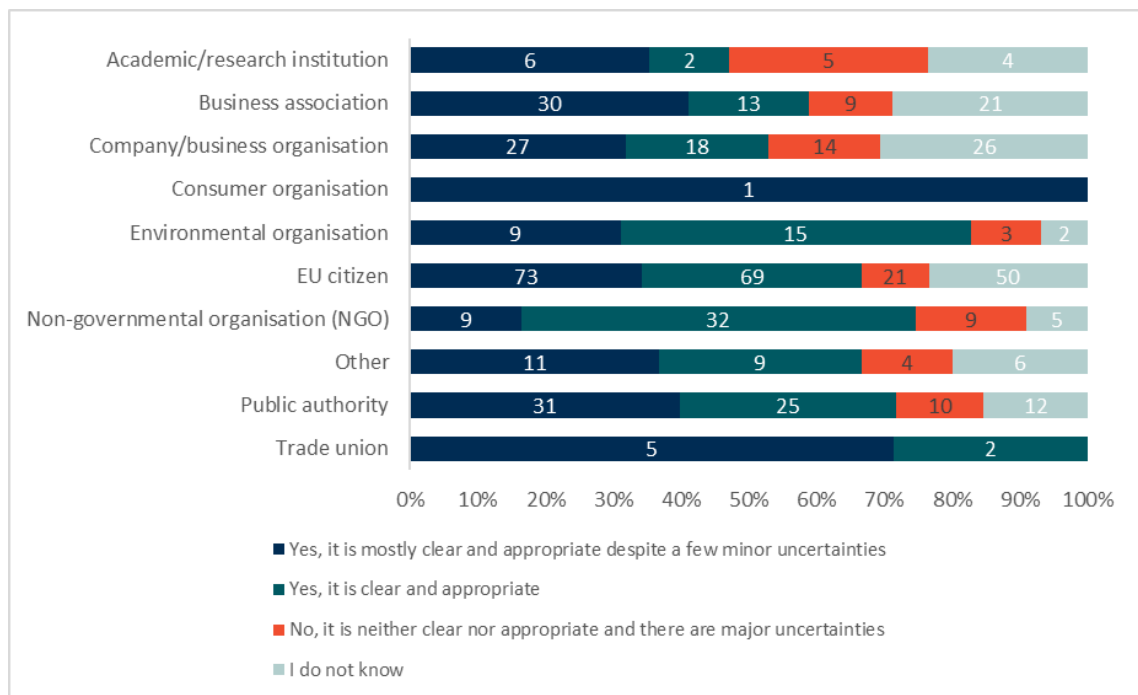
Yes, it is mostly clear and appropriate despite a few minor uncertainties	Yes, it is clear and appropriate	No, it is neither clear nor appropriate and there are major uncertainties	Total
202	185	75	462
44%	40%	16%	100%

Figure E.6-39 Views on the frequency for monitoring



It can be observed in the figure below that majority of the respondents from environmental organisations and NGOs consider the frequency specifications for monitoring sufficiently clear and appropriate in the Directives, including (where relevant) as regard to the monitoring of chemical pollutants in water, biota and sediment. The majority of the respondents from the rest of the stakeholder categories found the frequency specifications for monitoring mostly clear and appropriate, despite a few minor uncertainties.

Figure E.6-40 Views on the frequency for monitoring



Question 30 - Are the Directives clear enough about the spatial aspects of monitoring?

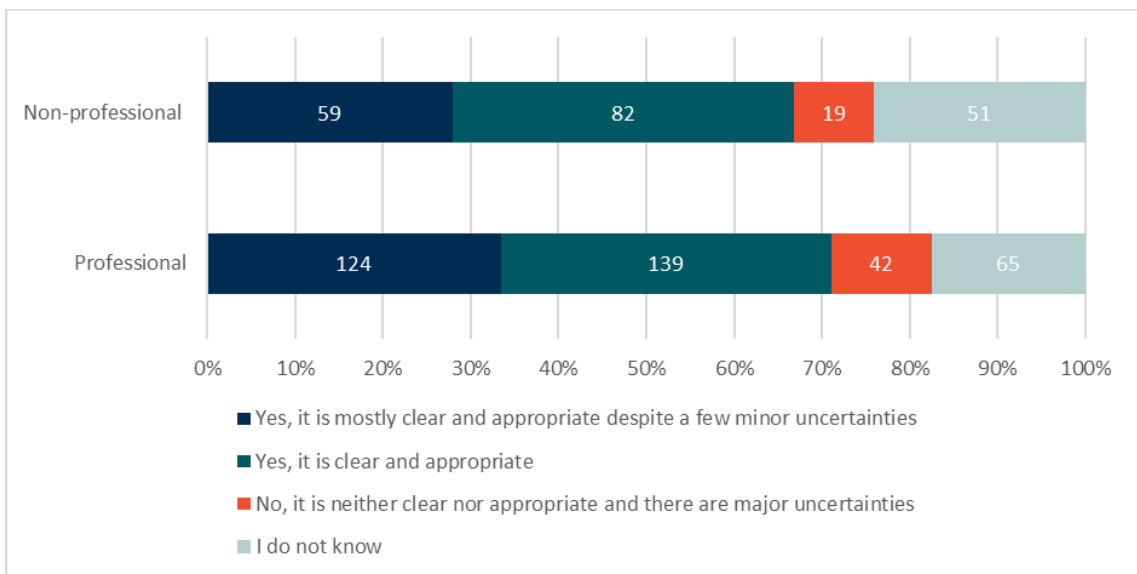
A total of 581 respondents provided an answer to this question, out of which 116 (20%) answered “I don’t know”. Of the respondents that had an answer to this question (80%), the majority answered that the Directives are clear or mostly clear about the spatial aspects of monitoring.

Yes, it is clear and appropriate	Yes, it is mostly clear and appropriate despite a few minor uncertainties	No, it is neither clear nor appropriate and there are major uncertainties	Total
221	183	61	465
48%	39%	13%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-41 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-42 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

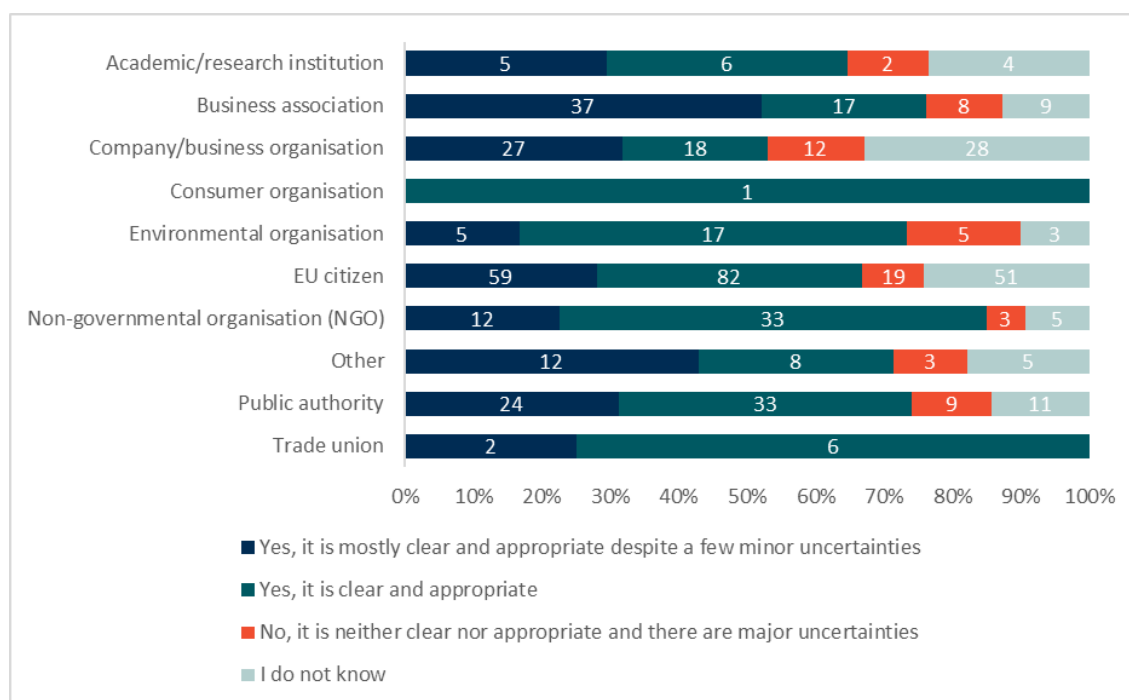
Figure E.6-41 shows that a greater proportion of professional stakeholders consider the Directives to be clear enough about the spatial aspects of monitoring compared to the non-professional stakeholders.

Figure E.6-41 Views from professional and non-professional stakeholders on the clarity of Directives on monitoring for spatial aspects



It can be observed from Figure E.6-42 that apart from business associations, business organisations and “other” stakeholders, the majority of the respondents from the different stakeholder categories indicated that the Directives are clear about the spatial aspects of monitoring.

Figure E.6-42 Views from specific categories of stakeholders on the clarity of Directives on monitoring for spatial aspects



The respondents that answered “No” or “mostly clear” were asked to provide a brief explanation of why and for which Directive. Their responses are summarised by stakeholder category in the points below:

Academic/research institutions:

- The need for representative surveillance monitoring in terms of status classes, water body types and geographic coverage should be better specified. More guidance is needed on how grouping or extrapolation should be done from monitored to non-monitored water bodies, as well as on how many stations should be used per water body and where the stations should be located relative to pressures;
- Spatial aspects of monitoring of PS in water, sediment and biota are to a large extent missing. Modelling and statistical analyses should be implemented.

Industry/economic organisations/trade unions:

- For sediment the “right” monitoring level cannot be known as of now because good models/results are missing;
- The spatial scale of monitoring the state of water bodies is not sufficient or consistent with the ground truth: there are too many monitoring stations are located downstream of the water body;
- Geographical representation of some monitoring stations appears questionable;
- Geographical and climate related differences make it difficult if not impossible to define what is an appropriate frequency of monitoring at EU level, it should be defined at MS level;
- There remains a monitoring issue concerning minor tributaries of the larger water bodies and where compliance monitoring for EQSD should be carried out. This also relates more generally to the size of water bodies and how their compliance is reported;

- It is not always clear if Member States follow the CIS Guidance. For example, hotspot sampling is not useful for the overall status. This might give a false negative picture of the overall water body quality.

NGOs and environmental organisations:

- While the specifications in the WFD are clear, the transfer to Slovenian national legislation intentionally or unintentionally misinterprets the specifications and so the national level policy is neither clear nor in agreement with the WFD;
- There are too few monitoring stations for water bodies;
- The location of measurement points for the monitoring of ecological status of surface water bodies is not always representative. Sometimes very large surface water bodies, which are interrupted by dams and barrages, have only one monitoring station.

Public authorities:

- The monitoring stations aren't always representative of the water body. A common conceptual framework should be proposed to ensure the representativity of a monitoring site(s) with respect to a whole water body;
- The quantitative monitoring must have sufficient density sites to ensure proper assessment of impacts due to abstractions and discharges on groundwater level and to monitor the relevant local groundwater supported receptors i.e. surface waters bodies and groundwater dependent terrestrial ecosystems;
- The Directive is mostly clear; however, some points require additional guidance. For instance, is operational monitoring mandatory only for those water bodies where priority substances are identified as being at risk of failing to meet their EQS (on the basis of either the impact assessment carried out in accordance with Annex II or surveillance monitoring)? Or is operational monitoring mandatory for all water bodies where priority substances are discharged, regardless of Annex II impact/risk assessment.

Citizens:

- It is unclear what a representative sampling means. For a large body of water, sample points are sometimes located far from pollution sources and thus they do not provide an accurate representation of the quality of water. A water body may also consist of several pools with different quality;
- It is not always clear if Member States follow the CIS Guidance. For example, the hotspot sampling is not useful for the overall status. This might give a false picture of the overall water body quality.

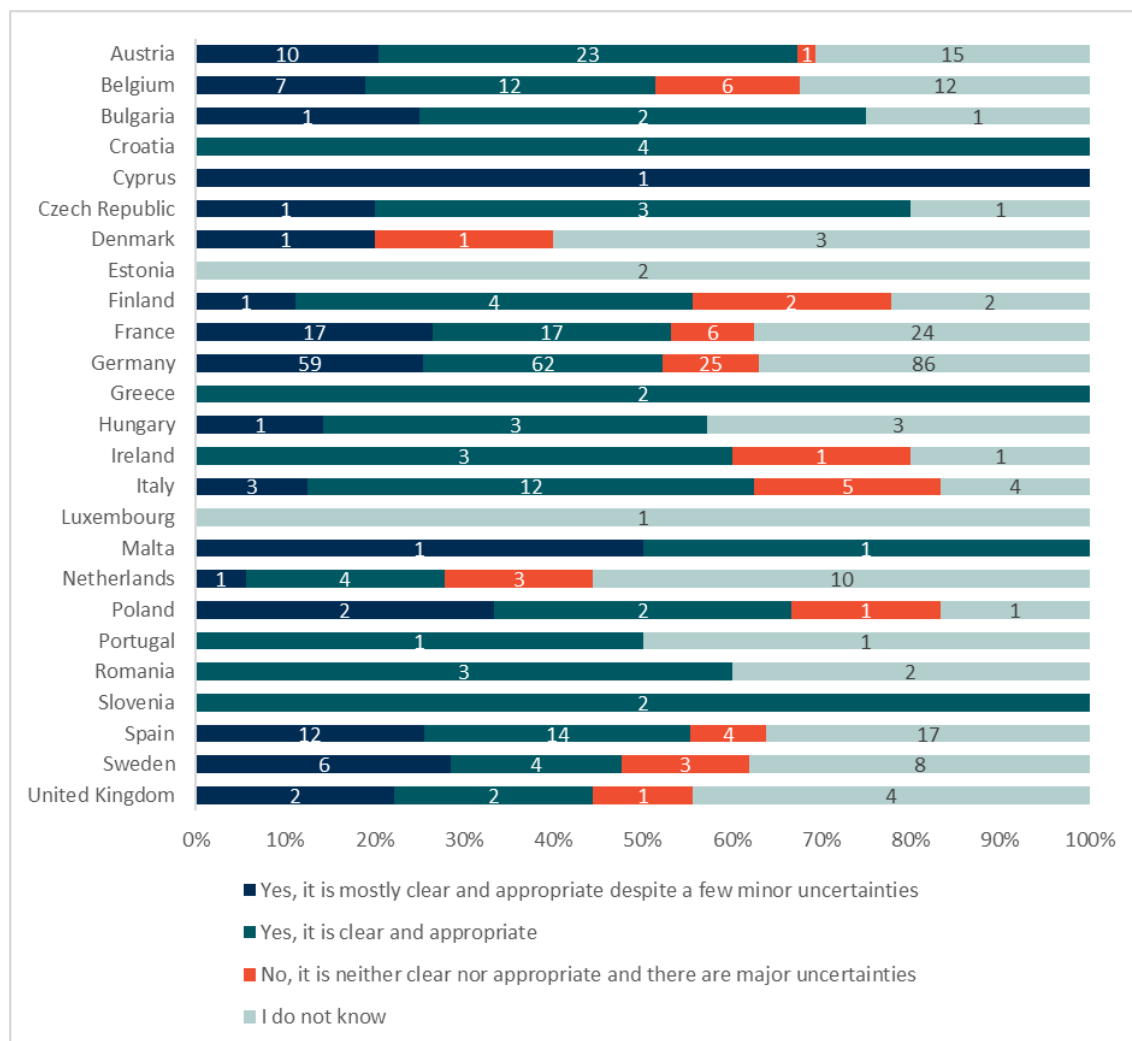
Question 31 - Are the Directives clear enough about when monitoring is not or no longer required, e.g. for which substances or in which circumstances, and are those exceptions appropriate?

A total of 563 provided an answer to this question, out of which 198 (35%) responded “I don't know”. Of the respondents that had an answer to this question (65%), majority responded that the Directives are clear or mostly clear about when monitoring is not or no longer required.

Yes, it is clear and appropriate	Yes, it is mostly clear and appropriate despite a few minor uncertainties	No, it is neither clear nor appropriate and there are major uncertainties	Total
180	126	59	365
32%	22%	10%	35%

Figure E.6-43 below presents the results by Member State. It can be observed from Figure E.6-43 that majority of the respondents from Austria, Bulgaria, Croatia, the Czech Republic, Finland, Greece, Ireland, Italy, Poland, Romania and Slovenia consider the Directives to be clear about when monitoring is not or no longer required. There were no Member States for which the majority of the respondents indicated that the Directives are not clear about when monitoring is not or no longer required.

Figure E.6-43 Views on clarity of Directives on monitoring



The respondents that answered “No” or “mostly clear” were asked to provide a brief explanation of why and for which Directive. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions

- More guidance is needed that can be easily used by government bodies, environmental agencies and consultants. This would ensure more targeted and cost-efficient monitoring.

Industry/economic organisations/trade unions:

- WFD need to define what the basis for representativity is, without specifying the methods to be used. WFD also needs to consider the seasonal differences. Regarding hydro morphological parameters, the WFD needs to associate monitoring scheme to the geographical extension of

the water bodies. WFD also need to account for water bodies that have pressures from both point sources and diffuse sources of pollution;

- The EQS Priority Substances lists no longer reflects the real EU level substance use. Many of the listed substances are already banned, phased out or in their natural origin and should be managed locally;
- In national implementation, monitoring requirements are transferred to stakeholders like wastewater treatment plants and water treatment plants. National guidance has been written by the Environmental Ministry concerning EQSD but there is still much room for the local authorities to make decisions how water/wastewater utilities should monitor.

Public authorities:

- For the WFD there are problems with the spatial aspects and design of the monitoring in general, especially regarding biological quality elements (e.g. macro algae);
- The WFD and the EQS directives could be clearer regarding when monitoring is not/no longer required (under good status or risk of not achieving the good status);
- The implementation depends largely on the local transposition of the Directive;
- For groundwater, the requirements are clear and appropriate. For POP and no longer prohibited substances, the exceptions not sufficiently clear.

Citizens:

- Emerging pollutants and synergetic effects are not sufficiently addressed;
- Based on the experience of nature and environmental protection associations, monitoring is required to be permanent even if targets are achieved.

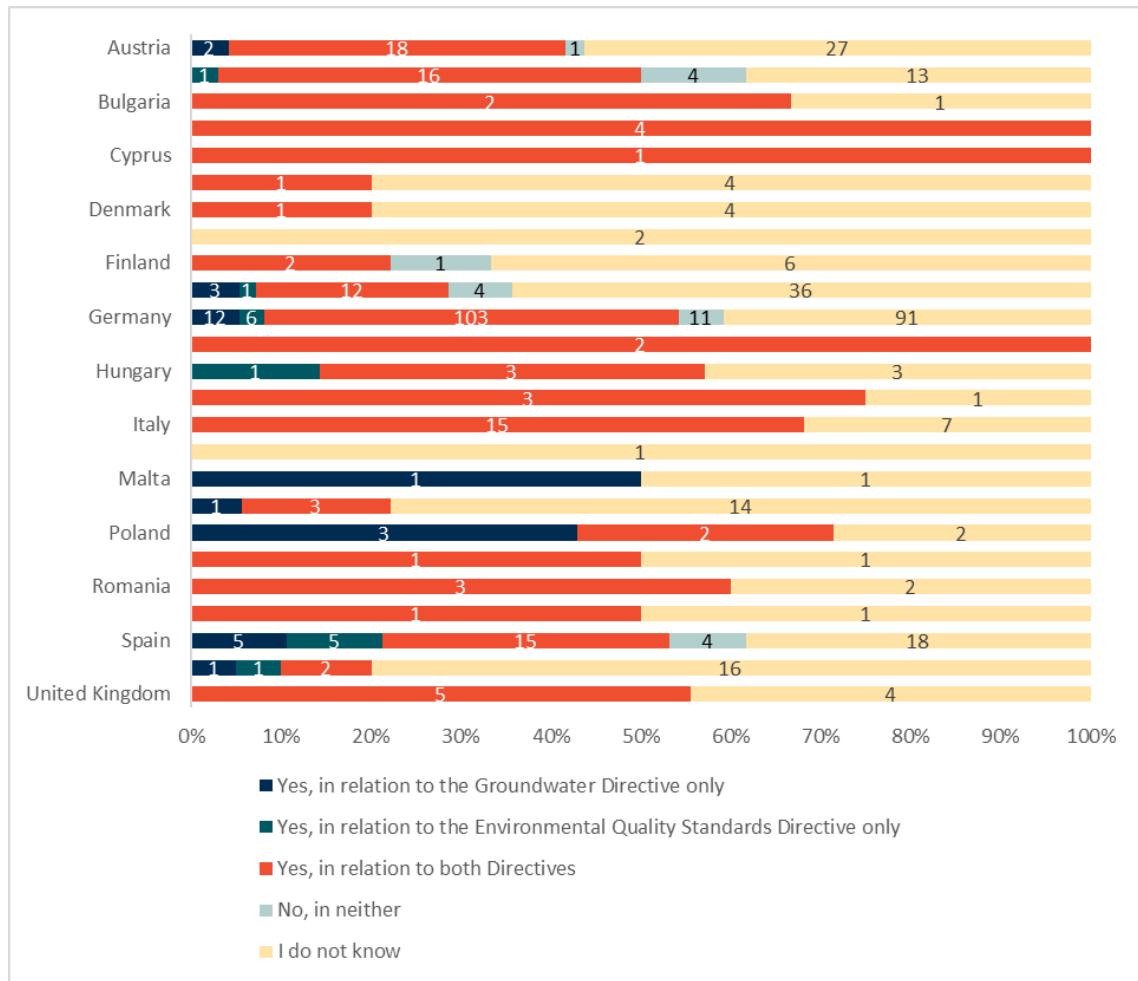
Question 32 - Are the requirements for trend monitoring and assessment clear and appropriate in relation to the Groundwater Directive and Environmental Quality Standards Directive?

A total of 538 respondents provided an answer to this question, out of which 255 (47%) answered “I don’t know”. Of the respondents that had an answer to this question (53%), the majority (76%) answered that the requirements for trend monitoring and assessment are clear and appropriate in relation to the Groundwater Directive and Environmental Quality Standards Directive

Yes, in relation to both Directives	Yes, in relation to the Groundwater Directive only	Yes, in relation to the Environmental Quality Standards Directive only	No, in neither	Total
215	28	15	25	283
76%	10%	5%	9%	100%

Figure E.6-44 presents the results by Member State. It can be observed in Figure E.6-44 that the majority of the respondents from Belgium, Bulgaria, Croatia, Cyprus, Germany, Greece, Hungary, Ireland, Italy, Romania and the United Kingdom indicated that the requirements for trend monitoring and assessment are clear and appropriate in relation to both the Groundwater Directive and Environmental Quality Standards Directive.

Figure E.6-44 Views on requirements for trend monitoring and assessment



The respondents that answered “No” were requested to provide a brief explanation. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions

- Information is missing on models and data requirements on how to perform valid trend monitoring for the EQSD.

Industry/economic organisations/trade unions:

- As a consequence of the so-called “one-out-all-out” principle, the worst status of the elements used in the assessment determines the overall status of the water body. Progress achieved in some areas may be hidden by a lack of progress in others, resulting in an overly “pessimistic” assessment of water quality status. Industry, amongst other actors, have managed to reduce its impact on water bodies, but the principle prevents improvements to be adequately reflected. Improved trend monitoring and assessment would help.

Public authorities:

- For both directives, some background knowledge should be gathered and shared through MS about how to adapt the monitoring strategy in order to derive significant trend estimation, based of case studies and robust statistical considerations;
- For groundwater, the rules exist but are not clear;

- The trend monitoring in biota requires further coordination between the member states.

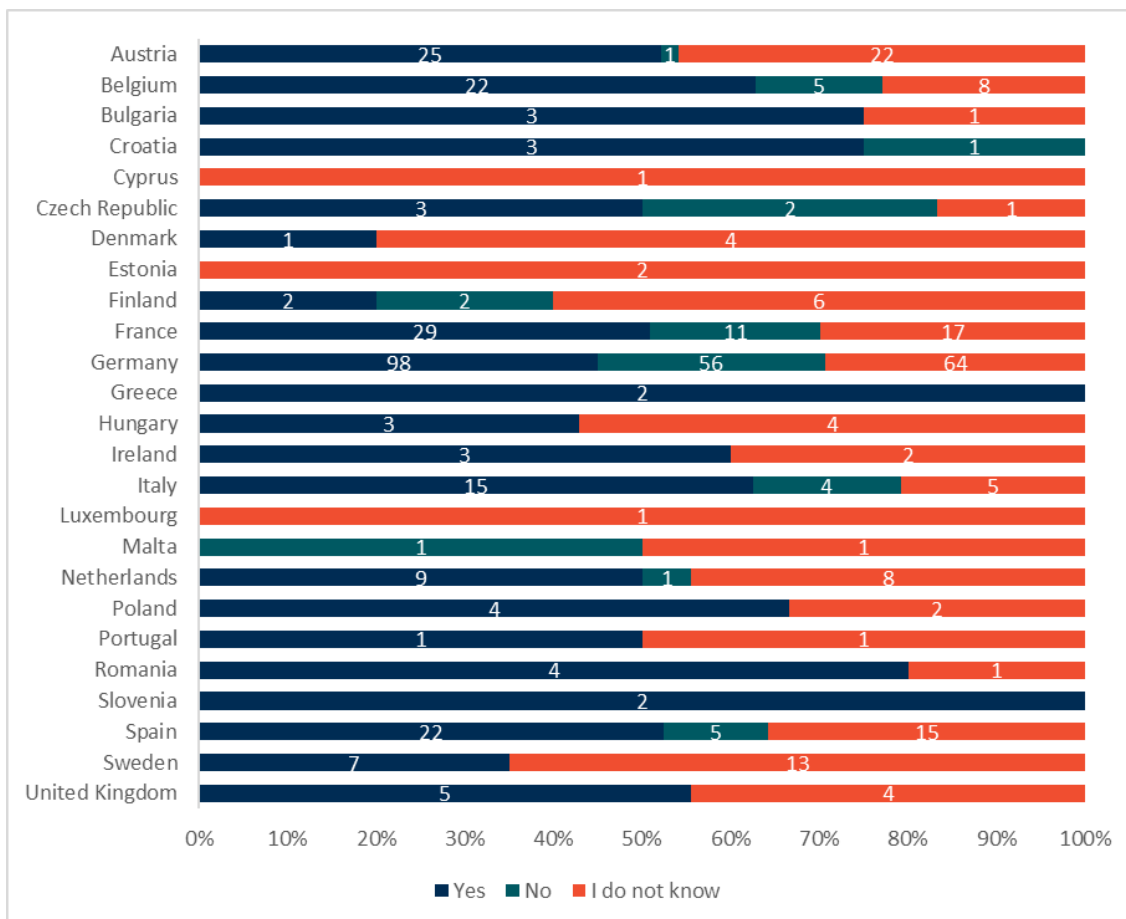
Question 33 - Are the surface water watch list monitoring requirements appropriate for the intended purpose?

A total of 183 respondents provided an answer to this question, out of which 183 (34%) responded “I don’t know”. Of the respondents that had an answer to this question (66%),

Yes	No	Total
263	89	352
75%	25%	100%

Figure E.6-45 below presents the results by Member State. It can be observed in Figure E.6-45 that apart from Cyprus, Denmark, Estonia, Finland, Hungary, Luxembourg, Malta, Portugal and Spain, the majority of the respondents from the Member States indicated that the surface water watch list monitoring requirements are appropriate for the intended purpose.

Figure E.6-45 Views on the appropriateness of the surface water watch list



The respondents that answered “No” were requested to provide a brief explanation. Their responses are summarised by stakeholder category in the points below:

Academic/research institutions

- More knowledge about the industry and their rapid changes/modifications in chemical structures of compounds are needed.

Industry/economic organisations/trade unions:

- The list should be reviewed periodically so that it can be adapted to new challenges;
- The measuring points are sometimes not representative. The monitoring network is not well suited for a review.

NGOs and environmental organisations:

- An observation list of no more than 14 substances is totally inadequate to identify the challenges posed by pesticides, biocides and veterinary drugs;
- Drug residues in waste water and its effects on water and its living creatures are not sufficiently detected.

Public authorities:

- The intended purpose of the watch list is unclear as it was apparently decided to no longer update the existing priority substance lists;
- The surface water watch list monitoring currently does not require to perform measurements at the most appropriate time of the year (e.g. during use periods for pesticides) nor to measure them in the appropriate matrix (e.g. sediments), but rather recommends doing so. As a consequence, results outside of the relevant period and matrix are worthless for the EU;
- There is a surprising absence of some compound, such as pharmaceuticals currently used like angiotensin receptor blockers (sartans, etc.), anticonvulsants (lamotrigin), or some pesticide widely used such as "glyphosate", etc.;
- While watch list monitoring is considered a very appropriate mechanism to address emerging contaminants, the rate at which the priority substances list is updated may not ensure timely management of potentially hazardous contaminants.

Citizens:

- Reference conditions often are unrealistic;
- A lot more substances should be considered, such as biocides, pesticides, veterinary drug residues etc. Additionally, ponds <10km² should also be monitored.

6.4 Relevance

The aim of the relevance section is to consider two aspects: whether the needs that the legislation addresses are still current and relevant, and whether there are additional needs that the legislation should address but does not (i.e. gaps).

Question 34 - Do you think the implementation of the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive has improved people's appreciation of the importance of good water quality, for the sake of the environment and human health, and how it can be achieved?

A total of 607 respondents provided an answer to this question, out of which 25 (4%) responded "I don't know". Of the respondents that had an answer to this question, the majority (46%) consider that the implementation of the Directives has improved people's appreciation on the importance of good water quality 'to some extent'. This is then followed by respondents considering it has improved people's appreciation of water 'to a large extent' (34%).

Yes, fully	Yes, to a large extent	To some extent	No	Total
79	199	265	39	582
14%	34%	46%	7%	100%

Respondents that answered “No” or only “To some extent” were requested to provide an explanation. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- Many people are still not aware that the ecological integrity/good ecological status is the basis for all human activities and services received by aquatic ecosystems. This must be very clear for all sectors and players;
- More efforts are needed to inform on the value of healthy surface water bodies and the importance of conserving groundwater bodies;
- For some of the priority substances, people have become more aware, especially substances like mercury, flame retardants and PFAS. This is maybe due to the Environmental Agency increased focus on these substances. However, there is not enough focus on the benefits of reducing nutrient pollution.

Industry/economic organisations/trade unions:

- The average citizen does not feel being included. Due to the lack of implementation of the polluter pays principle and the lack of implementing Art.9 EU WFD, this attitude is not astonishing;
- Media coverage and educational efforts are responsible for starting to raise awareness;
- RBMPs and PoMs are too extensive and too complex for the broad public to read;
- Flooding maps have helped to improve people’s appreciation, however for WFD, the UK public pressure causing an increasing insatiable demand for clean drinking water has been a larger contributor to increasing the public’s appreciation;
- Communication to the public is dominated by bad News. Details on the improvements made to water quality are relatively unknown by the public.

NGOs and environmental organisations:

- The WFD has established a number of relevant obligations that, if implemented properly, can improve people’s understanding and appreciation of the importance of water and ensure support for reaching the WFD’s objectives. However, despite some positive examples, the public participation requirements of the WFD have so far not been fully implemented. As such, the opportunities to properly communicate the benefits of healthy freshwater ecosystems, to make people part of the implementation of the ambitious WFD, and to foster societal/community support, have been often missed;
- The WFD has established many relevant obligations that have the potential to improve people’s understanding and appreciation of water. However, the WFD in general and the other directives in particular, are more or less unknown to the public.

Public authorities:

- Very few of the public are aware of these directives. People appreciate good water quality, but most believe that the regulations come from national law;

- The guidelines are now frequently quoted in the media. Nevertheless, they are so abstract that their central importance for water and flood protection has to be documented on the basis of practical implementation examples and tangible successes on site;
- Many people are still not aware of the influence of individual consumer behaviour on water quality. Therefore, the consumption of detergents and cleaning agents, pesticides, biocides and over-the-counter medicines in the private sector remains high.

Citizens:

- Communication on the importance of functioning ecosystems and integrated management has to be emphasised;
- A lot of people are unaware of the water framework directive, especially outside science and water "industry". The Public should be informed more about the directives and what they are there for.

Question 35 - Do you consider the relevant sectoral stakeholders to be sufficiently involved in the implementation of the Water Framework Directive and daughter Directives in your river basin/country?

A total of 595 respondents provided an answer to this question, out of which 50 (8%) answered “I don’t know”. Of the respondents that had an answer to this question (92%), the majority (43%) considered that relevant stakeholders are sufficiently involved only ‘to some extent’ in the implementation of the WFD. However, another 35% of respondents consider it is to ‘a large extent’. This might reflect the range of stakeholders interested in the topic but also the lack of clear knowledge on opportunities for involvement that was identified as part of the analysis of Part I questions.

Yes, to a large extent	Yes, to some extent	No	Total
193	232	120	545
35%	43%	22%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-46 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-47 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-46 shows that a greater proportion of professional stakeholders consider that relevant stakeholders are sufficiently involved in the implementation of the Water Framework Directive and its daughter Directives compared to non-professional stakeholders.

Figure E.6-46 Views from professional and non-professional stakeholders on involvement of stakeholders in the implementation of the WFD

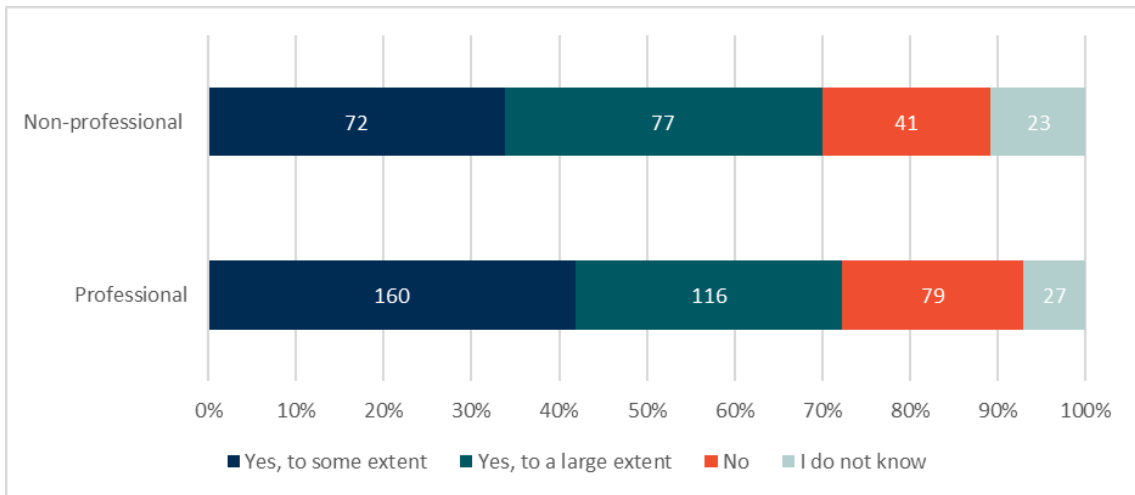
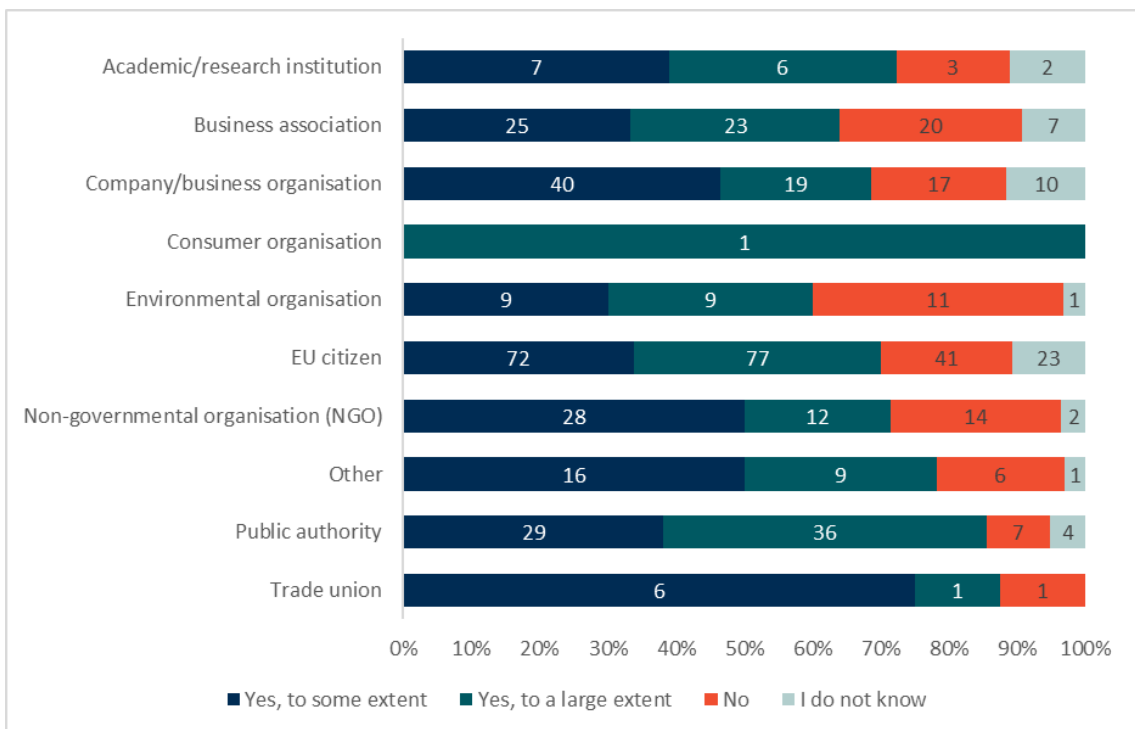


Figure E.6-47 shows that public authorities consider mostly that stakeholders are sufficiently involved. In contrast, a higher share of environmental organisation respondents consider that stakeholders are not sufficiently involved.

Figure E.6-47 Views from specific categories of stakeholders on involvement of stakeholders in the implementation of the WFD



Respondents that answered “No” were asked to provide an explanation. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions

- The aquaculture sector is not sufficiently involved;
- The municipal planning authorities are given too much weight.

Industry/economic organisations/trade unions:

- The interests of the business sector have not been included since the impact of the Directive on infrastructure projects was not anticipated;
- In some cases, the data and studies given to authority have not been taken into consideration. Quite often no proper analysis or arguments have been given to stakeholder's comments;
- Involvement has improved, but the water sector, one of the major stakeholders, in many countries is not involved enough as a partner in the process of defining the River Basin Management Plans and Programs of Measures;
- The implementation of the WFD has so far been too one sided, focusing only on ecological issues and not enough on the socio-economic aspects of sustainable water resource management. The integration of these aspects will be of prime importance if the WFD should be able to achieve its objective of ensuring sustainable use of Europe's water;
- Economic/Industrial stakeholders contributing to the achievement of other key EU objectives (such as hydropower for energy objectives) are not taken in to account.

NGOs and environmental organisations

- Stakeholders are consulted on the basis of past cooperation between different national administrations and expert and general public is consulted on a need to know basis, but their views are not actually considered or integrated;
- There is a general lack of proper involvement of the agro- and other industry in securing a good implementation of these Directives;
- The fact that the stakeholders are not sufficiently involved in the implementation process of the Water Framework Directive and daughter directives, is not a question of / the law, but rather to do with the lack of implementation of the guidelines. The WFD is unique in that it facilitates stakeholder involvement and even requires it to reach certain goals;
- Involvement has improved due to the WFD, but the water sector, one of the major stakeholders, in many countries is not involved enough as a partner in the process of defining the River Basin Management Plans and Programs of Measures. Furthermore, there is a lack of coordination, commitment and engagement of all stakeholders and the implementation of the polluter pays principle is too often not applied to all stakeholders, putting the water services as the final actor in line to provide good water quality and treat all kinds of pollutants.

Citizens:

- Local level actors are not sufficiently involved;
- Some stakeholders, such as the agriculture industry, are too heavily involved. On the other hand, consumers have little opportunities to express their views;
- NGOs could be better involved;
- The positions of the natural and environmental groups are often perceived as a nuisance and this group is usually only included as part of necessary legal requirements.

Question 36 - Do you consider the relevant sectoral stakeholders to be sufficiently involved in the implementation of the Floods Directive in your river basin/country?

A total of 557 respondents provided an answer to this question, out of which 171 (31%) responded "I don't know". Of the respondents that had an answer to this question (69%), the majority (46%) consider that stakeholders are 'to a large extent' sufficiently involved in the implementation of the Floods

Directive. It is interesting to note that the views appear to be more positive on the sufficiency of the involvement of stakeholders than for the Water Framework Directive.

Yes, to a large extent	Yes, to some extent	No	Total
178	138	70	386
46%	36%	18%	100%

Figure E.6-48 Views from professional and non-professional stakeholders on involvement of sectoral stakeholders in the implementation of the FD

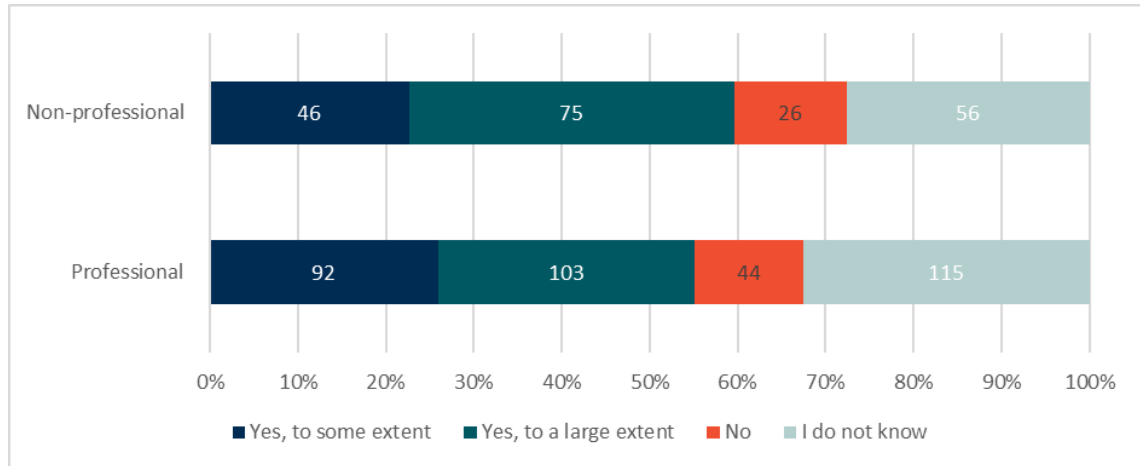
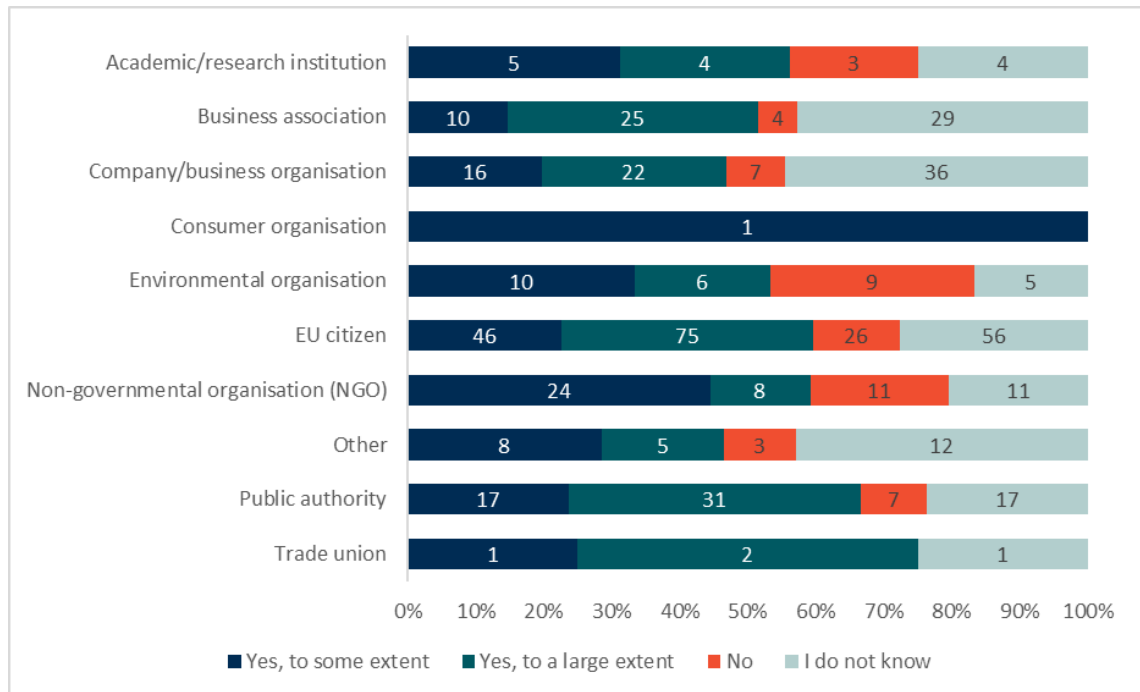


Figure E.6-49 Views from specific categories of stakeholders on involvement of sectoral stakeholders in the implementation of the FD



The respondents that answered “No” were asked to provide an explanation. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- Municipal planning authorities are too heavily involved.

Industry/economic organisations/trade unions:

- The farming sector is involved but it is crucial to consider the impact flooding can have on farm business and this aspect should be given greater weight when considering flood mitigation measures;
- A tighter interaction between main hydro users -and particularly hydropower operators- and river basin/country authorities would result in more effective measures;
- Economic / industrial interest groups that contribute to the achievement of other key EU objectives (for example, hydroelectric power for energy purposes) will not be considered.

NGOs and environmental organisations:

- Economic / industrial interest groups that contribute to the achievement of other key EU objectives (for example, hydroelectric power for energy purposes) will not be considered;
- The communication channels and methods for involving stakeholders / public should be improved. Member States should ensure that the relevant stakeholders, including environmental NGOs are effectively and actively involved in decision making on measures to deal with flood risks, including the framework programs. Feedback from stakeholders should be analysed and an open dialogue between the authorities and stakeholders should be established;
- Local public authorities are not sufficiently involved in the implementation of the Flood Directive.

Citizens:

- Municipalities are not sufficiently heard;
- Administrations responsible for urban planning are not sufficiently involved;
- NGOs and civil society can be better involved;
- Stakeholders are generally consulted in a late stage of the implementation process of the Floods Directive. An early engagement would greatly help better design and effectively implement measures that allow to reduce the pressure on end users, and especially on the agricultural / irrigation sector.

Question 37 - Are any aspects of the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive now obsolete for achieving good status or flood risk reduction?

An important aspect of a Fitness Check is to ensure that there are no aspects of the legislation which are obsolete. The questionnaire sought views from respondents on each of the four Directives with regard to this aspect.

Table E.6-13 shows the level of knowledge of respondents on the aspects of the Directives that are obsolete for achieving good status or flood risk reduction by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered “I don’t know”.

Table E.6-13 Level of knowledge of respondents regarding the aspects of the Directives that are obsolete for achieving good status or flood risk reduction

	% Know	% Don't know	Total number of respondents
WFD	85%	15%	604
EQSD	65%	35%	567
GD	66%	34%	562
FD	58%	42%	559

The results are presented in the table below. It can be observed that a significant share of respondent (almost half of those providing a response) consider that the WFD contains obsolete provisions.

Table E.6-14 Views on aspects of the legislation being obsolete

	Yes	No	Total
WFD	144	368	512
EQSD	79	290	369
GD	36	335	371
FD	37	289	326

Respondents that answered “Yes” were requested to briefly summarise which aspects of the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Water Directive and Floods Directive are now obsolete for achieving good status or flood risk reduction. Their responses are summarised per stakeholder category in the points below:

Water Framework Directive

Academic/research institutions:

- The list of priority substances needs to be updated more regularly to consider emerging pollutants.

Industry/economic organisations/trade unions:

- The principle of ‘one out all out’ is obsolete. It is necessary to take into account climate change;
- There are shortcomings in terms of coherence with other Directives ;
- The definition of “good status” of water bodies should be reviewed to integrate the challenging context of climate change challenge as well as the “one out all out” principle;
- The definition of ecological status as stated in the WFD is based on a theoretical reference condition equivalent to undisturbed or close to undisturbed conditions. Today, there is a lack of consensus among researchers about what an “undisturbed state” is;
- The WFD focuses on both chemical status and ecological status. However, resources seem to be mainly devoted to assessing the chemical status. In fact, the “ecological” status is often based on chemicals (EQS) assessment, since the compliance/non-compliance of RBSPs with their EQSs prevails on other aspects;
- The WFD requires a 6-year Review of the River Basin Management Plans. As measures and changes especially of the ecological status require more time, an Extension of the Review period should be considered;
- In 2015, the Weser case judgement introduced a very strict interpretation of the “non-deterioration principle”. It accentuates the pressure on Member States to use of the exemption’s clause under art. 4.7 in order to grant permits for industrial activities. The need for exemptions has increased drastically. However, exemptions which do not represent hydromorphological changes, only apply to surface water bodies with “high status”. Nonetheless if there are physical alterations, status only needs to be “good”. Therefore, it leaves industries at constant risk of not having their permits being granted or renewed;
- The separation between Heavily Modified Water Bodies and other water bodies is often arbitrary. The WFD has to take into account the growing effects of the climate change and

ensure the correct implementation of rules and strategies able to preserve and improve the key role of hydropower for mitigation and adaptation. In this context, EU authorities should review the Heavily Modified Water Bodies (HMWB) rules, in order to avoid indiscriminate application of the good ecological potential definition and setting unreachable targets.

NGOs and environmental organisations:

- In order to identify and take into account mixture / cumulative effects associated to chemical pollutants, effect-based tools should be implemented as screening tools to address chemical interactions stemming from mixtures of chemicals on aquatic organisms.

Groundwater Directive:

Academic/research institutions:

- Groundwater biota should be monitored.

Public authorities:

- Quality standards should be closely related to quality standards used in surface waters in terms of chemical status;
- An indicator of water scarcity should be defined to take into account the potential impact of climate change on groundwater, aquatic and terrestrial ecosystems.

Environmental Quality Standards Directive:

Academic/research institutions:

- Groundwater biota should be monitored in EQS setting;
- The list of priority substances should be updated more regularly to take into account emerging pollutants.

Industry/economic organisations/trade unions:

- EQS priority substance list keeps getting extended, whilst substances no longer a priority are never removed;
- The list of priority substances should only be extended if new EU wide risks are clearly identified.

NGOs and environmental organisations:

- The current Watch list mechanism is relatively slow to derive conclusive data and addresses a far too limited list of substances. It is therefore difficult to use the Watch List mechanism as an early-warning system for identification of emerging risks (overlooked PS) to aquatic ecosystems and human health via the aquatic environment.

Public authority:

- Development of EQS per substance, as currently stated in the EQS directives, is not anymore as relevant due to the huge number (millions) of chemical substances and the "cocktail effect" (synergistic effects of different substances). An integrative approach should rather be developed and accepted by the EU, such as effect-based monitoring and passive sampling. Such an integrative approach could be used additionally to the current EQS as long as the EU ascertains that an equivalent protection level is guaranteed;
- Concentration based indicators are not a good indicator since they penalize the irrigated areas under irrigation returns.

Floods Directive:

Public authority:

- The six-year review of the preliminary risk assessment, which is almost like a full re-enactment, seems unnecessary. The potential risks should have been apparent after a few cycles;
- Article 4 of the preliminary flood risk assessment is useful to collect past flood data but has no added value for a small district to exclude areas and risks.

Question 38 - Do the Water Framework Directive's provisions on assessing ecological status sufficiently allow for the effects of climate change to be distinguished from other effects?

A total of 602 respondents provided an answer to this question, out of which 80 (13%) answered “I don’t know”. Of the respondents that had an answer to this question (87%), the majority (44%) consider that the WFD does not sufficiently allow for the effects of climate change to be distinguished when assessing ecological status. This finding is coherent with feedback received from other engagement of stakeholders which emphasizes the challenge of distinguishing changes due to climate change from other changes.

Yes, fully	Yes, to a large extent	To some extent	No	Total
76	99	115	232	522
15%	19%	22%	44%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-50 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-51 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-50 shows that a greater proportion of professional stakeholders don’t think the Water Framework Directive’s provisions on assessing ecological status sufficiently allow for the effects of climate change to be distinguished from other effects compared to non-professional stakeholders.

Figure E.6-50 Views from professional and non-professional stakeholders on the appropriateness of the ecological status to distinguish climate change effects

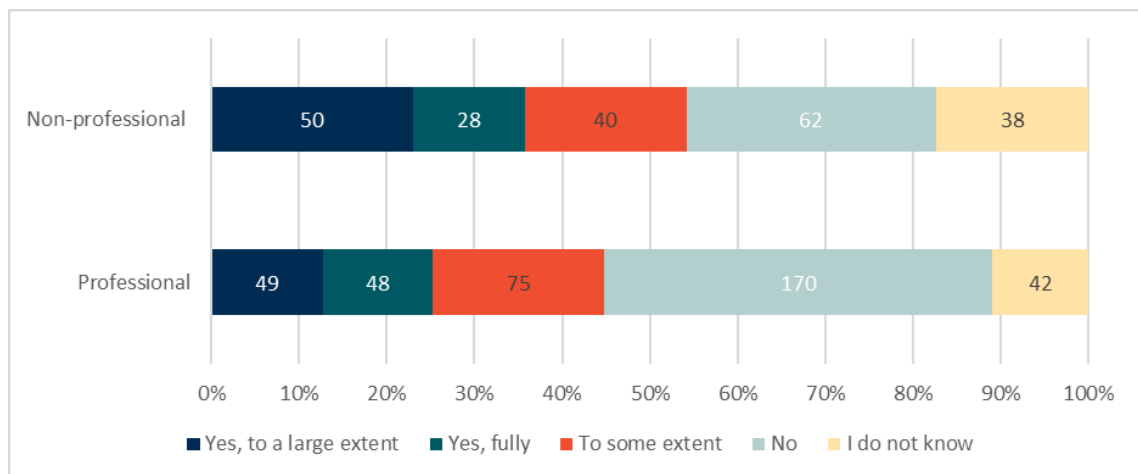
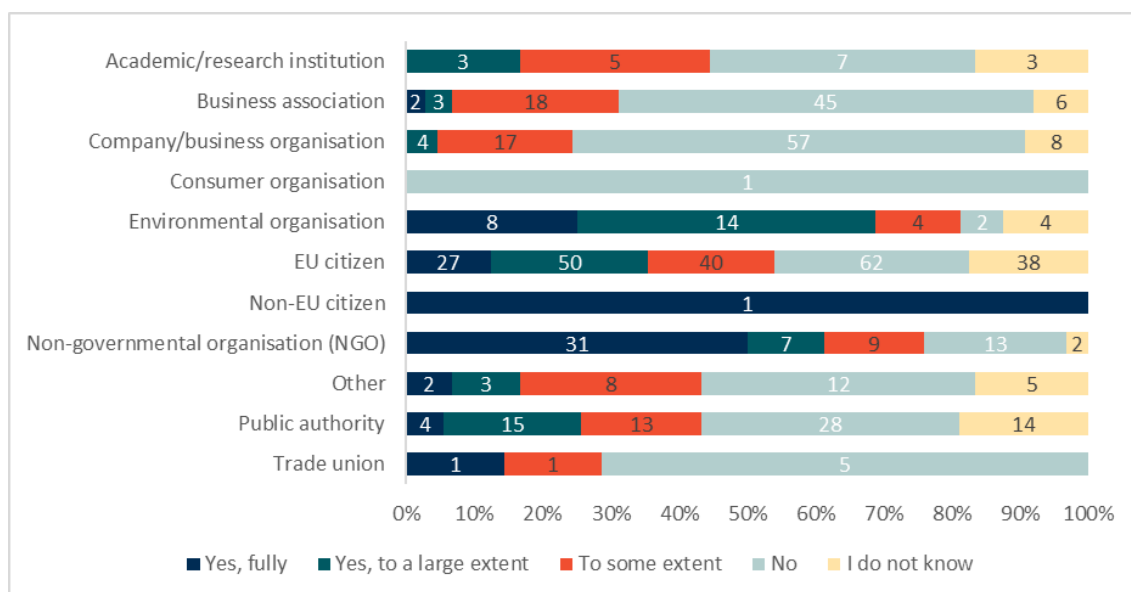


Figure E.6-51 shows that companies and business organisations are the most critical on the possibility to distinguish climate change effects as part of the ecological status assessment. In contrast NGOs are positive on the capacity of these effects to be ‘fully’ distinguished. This difference in views is also reflected in other evidence gathered which seems to suggest two main groups: those for which climate change is a factor that was not fully considered as part of the adoption of the Directives and that consider that the provisions are not fully taking into account, and those for which the Directives have sufficient flexibility to allow this to be taken into account.

Figure E.6-51 Views from specific categories of stakeholders on the appropriateness of the ecological status to distinguish climate change effects



Question 39 - How relevant are the priority substances listed in the Environmental Quality Standards Directive to the overall quality of surface waters in your country?

A total of 559 respondents provided their views on the relevance of the priority substances listed in the EQSD, out of which 173 (31%) responded “I don’t know”. It can be seen that the first two categories of responses: highly relevant and moderately relevant are very closely rated (totalling 83% together). A very small number of respondents consider these as ‘not relevant’ (3%).

Highly relevant	Moderately relevant	Slightly relevant	Not relevant	Total
158	162	56	10	559
41%	42%	15%	3%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-52 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-53 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-52 shows that only a very small proportion of professional stakeholders consider the priority substances listed in the Environmental Quality Standards Directive not relevant to the overall quality of surface waters in their country.

Figure E.6-52 Views from professional and non-professional stakeholders on the relevance of the priority substances

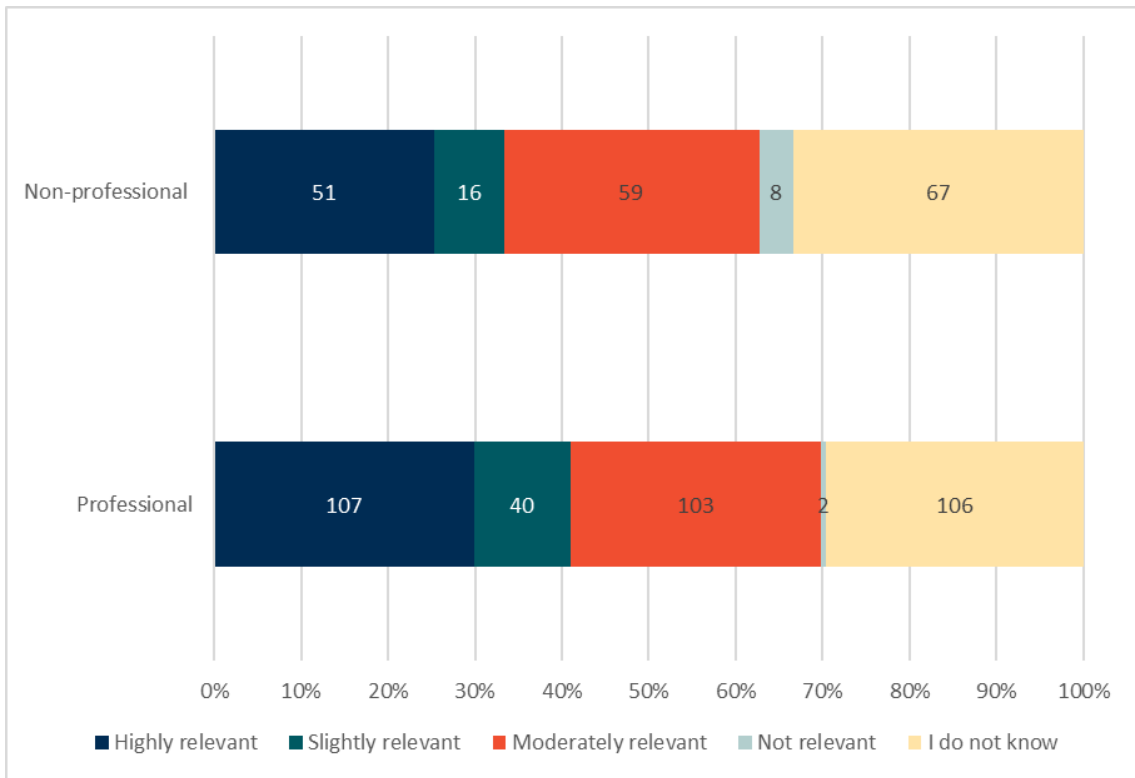
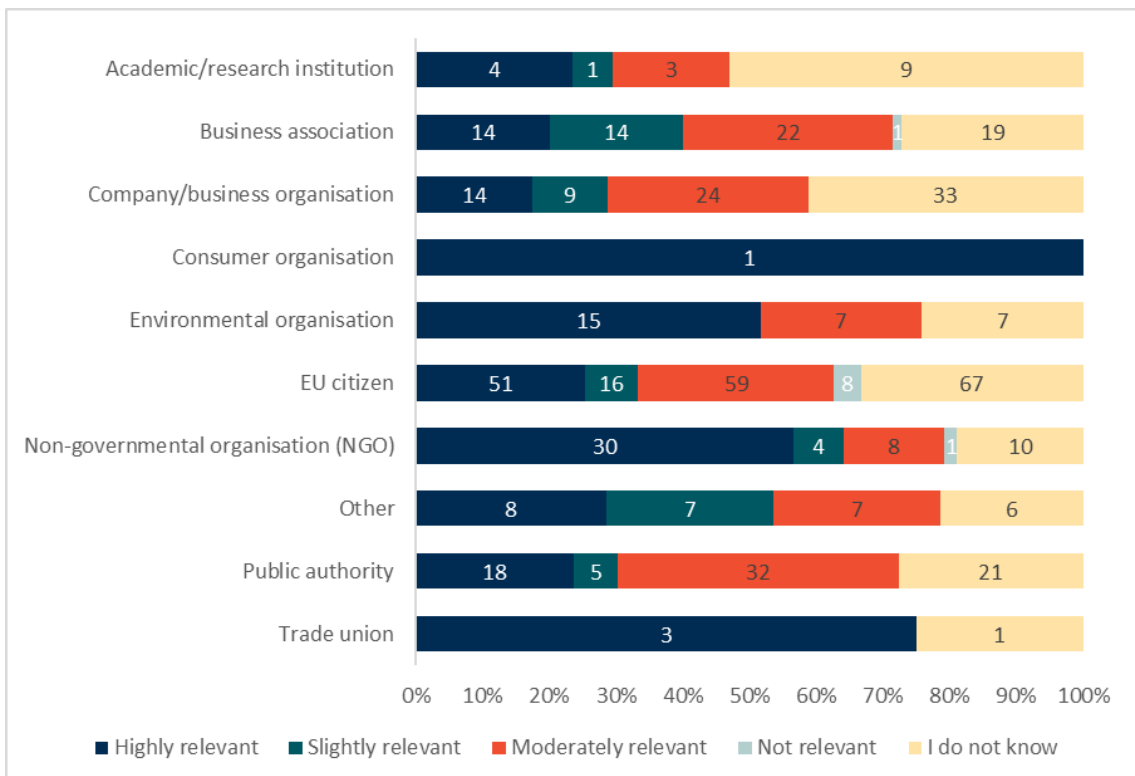


Figure E.6-53 shows that one noticeable difference is that NGOs find substances more ‘highly relevant’ than other categories of respondents.

Figure E.6-53 Views from specific categories of stakeholders on the relevance of the priority substances



Respondents were asked to explain their answer. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- There are too many old pesticides and industrial chemicals that have not been used, produced, imported, and susceptible for long range transported pollution on the list.

Industry/economic organisations/trade unions:

- EQS priority substance list keeps getting extended, whilst substances no longer a priority are never removed;
- Some pesticides listed in the EQSD are not in use anymore but new ones, put on the market, are not in the list. This causes a mismatch with reality. More coherence is necessary between parameters of the EQSD and of the Groundwater Directive with those in the DWD;
- Standards are often not technically feasible;
- The role of climate change, alongside population changes and increasing urbanization, also need to be considered in relation to ‘no deterioration’;
- Emission limit values (especially phosphorus) in water discharges from wastewater treatment plants should be tightened. Emerging substances like pharmaceutical substances needs to be thoroughly followed up and, when needed, be implemented in the legislation;
- Due to the one-out all-out principle of the WFD a failure of a priority substance (e.g. TBT, mercury and PAH) will affect the overall quality status of the surface water. This has an impact on the overall deemed quality of surface waters England and Wales even though in many cases it does not necessarily translate into widespread biological effect;
- In Sweden, there are EU priority substances (PS) and EU priority hazardous substances (PHS) that (1) are not present in the country anymore since many years, (2) are ubiquitous such as Hg that are still included in the EQS directive but will not decrease in concentration for a long time, (3) should be identified such as emerging substances. It is suggested to analyse the eventual needs to reclassify certain substances that today are part of the evaluation of ecological status into chemical status (example N, P).

Public authorities:

- Substances such as PAHs and mercury have inadequate standards;
- Problematic banned substances persist for several years (atrazine) and yet still present in groundwater.

Citizens:

- Pollutants by transport and traffic are not adequately taken into account.

Question 40 - How does the relevance of the priority substances (as components of overall chemical pollution) compare with the relevance of substances identified as river basin specific pollutants in your country?

A total of 544 respondents provided an answer to this question, out of which 205 (38%) responded “I don’t know”. Of the respondents that had an answer to this question (62%), the majority (54%) consider priority substances to be as equally relevant to the river basin specific pollutants. There seems to be an indication that river basin specific pollutants might be in some instances (12% respondents) be more relevant than the priority substances. However, there is also a high level of unknown, more than one third of respondents.

Much more relevant	More relevant	Equally relevant	Much less relevant	Less relevant	Total
33	51	182	9	64	399
10%	15%	54%	3%	19%	100%

Question 41 - Are the surface water watch list monitoring requirements appropriate for the intended purpose?

A total of 548 respondents provided an answer to this question, out of which 223 (41%) responded “I don’t know”. Of the respondents that had an answer to this question (59%), the majority (74%) indicated that the monitoring requirements of the surface water watch list are appropriate with only a small share of respondents (26%) disagreeing.

Yes	No	Total
240	85	325
74%	26%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-54 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-55 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-54 shows that a greater proportion of professional stakeholders consider the surface water watch list monitoring requirements to not be appropriate for the intended purpose.

Figure E.6-54 Views from professional and non-professional stakeholders on the appropriateness of the surface water watch list monitoring requirements

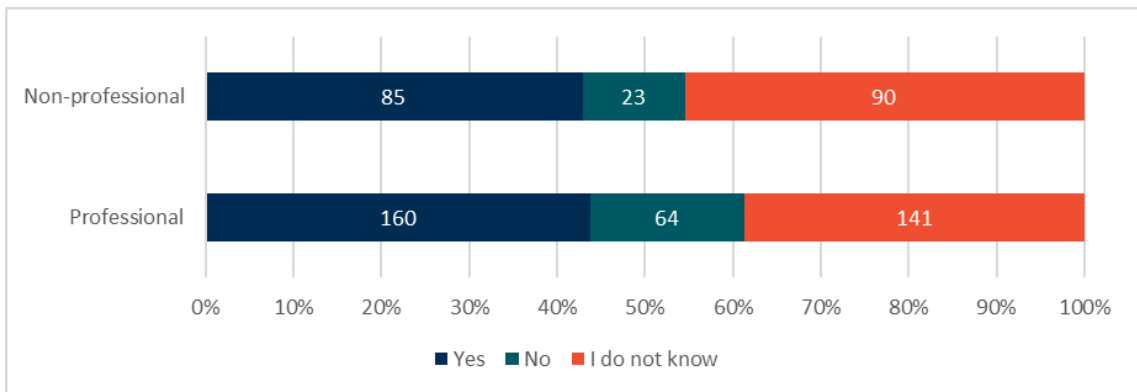
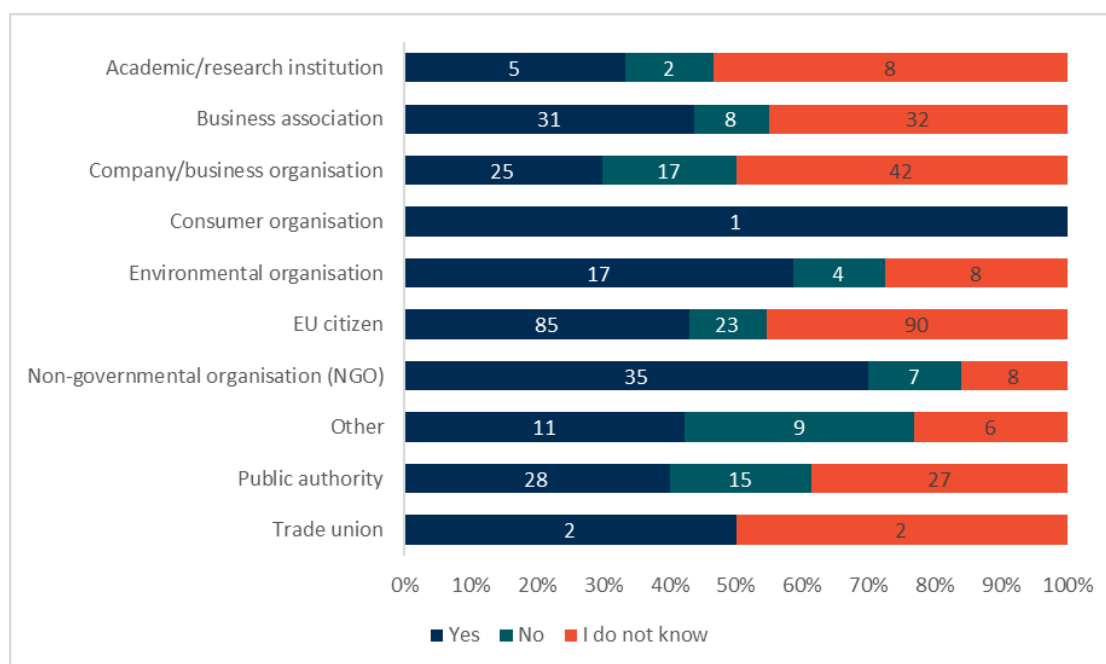


Figure E.6-55 shows that the split of views across the respondents’ categories is similar to the EU average with an overall agreement with the surface water watch list monitoring requirements.

Figure E.6-55 Views from specific categories of stakeholders on the appropriateness of the surface water watch list monitoring requirements



Respondents that answered “No” were requested to provide an explanation as to why not. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- The watchlist doesn’t always contain substances that are problematic for every region.

Industry/economic organisations/trade unions:

- The density of the monitoring stations is insufficient for obtaining an appropriate temporal and spatial distribution of result to allow irrefutable decision on the future status of the substance under investigation.

NGOs and environmental organisations:

- Drug substances are not sufficiently taken into account;
- The concept behind the Watch List mechanism (investigating emerging compounds) is correct and important, but the way in which this mechanism is implemented is too slow. A systematic use of “wide-scope target screening“ and “suspect screening” of large batches of substances, using High Resolution Mass Spectrometry tools, would help prioritising chemicals before possible target monitoring of a reduced list of prioritised substances.

Public authorities:

- The surface water watch list monitoring currently does not require to perform measurements at the most appropriate time of the year (e.g. during use periods for pesticides) nor to measure them in the appropriate matrix (e.g. sediments), but rather recommends doing so. As a consequence, results outside of the relevant period and matrix are worthless for the EU;
- The cost of monitoring of substances is excessive in many cases.

Citizens:

- Monitoring requirements should be more extensively complemented with sediment and biota matrices.

Question 42 - Are the provisions of the Water Framework Directive and the Groundwater Directive sufficient to protect groundwater bodies from technological developments such as fracking?

A total of 588 respondents provided an answer to this question, out of which 239 (41%) responded “I don’t know”. Of the respondents that had an answer to this question (59%), the responses were evenly split between ‘yes’ and ‘no’. These results seem to indicate polarised views on the suitability of the framework for addressing new technological developments. This might also be a reflection on the uncertainty of the needs that would have to be addressed. For example, the impacts of fracking activities on groundwater are known but more research could support a more refined understanding of risks.

Yes	No	Total
179	170	349
51%	49%	100%

The figures below present the results of this question by category of stakeholders. Figure E.6-56 presents the results by professional stakeholders (organisations) and non-professional stakeholders (EU citizens and non-EU citizens). Figure E.6-57 presents the results by specific categories of stakeholders. The proportion of respondents who responded “I don’t know” is also presented in the charts below to indicate the stakeholders’ level of familiarity with the subject of this question.

Figure E.6-56 shows that a greater proportion of professional stakeholders answered they don’t know if the provisions of the Water Framework Directive and the Groundwater Directive are sufficient to protect groundwater bodies from technological developments such as fracking compared to non-professional stakeholders.

Figure E.6-56 Views from professional and non-professional stakeholders on the suitability of provisions of the WFD and GD to protect groundwater bodies

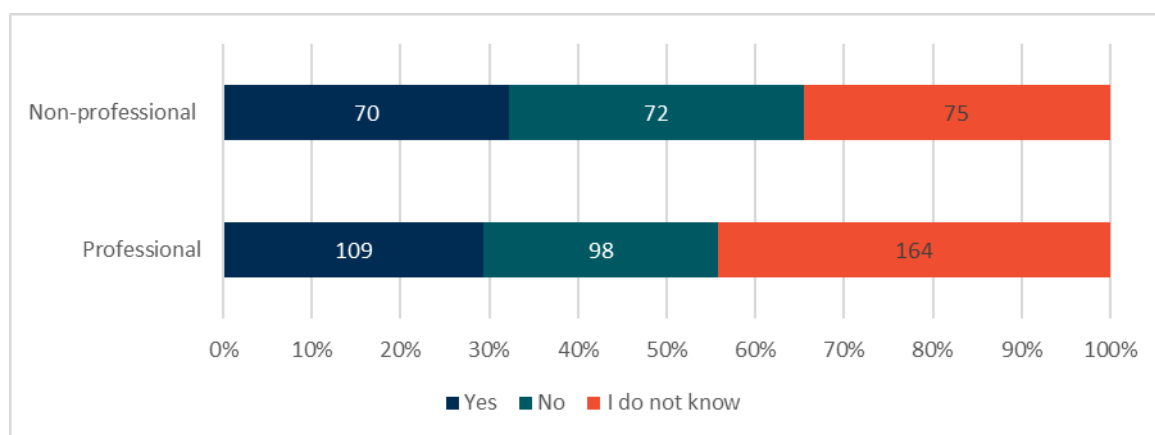
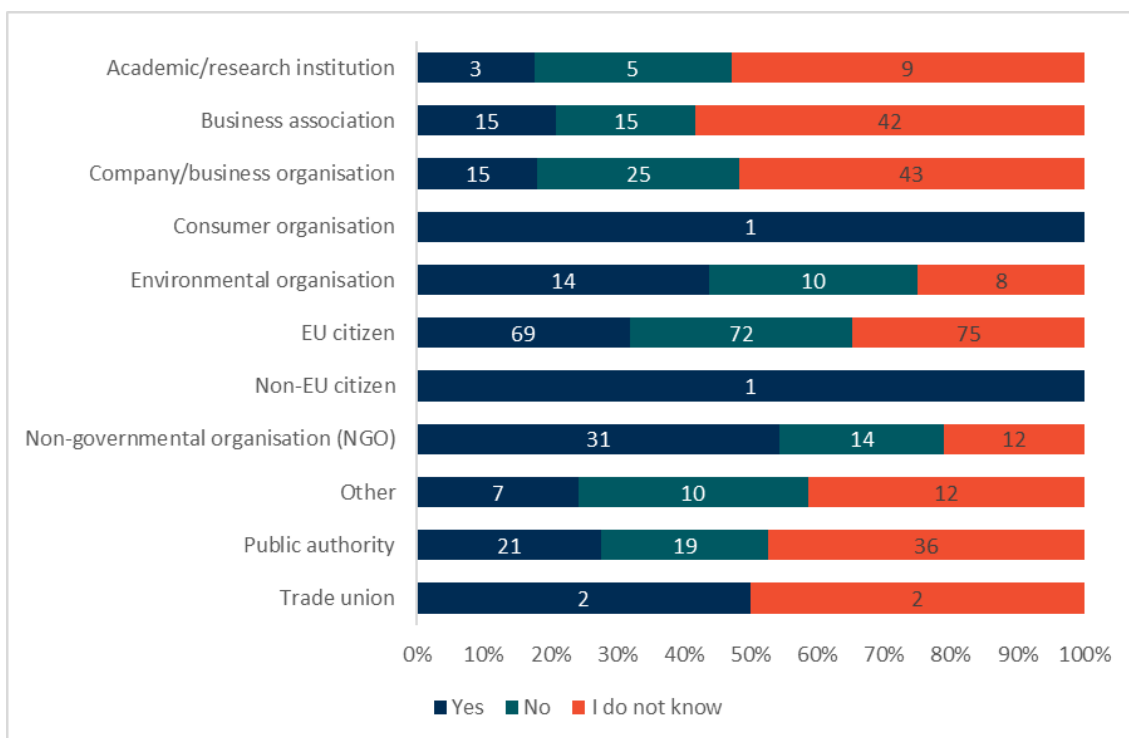


Figure E.6-57 shows that NGOs and environmental organisations are generally more positive regarding the suitability of the existing provisions for protecting groundwater bodies. This finding is somewhat surprising as it could be expected that these stakeholders would ask for more protection for new technological developments that are not covered by the existing legislation.

Figure E.6-57 Views from specific categories of stakeholders on the suitability of provisions of the WFD and GD to protect groundwater bodies



Respondents that answered “No” were required to provide an explanation as to why not. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- WFD and GD do not contain directly effective instruments for the protection of groundwater bodies. This applies particularly to those required by Art. 7.3 protection of drinking water resources;
- In Germany, the Water Resources Act had to be revised in order to estimate the consequences of fracking. This is a clear indication that the current framework, which is mainly determined by the WFD, does not offer sufficient protection.

NGOs and environmental organisations:

- There are no provisions in the WFD which would prevent fracking, although it involves the introduction of large amounts of chemicals of unknown composition into the ground without any kind of risk assessment;
- Fracking was not approved at the time of the inception of the WFD and so the Directive does not protect against it.

Public authorities:

- The regulatory framework is inadequate under the water directives, referring only to the mining regulations;
- These directives only specify goals and objectives. Activities such as fracking need concrete rules in national law depending on the geogenic conditions;
- The problem with technological developments such as fracking is precisely technological, not legal. This activity is just one of the possible pressures on water bodies, which must undergo an approval process that takes into account the possible negative effects to the environment.

Citizens:

- Technically, there is nothing in the Directives that would prevent authorities from protecting groundwaters from activities such as fracking;
- The legislation does not progress as quickly as new technologies, so environmental impacts occur long before the legislation can be adapted to mitigate these impacts.

Question 43 - What are currently the most important water management needs for society? (Please rank 5 - highest, 1 - lowest)

On average 580 respondents provided their views on the most important water management needs.

Based on the responses received, the most important needs (ranked 4-5) are:

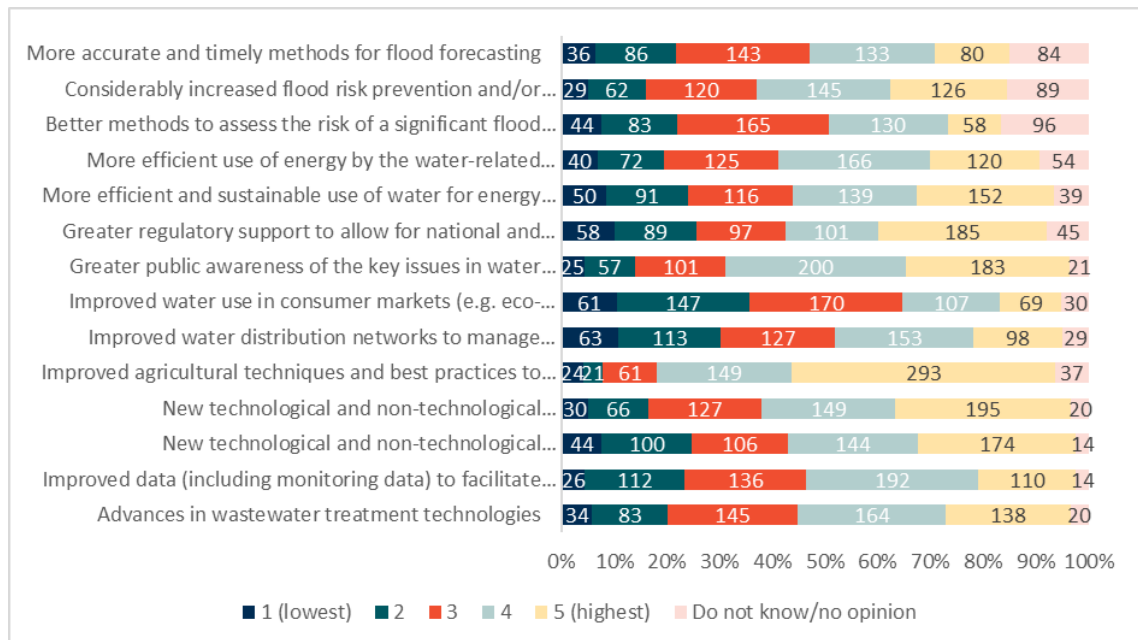
- Granting public awareness of key issues in water management;
- Improving agricultural techniques and best practices related;
- New technological and non-technological solutions to address water scarcity due to demand;
- New technological and non-technological solutions to address water scarcity due to climate change.

It is important to note that many of the needs listed as options received a high rating, which highlights the vast ranging need from water management sector.

The needs seen as less important (1-2 rating) include:

- Improved water uses in consumer markets;
- Improved water distribution network.

Figure E.6-58 Views on most important water management needs



Question 44 - In your opinion which of the following aspects contribute the most to the sustainable use of water? (Please rank 5 - highest, 1 - lowest)

An average of 567 respondents provided responses to the aspects contributing the most to the sustainable use of water.

The following aspects received the highest ratings (4-5):

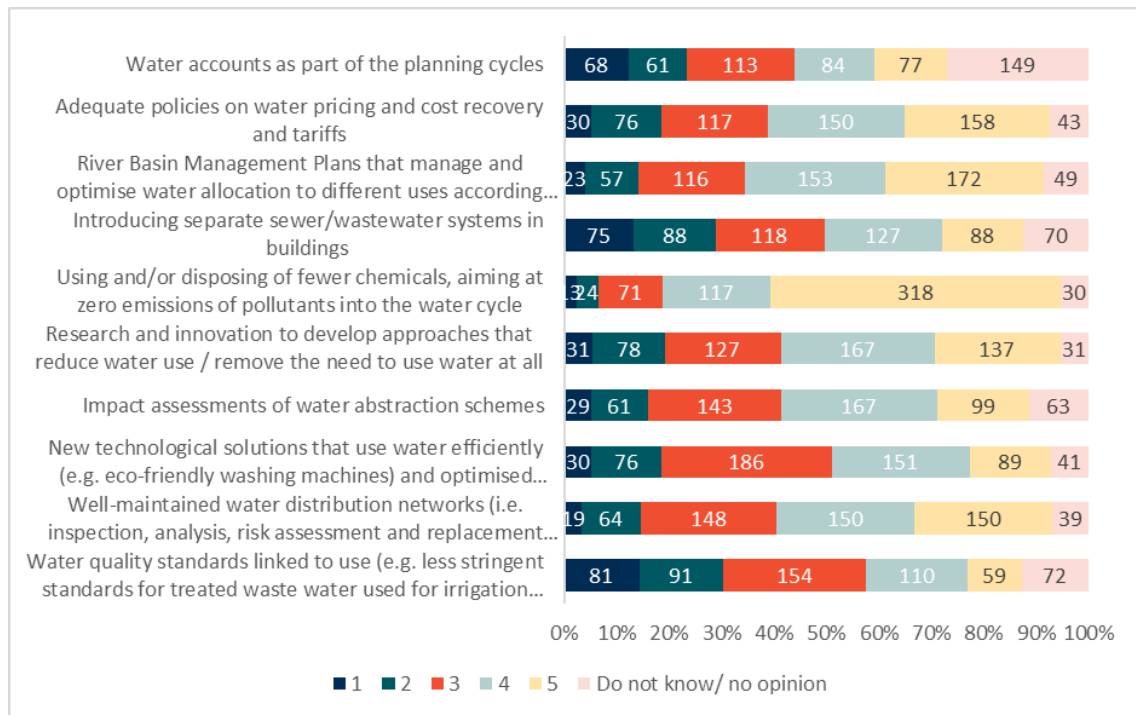
- Well-maintained distribution networks;
- Impact assessment of water abstraction schemes;
- Research and innovation to reduce water use;
- River Basin Management plans;
- Adequate policies on water pricing.

When compared to the previous response some of these priorities appear to be slightly contradictory, in particular with regards to the maintenance of distribution networks which is seen as one of the aspects contributing the most to the sustainable use of water, but also one where the needs were listed as less important in the previous question.

The aspects that are considered to contribute the least to the sustainable use of water (rated 1-2) include:

- Introducing separate sewer systems in buildings;
- Water quality standards linked to intended use.

Figure E.6-59 Views on aspects contributing the most to the sustainable use of water



The respondents that answered “other” were requested to elaborate on their answer. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- Access to a well-educated labour force to maintain and develop the water infrastructure;
- Implementation of real time data collection for databases and digital solutions for combining with information that was previously unavailable to make effective decisions on the management of water resources;
- Continuing education and awareness of all water users;
- Water storage contributes massively to sustainable use of water;

- Digital solutions provide numerous possibilities for developing wastewater treatment. Further analysis of treatment processes, including the optimization of chemical dosing and predictive process operation, leads to higher overall treatment efficiency within the boundaries of existing infrastructure;
- Deeper knowledge of climate change consequences and weather forecast will enable a better adaptation of water uses and anticipate the necessary means to be put in place for the protection of water bodies.

NGOs and environmental organisations:

- Reduced water demand for irrigation purposes;
- Maximum use of nature-based solutions due to flexibility and potentially lower costs, higher income and social benefits.

Public authorities:

- Penalties for offenses and violations of the law.

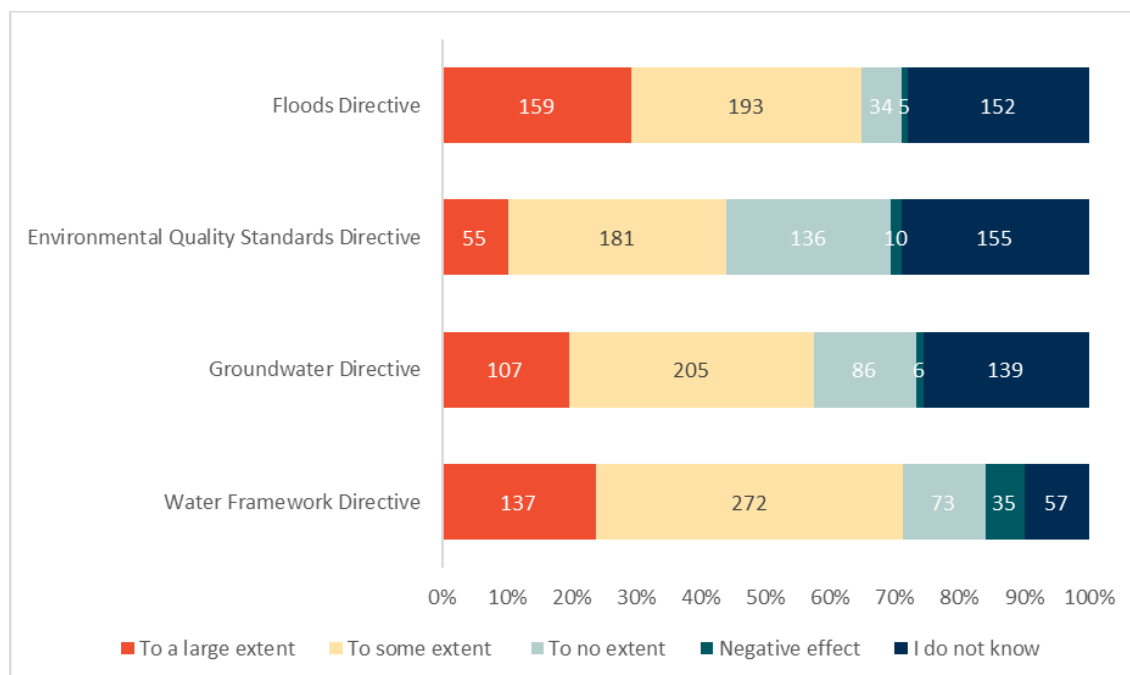
Citizens:

- Conversion of agricultural operations, for e.g. Irrigation, to more sustainable systems. Growing less water-sapping crops;
- Natural water retention measures and river restoration projects;
- Promotion of water reuse.

Question 45 - To what extent do the Directives contribute to managing the challenges arising from climate change in the EU, and to addressing its consequences?

An average of 540 respondents provided a response to this question, Figure E.6-60 presents the responses per Directive. It can be seen that the FD is seen as the one contributing the most to the management of climate change, followed by the WFD. There were very little views that the legislation had negative effects on the management of these challenges.

Figure E.6-60 Views on contribution of the Directives to the management of challenges from climate change



Respondents were asked to explain how the Directives have contributed or failed to contribute to managing the challenges arising from climate change in the EU and to addressing the consequences.

Contributed to managing challenges:

- Natural water retention measures in WFD are also effective adaptation measures;
- The WFD encourages the restoration of water bodies towards their natural state, which indirectly improves the natural resilience of such bodies against flooding, high sea levels, water shortages etc;
- By regularly reviewing the implementation of the measures, new insights from climate research or monitoring can be integrated. Also, cross-sectoral aspects can be taken into account. Thus, the Directives are an important and central element of the protection of waters from the effects of climate change;
- The WFD already prohibits excessive pumping to achieve good quantitative status.

Failed in contributing to manage challenges:

- WFD prevented the water storage and the development of renewable energy production;
- Concerns about changes in climate are not yet matched by practical actions on the ground that will enable communities to withstand its impacts. The response of water services to climate change should encompass both mitigation (reducing water services impact) and adaptation (become resilient to the effects) measures;
- The WFD sets standards for the protection of the aquatic environment, but achieving these standards in the light of climate change impacts may require additional treatment in waste water treatment plants. This in turn may result in high energy consumption that translates to a higher carbon footprint, diluting the mitigation efforts made by water services. Water services used to be an energy-intensive sector but over the past years, the sector has been able to significantly reduce its energy consumption and carbon footprint. This positive trend should not be jeopardised;
- Climate change is not mentioned and does not exist in Art 2 as a definition in WFD because this challenge did not exist in the minds of legislators at the end of 1990s. Reference conditions to which the EU waters are supposed to be restored to have therefore not included the effects of climate change at all. Currently this gap is solved by adjusting the reference condition constantly and designing and carrying out measures at regional and local scales;
- The main challenges that water operators will be increasingly facing with climate change are the intensification of droughts and floods events. Today, these aspects are not sufficiently addressed by the Water Framework Directive. For instance, the River Basin Management Plans could have an obligation for Member States to include also a Climate Adaptation/Mitigation Plan.

6.5 Coherence

Question 46 - In your opinion how coherent are the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive internally?

A total of 584 respondents provided an answer to this question, out of which 148 (25%) responded “I don’t know”. Of the respondents that had an answer to this question (75%), the majority (57%) consider the four Directives under the scope of the Fitness Check to be ‘mostly coherent internally’. There are very few respondents (4%) considering these Directives are not coherent. This finding is coherent with the fact that the Directives have been drafted to be complementary to each other.

Fully coherent internally	Mostly coherent internally	Not coherent internally	Total
167	250	19	436
38%	57%	4%	100%

Figure E.6-61 Views from professional and non-professional stakeholders on internal coherence of the Directives

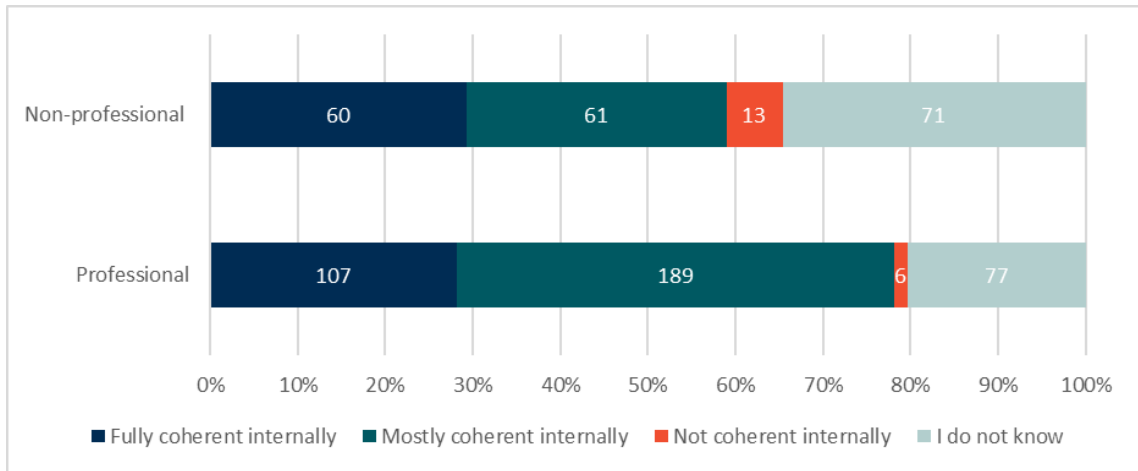
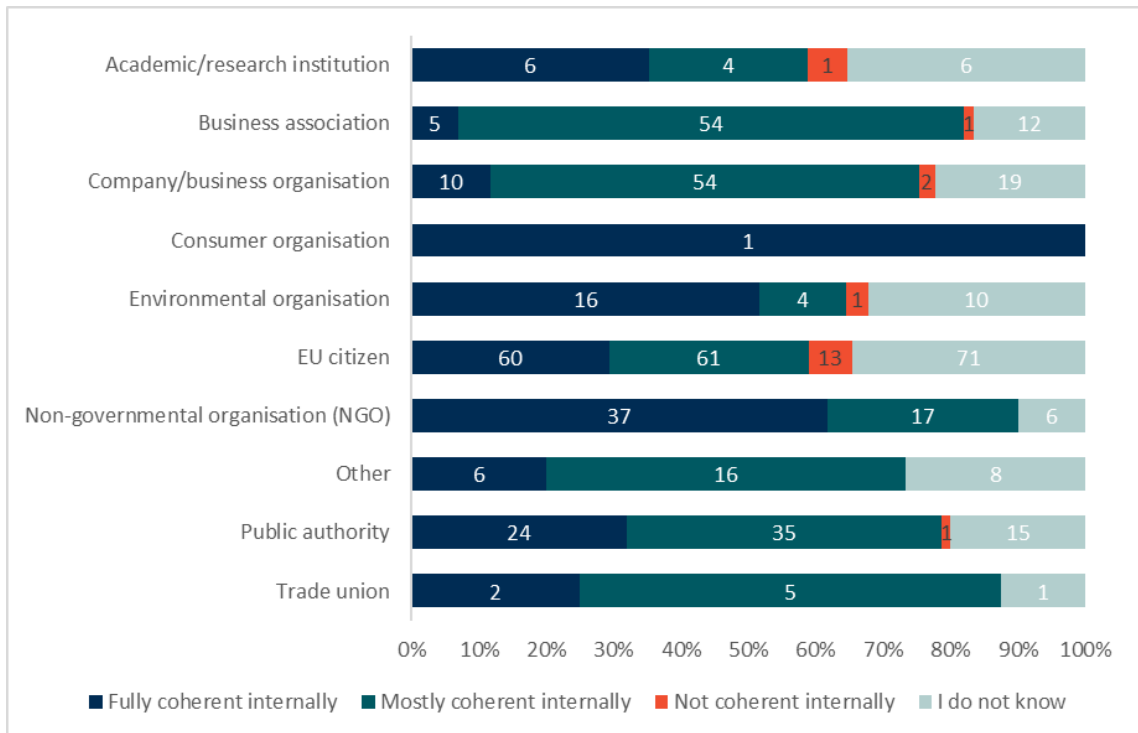


Figure E.6-62 shows that NGOs appear to more find the Directives fully coherent internally than the average respondent. Most of the respondents indicating the Directives are not coherent are generally EU citizens.

Figure E.6-62 Views from specific categories of stakeholders on internal coherence of the Directives



The respondents that answered “Mostly coherent internally” or “Not coherent internally” were requested to describe the incoherence. Their responses are summarised per stakeholder category in the points below:

Water Framework Directive:

Industry/economic organisations/trade unions:

- The WFD is not coherent with the MSFD as the latter contains no part which is relevant to the shellfish aquaculture industry. This means that shellfish waters outside 1 nautical mile do not have any protection;
- Many requirements are vaguely formulated and are not linked to concrete implementation targets. For example, prohibition of deterioration and protection of drinking water resources under Article 7.3 WFD
- For an efficient implementation of the Water Framework Directive, the revision of the CAP is urgently needed;
- Both the chemical and ecological status have different scales of classification. This is not optimal and needs to be carefully analysed, particularly with respect to the current purpose of each status (EU wide and national);
- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD;
- Coherence is missing in the exemption regime;
- Properly implemented, the WFD is coherent with other policies. However, the way WFD is interpreted in some national implementation and even some CIS guidance documents is not coherent with RES-directive and climate policy. In some cases, targets of FD and WFD are in conflict.

NGOs and environmental organisations:

- For an efficient implementation of the Water Framework Directive, the revision of the CAP is urgently needed;
- There is a need for more coherence between the goals set in article 7 of the WFD and the EQSD as well as the GWD.

Public authorities:

- The 2027 limit does not apply equally to other directives, such as for example EQSD;
- There are some issues which may require further integration between the WFD and the daughter directives for example between Art. 16 WFD and the EQS Directive.

Citizens:

- The incoherence exists mainly concerning the non-implementation of Art.9 EU WFD;
- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD.

Groundwater Directive:

- The effective implementation of the Groundwater Directive requires full implementation of the Nitrates Directive. This is not so far carried out in Germany;
- There is no coherence with respect to nitrates;
- The groundwater specific ecosystems should be taken into account for groundwater quality assessment, just as surface ecosystems are for WFD;
- There is a need for more coherence between the goals set in art. 7 of the WFD and the EQSD as well as the GWD;

- Annex I is not compatible with Article 6.

Industry/economic organisations/trade unions:

- There is no consistency in many aspects, e.g. nitrates;
- The effective implementation of the Groundwater Directive requires full implementation of the Nitrates Directive. This is not so far carried out in Germany.

Public authorities:

- The groundwater specific ecosystems should be taken into account for groundwater quality assessment, just as surface ecosystems are for WFD.

NGOs and environmental organisations:

- The effective implementation of the Groundwater Directive requires full implementation of the Nitrates Directive. This is not so far carried out in Germany.

Citizens:

- Annex I is not compatible with Article 6.

Environmental Quality Standards Directive:

- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD;
- The EQS Directive overwrites the bottom-up approach used by the RBMP. The EQS level list is more of a legacy deriving from an outdated command and control regime which is no longer needed at EU level;
- EQS Directive distinguishes ubiquitous pollutants from other PS, but the Commission doesn't come up with solutions to reduce these ubiquitous at the European scale.

Industry/economic organisations/trade unions:

- The EQS Directive overwrites the bottom-up approach used by the RBMP. The EQS level list is more of a legacy deriving from an outdated command and control regime which is no longer needed at EU level;
- No coherence on many aspects in regard to the deterioration;
- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD.

NGOs and environmental organisations:

- There is a need for more coherence between the goals set in art. 7 of the WFD and the EQSD as well as the GWD.

Public authorities:

- EQS Directive distinguishes ubiquitous pollutants from other PS, but the Commission doesn't come up with solutions to reduce these ubiquitous at the European scale.

Citizens:

- The review cycle of the EQSD and the deadline set are not aligned with the 6-year cycles of the RBMP in the WFD.

Floods Directive:

- The flooding directive is less coherent with the other directives in terms of the time horizon and possible field of application;
- There is no coherence in standards;
- Further work could be done to ensure the Water Framework Directive and Floods Directive are coherent in achieving the aims of each of the objectives e.g. flood protection may be reliant on hard engineered defences which can alter the morphology of a river and therefore leads to the river achieving poor or bad ecological status. Therefore, considerations must be made to ensure the exemption of such measures where necessary.

Academic/research institutions:

- Nature-based solutions should be more focused to better match WFD. Conventional floods protection prevents good ecological status due to hydromorphological alterations.

Industry/economic organisations/trade unions:

- There is no coherence in standards;
- Further work could be done to ensure the Water Framework Directive and Floods Directive are coherent in achieving the aims of each of the objectives e.g. flood protection may be reliant on hard engineered defences which can alter the morphology of a river and therefore leads to the river achieving poor or bad ecological status. Therefore, considerations must be made to ensure the exemption of such measures where necessary;
- Quantitative surface water management (WFD, FD) is not giving adequate consideration to structural measures aiming at avoiding floods such as reservoirs. In a context where 95 % (EEA 2018) of Europe's natural floodplains have been converted to other uses, it is not realistic to promote only natural means for flood mitigation.

Public authorities:

- The flooding directive is less coherent with the other directives in terms of the time horizon and possible field of application;
- The objectives between Flood and Water Framework Directive differ - measures for flood protection can have a negative impact on water quality.

Question 47 - In your opinion does any incoherence between the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive affect the achievement of good status under the Water Framework Directive or adequate flood risk management?

The aim of the question was to understand whether any incoherence identified between the Directives considered under the Fitness Check was affecting the achievement of good status and adequate flood risk management. The following incoherence were identified:

- Between the WFD and the FD;
- Between the WFD and the EQSD;
- Between the GD and the WFD.

The question did not allow for additional comments however more information was provided in subsequent questions.

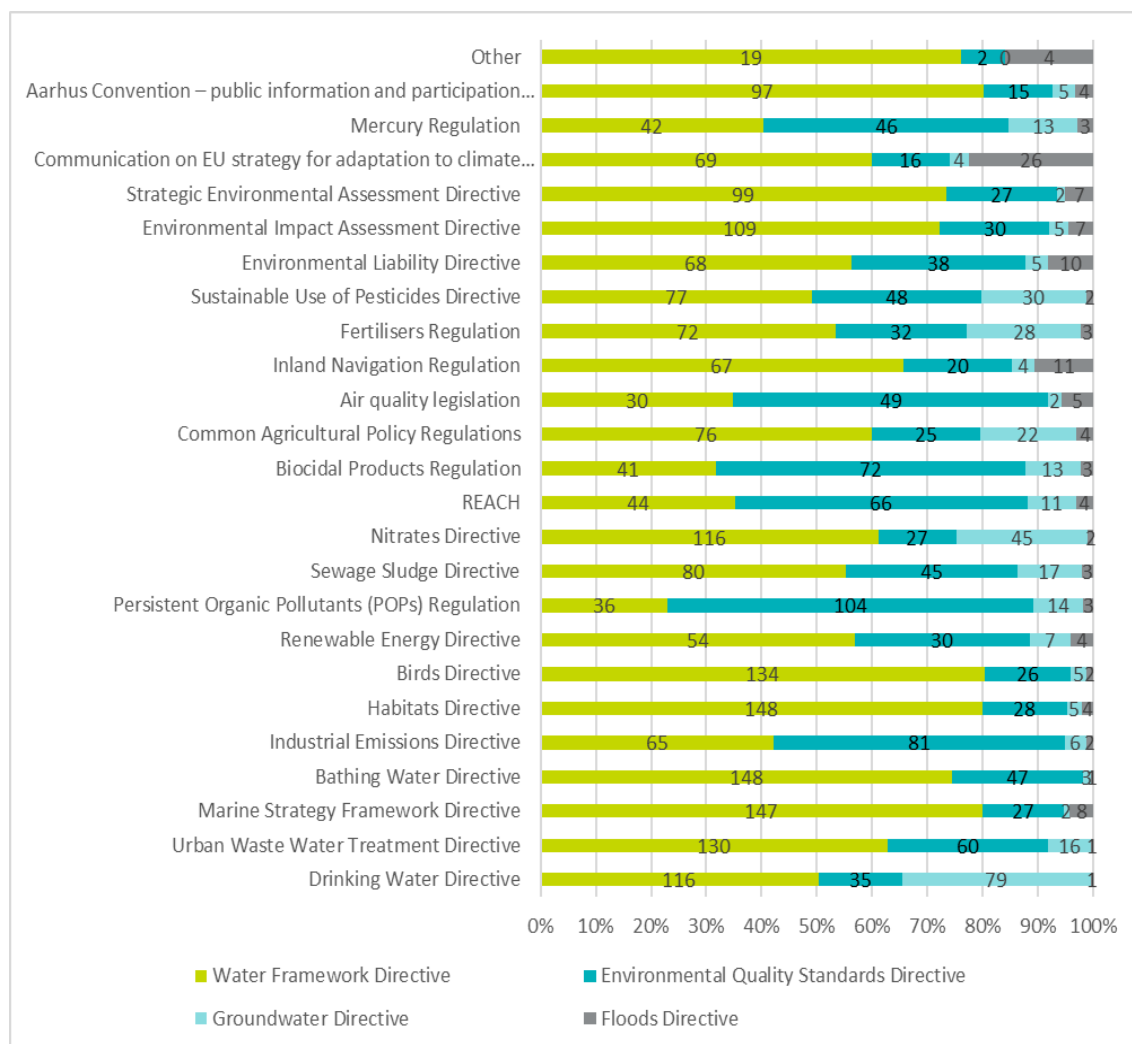
	Water Framework Directive	Groundwater Directive	Environmental Quality Standards Directive	Floods Directive
Water Framework Directive	17	14	46	56
Groundwater Directive	31	1	24	11
Environmental Quality Standards Directive	55	12	6	8
Floods Directive	75	5	5	6

Question 48 - Please indicate where you consider the legal framework provided by the collective actions of the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive to be coherent with the following environmental /sectoral legislation?

Table E.6-15 Views on coherence with wider legislation

Environmental legislation	Water Framework Directive	Environmental Quality Standards Directive	Groundwater Directive	Floods Directive
Drinking Water Directive	116	35	79	1
Urban Waste Water Treatment Directive	130	60	16	1
Marine Strategy Framework Directive	147	27	2	8
Bathing Water Directive	148	47	3	1
Industrial Emissions Directive	65	81	6	2
Habitats Directive	148	28	5	4
Birds Directive	134	26	5	2
Renewable Energy Directive	54	30	7	4
Persistent Organic Pollutants (POPs) Regulation	36	104	14	3
Sewage Sludge Directive	80	45	17	3
Nitrates Directive	116	27	45	2
REACH	44	66	11	4
Biocidal Products Regulation	41	72	13	3
Common Agricultural Policy Regulations	76	25	22	4
Air quality legislation	30	49	2	5
Inland Navigation Regulation	67	20	4	11
Fertilisers Regulation	72	32	28	3
Sustainable Use of Pesticides Directive	77	48	30	2
Environmental Liability Directive	68	38	5	10
Environmental Impact Assessment Directive	109	30	5	7
Strategic Environmental Assessment Directive	99	27	2	7
Communication on EU strategy for adaptation to climate change	69	16	4	26
Mercury Regulation	42	46	13	3
Aarhus Convention – public information and participation and access to justice	97	15	5	4
Other	19	2	0	4

Figure E.6-63 Views on coherence with wider legislation



Respondents were requested to provide further details of any key synergies/conflicts between legislation. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The Habitats Directive is not coherent to the Water Framework Directive, for example, the floodplains are missing in the consideration of the Directive.

NGOs and environmental organisations:

- There are disconnections between the Water Framework Directive and Drinking Water Directive, between the CAP and the WFD and the Floods Directive. These inconsistencies relate primarily to issues related to pollution;
- There is a real discrepancy between the WFD and MSFD on the issue of marine litter. MSFD considers marine debris as indicators of the condition of marine environments. However, most of the plastic ocean pollution is carried along by the rivers. Unfortunately, the WFD does not consider to date waste (micro and macro plastic) as an indicator of the condition of surface freshwater.

Public authorities:

- Synergies with the IED should be improved
- Reach, pesticides, biocides: assessment methods insufficient, in accordance with environmental quality standards for good status;
- There is a need to improve consistency between WFD and DWD, UWWTD, ND and also GD. Water legislation would benefit from harmonization of monitoring programmes and reporting requirements. Conflicts might exist between Habitat Directive and Flood Directive in some special cases such as in a protected area near large urban area;
- Disposal operations in the Waste framework directive 2008/98/EC; Annex I, points D3, D4, D6 are in direct conflict with water protection;
- There is lack of coherence between treated Directives and the Nitrates Directive since they lack connection. The Nitrates Directive is not as ambitious as it could be.

Citizens:

- The key conflict is that the CAP does not consider WFD (as well as many other Directives') obligations/objectives in an appropriate manner;
- Further efforts are needed to align the water framework directive with the Union guidelines for the development of the trans-European transport network (TEN-T regulation) and other European legislation or strategies outside the environmental legislation;
- The Birds Directive is not coherent with the Water Framework Directive;
- Investments in politically motivated hydropower plants require long-term and legally compliant exceptions.

Question 49 - Do you consider the legal framework provided by the collective actions of the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive to be coherent with the following environmental /sectoral policy areas?

Respondents were asked to rate the coherence of the legislation with other sectoral policy.

Table E.6-16 shows the level of knowledge of respondents regarding other environmental/sectoral policy areas by providing a breakdown of the proportion of respondents that knew the answer versus the proportion of respondents that answered "I don't know".

Table E.6-16 Level of knowledge of respondents regarding other environmental/sectoral policy areas

	% Know	% Don't know	Total number of respondents
EU Strategy on Green Infrastructure	58%	42%	410
Biodiversity policy	77%	23%	430
Chemicals policy	78%	22%	418
Marine protection policy	71%	29%	415
Climate change adaptation and mitigation policy	80%	20%	449
Industrial emissions policy	73%	27%	420
Air quality policies	65%	35%	404
Waste policies	65%	35%	404
Resource efficiency	67%	33%	421
Environmental liability	63%	37%	407
Environmental crime	56%	44%	405

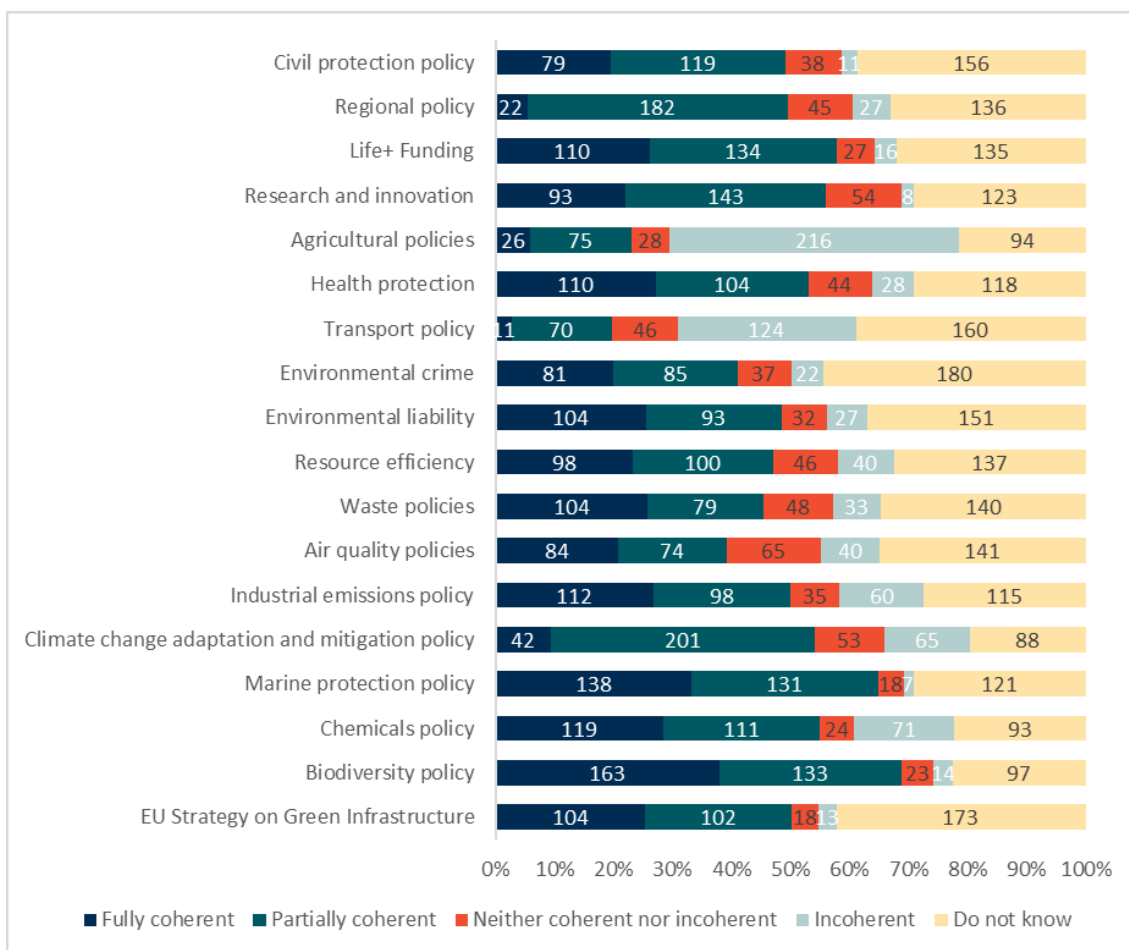
	% Know	% Don't know	Total number of respondents
Transport policy	61%	39%	411
Health protection	71%	29%	404
Agricultural policies	79%	21%	439
Research and innovation	71%	29%	421
Life+ Funding	68%	32%	422
Regional policy	67%	33%	412
Civil protection policy	61%	39%	403
Other	60%	40%	142

Table E.6-17 Views on coherence with sectoral policy areas

	Fully coherent	Partially coherent	Neither coherent nor incoherent	Incoherent	Total
EU Strategy on Green Infrastructure	104	102	18	13	237
Biodiversity policy	163	133	23	14	333
Chemicals policy	119	111	24	71	325
Marine protection policy	138	131	18	7	294
Climate change adaptation and mitigation policy	42	201	53	65	361
Industrial emissions policy	112	98	35	60	305
Air quality policies	84	74	65	40	263
Waste policies	104	79	48	33	264
Resource efficiency	98	100	46	40	284
Environmental liability	104	93	32	27	256
Environmental crime	81	85	37	22	225
Transport policy	11	70	46	124	251
Health protection	110	104	44	28	286
Agricultural policies	26	75	28	216	345
Research and innovation	93	143	54	8	298
Life+ Funding	110	134	27	16	287
Regional policy	22	182	45	27	276
Civil protection policy	79	119	38	11	247
Other	1	8	5	71	85

Figure E.6-64 shows that agricultural and transport policies are those which are rated 'incoherent' in the majority. In contrast, marine and biodiversity policies are seen as mostly 'fully coherent'. Overall most of the policies considered appear to be at least 50% coherent to some extent.

Figure E.6-64 Views on coherence with sectoral policies



The respondents that answered “Other” were requested to explain their answer. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The WFD has recently shown several weaknesses, which include becoming an obstacle to reaching climate policy goals. Besides this, the objectives of the WFD and other European policy strategies such as Energy, Transport, Raw Material Initiative, IED, BAT, REACH or the Urban Waste Water Treatment Directive are not fully coherent with each other. The work of numerous industry installations is directly affected by the different requirements of these strategies;
- There is coherent with Public Procurement Policy;
- Through discouraging investment, the WFD is unfortunately becoming an obstacle to reaching other EU policy goals, such as the Climate policy, the Raw Material Initiative, or the Urban Waste Water Treatment Directive;
- Water legislation is not coherent with climate and renewable energy policies;
- Conflicts between the low-carbon agenda and the environmental agenda (in particular the WFD) negatively impact on the sustainability of the development and operation of hydropower facilities. At the same time, at implementation level, strong differences among MSs undermine a common effective management of water resources;
- Raw Material Strategy is missing from the above list, however there is incoherence between the WFD and the Raw Material Strategy.

NGOs and environmental organisations:

- There is a lack of coherence with energy policy;
- Incoherence occurs with several sectoral policies, primarily agriculture, transport and energy. However, it must be emphasised that any incoherence between sectoral policies and the EU legal framework for sustainable water management is not due to the EU water legal framework. The lack of integration of water protection considerations into other policy areas is, in fact, the root cause of poor implementation of the EU water law, as shown by a range of analyses/studies. For example, lack of policy coherence can be seen in countries not using investment opportunities that are provided by EU financial mechanisms (specifically Cohesion Policy funds and Common Agricultural Policy funding) for implementing WFD measures. Instead, these funds are used to finance measures that directly undermine the WFD objectives (e.g. technical solutions to flood management, navigation, irrigation and land drainage).

Public authorities:

- Water legislation is not coherent with climate and renewable energy policies.

Citizens:

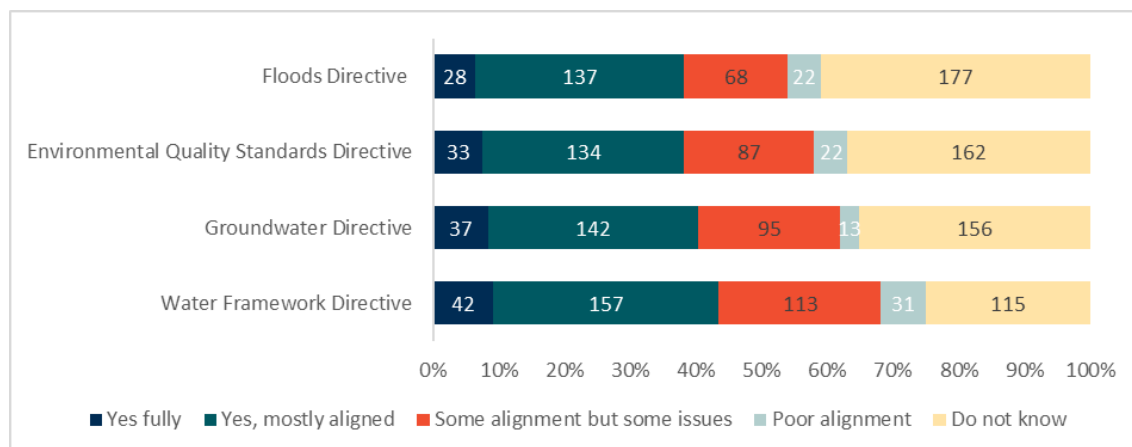
- There is a lack of coherence with energy policy
- The achievement of the objectives of the WFD was significantly affected by unsustainable practices that are promoted within the framework of other EU sectoral policies, particularly in the areas of agriculture, energy and transport. The objectives of water protection must be integrated into these sectoral policies

Question 50 - Do you consider the monitoring and reporting under the Water Framework Directive, Environmental Quality Standards Directive, Groundwater Directive and Floods Directive to be sufficiently aligned with other relevant environmental policies (marine, nitrates, nature, air, emissions, etc.)?

Beyond the coherence of the legislation, another aspect considered was the coherence of the monitoring and reporting requirements of the water legislation and other legislations.

Figure E.6-65 shows that the respondents’ views are quite similar for all Directives. Overall, the requirements are seen as mostly aligned. Respondents see slightly more issues with the WFD than with other legislation. A minority of respondents have identified ‘poor alignment’, here again these are mostly for the WFD.

Figure E.6-65 Views on coherence of the monitoring and reporting requirements



Respondents were requested to provide additional comments. Their responses are summarised per stakeholder category in the points below:

Academic/research institutions:

- Diffuse emissions receive far too little attention.

Industry/economic organisations/trade unions:

- Monitoring is mostly aligned as a general rule. However, the application at the national and local level may be a source of complexity for project developers as there may be different agencies monitoring for similar environmental parameters but in parallel, which increases the cost on project development without producing significant improvement on the environmental quality of the project;
- Indicators and scales for monitoring were developed independently from e.g. the Nature Directive, even where synergies would have been possible. Now, high additional / duplication efforts are needed in permitting procedures;
- There is currently incoherent policy framework related to water requirements across several pieces of EU legislation. There should be assured consistency of requirements related to public health protection and testing requirements in terms of microbiological growth. This is very important in order to ensure consistent and best possible level of protection.

NGOs and environmental organisations:

- There should be a central database system to report the monitoring results of the various, interlinked environmental policies to inform each other and to take better management actions.

Citizens:

- Water management framework not fully consistent with MSFD.

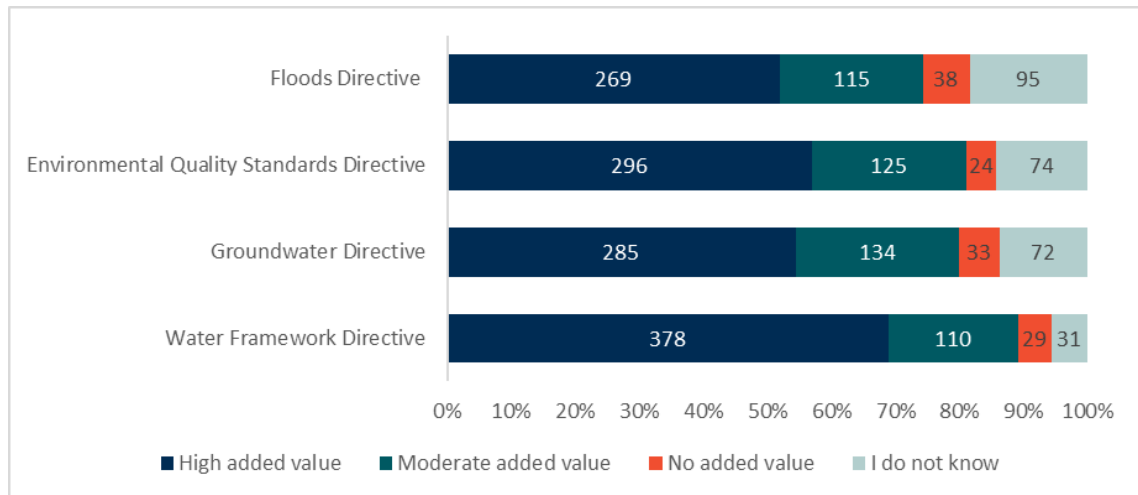
6.6 EU added value

The EU added value assessment is aimed at understanding the extent to which the legislation is needed at EU level but also the additional benefits arising from the action being taken at EU level.

Question 51 - What is the additional value of adopting legislation at EU level compared with what could be achieved by legislation at national/regional level?

Figure E.6-66 presents the views of respondents on the added value of the legislation. This reflects on the number of respondents that consider that the legislation being at EU level adds value. It can be seen that the Water Framework Directive is seen as having the highest added value (70% of respondents), followed by the EQSD, the GD and the FD. The lowest rating of the Floods Directive is a reflexion on the number of participants responding 'I do not know' rather than a more critical view of its EU added value.

Figure E.6-66 Views on additional value of EU level



Question 52 - Can the following issues be best addressed at EU or Member State (MS) level?

The aim of the question was to understand those issues that are best addressed at Member State level.

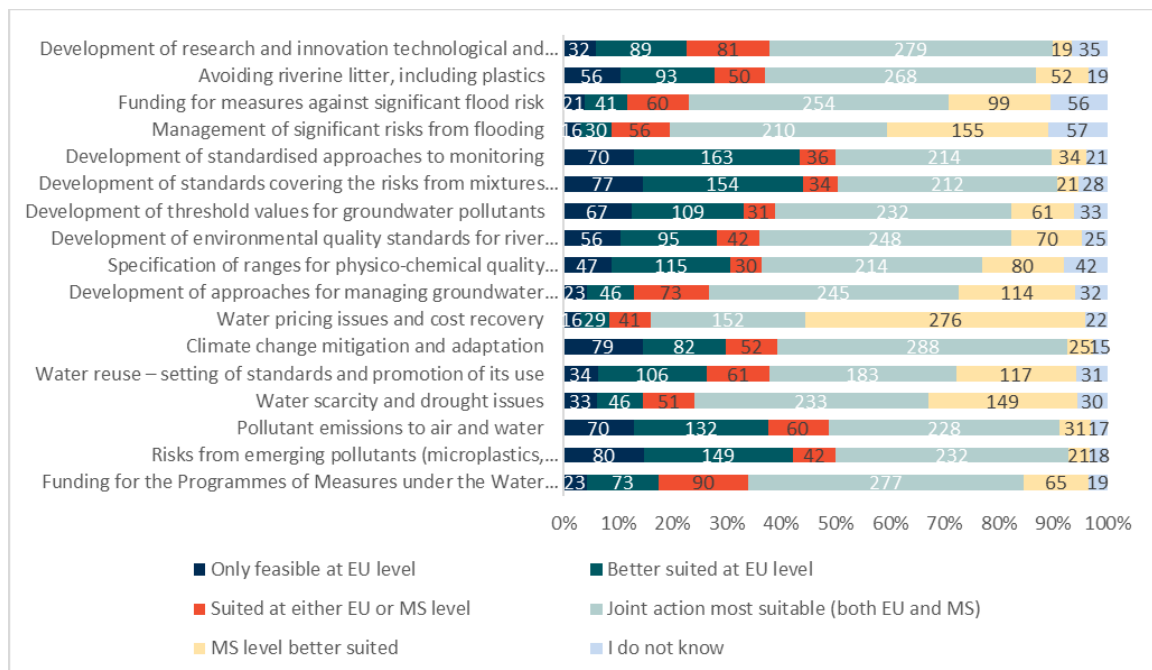
The issues that have the strongest support for EU action include:

- Risks from emerging pollutants;
- Climate change mitigation and adaptation;
- Development of standards for mixtures;
- Development of standardised approaches for monitoring.

The following issues are those for which the number of respondents indicated better suited at MS level:

- Water pricing issues and cost recovery;
- Management of significant risks from flooding;
- Water scarcity and drought issues

Figure E.6-67 Views on the issues and the best level to address these



The respondents that answered “Other” were requested to provide further information. Their responses are summarised per stakeholder category in the points below:

Industry/economic organisations/trade unions:

- The benefits of an EU-wide action are particularly clear in the area of standards derivation and methodologies;
- Water pricing and cost recovery issues are better suited at MS level due to historically grown permitting and authorization systems (very different ownership and property rights). Any harmonization would undoubtedly interfere with subsidiarity principle.

Citizens:

- Many issues can also be addressed in international river commissions, like the river basin specific pollutants.

6.7 Final comments

A total of 169 respondents made a final comment at the end of the questionnaire. These comments are presented in the points below and are not presented per stakeholder category as they were selected on the basis of being the most commonly occurring comments across stakeholder groups:

- The legislation does not address adequately the mixtures of chemicals;
- The approach to water management should not be solely based on cost-effectiveness or efficiencies. Water is a habitat for ecosystems and as such needs to be protected;
- Any revision of the legislation should be to add new challenges but not lower the standards;
- The WFD is seen as fit for purpose instrument addressing the quality and the status of water bodies. It embraces water management by river basin management plans following a holistic approach instead of administrative or political boundaries. The WFD has proven to be effective in not only protecting but also restoring freshwater ecosystems, as well as improving water management;
- The challenges and shortcomings identified are due to lack of implementation and lack of political will at Member State level;
- With regards to the definition of ecological status and reference state, some respondents indicated it should be based on a balanced water environment whose ecosystem is sufficiently resilient to resist the long-standing impact of human activity, the natural changes of the aquatic environment, and the climatic changes that are becoming increasingly clear. New assessment tools and indicators have been developed in the last years such as effect-based methods (EBM), using ecosystem services, or assessing resilience;
- When the status of a water body is evaluated and reported, the quality factor with the lowest level determines the overall status. Moderate status remains moderate, even if all other physicochemical or hydro morphological factors meet the requirements for good status due to major investments and local commitment. The evaluation is also affected if the reference condition changes by a single quality factor. Some respondents see the ‘one out all out’ approach to be counterproductive to any progress in the water environment and hinders political and private willingness to pay and the commitment of individuals;
- The lack of information on the costs and benefits is a reflexion on the lack of assessment or evaluation of the costs and benefits associated with measures. ;
- The implementation of the WFD has in most cases been carried out by specialists from research and science within fields of limnology for example; most water managers at MS level have a

scientific background (also the Common Implementation Strategy, CIS). This leads to a lack of balance in terms of type of competence. The processes involved in the water cycle management need to include stakeholders from the start, otherwise resulting in an unsustainable water management;

- The water-energy nexus is not managed in the best way;
- The legal situation of the Directive after 2027 is unclear and should be clarified;
- Floods Directive remains necessary, with more than 90% of the economic losses from climate-related extremes remaining uninsured in several MS. The European Environment Agency identified a protection gap of around € 400 bn per year;
- The achievements of the objectives of the WFD and daughter Directives have been compromised by the sectoral policies on agriculture, energy and transport;
- The level of ambition of the Directive is widely acknowledged, which is in part a reason to why the objectives are not achieved. Several comments highlight the need to maintain the high level of ambition.

Finally, some respondents highlighted that the questionnaire was too complicated to respond to. This reflects a mis-understanding of the purpose and target of Part II's questionnaire which was not directed to general public nor uninformed respondents.

7 Position papers

7.1 Overview

As part of the consultation process stakeholders were invited to submit additional information including position papers. The information submitted was reviewed in order to identify position papers. More than 100 separate submissions were received, some of these included documents that were submitted multiple times by different stakeholders. When this situation arose, the position paper was logged and reviewed only once. In total, 90 unique position papers were submitted. An overview of the position papers received is presented in the table below.

Table E.7-1 Overview of position papers received

Author	Title
Société Internationale de Biospéologie (SIBIOS) / International Society for Subterranean Biology (ISSB)	Review Process of WFD: Expert consultations Statement on Groundwater Ecosystems and Riverbed Colmation
Port of Rotterdam	Contribution to the public consultation as part of the Fitness Check of the EU Water Framework Directive
Irrigants d'Europe	WATER FRAMEWORK DIRECTIVE (WFD) - POSITION PAPER
Finnish Energy	Response to the Public Consultation on the Water Framework Directive
Union Française de l'Electricité	Propositions du secteur hydroélectrique français pour la révision de la DCE.
No author	Below we summarize our core messages
Statkraft	Main challenges related to the Implementation of the Water Framework Directive (WFD) Statkraft's viewpoint
No author	Contribution à la consultation sur la révision de la DCE
AN FORAM UISCE The water forum	PUBLIC CONSULTATION TO INFORM THE FITNESS CHECK OF THE EU WATER FRAMEWORK DIRECTIVE
Euromines	Euromines position on the current evaluation of the Water Framework Directive (WFD)
EUWMA	EUWMA Frankfurt Declaration on Water Framework Directive
BDI	BDI's proposals for the review of the Water Framework Directive (WFD)
EurAqua	Research and Innovation Needs for Enhanced WFD Implementation
IAWR	Position of the International Association of Waterworks in the Rhine Basin (IAWR) concerning the Public Consultation to inform the Fitness Check of the EU Water Framework Directive and its associated Directives
ÖVGW	ÖVGW Position concerning EU Water Framework Directive
Landbrug & Fødevarers	Erhvervsorganisationen Landbrug & Fødevarers indspil til WFD Fitness Check
PAN Europe and PAN Germany	PAN Europe and PAN Germany position concerning the current review of the Water Framework Directive (WFD) and its Daughter Directives
Eurelectric	Water Framework Directive: Experiences & Recommendations from the Hydropower Sector

Author	Title
WKO	Position der Wirtschaftskammer Österreich REFIT Wasserrahmen-Richtlinie
VKU	ÜBERPRÜFUNG DER EUWASSERRAHMENRICHTLINIE 2019
BAB	UK Farming Unions Response to the Public Consultation to inform the Fitness Check of the EU Water Framework Directive, its associated Directives and the Floods Directive
IPO	IPO Position Paper - EU watterichtlijnen
AGW	agw-Position anlässlich der „Öffentlichen Konsultation als Beitrag zur Eignungsprüfung der EUWasserrahmenrichtlinie und der damit verbundenen Richtlinien“
Living Rivers Europe	The EU Water Framework Directive. Fit for Purpose
Swedenergy	Remarks on modernization of the Water Framework Directive to efficiently balance local and global environmental needs
ECPA	ECPA Position paper in the context of Public Consultation for the Fitness Check of the Water Framework Directive and the Floods Directive
Zurich	Zurich Insurance Group - Response to public consultation on the fitness check of the EU Water Framework Directive and the Floods Directive (February 2019)
Water UK	Fitness check of the Water Framework Directive and Floods Directive
	Zu den Zielen der WRRL
Fortum	FITNESS CHECK OF THE EU WATER FRAMEWORK Fortum's views for the public consultation
EUROFER	EUROFER Position Paper on the Fitness Check Water Framework Directive and Daughter Directives for the Public Consultation
NABU	Flussgebietsübergreifende Stellungnahme des NABU zu den Bewirtschaftungsplänen und den Maßnahmenprogrammen der Wasserrahmenrichtlinie (WRRL)
DVGW	POSITION PAPER Fitness Check of the EC Water Framework Directive
Fortum Sverige	COMMENTS FROM FORTUM SVERIGE AB
Miljø- og Fødevarerministeriet	Høringssvar i forbindelse med kvalitetskontrollen af EU's vandrammedirektiv, dets datterdirektiver (grundvandsdirektivet og direktiv om miljøkvalitetskrav) og oversvømmelsesdirektivet
ENEL	ENEL VIEWS ON THE EU WATER FRAMEWORK POLICY
VATTENFALL	Key messages on the Water Framework Directive (WFD)
MEDEF	Directive Cadre sur l'Eau - remarques et propositions du MEDEF
MEDEF	Water Framework Directive
COPA-COGECA	FITNESS-CHECK OF THE WATER FRAMEWORK DIRECTIVE (WFD)
SWA	Key issues to address in the Water Framework Directive (WFD) to reach a sustainable water management - description and examples from the Swedish Water Alliance (SWA)
CDP	CDP Europe's comment on European Commission's Fitness Check of the EU Water Framework Directive, its associated Directives (Groundwater

Author	Title
	Directive and Environmental Quality Standards Directive) and the Floods Directive
Insurance Europe	Insurance Europe comments on the Fitness Check of the EU Floods Directive
KEMIRA	Evaluation of the UWWTD
DBV	Stellungnahme zur öffentlichen Konsultation zur Wasserrahmenrichtlinie, damit verbundener Richtlinien sowie der Hochwasserrichtlinie
ICOMIA	Contribution to the public consultation as part of the Fitness Check of the EU Water Framework Directive
Wiener Wasser	Position Wiener Wasser
CEMR	Fitness check of the WFD and FD
DIHK	DIHK-Stellungnahme
Businesseurope	Response to the public consultation on the WFD
Bayerischen Bauernverbandes	Stellungnahme zur WFD und FD
RWE Group	Questionnaire statement
Innogy	Public Consultation to inform the Fitness Check
AöW	Wie weiter mit der Europäischen Wasserrahmenrichtlinie?
UPM	Fitness check of the WFD
	Norwegian inputs to the Fitness Check of the Water Framework Directive
Stockholm University Baltic Sea Center	General views regarding the WFD
Danish Environment Technology Associations	Position on the evaluation and fitness check of WFD
ECCR	Response to the Public Consultation WFD
EFBW	Fitness check of WFD and FD
Euracoal	Position paper on WFD
Eurochambres	Statement of the fitness check of the WFD and FD
The Norwegian Biodiversity Network (Sabima), The Union of Outdoor Recreation Organizations in Norway, The Norwegian Hunters' and Anglers' Association, WWF Norway, The Norwegian Trekking Association and Friends of the Earth Norway	Input to the fitness check of the WFD
Royal Norwegian Ministry of Climate and Environment	Norwegian inputs to the Fitness Check of the WFD
ECSA	Answer to the public consultation WFD and FD
Finnish Forest Industries	Response to the consultation on the WFD
Swedish Association of Local Authorities and Region	Fitness check on the WFD
UKELA	Response to Fitness Check of the EU Water Legislation
UNIPER	Position on the fitness check of the EU WFD
Coldiretti	WFD remarks

Author	Title
Wetlands International	Feedback to the EU Fitness Check of the WFD
Norsk Industri	Position on the current fitness Check of the WFD
German Association for Water, Wastewater and Waste / Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e. V. (DWA)	Review of the Water Framework Directive 2019
EDF	EDF's Key messages on the ongoing WFD review
EurEau	Post 2027 scenario: Realising the Water Framework Directive
Wastewater Management in the Danube Region:	Is the UWWTD implementation delivering results for the people, the economy and the environment?
LANTBRUKARNAS RIKSFÖRBUND FEDERATION OF SWEDISH FARMERS	Some views from the Federation of Swedish Farmers on the review of the Water Framework Directive
CLEARANCE	Restoring riparian wetlands for clean water and agriculture - policy recommendations for the European Water Framework Directive, Fitness Check and review process, as well as the Common Agricultural Policy review process
European Water Association	EWA Position - Commitment to the Water Framework Directive - further development of the WFD while maintaining its objectives
Norwegian Environment Agency	How we organized implementation in Norway, and lessons learnt from evaluation.
IHK Nord (2018)	Expertise zu den wirtschaftlichen folgen der WRRL in NordDeutschland
Zentralverband der deutschen	Vorschläge zur Optimierung der Wasserrahmenrichtlinie
MARS (2018)	MARS Recommendations on how to best assess and mitigate impacts of multiple stressors in aquatic ecosystems
Seafish (2019)	Response to the Fitness Check of the EU Water legislation
CSOs in Spain	Contribution from CSOs in Spain to the WFD Fitness Check
Arbeitsgemeinschaft der Wasserwerke im Einzugsgebiet der Elbe (AWE)	Position of AWE in the context of the consultation of the WFD
Wattenfall and Fortum	Key messages on the WFD
Port of Antwerp	Position paper on WFD
Xylem	Xylem Position on Fitness Check on the WFD
Deutscher Städtetag	Überprüfung der EU-Wasserrahmenrichtlinie 2019

7.2 Analysis of key messages of position papers

The position papers were reviewed in order to identify key messages. Where possible we have mapped these against the evaluation criteria of the Fitness Check.

7.2.1 *Société Internationale de Biospéologie (SIBIOS) / International Society for Subterranean Biology (ISSB).*

- The high standards of the EU Water Framework Directive have to be maintained. Their implementation has to be improved and new scientific knowledge and data must be taken into account as part of the implementation;
- For the protection of groundwater and groundwater ecosystems some new indicators should be added to the minimum list of parameters to Annex IIb of EC-GWD as a reflection on technical adaptation. For example, ‘heat’ (and the alteration of groundwater temperature), which is a pollution. Temperature data and the deviation from a local or regional reference gives indication for a thermal stress. Groundwater ecosystems and their communities are particularly sensitive to temperature changes, especially to warming (Issartel et al. 2005a,b; Avramov et al. 2013; Griebler et al. 2015; Di Lorenzo & Galassi 2017). By using groundwater fauna, temperature thresholds can be delineated (Briemann et al. 2013; Spengler & Hahn 2018).

7.2.2 *Port of Rotterdam*

- It is already clear that not all water bodies will reach their WFD objectives by the end of the third RBMP planning cycle. The best way forward would be to extend the WFD deadlines, making provision for further planning cycles to ensure that measures can continue to be implemented to meet the WFD objectives in a practical and well-informed way;
- **Effectiveness.** The Port of Rotterdam Authority (PoR) acknowledges that the EU Water Framework Directive (WFD) is crucial in order to achieve the good ecological and chemical status for all EU water bodies;
- **Relevance.** WFD implementation must better recognise both the important natural role of sediments in aquatic systems, whilst also acknowledging the need for several 100 million cubic metres to be dredged annually in Europe to provide safe depths for waterborne transport. Sediments play an important role in achieving the WFD ecological and chemical status objectives, including sediment quantity (hydromorphology) and quality. The European Sediment Network - SedNet (www.SedNet.org) - stated in its policy brief (SedNet, 2017) that the inclusion of sediment measures in RBMPs is a prerequisite for achievement of the WFD objectives. However, with the exception of the Elbe RBMP, and to some extent also the Rhine RBMP, sediment management is not properly addressed yet in the majority of RBMPs;
- **Coherence.** The WFD overlaps with the Marine Strategy Framework Directive at the coast (i.e. in coastal water bodies). PoR notices both a lack of adequate implementation attention to transitional and coastal waters in general and poor links to the Marine Strategy Framework Directive, notably in relation to hydromorphology, scale and new projects in coastal water bodies. This lack of effective integration has the potential to cause some bureaucratic if not practical issues (i.e. licensing or authorisation decisions).

7.2.3 *Irrigants d'Europe*

- Need for more effective and inclusive participatory approaches in all Member States;
- Need for long-term plans and supporting actions aiming to overcome the variety of bottlenecks currently impeding water storage and reuse;
- Need for criteria to identify technically feasible, cost-effective environmental options to achieve HMWB and AWB good ecological status, considering the specific uses of water supply or flood defence as irremissible priorities;

- Need for the implementation of alternative measures - i.e. reduction of pollutant loads, limitations to their use and advanced tertiary treatments to remove them from urban and industrial wastewaters - thus reducing dilution needs in natural and artificial water bodies, permitting to mobilise resources for productive uses;
- **Effectiveness.** Although significant progress has been made in the vast majority of EU water bodies, this is not reflected by the Directive's reporting systems; Irrigants d'Europe argues in favour of the application of more flexible criteria in assessing water quality, instead of the one-out, all-out principle;
- **Efficiency.** Irrigants d'Europe calls for the implementation of extended socio-economic criteria under art. 5, avoiding unbalanced cost/benefit evaluation and partial assessment of the real art. 9 impacts on rural society, the agri-food sector and the overall food security. According to the Directive's polluter-pays principle, environmental and resource costs can neither be expressed in monetary terms nor individually allocated. The existing approaches are costly, time-consuming and highly administrative, making their practical implementation impossible;
- **Relevance.** More attention should be paid to non-agricultural pollution sources and to the wide range of products that could result in detectable concentrations of emerging pollutants. Need for a revision of targets and standards aiming to meet agricultural demands while achieving environmental goals, and for more flexibility in their application taking into account ongoing and future effects of climate change on crop production patterns.

7.2.4 Secteur hydroelectrique francais

- The Fitness Check offers an opportunity to review the existing framework and consider the review of the Directive to improve its coherence.
- Climate change related actions, such as the development of renewable energies, should be integrated into the Directives.
- It is worth questioning the refinements of assessment of water status that due to finer level of details and precisions end up in a worse state despite progress being realised.
- Hydropower does not impact the quality of the waterbodies nor its quantity. Its potential impacts are on hydromorphology which is one of the pressures against which ecological status is assessed.
- There is no link observed between hydropower stations and degraded water bodies.
- The one-out all-out principle's interpretation should be revised to allow more flexibility as was intended when the Directive was adopted.

7.2.5 Finnish Energy

- Finnish Energy and its member companies with hydropower production are committed to the objectives of the WFD;
- The WFD implementation could be improved making use of all the flexibilities allowing a good management of water;
- The implementation of HMWB in some Member States is not in line with the definitions of HMWB in the WFD (Article 4.3), no further details is provided;
- The Common Implementation Strategy (CIS) should not be legally binding;
- Stakeholder involvement is essential. Especially in the case of HMWB designation and classification, stakeholders might have the best knowledge of river hydromorphology, measures in place, possibilities to carry out additional measures as well as knowledge on studies already carried out on ecology of the waterbodies;

- **Efficiency.** Cost-benefit analyses should be used to implement only cost effective and cost proportionate measures;
- **Relevance.** There is still a lack of consideration of climate change aspects as well as missing coherence to the EU's climate and energy goals.

7.2.6 *Anonymous author*

- The WFD so far was effective in preventing the deterioration of the current status and rather effective in reducing the water's pollution, but its success in enhancing or restoring the aquatic ecosystems was limited;
- Many of the principles of the WFD (planning approach, monitoring requirements, quality standards, flexibility...) strongly contribute to achieving the objectives, while still being able to maintain a sustainable use of water resources;
- However, the measures put into effect in the past were often isolated, rather than in the context of an integrated river basin related concept. Frequently they did not show the desired effect on the ecosystem;
- Among the main obstacles to achieve the targets set by the directive are unrealistic expectations in terms of timescale combined with poor coordination of stakeholders (water users, communities, land owners...), which often lead to the implementation of suboptimal measures. Furthermore, lack of knowledge and funding are issues;
- The one-out-all-out principle obscures which stressors cause water bodies to fail the target and makes it harder to communicate progress to the public. A complementary, more detailed assessment should be provided;
- At the current rate of progress, it is highly unlikely that the restoration of water bodies will be completed by 2027, as intended by the WFD. Rushing the completion until 2027 may lead to the implementation of expensive measures, which show little impact (see above). Hence, the WFD should be extended beyond 2027;
- The restoration of water bodies may lead to restrictions on the use of the water. The ecological benefits of the restorations and the impacts of the restrictions on water use must be weighed carefully. This includes economic, societal, safety but also negative ecological impacts (e.g., restrictions for hydropower may increase fossil fuel demand). Requirements and priorities in this respect may vary regionally. Therefore, specifications of the implementation must remain in the competence of the member states (i.e. the Common Implementation Strategy must stay non-mandatory and focus on guiding methods rather than specific parameters);
- More concentrated efforts to foster public awareness concerning the precarious state of water ecosystems, water protection and the benefits of water body restoration are needed.

7.2.7 *Statkraft*

- The efficiency, effectiveness and coherence of the WFD's further implementation could be improved combined with a streamlining and simplification of its guidance documents.
- "One-size-fits-all" solutions are not appropriate to manage hydropower;
- While ensuring sustainable water use is one of the WFD's goals, its definitions of water use is ambiguous and cross-referenced to water services (art 2 38/39) what leads to confusion and potential misunderstandings;
- Treatment of stakeholder input should become more transparent and the composition of the CIS working groups should include more experts of the concerned economic sectors;

- **Coherence.** Enhancing the harmonization of various policy targets and decision-making bodies concerned by water management at the level of the European Commission would contribute to minimise conflicting goals;
- **Efficiency.** The shortcomings in economic assessments entail a lack of properly weighing benefits and costs related to the proposed environmental enhancement measures. This could potentially lead to considerable losses in renewable electricity generation. A socio-economic valuation of other water uses should be adequately implemented.

7.2.8 French hydroelectric organisation

- Hydropower is one of the activities that can lead to impacts on water quality and other factors such as agriculture, industrial activities, land use planning and climate changes are also important;
- It would be important to assess the efficiency and progress made with the measures implemented taking into account the scientific, technical, ecological and financial aspects of the measures;
- The French implementation has focused on hydromorphology and ecological continuity to a greater extent, which has been to the detriment of other pressures such as pollution (including chemical status);
- Concerns were raised on the disappearance of some invertebrates from water bodies and it was suggested to increase knowledge on water quality and micro-fauna interactions;
- Hydropower sector has developed and adopted many measures to support water bodies, these need to be recognised as such so that the knowledge and experience can be shared throughout Europe and beyond.

7.2.9 AN FORAM UISCE. The water forum

- After 20 years, the WFD is still important, relevant and of necessity;
- The missed achievement of the objectives of the WFD is due to difficulties and challenges arising from implementation rather than the objectives contained within the Directive;
- The ‘one-out-all-out principle’ should be maintained as an essential component of the WFD, with water body ecological status as the primary measure of the state of our water resources. However, we favour reporting of the state and progress of individual ‘biological quality elements’ (BQEs) in addition as a means of tracking progress and enabling a focus on the particular issues impacting on water quality;
- An Fóram is particularly concerned that there appears to be a low level of awareness amongst the public in general in relation to the status of our waterbodies and indeed the provisions and benefits associated with integrated catchment management and the implementation of the WFD;
- **Effectiveness.** It is of concern to all that the many of the aims and objectives of the WFD have not been achieved or only partly achieved in the context of protecting and restoring waters;
- **Coherence.** We would encourage greater emphasis on the linkages between the various environmental Directives, particularly on the context of deriving co-benefits from the mitigation actions that arise from each Directive.

7.2.10 Euromines

- The current WFD provisions and natural concentration ranges do not take account of natural change in ecosystems and therefore the proposed pathway to achieving the WFD's objectives;
- Good Ecological Status should not be defined in relation to a static original state without human influence. The two-category system for chemical status (good or not good) does not allow the same freedom of action as the five-category system for ecological status (High, Good, Moderate, Poor, Bad);
- The one-out-all-out approach is not the ideal tool for water bodies affected by diffuse, multiple stressors, thus posing additional problems to track progress in ecological status;
- Although the term "deterioration" is a pillar of the WFD, namely the prohibition of deterioration, the WFD does not contain a definition of "deterioration";
- The requirement of "no further deterioration" within article 4.5 seems not justified. The strict interpretation of the non-deterioration clause in the Weser Ruling for industrial projects limits the application of article 4.5 and makes permitting procedures more difficult and insecure;
- **Coherence.** The objectives of the WFD and other European policy strategies such as Energy, Transport, Raw Material Initiative, Best Available Techniques for industrial emissions, Chemicals Policy or the Urban Waste Water Treatment Directive are not fully coherent with each other. The work of industrial installations is directly affected by sometimes contradictory requirements of those strategies.

7.2.11 EUWMA

- Both the "one out, all out" principle and the limitations of only looking at an overall change of state, may miss some of the major improvements achieved towards the WFD by Member States;
- The current approach of 6-year management cycles discourages ambition for longer term actions to improve groundwater or biological outcomes, which may only become evident 20 to 30 years after remedial actions have been taken and may also encourage Member States to invest in shorter term "easy wins" rather than invest in more significant long-term improvements to the health of water bodies across Europe;
- Definition of HMWB. In most EUWMA countries, much of the land has been significantly modified over historic periods of time and, for the water bodies, water quality is not necessarily the problem. EUWMA therefore suggests that a better way to classify these water bodies is to refer to them as 'Cultured Areas of Land Management (CALM)';
- **Effectiveness.** Prescription of action generates behaviours which can lead in some cases to the unintended deterioration of water quality, as prescribed targets force governments to prioritize their achievements;
- **Coherence.** There should be a better integration of WFD with CAP and other environmental policies (e.g. Pesticides, Nitrates, buffer strips, Birds and Habitats Directives, renewable energy, flood and drought risk management, and major infrastructure development).

7.2.12 BDI.

- BDI is in favour of maintenance and further development of WFD;
- Since a large proportion of water bodies in Europe will not meet the objectives of the WFD by 2027, the interaction between objectives and exemptions in WFD have to be subjected to a thorough review;
- It should be made clear that the conditions for the derogation in accordance with Article 4(7) of the WFD must essentially be open for all industrial activities;

- The Weser ruling creates further uncertainties in relation to the outcome of the procedure and leads to serious delays in the authorisation procedure;
- The phasing-out aim for priority substances (article 4.1, article 16.6 and 16.8 WFD) should be clarified with regard to whether the WFD aim for emissions of priority substances to be completely halted;
- A review process of the one-out-all-out principle must deliberate on how improvements to individual components can in future be recognised;
- Division of the chemical status into two categories (good and not good) sometimes lead to results which are objectively difficult to understand; It would be therefore helpful to have further differentiation in the “not good” status;
- The definition of a heavily modified water body under article 2.9 WFD should be extended to include material/chemical changes to surface waters and to include groundwater bodies.

7.2.13 Euraqua

- **Effectiveness.** The WFD should have an increased ability to develop more effective PoMs. Lack of dedicated evaluations after implementing measures further hampers the ability to provide scientifically underpinned insight;
- **Efficiency.** Addressing non-compliant status elements is not necessarily the key to reaching good ecological status. Targeting other pressures and tipping points is expected to be more (cost) efficient, and it is also probable that the non-compliant status element will change;
- **Coherence.** Research and innovation activities should contribute to strengthening policy integration, coherence and water policy coordination whilst bringing a long-term perspective to policy implementation and decision making. The WFD should be further integrated with other policy agendas, such as the management of water under the UN-SDG targets, which takes a more cross-sectoral, inter-disciplinary approach for Europe and beyond.

7.2.14 IAWR

- **Coherence.** Need for the implementation of the water protection objectives in Common Agricultural Practice and finance water protection measures using agricultural funding;
- **Coherence.** Need for a systematic review of Common Agricultural Policy, REACH and EU regulations for placing pesticides, biocides and pharmaceuticals on the market in regard to their contribution to objectives of WFD;
- The implementation of the WFD should give more attention to substances of emerging concern;
- **Relevance.** The Environmental Quality Standards Directive (EQSD) and the Groundwater Directive do hardly list any drinking water relevant substances and do not provide any water quality standards related to the use of surface and groundwater as resource for drinking water supply. Strategic approach to pharmaceuticals in the environment should be implemented alongside the Directive;
- IAWR recognises that the implementation of the WFD and EQSD have helped to end water quality issues for some drinking water relevant substances in the past such as alachlor, atrazine, cadmium, chlorpyrifos, diuron, isoproturon and simazine. However, currently there is a considerable number of other substances emerging which can exhibit a great risk for the production of drinking water;
- **Coherence.** more coherence between the EQSD, the WFD, the Groundwater Directive (GWD) and the Drinking Water Directive (DWD).

7.2.15 OGVV

- Source control and polluter pays principle are vital elements that should be implemented fully;
- Exemptions should not become general rule;
- The classification system based on the one-out-all-out principle as a monitoring tool for quality status of European water bodies, should not be changed fundamentally;
- **Effectiveness.** Implemented measures and technical solutions often show their positive effects on ecosystems with some time delay;
- **Coherence.** The existing EU legislation has shortcomings when addressing implementation of protection of drinking water resources. A proper cross sectoral link should be established between agricultural sectoral policies (Common Agricultural Policies, Nitrates Directive and Plant Protection Products Regulation) and the EU WFD, the Groundwater Directive, the Priority Substances Directive and the Drinking Water Directive and other EU policies (e.g. Microplastic Strategy, Pharmaceutical Strategy).

7.2.16 Landbrug & Fødevarers

- The deadline must be extended, as it is completely impossible to achieve the objectives in 2027;
- One-out-all-out principle should be replaced with a more stepwise scale;
- The possibility to apply derogations should be tightened;
- Climate change must be taken into account when setting the objectives;
- More and better stakeholder involvement. There has not been enough dialogue between Commission and the real-life actors. This would allow to have more practical knowledge and increase the understanding of the projects that are put in place.

7.2.17 PAN Europe and PAN Germany

- Poor WFD-implementation. Despite the fact that some progress has been made for the protection of river basins in the EU since the introduction of the WFD in 2000, there are still shortcomings at a large scale;
- The status of the majority of small water courses below a basin area of 10 km² or lakes with a size below 0.5 km² are not usually considered in the management plan and reports of the MS. Consequently, there is a big knowledge and data gap regarding the contamination of small watercourses;
- Member States clearly need to identify the gap to good status for individual pressures and water bodies. They shall design, fund and implement targeted action programmes to close the gap;
- It is crucial to enforce and track the implementation of the available WFD-tools.¹⁹ Amongst others, a "CIS-task force" should be established in order to identify and rapidly solve the central inter-sectoral shortcomings of the implementation;
- There should be an effective and quick feedback mechanism between chemical regulations and water protection legislations in order to enhance the synergies of both legislative areas;
- It is necessary to screen significantly more substances under the EU-wide watch list scheme established with the EQS-Directive as well as to control more chemicals as priority substances;
- EQS should be established for all water-relevant substances and assessment methods should be developed and applied to address the effects of chemical mixtures;

- Effective incentives for supporting sustainable water uses should be strengthened, for instance in the context of the Common Agricultural Policy in order to guarantee and promote environmentally friendly farming;
- **Relevance.** PAN Europe and PAN German highlight that contamination from pesticides, biocides and veterinary pharmaceuticals remains mostly unresolved because relevant measures lack efficiency or are simply not in place.

7.2.18 *Eurelectric*

- Involve all relevant stakeholders in the development of the WFD to ensure a fair sharing of responsibilities and costs when defining and implementing mitigation measures to reach the Directive's goals;
- Fully recognise the subsidiarity principle and allow Member States to take into account their specificities when implementing the WFD;
- Keep Heavily Modified Water Bodies (HMWB) designation as a key category for the integration of ecological, human and economic aspects;
- Only implement cost-effective measures to prevent ecologically unsatisfactory solutions and unnecessary costs;
- Close the knowledge gap by increasing integrated expertise on all scientific questions arising from the WFD, such as river ecology and mitigation measures;
- Keep hydromorphological quality elements as supporting criteria since they serve as points of reference for the classification of water bodies;
- **Efficiency.** Art. 4 WFD requires that measures to reach the goals of good ecological status or good ecological potential should be technically possible, economically reasonable and lead to a significant, measurable improvement. However, the methods and tools to evaluate these variables are still not sufficiently developed or not implemented. Cost-benefit analyses (CBA) should always be applied to evaluate disproportionate costs;

7.2.19 *WKO*

- Lots of necessary projects can only be accepted as "exceptions to the prohibition of deterioration", which discourages investments that are potentially ready to be put in place;
- Revising the one-out-all-out principle, which has to be changed in order to better highlight the actual stress factors and improve the communication potential to the public;
- The 2027 goals need to be reset to be achievable, keeping a management-oriented mind;
- All water uses should be treated equally with regards to the objective of the WFD;
- Deterioration of parameters should be compensated in the future by improvements of other parameters, so that a positive overall assessment becomes possible;
- Integrate renewables targets that were not available 20 years ago, that is also to acknowledge the targets set in Paris in 2015. This means allowing more hydropower production;
- Take socio-economic differences among regions more into consideration;
- The revision must be based on the REACH Regulation;
- **Efficiency.** Cost estimates were too optimistic and today it is clear that they are not proportioned to benefits.

7.2.20 *WКУ*

- The proposed mandatory introduction of a risk-based approach in the Drinking Water Directive in the currently proposed embodiment would require adjustments to the WFD;

- Focus on to climate change that is more adaptation to heavy rainfalls and droughts;
- Avoid cost coverage comparisons, as MS apply different definitions of cost recovery;
- Maintain the polluter pays principle;
- **EU added value.** Even if the targets will probably not be met by 2027, the WFD has set a valid international framework for water management;
- **Coherence.** The success of the WFD will also depend on how well it will be better integrated with other policy areas such as agriculture, industry and transport, which are crucial to reduce pollutants into waterways. Especially on the CAP side, it is important to direct funding to water protection to aid the achievements of the WFD objectives.

7.2.21BAB

- While ‘no deterioration’ is an admirable ambition, the WFD is causing a real challenge for those tasked with finding a workable balance between environmental and business needs for water. This is a key issue that the fitness check should address;
- For monitoring the nitrate concentration in water bodies, a representative network of measurement stations is needed in order to derive recommendations. In some areas of the UK the monitoring density is still too low for this. sources of water pollution that have so far been neglected, such as broken sewage systems, untreated rainwater from urban areas and medicinal residues from human use, must be assessed;
- For most EU water bodies, significant progress has been made on the ground in improving the chemical and ecological status of water, but the one-out, all-out principle is not an accurate reflection of reality;
- Adjust the WFD to include climate change;
- Under the Floods Directive, compensation must be considered separately to insurance. Compensation must be in place for land owners and farmers whose land is intentionally or regularly flooded. Currently, agricultural land is not given enough recognition nor is its protection obligatory within the Floods Directive;
- Coherence. More flexibility must be given to targets and standards whilst ensuring coherence with the Floods Directive.

7.2.22IPO

- Standard for medicines and other emerging substances suspected to be harmful (e.g. flame retardants, cosmetics) do not exist yet. Since analysis techniques for these are not always available, it is important to prevent their discharge in water at the source;
- The on-out-all-out principle gives a too little picture of the progress made;
- The test for pesticides in groundwater bodies has to be revised;
- Art. 4 paragraph 7 of the WFD states: ‘Member States are not infringing the Directive, when: not preventing deterioration of a very good condition of one surface water body to good status is the result of new sustainable human development activities.’ The same kind provision should be applied in the groundwater directive;
- MS should be allowed to use new monitoring techniques such as eDNA determination, effect-based monitoring with bio-assays, passive sampling and remote sensing;
- The WFD should continue after 2027;
- **Coherence.** The WFD should be better coordinated with other EU regulations, in particular the Authorisation Policy for Medicines and Plant Protection Products, the Nitrate Directive, Natura 2000, CAP and Drinking Water Directive. Standards should be aligned across the regulations;

- A few examples: 1- different levels of nitrate content allowed in GWD and WFD; 2 - some areas to be preserved under Natura 2000 are the result of unnatural situations, which are suboptimal for water quality, and thus in contrast with WFD; 3 - growing food production under the CAP will create a greater need for water resources in the future, that can lead to excessive loads of nutrients, which in turn makes it more difficult to achieve the objectives of the WFD. In addition, better synchronization between planning periods of different guidelines is desirable;
- **EU added value.** Cross-border measures prescribed in the FD reduce flood risks in one country while contributing to reducing it also in the other.

7.2.23AGW

- The 6-years management cycles are too short;
- The one-out-all-out principle makes it hard to evaluate progress;
- It is suggested that ubiquitous substances be presented separately without suggesting a pressure to act on the water industry;
- Standards for priority substances have been set without a sound scientific knowledge, which led to some of them being introduced in water bodies at non-measurable levels;
- The strict observance of the polluter pays principle is essential for a sustainable reduction of the entry of drugs into the water cycle. For this, also relevant stakeholder involvement is central;
- The WFD has not only brought improvements in water quality, but also greater biodiversity in the aquatic environment and has created new jobs. These so-called soft effects of the Water Framework Directive can, in the long term, lead to greater acceptance of the implementation processes in society.

7.2.24Living Rivers Europe

- **Effectiveness;**
 - Positive organisational outcomes and fundamental changes to EU water policy objectives;
 - Improved transparency in water management and in public participation is a direct result of the WFD requirements where they were implemented properly;
 - Improved transboundary cooperation by stimulating the establishment of more recent transboundary basin organisations (e.g. International Sava River Basin Commission) and empowering the existing international river commissions (e.g. along the Rhine and Danube) by providing them with a common legal framework;
 - Resources for better implementation and enforcement of the WFD will have to be significantly stepped up.
- **Efficiency.** Overall, the WFD offers an outstanding cost-benefit ratio. No WFD would result in annual costs in the range of EUR 5-20 billion. There have also been cost savings through the wider degree of coordination which WFD implementation has resulted in thereby reducing administrative burden compared to the situation before its introduction;
- **Relevance.** The WFD framework remains relevant to addressing the key problems faced by European freshwaters as well as water related societal and economic challenges;
- **Coherence.** The WFD is coherent with other relevant pieces of EU environmental legislation;
- **EU added value.** The WFD provides a vital cross-border protection of freshwater ecosystems. Harmonisation of objectives and action at EU level are also essential to prevent a race to the bottom (i.e. trying to attract investments by lowering standards). The WFD helps deliver a level playing field in competition terms for companies in support of the EU single market.

7.2.25 Swedenergy

- The designation Heavily Modified Water Body (HMWB) is key to allow hydropower facilities under the WFD. It is reasonable and desirable that most, if not all, hydropower facilities are designated as HMWB;
- It is not unrealistic that solutions to counteract climate change involve new thermal power plants. Hence, the conditions for exemptions under Article 4.7 should be broadened to allow also emitting operations of large environmental and societal value;
- To ensure effective measures, consideration of national specificities, an efficient implementation process and fair sharing of responsibilities and costs, it is important that all relevant stakeholders are involved in the development and implementation of the WFD;
- Individuals' and companies' commitment to environmental progress should be visible; in this regard, the "one-out-all-out principle" is counterproductive;
- Guidance documents should propose best practice procedures and targets rather than unspecific standard solutions, and they should not include additional obligations, which can never be legally binding anyway;
- To achieve measures that are truly effective, it is important to keep the current systemic approach of the WFD, where Biological Quality Elements (BQE) constitute main indicators and Hydromorphological Quality Elements are supporting indicators.

7.2.26 ECPA

- The aim of the WFD should be revised to achieve clear quality parameters which meet defined and justified safety standards for consumers, and appropriate protection goals for the environment;
- The entire regulatory framework should be based on risk assessment to ensure that all measures are both necessary and consistent;
- There is no benefit in identifying priority substances based on comparative risk. Assessment should be conducted against a threshold of acceptable risk set for those substances detected in the environment and harmonized across the EU;
- Stakeholder involvement is vital when considering regulation of pesticides within the Water Framework Directive. Large datasets are available at manufacturer level, which should be taken into consideration when making decisions regarding the measures to be taken;
- The issue of pesticide contamination and risk should not be considered separately from other agricultural activities, such as soil management, irrigation and cropping systems;
- To promote an agricultural sectoral approach to water quality, and partnerships between water consumers within a watershed where all stakeholders can be involved to improve the overall quality of European water;
- A more granular assessment than the one-out-all-out principle and a departure from an overall scoring system could improve communication around water quality.

7.2.27 Zurich

- Societies' resilience to floods through enhanced ex-ante resilience planning;
- Lack of both direct and indirect, long-term incentives to prioritise resilience building complemented with a tendency to compensate for incurred losses;
- Standardisation of reporting language and forward-looking scenarios used;

- Transparent, easy and free access to basic hazard and risk-informed data is an important stepping stone towards risk reduction and increased risk awareness that is currently not used at its full potential.

7.2.28 Water UK

- There is scope to improve the clarity, efficiency and effectiveness of the WFD, both in its interpretation, and how it is implemented;
- The WFD's greatest strength is the identification of requirements across all sectors on an integrated catchment basis, based on environmental need;
- The one-out-all-out principle is not helpful to communicate the significant progress made in improving the quality and ecology of our waters;
- It is essential that we develop and enact better controls for the entry of pollutants into drainage and sewerage systems more effectively if we are to achieve the outcomes sought under the WFD. To that end we see the UWWTD as one of the possible vehicles to drive such improved 'control at source' approaches.

7.2.29 Fortum

- To fully recognize the subsidiarity principle for the implementation of the WFD by allowing member states to consider their national situation and apply good practice procedures on a case-by-case basis;
- It is important to keep HMWB designation as a key category also in the future for the integration of ecological, human and economic aspects. In addition, it is important to keep hydro morphological quality elements as supporting criteria since they serve as points of reference for the classification of water bodies;
- Stakeholder involvement is essential in HMWB designation and classification. Stake-holders do often have the best knowledge on river hydro morphology, measures already implemented, possibility to carry out additional measures and studies carried out on the ecology of the waterbody;
- Socio-economic and ecological assessments have to be improved;
- If the benefits and costs related to the proposed environmental measures are not weighted properly, there is a high risk, not only of significant losses in renewable electricity generation, flexibility and storage capacity;
- it is important to review and reduce the number of CIS guidance documents as well as to simplify them and to remove general provisions, in order to avoid ambiguity and counterproductive effects;
- A lot of renewable hydropower generation, storage and flexibility have been lost due to the implementation of the directive in several member states;
- The value of hydropower in contributing to climate change-related targets has not been sufficiently reflected into the WFD;
- **Coherence.** The impacts of WFD on hydropower generation are often related to possible conflicts;
- between energy and environmental policy objectives, i.e. generating renewable and carbon free electricity from hydropower and conserving water courses. There is an obvious need for better policy coherence between the WFD and other EU climate and energy policy goals and legislation. To continue letting hydropower play its important role in Europe's energy supply, it is crucial that DG ENER takes an active part in the evaluation, together with DG CLIMA and DG ENV.

7.2.30 Eurofer

- Modify the application of the “one out, all out” principle;
- Modify the non-deterioration principle as interpreted by the Weser Ruling in some Member States;
- More consistent use of exemptions under Articles 4.5 and 4.7 (some Member States are currently very reluctant to use these mechanisms);
- The cost-benefit analysis justifying such exemptions must consider all relevant costs, in consultation with the sectors expected to bear those costs (regulators, industry, local authorities etc.);
- Metals are naturally occurring substances. As such, background concentrations should be properly used for target setting;
- Development of a more coherent strategy on chemical status and identification of the EU-wide priority substances and the assessment of the ecological status.

7.2.31 DVGW

- In principle, the WFD is the right instrument for the protection of water bodies in Europe;
- There is a significant need for action to improve protection and reduce the pollution of water bodies used for drinking water supply;
- Operating costs for management measures and investment costs for additional treatment stages for the removal of trace substances and nitrate have been rising steadily for decades for the water supply sector;
- The WFD does not yet provide the Member States with instruments for effective emission control, neither for nitrate nor for plant protection products and anthropogenic trace substances;
- The additional measures required by WFD Article 7 to protect drinking water resources, if taken at all, have so far not been successful;
- A firm establishment of the polluter-pays principle is essential. This requires a close linking with the political and legal areas relevant for addressing the causes of pollution;
- The monitoring requirements of the WFD and its daughter directives do not yet cover the area of anthropogenic trace substances;
- The WFD does not yet provide the Member States with instruments for effective emission control. In order to significantly reduce the pollution of water bodies and;
- Drinking water resources with trace substances, their entry into waters must already be prevented or reduced at the source or during application;
- Lack of efficiency and effectiveness of measures in the agricultural sector and lack of legally based control mechanisms.

7.2.32 Fortum Sverige

- In general, the WFD is reasonably well fit for its purpose and there should only, if any, be a limited need for a revision;
- Deadlines too tight and should be revised;
- The need for decarbonisation of the energy sector should be taken into account with reference to the EU 2050 strategy and the recently adopted Clean Energy Package;
- The good intention of the regulatory framework is lost in the overwhelming amount of details. There is a general need for a more pragmatic and solution-oriented approach safeguarding both aquatic values and renewable hydropower production.

7.2.33 NABU

- The fact that many water bodies will not achieve good status is a sign that management planning has failed;
- When formulating and implementing the programs of measures, the precautionary and polluter pays principle must apply on a higher level;
- The possibility of obtaining exemptions should be tightened;
- Too few measures described in the WFD are actually implemented;
- Lower water and land administrations should be more organisationally independent in order to do their work on a technical basis;
- The strong focus on voluntary measures for nitrogen reduction in agriculture no longer meets the polluter pays principle. There is an urgent need for a consistent implementation of the Nitrates Directive and an extension of the application of water management instruments, such as the designation of water conservation areas. Also incentivising organic farming is another way;
- Aiming at a reduction in nutrient inputs, a revision of the EEG support for biomass is needed;
- Water and groundwater conservation management and ecological interactions need to be given more prominence in agricultural education;
- **Coherence.** Greening of the EU's Common Agricultural Policy (CAP) requires the integration of nutrient targets for groundwater, surface water and oceans to ensure coherence in the next revision. Subsidies and eligibility criteria must be aligned in all planning sectors (agriculture, energy, forestry, etc.) to the integration of the WFD environmental objectives.

7.2.34 Miljø- og Fødevarerministeriet

- It is very important to maintain the non-deterioration principle;
- The contribution of each MS must be in proportion to the influence that comes from it to the given water area;
- The one-out-all-out principle can result in the progress achieved not being visible
- It would be preferable to have a standardised reporting format, as it has been difficult to provide a fair comparison of the MS's efforts;
- The objectives of flood risk management should continue to be defined by the Member States themselves and based on local and regional conditions;
- There is still a misunderstanding of when a water body can be designated as HMWB, as well as the environmental targets to be defined for such bodies;
- The challenges brought by climate change, such as increased water temperature and altered rainfall, should be addressed in the Directive;
- Clean water cannot be achieved without addressing microplastics;
- **Effectiveness.** The WFD has created an effective structure for management and protection of water resources. Economic challenges make it through to achieve the goals. Also, it is important that all MS follow the same interpretations and determine the required actions in the same way;
- **Relevance.** The WFD has proved itself to be relevant to water body problems;
- **Coherence.** General need for more coherence with other environmental Directives. It is important that provisions to improve waste water treatment do not conflict with climate targets. Different reporting requirements between WFD and Nitrates Directive may mean that the permitted nitrate load in aquatic environment is different under the two Directives. Need to uniform some terminology among different Directives;
- **EU added value.** There is a significant EU added value, especially in terms of international cooperation and knowledge exchange.

7.2.35 ENEL

- Climate change has to be addressed;
- The WFD should clearly and easily guide Member States towards a sustainable planning and management of the water resources in which environmental, climate, social and economic aspects are equally weighed;
- Cost-benefit analysis of environmental measures limiting the operation or development of hydropower generation must include the long-term value of the generation and flexibility lost as costs;
- Economic resources collected from the water users (e.g. hydroelectric fees in Italy or taxes in Spain) should be used to enhance sustainable water management within the river basin thus pursuing the environmental objectives set by the Directive;
- The different climatic zones should be considered, allowing for diversified approaches depending on differing rainfall conditions and morphologies;
- Greater EU harmonization of the approach used to manage hydropower utilization rights regimes (concession, licenses or authorization) should be ensured in order to guarantee a level playing field and avoid market distortions affecting investment decisions across Member States;
- Within the design of ‘fit for RES’ markets, appropriate design of the ancillary services market should be ensured in order to incentivize and remunerate flexibility.

7.2.36 Vattenfall

- The current guidance documents on HMWBs elaborated under the Common Implementation Strategy (CIS) are very complex and contain several general standards that are not suitable for hydropower. It is important to simplify them and to remove general provisions, in order to avoid ambiguity and counterproductive effects;
- In the implementation of the WFD, the effective application of holistic economic assessments of hydropower should be enforced in order for the WFD to achieve its goal to ensure sustainable water use, without undermining the achievement of climate and energy policy targets;
- **Coherence.** There is an obvious need for better policy coherence between the WFD and other EU climate and energy policy goals and legislation. To continue letting hydropower play its;
- important role in Europe’s energy supply, it is crucial that DG ENER takes an active part in the evaluation, together with DG CLIMA and DG ENVI.

7.2.37 MEDEF

- Systematically take into account energy benefits and climate change adaptation and mitigation measures when reviewing projects, plans and programs in the aquatic environment;
- Revision of the one-out-all-out principle through setting intermediate progress targets of good status to be achieved;
- **Efficiency.** Make systematic economic approaches through an economic, social and environmental impact assessment of the prescribed environmental measures. Prioritize the most cost-effective solutions while taking into account the economic situation, the European and international context and making sure the schedules are compatible with investment cycles;
- **Coherence.** Make the European public policies consistent with each other to better integrate the ecological and energy transition issues in the Water Framework Directive.

7.2.38 COPA COGECA

- Replacement of the one-out-all-out principle with more flexible systems in assessing water quality;
- Against any endeavour to further valorise water and are also against any the monetarization of the ecosystem service of provision of freshwater for agricultural purposes;
- Water for agricultural purposes from wells owned by farmers must be free of charge;
- Environmental and resource costs can neither be expressed in monetary terms nor individually allocated according to the Directive's polluter-pays principle;
- Increased water costs would harm agricultural irrigation as a particularly sustainable form of agriculture;
- More focus on climate change;
- Need for greater fiscal and financial support and incentives (grants, tax incentives, skills) to foster water storage and irrigation. Also, a reduction of administrative red tape;
- **Efficiency.** Existing approaches for water pricing are costly, time-consuming and highly administrative, making practical implementation impossible;
- **Coherence.** We consider that the use of pesticides is already sufficiently controlled, also by other legislation. No further regulation under the WFD is needed.

7.2.39 SWA

- The WFD does not take account of the natural changes in the ecosystem despite the Directive's systemic initial intention to ensure a more sustainable and holistic approach to water management;
- The assessment methodologies for classifying water bodies are not robust and good ecological status is thereby a moving target that will never be obtained;
- The principle of one out - all out does not allow to see trends and changes in water quality over time;
- It is essential to postpone the deadline of 2027;
- **Efficiency.** As observed during the 20 years of implementation of the WFD, costs associated with measures are inadequately assessed if evaluated at all. With regards to benefits, many of the measures taken to improve the quality of surface waters result in meeting the formal requirements, however, the benefits are low;
- **Coherence.** The WFD needs to be aligned with a sustainable development including ecological, economic and social considerations as set out in Article 3.3 in the EU-treaty.

7.2.40 CDP

- Strengthening the corporate reporting framework by specifying disclosure requirements of corporates on water security throughout their entire supply chains, notably considering the Non-Financial Reporting Directive;
- Enabling cities, states and regions disclosure of risks associated with water security, supporting them assessing their climate-related vulnerability and developing plans for increasing resilience;
- By increasing the transparency of high impact sectors, the flow of capital can be redirected away from those businesses, products and practices that deplete freshwater resources, towards those that protect them;

- Integrating water risk assessment into policy measures targeting investors and banks, notably considering the legislative and non-legislative measures of the EU Action Plan on Sustainable Finance;
- The lack of water risk awareness means that banks often fail to undertake adequate due diligence on their lending as it relates to water security.

7.2.41 Insurance Europe

- Insurance Europe believes that the Directive has had a positive impact on risk awareness and risk reduction. However, the scope of the Directive is - at present - limited to fluvial flooding;
- Insurers support an extension of the scope to include pluvial flooding and storm surge, too. The rationale for this is that most flood losses are triggered by torrential rain;
- Insurers also think that smaller rivers and creeks should be included in the scope of the Floods Directive;
- They would support a standardisation of the terms “frequent flooding” and “extreme flooding”, as well as a clarification between local water defences versus primary water defences (international rivers/sea). Insurers would welcome clarity on what should be included in modelling for flood risks. As an example, there is no clarity on whether sewerage systems should be included in any kind of modelling.

7.2.42 Kemira

- The requirements of the Directive must be implemented fully and equally in all member states;
- Emission limit values for BOD, COD, TSS and phosphorus in water discharges should be tightened;
- Digitalization can improve both the quality of monitoring and the cost efficiency of water treatment. Smart digital platforms can be used for applications such as real-time phosphorus removal optimization;
- Emerging pollutants need to be included in the legislation;
- Pollution from storm-water overflows must be limited and discharges safely disinfected;
- Clearer guidance is needed on applying innovation and sustainability criteria in public procurement for water treatment. Rather than focusing on the short-term cheapest unit price, innovative and sustainable solutions that can reduce the total cost of ownership (TCO) should be favoured in public procurement processes.

7.2.43 DBV

- Comment on the questionnaire: the expert section, the method of multiple-choice questions is wholly inappropriate. Without massive quality losses, the issue of the WFD cannot be assessed with multiple choice questions;
- Another management period is needed. Here, an unjustified adherence to the environmental goals despite historically conditioned human influence or natural conditions will not be sustainable;
- The one-out-all-out principle should be revised to give a clearer overview of progress. Particularly in groundwater, the changes achieved are significant but not well described with this principle;
- There is a lack of comparability of the monitoring data;

- Supplementary voluntary cooperative measures should have a greater role, and these must be designed pragmatically and flexibly on site; this enables more acceptance for the implementation and allows to create tailored solutions;
- **Effectiveness.** The time needed to achieve the objectives has been by far underestimated.

7.2.44ICOMIA

- Consideration of climate change effects;
- The all-in-all-out principle generates inability to properly reflect progress / lack of incentives to take small actions;
- 2027 deadline not realistic;
- **Relevance.** There is a potential lack of recognition of the role of sediments (quantity, quality, dynamics) in achieving WFD objectives;
- **Coherence.** The WFD overlaps with the Marine Strategy Framework Directive at the coast (i.e. in coastal water bodies). In particular, poor links with the MSFD notably in relation to hydromorphology, scale and new projects in coastal water. At least a need for better coordination between WFD/MSFD, IED, REACH, the Biocidal Products Regulation and the Waste Framework Directive. Issues regarding the relationship between IED, BPR, REACH, etc. and the WFD; including incompatibility between the respective objectives of these instruments for example in relation to invasive alien species (i.e. which is worse, invasive non-native species introductions or the risk of contamination associated with antifoulant use?).

7.2.45Wiener Wasser

- An extension of the 2027 deadline is needed;
- In case of conflicts among water uses, drinking water should always be prioritised;
- The polluter pays principle must take precedence over end-of-pipe solutions;
- Communication and monitoring should be improved; in particular, the one-out-all-out principle is not a tool in terms of communication, which can create hurdles when it comes to justify investments required in the Directive;
- More funding is needed to cover the required investments ;
- **Coherence.** There is some incoherence with the Nitrate Directive and the CAP.

7.2.46CEMR

- Even though the good water status will probably not be reached by 2027 in all waters, the WFD has proven itself as a major framework instrument and needs to be continued;
- There are many challenges due to developments beyond water that must be addressed such as land use intensification, climate change, geographical changes, pollutants and pressures from various sectors;
- It is essential for the success of the WFD that the future European Water legislation is aligned with the objectives of the WFD. New requirements should be based on the objective of the WFD;
- Local governments must be more involved in water management and legislation. As the administrative level closest to the water, they have the most adequate knowledge and data of water bodies;
- Need to simplify the implementation and reporting requirements, which are very technical and legally complex;
- Move towards the implementation of the polluter pays principle;
- Development of the regime of exemptions to allow a certain amount of human impact activities necessary for societal development as long as all necessary protective measures are taken.

7.2.47 Business Europe

- One-out-all-out principle hides progresses made towards improved water quality;
- Importance to keep the non-deterioration principle, but its application has led to some problems. For instance, the fact that the good status will not be achievable by 2027;
- **Coherence.** For instance, the water protection requirements such as minimum river-flow requirements or waste water treatment techniques do have an impact on the power generation capacity or its capacity to provide ancillary services that are important for the safety and stability of the power grid;
- **Efficiency.** measures often lack a good consideration of cost-benefit analyses. The focus tends to be directed towards the costs of implementation for Member States, often omitting measures that could bring improvement while being more proportionate.

7.2.48 DIHK

- Enforcement and licensing procedures within the framework of the WFD need to be facilitated. Delays due to legal uncertainty should instead be avoided; this requires both clear-cut and practicable exemption rules in the WFD;
- The timeframe beyond 2027 should be more flexible;
- A partly different implementation of the WFD in different river basins in Europe can lead to competitive disadvantages for companies, which should be avoided;
- According to an evaluation of the Northern German Chambers of Commerce and Industry (IHK Nord) the provisions of the WFD can delay single company projects by more than a year. These delays of commercial projects caused by the WFD partially trace back to a narrow interpretation of the requirement to improve and of the no-deterioration clause; thus, the DIHK is in favor of clarifying the deterioration ban and the WFD improvement requirement;
- The WFD also lacks the inclusion of possible measures of compensation for certain deterioration caused by commercial projects, possibly also through recognition of compensatory payments. Enforcement and licensing procedures should be facilitated, delays due to legal uncertainty should be avoided;
- There is a lack of a threshold value below which a negative and identifiable change is not considered as deterioration. This seems to be conceivable in the case of changes that only have a selective effect on a water body and do not influence it completely;
- The WFD implementation shows a variety of implementations in different river basins. This can result in competitive disadvantages for companies, which should be avoided;
- Climate change should be given due consideration;
- **Effectiveness.** In Germany, the implementation of the WFD has led to a further significant improvement of the state of numerous waters. At the same time, the knowledge of pollutant load and water quality could be increased considerably;
- **Efficiency.** The extent to which companies are affected by burdens linked to the WFD is potentially far-reaching. This includes lengthy approval procedures or, in certain cases, significant costs that could come along with water management planning measures. High requirements of the directive can ultimately endanger the economic efficiency of operational measures. Some management plans include the provision of additional treatment levels in treatment plants. This would generate high costs for companies with a high volume of wastewater, without these companies normally constituting the cause of the pollution load in the wastewater.

7.2.49 Bayerischen Bauernverbandes

- Comment on the questionnaire: it is not appropriate to ask the general public about such complex issues as EU water legislation. Ordinary people do not have access to this and can only answer the questions on the basis of feeling or assumption - the system of multiple-choice questions considerably facilitates an arbitrary or unfounded selection of answer options. In addition, NGOs massively abuse the EU consultations by encouraging their supporters to send out a standardized answer with just a few clicks. The experience with similar campaigns shows that very few people have actually read what they are supporting. For the questionnaire part 2 - so-called expert part - the method of the multiple-choice questions is completely unsuitable. Such a complex topic cannot be so simplified without massive quality sacrifices;
- There is a lack of comparability of monitoring data, which is not uniformly recorded and evaluated within and among MS;
- The one-out-all-out principle is counterproductive and successfully implemented measures with a positive effect on individual quality parameters play no role in the overall assessment;
- The goals are not achievable in the set timeframe; in groundwater changes might take decades to become visible;
- **Effectiveness.** As long as monitoring systems are being changed, no real development trend can be identified;
- **Efficiency.** It would be advisable that reporting requirements for MS be reduced, in order to reduce the disproportionate bureaucracy associated with the Directive.

7.2.50 RWE and Innogy

- The process of River Basin Management Planning (RBMP) as well as the structure of environmental objectives resulting from the application of the range of mechanisms within the WFD has to date provided an overall effective, efficient and flexible framework for Member States to strike an appropriate balance between water use and protection;
- **Effectiveness.** Despite some imperfections the WFD is overall an effective and efficient framework to achieve this overarching balance of objectives. Justified designations of HMWB as well as a justified use of exemptions do not indicate lack of effectiveness but rather reflect the correct application of the WFD's mechanisms in achieving an appropriate balance between the different targets. They strongly support the classification of status and the definition of environmental objectives based on biological quality elements;
- **Efficiency.** A clear focus on biological quality elements is necessary for both securing ecological improvement and the application of well-targeted and cost-effective measures. The designation of HMWB is essential to achieve overall efficiency. A pre-condition for efficiency is provided by the requirement of cost-effectiveness for the Programme of Measures which is key for the long-term acceptance of cost burdens for users and taxpayers. Water pricing is not always an appropriate instrument to promote more sustainable use of water in the hydropower sector;
- **Coherence** between different EU policies and legislation and their respective objectives and obligations could be improved on EU level. This applies especially to the balancing of trade-offs between different policies and legal requirements (e. g. energy and climate policy);
- **EU added value** occurs through the promotion of a level playing field as part of the internal market.

7.2.51AöW

- The WFD will have to be the basis for sustainable development in Europe for the next generations;
- The non-deterioration principle and improvement requirements must be maintained;
- The 2027 targets are not realistically achievable;
- The one-out-all-out principle must be revised.

7.2.52UPM

- It is necessary to fully recognize the subsidiarity principle for the implementation of the WFD by allowing member states to consider their national situation and apply good practice procedures case by case;
- National implementation of HMWB is not always in line with definitions of WFD (Article 4.3). Good ecological potential is not reached because authority has either underestimated the significant adverse effect on specified use or the benefits of possible mitigation measures to biological quality elements are overestimated in assessment;
- Stakeholder involvement is essential in HMWB designation and classification as well as in designing environmental measures to reach the targets of WFD;
- **Efficiency.** Cost-benefit analysis of the mitigation measures on hydropower should always be executed to better understand generation losses and maintenance costs in the estimated overall costs of environmental measures;
- **Coherence.** The impacts of WFD on hydropower generation often relate to possible conflicts between energy and environmental policy objectives, i.e. generating renewable and carbon free electricity from hydropower and conserving water courses. UPM also wishes that DG ENER takes an active part in the WFD evaluation, together with DG CLIMA and DG ENVI, to align better the energy and climate policies with EU water policy.

7.2.53Stockholm University

- The recovery time of water bodies are long. This means that it is more difficult or impossible to judge whether or not the WFD has had sufficient effect. Further, the present cycle duration (6 years) is too short for the actions to be fully implemented and any effects measured. It mostly creates an administration burden;
- There is no money allocated directly for the implementation of the WFD. This is a great obstacle;
- Too little monitoring is being done. The resources are scattered. This leaves the Baltic sea countries with incomplete series of data hindering evaluation and research;
- The goals - good ecological status - have often been interpreted to be the conditions that would exist without substantial human disturbance. In the case of the Baltic Sea, it is not known if this is even achievable given that 85 million people live in the catchment and other factors apply, like climate change. This situation begs the question of whether we are investing in the most cost-effective measures;
- The “one-out-all-out-approach” doesn’t reflect the real situation regarding ecological status.

7.2.54Danish Environment Technology Association

- Need for more effective tariff systems to fill in the huge investment gap in the EU water infrastructure;

- There is a need to reform the use of derogation clauses. Today there is an intensive use of the derogation clauses by all member states leading to ineffective implementation and less willingness to implement and test new technologies and methods;
- A new EU water framework should drive innovation and use of smart technology to a larger extent;
- New common targets for an energy neutral water cycle and CO₂-reductions in the EU water sector should be promoted. Full transparency on energy performance could be the first step;
- A new directive should support the implementation of the circular economy agenda;
- New quality standards for environmental harmful substances such as pharmaceuticals from hospitals, antibiotic resistant bacteria, endocrine disrupters in general and microplastics should be considered in a revised directive;
- Better monitoring needed;
- A revised version of the WFD should be tackling climate change;
- The evaluation should assess the socioeconomic effects of the implementation of the existing directive and the direct investments in the EU waste water sector related to the implementation of the directive;
- **Coherence.** If the WFD should be fit for purpose, we need a much stronger policy coherence between especially the EU climate, energy and water agendas. This could potentially unlock a huge untapped potential for circular economy solutions and further resource efficiency, water and energy savings and smart, cost-effective production of renewable energy.

7.2.55ECRR

- ECRR supports the ‘one-out-all-out’ tough target and has suggested the need for more transparent and positive reporting of positive progress towards the aims and goals of the WFD. This is to ensure that implementation effort is clearly, visibly and politically seen to be delivering the significant (but gradual) improvement to our water environment;
- The successes of some countries should be shared, and guidance produced to aid other countries to better interpret and implement truly meaningful and engaging local community planning and problem solving;
- **EU added value.** ECRR is confident that much of the change in water governance and management across Europe over the past 20 years would not have taken place, been slower and delayed and not as effective without the WFD. River continuity restoration urgently needs EU backing to integrate it into national strategies that underpin the ambitions of the WFD and the implementation of RBMP’s. Positive impact of the WFD in supporting and creating more and better transboundary cooperation and action.

7.2.56Euracoal

- “Non-deterioration principle” - no clear definition;
- To be a useful management planning tool, one which balances environmental and socioeconomic considerations, the contradiction in Article 4.5(c) of the WFD regarding less stringent objectives should be clarified;
- Many mine operators increasingly rely on exemptions. Good water status will not be fully achieved by 2021 or 2027. To go beyond 2027 with a status that is not regarded as “good” is only allowed under the current WFD if it can be shown that the objectives cannot be achieved by the deadline due to “natural conditions”. There are only rare cases which would fulfil the definition of “natural conditions”. The mining industry thus needs time extensions beyond 2027 in order to continue mining.

7.2.57 Eurochambres

- The one-out-all-out principle leads to a situation where the time consuming and costly efforts of companies to limit impacts of their activities and improve the water status are not visible and neither is the progress made for the entire waterbody. This discourages companies from taking the necessary steps;
- Sometimes, charges applied did not correspond to the polluter-pays-principle and were thus disconnected from whether the water use of a company actually affected its status. In particular, in order to contribute to legal certainty for companies, it would be useful to define a de minimis threshold;
- Different interpretation of the definition of “no deterioration” and requirement “to improve” water status has led to significant delays and cost increases due to lengthy legal proceedings in some cases. This shows the need to clarify these definitions in order to prevent legal uncertainty due to different national implementation;
- **Effectiveness.** The environmental objectives of the WFD are from our point of view barely achievable within the given timeframe;
- **Efficiency.** The costs incurred sometimes jeopardise the commercial viability of projects. Costs for appraisals, delays in projects and possible legal proceedings have to be borne by the companies involved and can render approval for projects in industry, shipping and water tourism nearly impossible;
- **Coherence.** Conflicts between the need to achieve good quality in water bodies and to produce renewable energy to reduce GHG.

7.2.58 The Norwegian Biodiversity Network (Sabima), The Union of Outdoor Recreation Organizations in Norway, The Norwegian Hunters’ and Anglers’ Association, WWF Norway, The Norwegian Trekking Association and Friends of the Earth Norway

- Looking at Norway, a main improvement through the WFD is a better knowledge base - and awareness of where the knowledge gaps are;
- Exemption and delays are used to a too large extent. Exemptions under WFD article 4.7, allowing new modifications or damaging activities, may degrade the status of many water courses, not least the few remaining free flowing rivers and stretches of rivers, which need better protection;
- The RBMPs need to be implemented and full focus given to the quality of the RBMPs for the next planning cycle;
- The terms “sustainable development” and “sustainable use” are used, needs to be evaluated in light of the latest research in the field. The previous idea that sustainability is reached when economic, social and environmental factors are equal or balanced is now challenged with a new view, where the biosphere and ecology are (evidently) the basis of all other activities.

7.2.59 Royal Norwegian Ministry of Climate and Environment

- WFD implementation has resulted in a significant boost in knowledge about the water environment, with increased resources for monitoring, and development of new tools for monitoring and management;
- Integration of Climate Change into river basin management planning should be pursued;
- Ecosystem services should be further taken into account as part of economic analysis of costs and benefits;

- Emerging pressures on the water environment (plastics and pharmaceuticals) are not addressed by the current legislation;
- Resource effective monitoring is a source of concern, this is also reflected in the wish to lessen the burden of consultation;
- Coherence. Priority substances - integration with IED and REACH.

7.2.60 ECSA

- There is significant regional variation in how exhaust gas cleaning systems (EGCS) wash water discharges are regulated within European waters subject to the WFD;
- Various EU Member States and local authorities have not correctly implemented the requirements of the WFD, and for instance do not perform the required monitoring and assessments;
- Need for more scientific research on EGCS discharge;
- Need for harmonised approach on implementation, interpretation and enforcement of the WFD.

7.2.61 Finnish Forest Industry

- The water management plans have been drafted in good cooperation and have worked well, including taking them into account in the permitting processes;
- The one-out-all-out approach doesn't result in a clear picture of where improvements are needed, and it doesn't allow for appropriate prioritisation of measures. It could be worth complementing it with more detail on progress made on the ecological status;
- Significant obstacles to full implementation: Unrealistic expectations of the achievability of the environmental objectives in the time scales required by the Directives, lack of funding to implement the measures required to meet the objectives of the Directives, differences in interpretation of key provisions between Member States;
- The Common Implementation Strategy (CIS) should not be legally binding;
- With the strict implementation of the non-deterioration principle there is a risk that sustainable investments are hindered and the exemptions for deterioration is inadequate;
- **Efficiency.** Permitting and monitoring costs in general have become more expensive and industry has been given a very high responsibility/disproportionate administrative burden in the implementation;
- **EU added value.** The implementation of the Water Framework Directive has improved cooperation between different actors both in the EU and in Finland. Issues such as water scarcity and drought, water pricing issues and cost recovery, specification of ranges for physicochemical quality elements contributing to the ecological status assessment, development of environmental quality standards for river basin specific pollutants, development of threshold values for groundwater pollutants can be better addressed at a MS level.

7.2.62 Swedish Association of Local Authorities and Regions

- It has only limited possibilities to balance water quality to other important societal interests, among them environmental measures, climate mitigation actions, public transportation and the development of sustainable urban environments;
- Derogations must be developed to allow for a certain amount of human impact, necessary for societal development, as long as all necessary protective measures are taken;

- The WFD must be updated in light of climate change and other policies must be coordinated and/or reviewed to ensure that consistent approaches to climate change mitigation are applied;
- Unrealistic expectations of the achievability of the objectives in the time scales;
- The one-out-all-out principle results in improvements and deteriorations being inadequately captured and has negative implications for water management;
- Implementation and reporting requirements are too complex;
- Lack of integrated approach to water management at both national and EU level;
- Lack of funding to implement the measures required to meet the objectives of the Directive;
- Due to the complexity of the WFD and the lack of data it is not clear for municipalities what exactly is required from them and whether a certain measure would be considered enough or not;
- Local governments must be more involved in water management;
- **Effectiveness.** The directive does not function properly in legal applications due to its very technical and scientific nature;
- **Coherence.** remark with regard to targets is the lack of coherence between the Waste;
- Water Treatment Directive (UWWTD) and the WFD, where the former stipulates that more efficient waste water treatment plants must be established in order to meet the requirements while the latter prevents such installations as its emissions will affect waters. We need coherent obligations in place in the Priority Substances Directive, the WFD, the REACH and other chemical legislation to allow for the full implementation of the Polluter Pays Principle and control at source approach in order to protect the environment from hazardous substances.

7.2.63UKELA and Seafish

- The WFD has had a positive impact on management practices;
- The one-out-all-out approach is an important scientific principle of the WFD;
- **Effectiveness.** Measures adopted under the WFD have led to reductions in pollution from urban, industrial and agricultural sources. There has also been a substantial improvement in transparency in water management as a direct result of the WFD. However, the River Basin Management Plans (RBMPs) have been ineffective primarily due to: planning approaches often lacking incorporation of the most cost-effective measures to deal with the main pressures, a reliance on voluntary measures (which are also often too vague and not linked to the main pressures), non-transparent use of exemptions, insufficient funding to implement control measures resulting in a failure to deliver the environmental objectives of the WFD, a reliance on self-regulation coinciding with a fall in the number of national enforcement officers. The costs of rectifying damage caused to water environment is often borne by taxpayers and consumers;
- The most effective measures of the WFD have been regulatory ones, such as restrictions in the use of certain pollutants, the use of economic instruments such as water tariffs, and measures introduced through related EU legislation such as the treatment of wastewater. The voluntary measures, especially with regards to agricultural pollution and over-abstraction, have been less effective.

7.2.64UNIPER

- Prolongation of the WFD beyond the year 2027;

- The system of fixed time schedules does not reflect the temporal needs of ecosystems to unfold their full potential;
- The reference conditions for HMWB should be evaluated realistically and improvement potentials set at challenging yet achievable levels. Ecological measures should furthermore always consider site-specific conditions to avoid a detrimental “copy-paste” approach of general measures;
- Allow member states to set targets considering the broad variety of societal interests.

7.2.65 Coldiretti

- The costs of the resource must be kept clearly distinct from the environmental costs, which represent an eventuality connected to the indiscriminate use of the resource, certainly different from the normal use in agriculture;
- Positive effects deriving from the agricultural activity using the same resource but also on the environment and the landscape must also be considered as compensation;
- **Coherence.** it is necessary to ensure the coordination of the directive with the nitrates directive 91/676 and proceed with the revision of the latter, which is now obsolete, ensuring the possibility of verifying the actual pressure sources, so as to direct measures and interventions on the sectors actually responsible for the pollution.

7.2.66 Wetlands International

- **Effectiveness.** The scale of restoration projects is not as large as needed to make a difference in the entire water body status before and after implementation of the measures. Restoration measures of a few kilometres in length are very short with respect to the mean length of the water bodies. Many MS have developed a long list of measures but failed to provide funding to implement these measures. The large number of water bodies still not in good status proves the fact that the exemption regime is still too often applied by MS. The one-out-all-out principle is a cornerstone that should be maintained. It ensures that all water problems are addressed. Further efforts are needed to adapt the size of water bodies to the scale of the different pressures and management actions;
- **Relevance.** The WFD’s provisions are especially relevant to address the pressure of hydropower on water bodies;
- **Coherence.** The WFD is coherent with other relevant pieces of EU environmental legislation. A lack of coherence exists between the WFD and the EU’s sectoral policies (navigation, flood defence and hydropower);
- **EU added value.** Without the WFD, some European countries would not have national legislation on water management. The binding nature of the WFD objectives was the major driver for the improvement of the water quality in recent years.

7.2.67 Norsk Industry

- The post-“Weser” ruling interpretation of WFD provisions hinders a proper balancing of different water uses in river basin management and variation in and amongst water bodies;
- The classing of chemical status into one of only two categories (good and not good) gives rise to legal interpretations that are difficult to reconcile with the scientific approach of the WFD;
- The instrument of setting less stringent targets (article 4.5) must be able to play its intended role in the exercise of planning water management, taking into account socio-economic aspects, local hydrogeological and anthropogenic conditions and water protection concerns in line with sustainable development;

- Although the term “deterioration” is a pillar of the WFD, the WFD does not contain its definition;
- The one-out-all-out approach is not the ideal tool especially for water bodies affected by diffuse, multiple stressors, thus posing additional problems to track progress in ecological status. It should not be allowed that a minor class descent of a low-importance parameter triggers the same legal consequences as more important ones;
- It is fundamental to clearly distinguish between Priority Substances which pose an EU-wide risk, and River Basin Specific Pollutants;
- **Effectiveness.** The current WFD provisions and natural concentration ranges do not take account of natural change in ecosystems and therefore the proposed pathway to achieving the WFD’s objectives appears out-dated and unrealistic;
- **Efficiency.** The WFD has not yet properly integrated sound economic principles into the evaluations carried out to assess the cost-benefit analyses. Measures are often implemented without the proper consideration of their economic feasibility they should have undergone. Costs at MS level are most likely underestimated;
- **Coherence.** methods for deriving EQSs for RBSPs should be harmonised in line with the updated version 2018 of the CIS Guidance Document nr. 27.

7.2.68DWA

- The WFD has to be adapted to practical experience while maintaining its level of requirement;
- The management plan and programme of measures need to be strengthened with more data and knowledge in the planning process;
- The obliging effect of the management planning for the implementing authorities has to be strengthened;
- The “one out - all out” principle obscures the view of the success of water management activities and thus proves to be an obstacle when it comes to presenting effective measures for water protection;
- Under the non-deterioration principle, it also has to be possible to grant authorisations to discharge without increasing the requirements and/or having to resort to derogations;
- Appendix V of the WFD needs to be amended so that in the future, all environmental quality standards for the assessment of the chemical status of surface waters are applied and not only the requirements for priority substances and priority hazardous substances as was previously the case. In addition, the river basin-specific substances are to be used for the assessment of the chemical status;
- The regulation in article 16 para. 6 WFD on ending the emission of so-called priority hazardous substances has not gained any practical significance since the WFD entered into force, and therefore needs to be reviewed;
- **Coherence.** Need to harmonise the regulation for the assessment, approval and use of substances as they result from the REACH Regulation, CLP Regulation, Biocidal Products Regulation and phytosanitary or pharmaceutical legislation, more closely with water law.

7.2.69EDF

- Energy and climate benefits should be systematically taken into account in the review of projects, plans and programmes;
- Achievable targets and a reasonable approach to the “non-deterioration” principle is necessary;

- The very strict application of the non-deterioration principle by the European Court of Justice could slow down economic activities;
- **Efficiency.** Methods and tools to evaluate those aspects and especially the real costs of the measures are missing or could be better developed, improved and shared in view to implement cost effective measures first.

7.2.70EurEau

- The requirements regarding the achievement of good status for water bodies have to take into account the necessary time for the implementation of technical solutions;
- It is vital that the authorities developing River Basin Management Plans (RBMPs) work closely also with water services to produce optimal deliverables according to the available finances;
- The approach based on the one-out-all-out principle, masks and distorts the reality of the water body quality. Since the improvement of the quality of water bodies is difficult to show, it is challenging for relevant authorities to justify the investments made and those needed in the future to continue on their path towards 'good status'. There should be a commonly agreed additional tool for Member States to show the improvements, such as a set of biological or chemical parameters assessed over time;
- Climate change has to be included in order to set reasonable reference conditions;
- Frequent and non-transparent use of exemptions should be avoided, and exemptions should be granted under rigorous planning and control;
- Exemptions should avoid that water utilities alone are the ones bearing the burden of possible follow-up measures;
- An extension of the deadline beyond 2027 should be considered, as natural recovery processes might need a longer timeframe to be visible;
- The lack of a holistic approach to water pollution has increasingly led to end-of-pipe solutions rather than 'source control' measures, making the burden of investment fall on the shoulders of consumers financing these measures via their water bills.

7.2.71Wastewater Management in the Danube Region

- Revisit the institutional setup for wastewater management where relevant to address limited national and local capacity;
- The lack of comprehensive and transparent central database with wastewater discharges in the DRB at national and local levels is making the assessment of UWWTD implementation on surface water quality difficult;
- OPEX sustainable financing should be addressed upfront in the UWWTD implementation process. WWTP projects should come with a clear costing including lifecycle and long-term costs, as well as a funding plan;
- Prioritize investments according to their impact rather than on a readiness basis;
- Financing gaps between tariff revenues and total costs of wastewater services exist in several new MS countries, thus there is a need to strengthen the financial viability of utilities to ensure financial sustainability and access to financial markets;
- Introduce a solid economic and environmental analysis of individual projects to allow lower level of treatment when it proves more cost-beneficial;
- Provide more flexibility on the choice of technology especially in rural areas/small towns;
- There are several opportunities for the wastewater sector to make a valuable contribution to promoting a greener circular economy, which remain largely untapped;

- **Efficiency.** In order to achieve a better efficiency and to minimize costs of service provision, wastewater infrastructure would be best planned and potentially implemented and managed at regional level. With this purpose, also more efforts are needed to foster the adoption of new technological innovations in the wastewater sector;
- **Coherence.** The UWWTD should be aligned more closely with WFD objectives.

7.2.72 Federation of Swedish farmers

- The WFD does not take sufficiently into account the social and economic sustainability dimensions;
- The Directive's forms of participation and decision-making must be improved and clarified;
- The one-out-all-out principle is counterproductive and hinders or hampers urgent environmental improvement measures. Both improvements and deteriorations are inadequately captured;
- The WFD does not take account of the natural change in the ecosystems.

7.2.73 Clearance

- **Effectiveness.** The effectiveness of the WFD has been hindered by difficulties in its implementation. To cope with this issue, market failures should be addressed;
- **Efficiency.** Cost comparison of wastewater treatment plants and wetland buffer zones, as different measures for the reduction of nutrient loads in water, show the latter to be a cost-efficient method;
- **Coherence.** Meeting the WFD goals requires policy coherence, especially with the Common Agricultural Policy and Regional Development plans, as the instruments of the CAP are crucial for meeting the goals of the WFD. The plan to include WFD nitrate and phosphate goals as well as buffer strips as part of CAP conditionality is therefore much appreciated;
- **EU added value.** Rivers and climate change do not stop at national borders, thus only an EU guided action can ensure joint action between MS.

7.2.74 EWA

- Updates of the Directive will be necessary to take account of changes in economic, demographic and land use developments and of climate change;
- Achievable interim targets, based on realistic lead times, should be set for the respective management cycles, in order to achieve overall progress and make the success of considerable efforts in water protection visible;
- Review the one-out-all-out principle as it does not do justice to the success and progress of water management activities;
- There is a need for new guidance on the application of the non-deterioration principle application in the assessment of the chemical status of waters;
- Not much effort has been put into addressing issues of diffuse pollution, hydromorphology and restoration of aquatic ecosystems effectively;
- It is important that stakeholders and interested public in general have access to data on monitoring on a real-time basis;
- **Effectiveness.** In the course of the implementation of the WFD, the state of waters in Europe has improved significantly;
- **Coherence.** Sustainable, long term improvement of water status requires close integration of water policy with nature protection, flood protection and climate adaptation policies to maximise synergies and increase cost-effectiveness.

7.2.75 Norwegian Environment Agency

Describes WFD integration in Norway, including successes (i.e. large local community involvement) and potential areas for improvement, including:

- Resources for monitoring insufficient, and too late;
- Some relevant authorities did not participate sufficiently;
- Solving conflicts of interests;
- National guidance too complicated and produced too late.

7.2.76 IHK

- The provisions of the WFD can create damage to the shipbuilding industry in the future, which will move the production in other locations with massive jobs losses;
- Greater education can strengthen the willingness and ability to innovate;
- The WFD creates significant legal uncertainty due to a narrow interpretation of the need for improvement and the prohibition of judicial deterioration;
- Clearly defined exemptions are missing in order to take greater account of public and economic interests in the necessary balance with environmental concerns;
- Need for a stronger balance between economic interests and environmental concerns;
- The deadline for achieving good ecological status of waters should be extended beyond 2027;
- The polluter pays principle must be maintained;
- **Effectiveness.** The WFD makes it possible to reduce pollutant discharges from upstream residents;
- **Efficiency.** The provisions of the WFD in certain areas make operational developments more expensive and delayed. It has been shown that there is a variety of impacts from the WFD in its current form, which can lead to additional expenditure of 1-2 years (private projects around 1 year, public up to 2) and cost increases of 15-20%. The WFD create significant additional costs for the port industry in terms of maintenance dredging. Costs for legal proceedings and expert reports to be obtained lead to a significant increase in the costs of implementing projects.

7.2.77 Zentralverband der deutschen

- It should be acknowledged that the implementation is necessarily different among MS. The implementation is also made harder by inadequate definitions and a lack of procedural guidelines;
- Most of Germany's water bodies will not achieve the 2027 targets and this will be used by environmental organisations to legally enforce compliance with the Directive. Consequently, construction projects will be slowed down or withdrawn. Therefore, at least one more management period should be added beyond 2027;
- Both the expressions 'natural circumstances' and 'supporting quality components' are not well defined. Also, the non-deterioration principle should be more clearly described;
- **Effectiveness.** The objective of the Water Framework Directive has been missed to a significant extent throughout Europe. The Directive delays projects by an average of 24 months;
- **Efficiency.** The WFD creates high additional costs without any additional value for environmental protection.

7.2.78 MARS

MARS has generated a general framework supported by MARS tools for tackling multi-stressor conditions in River Basin Management and to select appropriate management strategies concerning the level and type of necessary mitigation measures.

The MARS Tools support the analytical process at various levels: The vast amount of EU water-related information has been integrated and synthesized within the MARS Geodatabase and the Freshwater

Information System to identify important stressors, their spatial distribution and combinations as well as their effects on the ecological status of lakes and rivers.

7.2.79 AWE

- The continuation of the WFD with appropriate further development beyond 2027 is absolutely necessary;
- From the point of view of the drinking water supply, there is already an urgent need to update the environmental quality standards. Drinking water supply should be classified as a priority form of use;
- **EU added value.** An EU-wide regulation is important as it is the only way to properly address transboundary watercourses.

7.2.80 Wattenfall and Fortum

- WFD does not sufficiently address climate change, therefore value of hydropower not properly reflected. As a consequence, it can unduly reduce renewable electricity generation from hydropower;
- HMWB classification very important, but CIS documents are very complex and contain several general standards that are not suitable for hydropower;
- **Efficiency.** same time, it is important that the measures do not impair dam security and flood mitigation. If the benefits and costs related to the proposed environmental measures are not weighted properly, there is a high risk, not only of significant losses in renewable electricity generation, flexibility and storage capacity, but also of implementing measures with limited ecological improvements at a high cost to society;
- **Coherence.** need for better policy coherence between the WFD and other EU climate and energy policy goals and legislation. This Although the WFD enables reconciliation of the targets for the protection of water bodies with other important policy targets, this has seldom been implemented in practice.

7.2.81 Port of Antwerp

- The one-out-all-out principle doesn't stimulate to implement measurements affecting certain elements because the overall result will be determined by the worst element;
- Due to climate change, some parameters are evolving beyond the authorities' capacity to control, therefore this should be taken into account when setting targets;
- To obtain an international approach to the problem of plastic, this should be included in the WFD;
- Consequences of not meeting the 2027 deadline not set;
- The WFD should better address the issue of sediment quality;
- The effects of ecology enhancements are not always caught due to lack of monitoring;

- The standards set for reaching good status are not consistently defined between similar waterbodies in different MS, thus this should be supervised by the EU;
- The list of priority substances and their corresponding quality standards was updated in 2013. For some substances the standards were lowered below the current detection limits, this is the case in the port area for Benzo(a)pyrene, Benzo(ghi)perylene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Benzo(b)fluoranthene and Benzo(k)fluoranthene. As a consequence, it is currently impossible to establish whether these substances are in compliance or not.;
- **Effectiveness.** The WFD has had a positive impact on the water management;
- **EU added value.** The WFD enhanced the communication between national and international water managements;
- **Coherence.** A better agreement between the WFD and other international legislations is needed. For example, the implementation of open scrubbers on vessels to reduce emissions into the air, regulated by IMO (international maritime organization), has led to increased emissions into the water. A second disagreement exists between the standards set for the PHCs (poly hydrocarbons) in the air and those set for water.

7.2.82 Xylem

- Considering the reduction of water leakage in the distribution systems to reduce water abstractions;
- The Water Framework Directive does not take the full potential of available real-time data and communication to build more frequent but less effort-intensive monitoring of chemical and ecological status of water and the environmental footprint of the water sector;
- Promotion of more transparency and the reuse of data in the water sector, as mandatory for both public and privately-operated installations;
- Updating monitoring rules of the Water Framework in line with smart technological innovations available on the market, such as wireless communication technologies, cloud-based network management, and digital operation simulations;
- **Efficiency.** The cost recovery principle needs to be strengthened in order to ensure its full implementation across different water service providers via a water price which accurately reflects costs. It is essential that the costs associated to lost water through leakage must be integrated in Member State implementation of the cost recovery principle;
- **Relevance.** Expanding the scope of the Water Framework Directive to tackle additional emerging contaminants of concern.

7.2.83 Deutscher Stadtetag

- **Effectiveness.** The WFD has proven itself as a valid instrument and thus must be maintained;
- **Efficiency.** A sole responsibility of the end-of-pipe actors (i.e. municipal sewage treatment plants) may lead to cost-efficiency losses;
- **Coherence.** More harmonisation with the Drinking Water Directive must be ensured. Water protection should be included in the revision of the CAP.

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