



Future of the Water Framework Directive: What have we learned and how do we adapt to new challenges?

Background

The Water Framework Directive (WFD) is the cornerstone of the European Union's water policy and was formally adopted in the year 2000. The Directive has stimulated an enormous portfolio of new and comparable ecological assessment schemes across Member States, greatly enhanced monitoring of water resources and encouraged a multitude of restoration measures. At the same time, the WFD has not yet succeeded in achieving its primary objective: good ecological status of all Europe's waters.

Since the adoption of the WFD, the challenges and opportunities in water management have changed in many ways. New pressures have emerged, new monitoring and assessment tools have become available and new perspectives on water management have been developed. In the context of these changes, there is a need to analyse the strengths and weaknesses of the current WFD implementation, understand where innovation offers new opportunities for monitoring, assessment and management and identify conflicts and synergies between the WFD and new policies.

A formal evaluation, or "Fitness Check", of the WFD is due in Autumn 2019. This policy brief aims to contribute to this evaluation by providing the views of a wide range of European experts on how water policy and its implementation could adapt to the new challenges facing Europe's waters, incorporating innovation to help achieve its overarching goals of good status and sustainable water use.

The brief provides recommendations for future implementation and evaluation of water policy in three areas: monitoring and assessment, management measures and policy integration. It then discusses the future of the WFD more specifically for the time beyond 2027.

Monitoring and assessment systems

Although the WFD greatly advanced the monitoring of Europe's waters, several problems with the current monitoring and assessment methodologies have become obvious. Furthermore, new monitoring methodologies have emerged in recent years, which have the potential to increase monitoring efficiency and reliability. The following improvements of WFD-related monitoring and assessment methods need to be considered:

- Further CIS guidance should be developed on **strategic design of monitoring networks** and greater flexibility in implementation allowed to support more cost-effective designs.
- When **monitoring the effects of restoration**, the use of "early responding indicators" are advisable, i.e. species and metrics that respond rapidly to restoration.

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Further reading:
Feld, C.K. et al., 2016.
Science of the Total Environ-
ment, 573, 1320-1339
<https://doi.org/10.1016/j.scitotenv.2016.06.243>

Further reading:
Baatrup-Pedersen, A., et al.,
2016, Science of the Total
Environment, 543, 230-238
<https://doi.org/10.1016/j.envres.2017.03.054>

Further reading:
<http://openness.hugin.com/caseStudies/LochLevenHabitat>

Also, the “supporting elements” (e.g. hydromorphological parameters and nutrients) should be used more frequently for this purpose.

- There is concern that WFD assessment uses **overly strict criteria** to define success. The “one-out-all-out principle” is used to integrate all the quality elements into an overall ecological status of a waterbody, i.e. the ecological quality class is determined by the lowest score of any of the biological and physico-chemical quality elements. To make the successes of WFD implementation more visible, greater emphasis in reporting should be placed on the progress in individual quality elements. Furthermore, Member States should down-weight, or exclude, results from highly uncertain quality elements from the overall status assessments.
- **New monitoring tools** have become available, including earth observation, genomics, automated monitoring platforms and citizen science. While these approaches have the potential to widen the coverage and information gained from monitoring, their adoption raises some challenges for WFD implementation. New approaches require checks on comparability with the existing nationally-approved methods and they will need equal scrutiny of their cost-effectiveness. It is also essential to maintain ecological and taxonomic skills and knowledge, as these underpin the design and robustness of assessment schemes, enable the interpretation of ecosystem responses to stressors and inform restoration actions. Above all, the comparability with monitoring data collected in previous monitoring cycles needs to be ensured.

Management measures

River Basin Management Plans (RBMPs) follow on from the monitoring and assessment process and specify Programmes of Measures to improve water body status. RBMPs aim to include the whole river basin and incorporate partnership working with other fields of human activity and policy, such as agriculture, flood protection, hydropower and fisheries/aquaculture. Overall, though RBMPs have implemented many actions to protect and restore Europe’s waters, much remains to be done. More targeted planning and implementation of measures is needed to manage multiple stressors acting on Europe’s waters, with many stressors requiring management at larger spatial scales.

The following improvements of RBMPs and Programmes of Measures should be considered:

- Through the WFD monitoring activities, **data and diagnostic tools to identify the stressors** are available, as well as tools to identify stressor interactions. These should be used much more frequently to make the best use of the monitoring data. These tools enable a prioritisation of stressors that affect ecological status and are essential to derive the most cost-effective management measures for improving the status of a water body or river basin.
- Another approach for more informed water management is to use **trait-based diagnostic tools** to identify reasons for failure that can utilise the same monitoring data used in ecological assessment, but operate independently. Traits give insight into mechanisms behind changes and, therefore, help diagnose mechanisms behind degradation.
- Development and use of **ecosystem service indicators** can help to provide quantifiable messages about the benefits gained from improving ecological status.

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Further reading:
European Commission (2017) Agriculture and Sustainable Water Management in the EU. Commission Staff Working Document, Brussels, 28.4.2017 SWD(2017) 153 final. 29 pages.

Further reading:
Anzaldúa, G. et al., 2018, Ecosystem Services
<https://doi.org/10.1016/j.ecoser.2017.12.004>



A number of case-studies and tools now show that the ecosystem capacity to provide regulating and cultural services increases with better ecological status, but more demonstration studies are needed to broaden the evidence. There is a need to further develop the concept of ecosystem services in RBMPs.

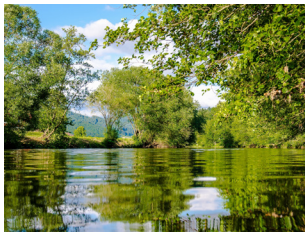
Policy Integration

The latest assessment of the state of Europe's waters highlights the large range of sectors contributing to the failure of achieving good ecological status, e.g. agriculture, forestry, aquaculture, energy (hydropower, biofuels) and urban and industrial developments. While these policy areas follow different agendas, the aim is to harmonise objectives and targets, planning and management processes (e.g. monitoring), regulatory action and incentives across relevant policies. New approaches are needed for practical integration of the WFD into these sectoral policies:

- Diffuse pollution and hydromorphological degradation are the prime stressors affecting Europe's waters, and for a large proportion of water bodies these are caused by agriculture. Future success or failure of the WFD implementation will be determined by the degree of integration with the **Common Agricultural Policy (CAP)**. In particular, finding ways that enable extensification of agriculture in riparian zones in tandem with "sustainable intensification" approaches to more precision farming in areas further away from water bodies.
- In terms of the CAP, it is desirable to produce more formal guidance on the difficult boundaries between **regulating pollution acts**, requiring the polluter to pay and paying not to pollute. The key question is whether upstream land managers or downstream beneficiaries should bear the cost of measures to restore ecological status and flood protection. The increasing focus of ensuring the new CAP is "socially acceptable" provides an opportunity for such debates.
- **Climate Change** should be a focus for revisiting the WFD to strengthen its provisions and ensure that adaptation is explicit in the RBMPs. In particular, drought and water scarcity are not adequately addressed in the WFD. The Floods Directive, currently a separate directive, could be incorporated into the WFD and synergies in the area of natural flood protection measures could be made more explicit.
- An **ecosystem services approach** and the ecosystem services paradigm, if made operational, could help to integrate land and water policy goals. Further developments, around payments for ecosystem services, could provide policy makers with new approaches that make explicit the costs and benefits of protecting or restoring natural capital, e.g. through green infrastructure approaches.

Beyond 2027

One of the principal concerns with the WFD is the **lack of progress in achieving good status**. Setting 2015 as the year when all water bodies should have reached good status was not realistic. This date greatly underestimated the time required to develop and compare ("intercalibrate") assessment systems, to then assess the status of all water bodies, and in particular to plan and implement sufficient and relevant measures in dialogue with all sectors. Once restoration measures have been implemented, ecological status requires time to recover, which is often estimated to take decades, not years. Therefore, it is likely that a large proportion



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<http://mars-project.eu>

of Europe's water bodies will not have reached good status by 2027, by when the third, and final, River Basin Management Cycle will have ended.

The options provided by the WFD to extend the deadline for achieving good status beyond 2027 are limited to "natural conditions" affecting the rate of natural recovery, in particular the decrease of pollution concentrations in sediments and the natural re-establishment by plants and animals. The use of this provision does require that measures needed to achieve good status have been included in the third RBMP in 2021 and acted upon by 2027 at the latest. It is obvious that this option will not be sufficient.

There is an urgent **need to decide about the future of the River Basin Management** mechanism beyond 2027. Given the slow progress with ecological status improvement, and the significant obstacles for achieving good status by 2027 for a large proportion of Europe's water bodies, there will clearly be a need to further improve the status of water bodies after 2027. Without a perspective for RBMPs post 2027, Member States are likely to apply less stringent environmental objectives for very many water bodies.

The WFD is the most important step ever taken towards sustainable water management in Europe. We should applaud all the effort taken across Europe to implement it so far. An extension of the River Basin Management mechanism, keeping the ambitious targets, and restricting the option to apply further time exemptions, is now required to make the WFD future proof.

More information on the EU MARS Project is available at: www.mars-project.eu

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