

Ambitious goals and ambiguous issues: Integrating water and energy concerns in the Norwegian hydropower sector

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Abstract: The EU Water Framework Directive represents a common framework for water policy designed to improve and integrate the way water bodies are managed throughout Europe. This complex and innovative directive engages multiple actors and sectors, involves changes in the institutional, organizational and spatial set-up of water resource management, and calls for the integration of the different interests and policy goals. Based on secondary data analysis and qualitative semi-structured interviews, the article investigates how the new EU water policy affects the management of water resources in relation to Heavily Modified Water Bodies and hydropower in Norway. The illustration of the Norwegian case helps gaining more insight into the implementation process in a country that, besides not being a EU member, relies mainly on hydropower for its electricity generation, hence needing even more effective energy-water policy integration. Conclusions reveal that, while the complexity of the organizational structure has increased in response to the WFD, the path towards major coherence and integration with the hydropower sector has seemingly not been supported by changes in the legislative framework. Despite the space created by the WFD for institutional reforms, the Norwegian case shows that domestic water quality ambitions and the WFD implementation process are profoundly influenced by broad political and economic conditions. Indeed, the importance of the hydropower sector makes of the implementation of the WFD a highly politicized issue and the country seems locked in a pre-existing path determined by a historical distribution of responsibilities in the water policy field and the established political-institutional structure.

Key Words: water management; hydropower; policy integration; Norway; Water Framework Directive

1. INTRODUCTION

Environmental planning and management within the European Union (EU) is strictly related, driven and challenged by the elaboration and implementation of the EU environmental legislation and policies. The EU Water Framework Directive (WFD) represents one of the most innovative pieces of environmental legislation of the last decades, designed to improve and integrate the way water bodies are managed throughout Europe (Knill and Lenschow 2000; Petersen et al. 2009; Sigel et al. 2010; Bourblanc et al. 2013). The ambition of this common framework for water policy design and water management is to improve and integrate the way water bodies are managed throughout the introduction of ecological objectives and the establishment of the river basin approach. In addition, the directive emphasizes the integration of water policies with other sectoral policies (e.g. energy, agriculture, navigation) that have notoriously struggled to get integrated, resulting in conflicting situations (Abazaj 2016). On one hand, this legal framework has granted the EU and EFTA countries with a large degree of freedom in terms of mutual adaptation of ecological objectives and regional interests, institutions and practices, the so-called flexibility in terms of policy process and output. On the other hand, it has challenged the way national and sub-national governments manage their water resources, requiring changes in the institutional, organizational and spatial set-up of water resource management (Raadgever et al. 2011; Liefferink et al. 2011).

In light of the changes that national governments, practitioners and economic sectors face in relation to the implementation of the WFD, this article aims to illustrate and discuss the particular challenge of managing Heavily Modified Water Bodies (HMWB) in the context of electricity

generation from hydropower in Norway. The hydropower sector is responsible for hydromorphological pressures on water bodies and as a consequence it has been identified by the WFD as one of the most significant stresses to address and mitigate. In a country where hydropower accounts for about 95% of the electricity generation it is crucial to authorities, water managers and the hydropower sector to understand how to continue generating electricity through hydropower while protecting and mitigating the impact of this technology on water bodies. Hence, through the Norwegian case, we want to address the under-researched dilemma of reconciling renewable energy needs and environmental protection and impact mitigation in the hydropower sector (Nilsson et al. 2009; Knudsen and Ruud 2011), meanwhile contributing to the wider debate on conflicting sectoral policy goals and environmental policy integration (Lafferty and Hovden 2003, Nilsson et al. 2009; Young et al. 2008; Abazaj, 2016). In addition, the article offers the opportunity to observe how the WFD implementation is carried on outside of EU member states that have not contributed or influenced the elaboration of the EU legal framework.

Hence, the aim of the article is twofold. First, we illustrate how the implementation of the WFD is taking place in Norway and what kind of changes the new regime of water management represents for the organizational and institutional set-up. Second, the article explores what are the challenges and obstacles to the integration of water quality and energy concerns in the Norwegian hydropower sector in terms of the on-going implementation. In this way, an insight is provided into the vertical interaction of the different levels of water governance (national/regional/local) in Norway and the horizontal degree of coordination between the relevant policy domains and sectors - water and energy - in the light of the WFD implementation.

As the WFD implementation is a multi-stage phenomenon still under development, drawing final conclusions in terms of the success of implementation, impact on the institutional and organizational set-up, as well as effective environmental results will be possible only after 2027. Nevertheless, we believe that the description and partial analysis of the Norwegian situation might be important and helpful in order to understand the direction taken and the progress made so far, as well as to be able to give suggestions in terms of future strategy and implementation process.

2. THEORETICAL AND METHODOLOGICAL CONSIDERATIONS

The concept of policy implementation has been long recognized as the actions undertaken by multiple actors and organizations towards the achievement of objectives set forth in the policy decision (Mazmanian and Sabatier 1983). In the profusion of implementation studies, the environmental field has come to acquire particular relevance and space in the European Union context in the last decades (Saetren 2005). The EU operates in respect to the environmental policy through flexible instruments that take into account the national context. Indeed, based on the EU constitutional principle of subsidiarity and proportionality, tasks are assigned across governance levels to the lowest level of governance with the capacity to conduct it satisfactorily and ensure that decisions are taken as closely as possible to the citizen (Jans et al. 2007). In this way, EU member states and EFTA countries are granted broad discretion when implementing into national law the EU Directives in terms of form and methods, as long as the goal is achieved. Nevertheless, these flexible instruments represent important drivers of changes in terms of organizational and institutional set-up, introducing in the case of the WFD multi-sectoral and multi-level governance challenges.

The principle of subsidiarity is closely related to the concept of scale that concerns the levels at which phenomena occur in the dimension of space and time (Young 2002; Cash et al. 2006). Environmental problems and water issues are inherently complex and do manifest themselves at various scales. Spatial scale is a particularly familiar concept in political science contributing to the differentiation of important sub-fields (local-national-international) and that highlights the important differences that exist between local and national priorities, or between national and international politics (Young 2002).

The changes triggered by the European environmental legislation and policies in the way national and sub-national governments manage natural resources are documented with an increasing attention to both the integration of environmental into sectoral goals, as well as the implementation deficits. These deficits can be partly addressed by underlying the sectoral orientation of the EU policy structure and the insufficient degree of environmental policy integration (Lafferty and Hovden 2003; Lenschow 2002; Beunen et al. 2009). The application of an institutional perspective indicates, on the one hand, that effective implementation depends on the degree of fit between EU requirements and domestic policies (policy misfit) or/and domestic institutional set-up (institutional misfit), and in turn, on the way this (mis)-fit impacts the domestic governance arrangements (Howe and White 2002; Radaelli 2003; Young et al. 2008; Ekstrom and Young 2009; Moss and Newig 2010). Hence, the on-going process of the WFD implementation can be seen as a reorganization phase where EU member states and EFTA countries need to address the role of different institutional actors and the interplay among institutions. Looking at the issue of institutional fit, this is related to the degree of proximity of the national institutional set-up with the one required by the WFD, in addition to what and how to change in order to facilitate implementation. In the case there is a considerable 'misfit' between the two it signifies that the need for institutional adaptation is high and implementation effectiveness is likely to be low.

The scaling literature (Gibson et al. 2000; Young 2002; Folke et al. 2007) addresses various forms of misfit as: spatial-scale misfit; temporal-scale misfit (e.g. short-term water planning under the WFD versus long-term hydropower licenses); and functional misfit (e.g. the sectoral organization versus the cross-sectoral nature of an environmental problem). All these approaches have in common their intrinsic focus on the achievement of the best environmental outcome.

On the other hand, there is the basic idea that "the effectiveness of specific institutions often depends not only on their own features but also on their interactions with other institutions" (Young et al. 1999:49). Successful and sustainable water management is partly a matter of policy integration, and more specifically environmental policy integration, which has come to mean that a broader range of issues – in this case environmental issues related to water resources – is taken into consideration in the policy making process (Knudsen and Ruud 2011; Nilsson and Persson 2012). The integration process, enhanced by broader public participation and better access for the different interest groups should trigger a process of communication, negotiation, and collaboration between different levels of governance, as well as, policy learning and reframing of the issues at stake (Abazaj et al., 2016). The aim of the integration process is to facilitate more coherent policy goals, instruments and outcomes, and more broadly to achieve the so called "win-win situations" (Nilsson and Eckerberg 2007). Nevertheless, institutional reforms are challenged not just because of the diversity of interests that must come to an agreement, but also because well-established interests may fight change to avoid altering their historic preferences or benefits for water use (Sabatier and Jenkins-Smith 1993; Stone 2002, Abazaj et al. 2016). Implementation failures can therefore be related to the concept of path dependency that helps explaining how institutions tend to have a strong tendency to persist and continue certain practices, even when arising from reasons that no longer apply (North 1990; Mahoney 2000; Young 2002).

The qualitative approach of this study consists of: the analysis of legislation, official publications from the EU Commission and Norwegian ministries and directorates; relevant articles and books related to the implementation of the WFD as well as the implementation theory; and qualitative semi-structured interviews conducted between January 2013 and March 2015. Twelve interviews of about 2 hours each were conducted with: government officials from the relevant ministries and directorates related to the adoption of the WFD, elaboration and implementation of the national strategy, NGOs and civil society representatives, and other researchers working on related issues. Initial contact was made with public officials involved in the WFD implementation working in the main ministries (Ministry of Petrol and Energy, MoPE, and Ministry of Climate and Environment, MoCE) and their directorates (Norwegian Water Resource and Energy Directorate, NVE, and the Norwegian Environmental Agency, MD).

3. THE NORWEGIAN CONTEXT

3.1 Electricity generation through hydropower and heavily modified water bodies

With about 96% of country's electricity generated through more than 1400 hydropower plants (32860 MW installed capacity in 2013), Norway is the sixth largest hydroelectricity producer in the world and the leading producer in Europe (MoPE 2015). The hydropower sector has made significant contributions to the broad prosperity in the country and is an important factor for the energy-intensive industry. In addition, as both power and electricity grid companies are mainly owned by the state or municipalities, hydropower represents economic benefits through the concession system, license fees, and other taxes.

Most of the major Norwegian hydroelectric plants were built between 1950 and 1970, at a time when there was a strong focus on hydropower's social significance and less focus on environmental concerns than today. Since then, the use of watercourses and values of the Norwegian society have changed, and because of environmental reasons, about 50 TWh of the economic available potential in Norway are nowadays located within protected areas. The conflict between hydropower development schemes and environmental considerations led in the 1970s to the elaboration of protection plans for inland waters where 388 watercourses are protected against hydropower development (about 38% of the total catchment area of Norway).

Today, hydropower is recognized as one of the main pressures influencing the aquatic environment in Norwegian rivers affecting physical conditions and causing changes in water flow, water temperature, water quality and ice conditions (EC 2012; Halleraker et al. 2013). These changes often have a negative effect on fish and other freshwater related species, as well as the outdoor recreation and tourism activities that are parts of the Norwegian experience.

In the light of the EU Water Framework Directive, Norway is one of the countries with the highest percentage (above 50%) of Heavily Modified Water Bodies (HMWB) due to hydropower. HMWBs are bodies of water that as a result of extensive hydro-morphological alterations by human activity are substantially changed in character. As the removal of the source of alteration could have unsustainable consequences from the social, economic and sometimes, environmental point of view, this is considered as unfeasible and the ecological quality objectives for HMWB are lower than natural ones: "good ecological potential" (GEP) instead of "good ecological status" (GES) (WFD art. 2; art. 4).

3.2 Plans, revision of licenses and the hydropower industry

Although political statements during the past decade have suggested that due to environmental conflicts the "era of new large-scale hydropower constructions is over" (MoPE 2001; Ibrenk and Pedersen 2005), there is nonetheless an increased interest and ambition for more hydropower. Electricity generation from hydropower represents a way of meeting national climate change commitments, renewable energy targets under the EU Renewable Energy Directive (67.5% of the total electricity consumption by 2020), sustaining the national power supply and balance meanwhile extending the export potential to Europe, together with storage capacity and grid stabilization services. At the time this article is written, about 1.5 TWh of new hydropower is under construction, and approximately other 3.3 TWh has received development permit but have not been realized yet (NVE 2013).

In parallel, many of the concessions granted in the past are now due for revision and part of the changes should involve a revision of their current environmental requirements. The legal provisions concerning the revision of concessions have been revisited in the last decades passing from a period of 50 years for indefinite licenses (according to the legislation of 1959) to a 30 years interval in 1992 for both time-limited and indefinite licenses (NVE 2013). This means that approximately 430 hydropower licenses, distributed in 187 rivers or watercourses, may be revised in 2022. The basis

for the revision of the terms will be to improve environmental conditions in the affected waterways and to achieve the environmental goals set up by the EU Water Framework Directive. On the other hand, concerns have been expressed by the hydropower industry in relation to a potential annual production loss of 5-12 TWh as a consequence of the revision process.

Few key players dominate the Norwegian hydropower production - Statkraft holding 40% of total production capacity, E-CO Energi with about 19%, as well as Norsk Hydro, Agder Energi, BKK Produksjon and Lyse Produksjon. The way these dominating actors perceive, address the WFD requirements, and work at the government level is of great significance for the way the implementation of the directive will take place and for the status of the environment. From its strong position, the hydropower sector has been powerfully expressing its considerations and concerns, both at the national and European level inside the Common Implementation Strategy for the WFD, in terms of: a) technical and economic feasibility; b) cost-effectiveness and disproportionality of cost of the measures to adopt; and c) uncertainty related to the long term policy effects (Abazaj et al. 2016). As these players are owned by the state or by municipalities the public ownership structure highlights even better the struggle between the strong economic interests (revenues from electricity generations) and the environmental and social interests.

3.3 Organizational structure of water management and hydropower

The principal institutional actors in relation to the energy sector are the Ministry of Petroleum and Energy (MoPE) and, at the operational level, the Norwegian Water Resources and Energy Directorate (NVE). MoPE is in charge of the different legal acts that are to guide the development of hydropower and represents the applications instance for licenses granted by NVE. As a subordinate agency to MoPE, NVE has by origin been related to hydropower and it is responsible for managing Norway's water resources and issuing licenses for new electricity production under 10 MW.

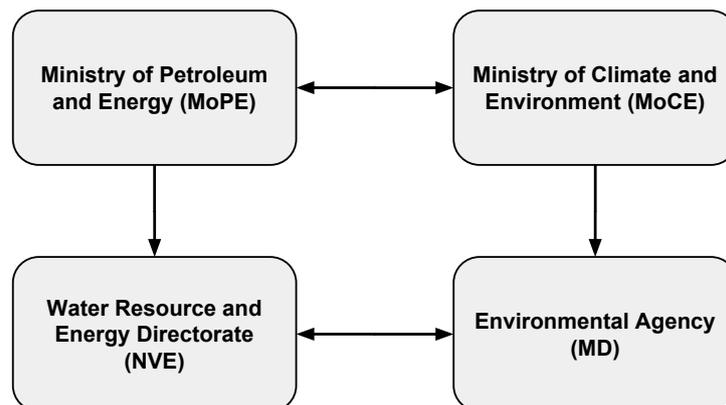


Figure 1. Inter-ministerial axes for water and energy management (source: authors' elaboration).

For hydropower, a crucial inter-ministerial axis (Figure 1) goes between the MoPE and the Ministry of Climate and Environment (MoCE). Involved in all issues pertaining to nature and landscape protection, biodiversity, water management and spatial planning MoCE has overall national responsibility for coordinating water resource management, in close cooperation with several other ministries (Knudsen and Ruud 2011). The Norwegian Environment Agency (MD) is the largest agency under the MoCE and plays an important role in the environmental administration of hydropower issues, overseeing and guiding regional and municipal authorities, and participating in the licensing processes for hydropower and related impact assessments. The Norwegian Environment Agency heads and coordinates a steering group of representatives of the directorates responsible for implementing the new management regime introduced by the WFD.

At the regional level, the departments for the environment and nature management of the County Governor's offices contribute to the assessment of environmental consequences of hydropower, by providing comments during the hearing processes, and inputs to NVE as part of the licensing process.

Finally, the local level is crucial for the actual realization of hydropower projects as well as the implementation of the environmental measures and goals. Through the Planning and Building Act, municipalities assume an important responsibility in the elaboration of impact assessments and gathering of knowledge on local conditions that are useful both for the energy companies and the national regulatory agencies.

4. DISCUSSION

From the observation that WFD transposition and implementation challenge the way member states manage their water resources - particularly in relation to sectoral activities that significantly affect water bodies - the goal of this section is to illustrate the changes occurring in Norway in terms of organizational and institutional set-up.

4.1 Any organizational change?

The adoption of the WFD in Norway, as in other EU countries, has affected the spatial organization of water management by introducing the river basin as a territorial unit of an ecosystem, rather than continuing focusing on political administrative units. River Basin Management Plans (RBMP) are an important tool for securing and improving the status of aquatic resources as they summarize the ecological and chemical status of the water bodies, set environmental goals and form a base for local, regional and national authorities' activity.

Norway is divided into 11 main River Basin Districts (RBD), of which 5 are international as they cover the territory of Sweden and Finland (Figure 2).

In each river basin district selected County Councils are designated as competent authorities (vannregionmyndighet, VRM), some of them covering several counties. River basin authorities are responsible for the coordination and facilitation of the River Basin Management Plans (RBMPs) preparation and implementation of the tasks, and lead district water boards (vannregionutvalg, VRU) in which all relevant authorities participate, including municipalities, counties and state government regional offices. In addition, each district water board has a regional reference group in order to provide information and secure the participation of industry associations, NGOs and civil society in the region.

The preparation of the RBMP and Program of Measures (PoMs) is the result of a multi-sectoral collaborative exercise in the District Water Board (vannregionutvalg, VRU), chaired by the Competent Authority (County Councils). In this picture, hydropower producers can formally take part in the development of the plans via so-called reference groups in each river basin. The participation of all sectoral authorities, MoPE and NVE in the case of hydropower, in the process of characterization, classification, setting of the objectives and prioritizing has the scope to facilitate sector integration and the agreement on the RBMP development.

The water regions (RBD) are further divided into 105 water sub-districts (vannområder), which for administrative purposes assemble over 17,000 water bodies. Most of these areas are inter-municipal and require the participation of all relevant authorities and stakeholders under the form of local committees or Water Boards (VOU) (Figure 2).

In the case of International RBD, the cooperation between the above-mentioned authorities is even more complex and demanding, as it requires bilateral cooperation and administrative arrangements between the River Basin Authorities of the countries involved. Some of the main

challenges are represented by the uniformity of classification methods, elaboration of common monitoring programs as well as deadlines coordination. However, the need to cooperate represents at the same time an incentive to respect the deadlines and an opportunity to improve knowledge and methodology.

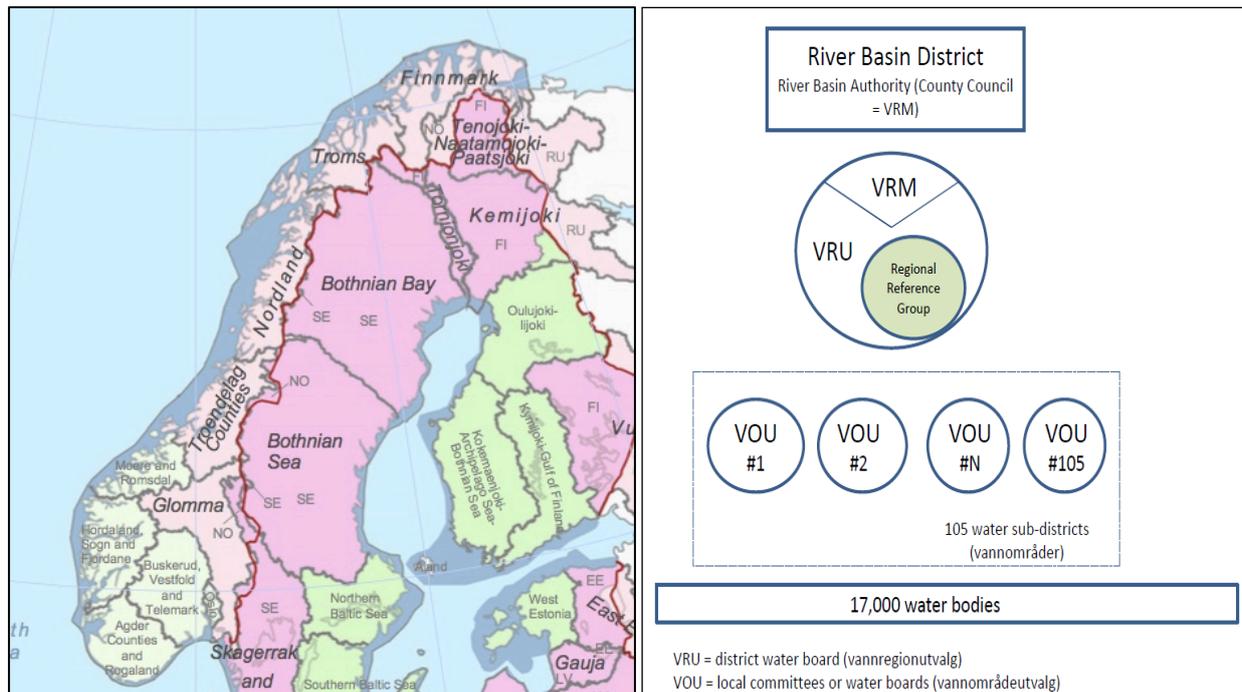


Figure 2. Territorial and organizational structure following the WFD implementation in Norway (source: www.vannportelen.no and authors' elaboration).

Regarding responsibilities of the different actors, the Ministry of Climate and Environment is the competent authority for the implementation of the WFD, representing Norway in the European Water Director meetings. The coordination at the directorate level is delegated to the Norwegian Environmental Agency jointly to the on-going monitoring of the work of the river basin districts, as well as the Norwegian participation in the pan-European Common Implementation Strategy for the WFD.

However, despite the new role of the Ministry of Climate and Environment, the observed adaptation of the organizational structure to the WFD requirements has not brought changes to the governmental responsibility configuration in relation to water management and more specifically to HMWB. Norway is yet characterized by a continued influence of state authorities over water management – especially the MoPE – and a fragmented and sector oriented policy structure that increases the complexity of the implementation process. The main players in relation to HMWB and hydropower are located along the ministerial axis (MoPE and MoCE and their agencies), which cover respectively water quantity and water quality issues (interview NVE and MD 2013, 2014). This centralized way of managing water of the Norwegian government stems from the will to keep a strong hand on the dominating source of electricity and highlights the political dimension of HMWB and the persistence of political disputes and power balances. As learned during the interviews, an example of this struggle of powers and interests is represented by the extensive discussions for the attribution of responsibilities regarding the implementation of the Directive. The final agreement qualified the then Ministry of Environment as the responsible authority over the Ministry of Oil and Energy, but the ambiguity that characterized the initial stages of the adoption and implementation has certainly contributed negatively to the quality and timing of the implementation process (interview with NVE 2013; interview with MD 2013).

4.2 Any legislative changes?

In terms of the legislative adaptation, the transposition of the directive took place in 2007 through the adoption of the Norwegian Regulation of a Framework for Water Management (referred to as the Water Regulation). The regulation formally translates the main goals, principles and procedures of the Directive into the national setting, providing a framework for the formulation of environmental quality objectives and establishing legally binding River Basin Management Plans (RBMPs) with corresponding Programs of Measures (PoM).

Nonetheless, thinking in terms of legislative changes, the WFD transposition has not brought much more than the adoption of the Water Regulation, which legal stand lies in the already existing legislation represented by the Water Resources Act, the Planning and Building Act, and the Pollution Control Act (MoCE 2006). The Water Regulation is considered a softer legal instrument that remains subordinated to the existing legislation. This has a direct impact on the complexity of the hydropower sector since it implies that Heavily Modified Water Bodies used for hydropower production remain subject not only to goals and practices of the Water Regulation, but also to a pre-existing national legal framework. This is composed by four different Legal Acts which regulate the licenses to build, own and operate a hydropower installation, as well as the environmental conditions to which such power plants are subjected (set on the basis of the Watercourse Regulation Act of 1917 and the Water Resource Act of 2000) (Knudsen & Ruud 2011).

Based on interviews it would seem that the Norwegian government does not perceive the need to change the current institutional framework by amending the legislation in the hydropower sector specifically, as this is already considered to be in line with the environmental requirements introduced by the Directive (MoCE 2012; interview MoPE 2013, 2014; NVE 2013, 2015; MD 2013;). During the interviews it was also stated that the focus on improving water status protection when developing and operating hydropower is not a new feature for Norway, as this has characterized the country policies long before the WFD elaboration and transposition. Further, interviewees highlighted that Norway has already in place relevant environmental regulations - the Act on Salmons and Inland Fish Stocks (1992) and the Biodiversity Act (2009) – that contribute to the legal regime for the environmental protection. On the other hand, a contribution of the WFD was recognized as the introduction of new ways of looking at water management, and more importantly, a “new way of working with the legislation already available” (interview MD 2013; NVE 2013, 2014). The authorities involved in the formal implementation process recognize the role of the WFD as a “driver” toward a more effective application and stricter implementation of the law (interview with MD 2013; NVE 2013; MoPE 2013; NIVA 2014; SINTEF 2014, 2015).

The reluctance to change the current institutional set-up is strictly related to the peculiar situation of the Norwegian energy market and influential role of the hydropower industry in the policymaking and implementation process. The sector deeply relies on the existing regime and, in line with the theory of institutional path dependency, supports the current framework in order to preserve its position and benefits (North 1990; Young 2002; Mahoney 2000). Under this perspective, the current legislative framework in relation to hydropower might have a chance to persist even when most individuals or stakeholders’ groups prefer to change it.

While national authorities resist and oppose legislative changes, the thesis of unnecessary intervention in the legislative framework (interview MoPE 2014) is strongly rejected by an organized group external to the national government dynamics, which defines the current framework “a patchwork without coherence” (interview Sabima 2013). By officially sending a complaint to the EFTA Surveillance Authority (ESA), this group – representing 173 municipalities producing hydropower, 70 riverine teams, 10 biology and nature conservation associations – has denounced the failure of the Norwegian government to correctly implement the provisions of the WFD in regulated watercourses used for hydropower production. They have highlighted in several occasions that HMWB risk to continue being subject to autonomous national procedures, instead of being subject to those foreseen by Articles 4 and 11 of the WFD (LVK et al. 2011). Therefore, in order to ensure institutional changes that are in line with the objectives of the WFD and interests of

local communities, this group calls for the modification of the current legislative framework and, more specifically, the revision process of the hydropower licenses terms (LVK et al. 2011; 2012). Addressing this concern, the EFTA Surveillance Authority (ESA) asserted in one of its communications that diversity and complexity of legal regimes in force might represent an obstacle to the goal of “consistent and coherent action” (ESA 2013).

The WFD implementation has thus triggered and legitimized bottom-up pressures, which aim at reforming the institutional set-up of water management in the country. The complaint to ESA has certainly given a higher degree of visibility to the hydropower-water quality nexus that could represent an important stimulus for the policy makers.

4.3 Integration challenges

The adjustment of the legal and organizational framework is certainly important, but there is more to implementing the WFD than that. The effective protection of water resources requires cooperation and coordination within all the sectors that affect water, calling therefore for horizontal integration with the hydropower sector (Moss 2006; Knudsen and Ruud 2011). Following the logic of the WFD, national coordination groups have been established at the ministerial and directorate level in order to address the issue of integrated water management (Figure 3). A national reference group is connected to the Directorates group to secure information and participation of branch organizations, NGOs and the civil society at large. Under this settings, hydropower and all the sectors that use and affect water should participate with their knowledge, written goals and solutions in order to achieve a truly coordinated water management, where “there is a protection of the water environment in a way that overall makes the most sense for the entire community” (interview NVE 2013, 2014). In addition, sectoral groups are established at both central ministry level and agency level, as well as in the 11 water regions where regional reference groups work side by side with the County Councils. The goal of this participation is not only to provide local knowledge, locally generated ideas, and data for environmental initiatives, but also to develop trust, ensure local ownership and support, as well as increase the motivation to carry out the work.

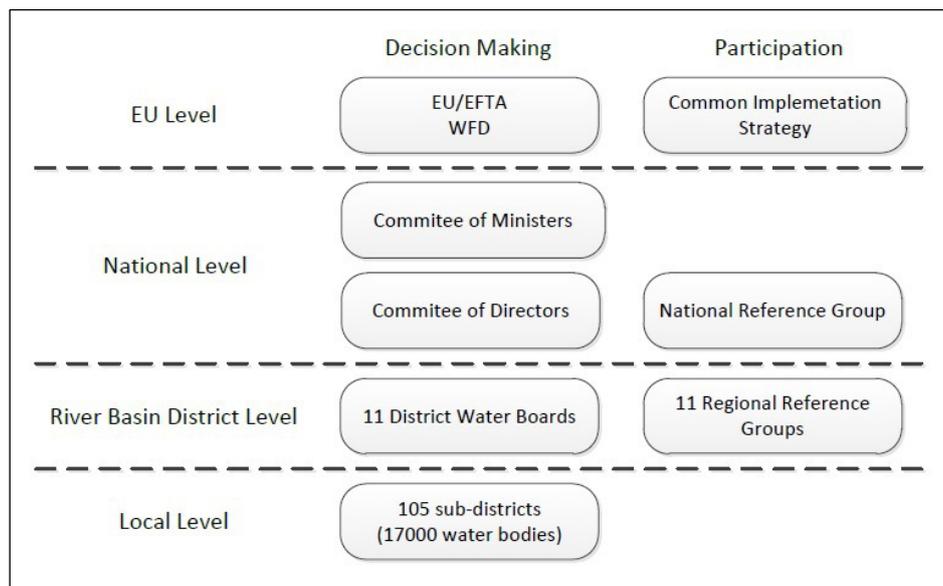


Figure 3. The organizational structure for the WFD implementation (source: authors' elaboration).

If on one side the organizational structure has been changed in order to support the path towards major coherence and integration with the hydropower sector, this does not reflect an automatic change in the understandings, procedures and culture of the ministries involved in the management of water resources. The external pressure for integration of environmental concerns into the

practices and understanding of the Ministry of Oil and Energy seems to be answered by proceeding with the business as usual, causing an inertia in the legislative framework. The fact that concrete mitigation measures should be based on sectoral legislation implies that actions related to hydropower should be settled through the existing system, which is related to revision of hydropower licences. According to this system, hydropower licences should be revised every 30 years, and considering that the estimated time for such revisions is 4-5 years, it is clear that such measures will not be feasible under the timing required by the WFD. In other words, the legislation on licence revision has so far not been coordinated with the 6 years planning cycles introduced by the WFD, representing a temporal-scale mismatch (short-term water planning needs under the WFD versus long-term concession of hydropower licenses). In this regard, NVE seems to believe that “it is more realistic to postpone the time for achievement of environmental objectives until 2027 for water courses open for revision until 2022 and until 2033 for water courses open for revision after 2022, unless it is necessary to use other means during the period” (NVE letter 2014: 6). It would appear that Norway falls short on the duty to properly adapt national law to WFD requirements and as expressed by ESA, the existing legal framework in Norway cannot guarantee the effective implementation of the WFD.

An indication of cooperation and integration efforts could be seen in the joint project implemented by NVE and MD (on behalf of MoPE and MoCE) in relation to the screening of the revision of hydropower licences and prioritization of the most relevant ones (50 among 187 oldest regulated rivers in Norway). The priority is given based on an assessment of the highest potential for environmental improvement, while minimizing consequences for power generation as a result of new environmental regulations (NVE 2013). This process is seen by the MoCE and MoPE as the occasion to issue guidelines to water regions that aim to strike a good balance between improving the environment and maintaining the post-revision power production. On the other hand, concerns have been expressed by ESA (letter 13.05.2013) as the screening process, by establishing a list of priorities, could potentially exclude a number of licences (i.e. those that were not prioritised) from the full scrutiny and to a possible review as required by the WFD. In addition to this, inconsistencies and conflicts are also highlighted in relation to: the extended use of exemptions; postponement of environmental objectives achievement; and the technical analysis required by Article 5 WFD - that forms the basis for establishing the specific measures to be taken to achieve good ecological potential – in the case of bodies of water which do not fall into high priority category in the screening report (ESA letter 4.06.2014). This level of ambiguity could certainly hinder and delay the implementation process if not properly addressed.

Last, cooperation challenges between sectors and ministries become even more relevant when considering the allocation of costs for the WFD implementation. Integrated water management costs and so does the complex water management system that follows the WFD implementation in Norway, in terms of information exchange, administrative tasks (e.g. monitoring, consultations and negotiation processes) and the adoption of water protection and mitigation measures. In 2008, a unanimous Committee of the Parliament on energy and environment decided that the funding plan of 480 million Norwegian kroner (NOK) represented the minimum resources needed for the implementation phase until 2013. While the need for funds is big, in the last years, the Ministry of Environment has assigned in total only 108 million NOK increasing the economic lag (in terms of foreseen budget on the national, regional and local level) to over 200 million NOK (Bergens Tidende 2013; Sabima 2013). The country is currently undergoing a costly process that needs generous funding, hence the scarce fund allocation has been a motive of distress and complaint from the NGOs which fear a decrease in domestic and sectoral environmental ambitions, commitment as well as the swiftness of the WFD implementation.

The organizational changes encouraged by the WFD implementation seem to support the path towards major coherence and integration with the hydropower sector. Nevertheless, ministries and government’s inertia in relation to the legal framework as well as scarce fund allocation represents a major obstacle and generates uncertainties in relation to time frames of the implementation measures.

5. CONCLUSIONS

This aim of the article has been to illustrate the way the WFD is being implemented in Norway and investigate the influence of the existing legislation and organization with regard to the hydropower sector. From the available evidence of the Norwegian implementation, it is possible to draw some conclusions and some suggestions for future research.

The adoption of the WFD and the river basin approach has certainly affected the spatial organization and redistribution of competencies in the Norwegian water management, resulting in an increase of the system complexity. On the one hand, the organizational changes encouraged by the WFD seem to support the path towards major coordination and coherence between different interests. National sectoral and reference groups have been established at the ministerial and agency level, as well as at the river basin level, answering to the call for integration of sectoral and local interests and knowledge into water management. On the other hand, the path towards major coherence and integration with the hydropower sector has not been supported by changes in the legislative framework and the policy structure is still characterized by fragmentation and sectoral orientation. The government's inertia has generated uncertainties and increased ambiguities in relation to the definition of HMWBs, GEP, and time frames of the WFD implementation measures. Hence, despite the space created by the WFD for institutional reforms, the Norwegian case shows in line with the literature, that domestic water quality ambitions and the WFD implementation process are profoundly influenced by broad political and economic conditions. The importance of the hydropower sector makes of the Norwegian WFD implementation a highly politicized issue and shows how strongly the main ministries rely on existing practices and how complicated it is to deal with ambitious goals and ambiguities.

As the implementation of the WFD in Norway is yet at an early stage – at the time the article is written the first RBMPs and the PoMs are not finalized yet – it is difficult to forecast the consequences of this process and much room is left for further research. We here identify two possible areas of interest:

1. The study of how the introduction of integrated approaches to water management is influencing stakeholders' involvement and public participation in water-related issues in the elaboration of the RBMPs. In turn, this could offer the possibility to observe how communication and cooperation may reduce ambiguity and conflicts.
2. Analysis of perceptions and subsequent strategies of the hydropower companies in relation to the WFD implementation and the enhancement of water resources' status depends.

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