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Transforming European Water Governance? Participation and River Basin Management under the EU Water Framework Directive in 13 Member States

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Abstract: The European Union (EU) Water Framework Directive (WFD) requires EU member states to produce and implement river basin management plans, which are to be designed and updated via participatory processes that inform, consult with, and actively involve all interested stakeholders. The assumption of the European Commission is that stakeholder participation, and institutional adaptation and procedural innovation to facilitate it, are essential to the effectiveness of river basin planning and, ultimately, the environmental impact of the Directive. We analyzed official documents and the WFD literature to compare implementation of the Directive in EU member states in the initial WFD planning phase (2000–2009). Examining the development of participatory approaches to river basin management planning, we consider the extent of transformation in EU water governance over the period. Employing a mixed quantitative and qualitative approach, we map the implementation “trajectories” of 13 member states, and then provide a detailed examination of shifts in river basin planning and participation in four member states (Germany, Sweden, Poland and France) to illustrate the diversity of institutional approaches observed. We identify a general tendency towards increased, yet circumscribed, stakeholder participation in river basin management in the member states examined, alongside clear continuities in terms of their respective pre-WFD institutional and procedural arrangements. Overall, the WFD has driven a highly uneven shift to river basin-level planning among the member states, and instigated a range of efforts to institutionalize stakeholder involvement—often through the establishment of advisory groups to bring organized stakeholders into the planning process.

Keywords: river basin management; participation; stakeholder engagement; integrated water resources management; institutional adaptation; mandated participatory planning

1. Introduction

The European Union (EU) Water Framework Directive (WFD), with its aim to protect and restore the European water environment via participatory and integrative river basin management, is widely regarded as the most ambitious and comprehensive piece of EU environmental legislation to date. Adopted by the European Parliament and Council in 2000, the WFD (Directive 2000/60/EC) sought to harmonize EU water policy, which was until then highly compartmentalized and had failed to safeguard aquatic ecosystems and water quality within the EU [1,2]. The WFD, one of a “new generation” of EU environmental directives [3], was seen by the European Commission and commentators alike as destined to transform the European water sector [4–6]. The Directive introduced the concept of “good status” (ecological and chemical for surface waters, and chemical and quantitative for groundwater), requiring that all water bodies reach good status by the end of 2015. To this end, the WFD set ambitious procedural requirements and means by which its goals should be achieved. Among other innovations, it requires that planning and implementation be carried out: (1) at the scale of hydrologically defined river basin districts (RBDs); and (2) in a participatory manner, encouraging the active involvement of “all interested parties”—including water users, other stakeholders, and the wider public. Together, these requirements have necessitated widespread institutional redesign and adaptation (albeit to differing degrees) among the member states, and thus resulted in a wide variety of experiences across the EU.

With the entering into force of the Directive, member states were required to identify RBDs and river basin authorities, and make legislative provisions for implementation by the end of 2003. Implementation then proceeds in six-year cycles, and involves the production and updating of river basin management plans (RBMPs) and programs of measures (PoMs) with the involvement of stakeholders and the public. Member states were required to have produced the first RBMPs and put in place PoMs by 2009. With the implementation of these first plans and the completion of the first management cycle (2009–2015), it appears timely to assess whether the WFD has actually lived up to expectations and led to institutional redesign as envisaged. Insofar as this “mandated participatory planning” approach to WFD implementation [7] requires specific deliverables and procedures, and imposes a common timeframe on member states, a broad comparative analysis of national-level experience across the EU can potentially provide valuable insight into how implementation is proceeding given the varied national contexts that the Directive encounters.

We focus in this article on the evolution of formal arrangements for participatory river basin management in 13 member states over the initial planning phase (2000–2009). Section 2 considers the river basin management and participation prescriptions of the WFD in light of the participatory environmental governance literature, and takes stock of prior comparative studies of WFD implementation. Section 3 outlines our methods, before Section 4 presents a mapping of “implementation trajectories” across the selected member states, and explores different experiences with WFD implementation, focusing on four member states (France, Germany, Poland and Sweden) for illustrative purposes. Section 5 draws conclusions and makes recommendations for further research.

2. EU Water Framework Directive: Key Requirements, Policy Innovations, and Assessments to Date

2.1. River Basin Management

In accordance with the Directive (WFD Art. 3), member states are required to assign all river basins within their territories to river basin districts, and make necessary institutional provisions—including the establishment of a competent authority—for application of the Directive within these RBDs. International basins are to be dealt with by member states in cooperation, although each member state is ultimately responsible for the portion of any basin within its territory. Accordingly, the EU has been divided into 128 RBDs, including 49 that span national borders. These new management units thereby transcend and intersect established jurisdictional boundaries at multiple levels, requiring cooperation among authorities and units that may not have shared responsibilities previously [8]. The extent to which this scalar shift has actually occurred is the subject of some debate [9–11], but such reorganization clearly implies an important transition in European water governance.

The river basin management approach adopted in the WFD can be attributed to a gradual paradigm shift towards more integrated resource management that has shaped European water governance over the last two decades [12,13]. The logic behind transitioning to a system of ecosystem-based water resources management in river basins lies in two basic, interrelated arguments. First, in line with the idea of spatial “fit” between the geographical extent of a natural resource and the territorial scope of responsible institutions [11,14], it is assumed that the management of water resources in river basins is most efficiently and effectively overseen by authorities organized at that scale. Second, according to principles of integrated water resources management (IWRM), sustainable management of water resources can only occur in the context of integrated and coordinated management of resources and the environment at large. Therefore, water policy in a given basin should take account of and be coordinated with policy in multiple other sectors, such as agriculture, conservation, fisheries, energy, and so on. Proponents of IWRM thus explicitly advocate for balancing social and ecological concerns in river basins, calling for “co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” [15] (p. 22). Both of these discourses shaped the WFD [16,17] and are clearly reflected in the text of the Directive (e.g., WFD Preamble (16); Art. 3 (2–5)).

It is worthwhile noting that water governance institutions on river basin scales are no panacea for effective and legitimate water resource management [18,19]. Empirical evidence on the performance of such institutions is still rare [20,21], and the appropriateness of hydrological units as the “natural” and “ideal” scale for water governance is increasingly questioned (e.g., [22–24]). In particular, IWRM and river basin management conflict to the extent that an integrative management approach may require addressing social and environmental processes and resources that do not conform to the boundaries of a given river basin. Hence, “fitting” institutions to water resources may create new misfits in other policy fields [11]. Delineating a hydrologically defined catchment or river basin for management purposes is a political decision [25], requiring trade-offs between environmental and social factors, and competing interests [23,24], whereas notions of river basins as the given “natural” units for management have been critiqued as depoliticizing water management [22,26].

2.2. Public Participation

A second notable innovation of the WFD is its requirement for stakeholder involvement in the river basin management planning process. The Directive stipulates timeframes and procedures for the provision of information and for consultation at key stages of the planning process, and requires that member states “encourage the active involvement of all interested parties in the implementation of this Directive, in particular in the production, review and updating of the river basin management plans” (WFD Art. 14 (1)). On the one hand, the intent of the Directive in this regard is clear, with participation being seen as essential for successful implementation (WFD Preamble (14)). On the other hand, the wording of the Directive is in some respects highly ambiguous, and leaves considerable room for interpretation as to who should be involved, at what stage, and how—especially around the “obligation to encourage” active involvement [27,28]. While public participation is strongly advocated in the Common Implementation Strategy (CIS) and associated guidance documents (e.g., [29]), these remain legally non-binding, and knowledge of such guidance documents among implementing bodies can be poor [30]. Despite the vision for participatory planning reflected in the CIS and implied in the preamble to the WFD, the actual legal requirements in Article 14 of the Directive focus mainly on information provision and consultation. Further, the advanced technical requirements of the Directive may restrict its compatibility with the provisions for participation [10], and may therefore serve to affirm business-as-usual expert-led consultative approaches.

The WFD provisions for participatory planning can be seen in terms of a codification and institutionalization of what has been labeled a “shift from government to governance” in the management of resources and the environment in Europe and beyond [17,31]. While its extent and nature are hotly debated, the idea of a shift to governance is supposed to capture a general decline over the last several decades in the expert-led managerial governing paradigm, and the increasing involvement of non-state actors—including organized stakeholders and the general public—in public decision-making [32]. This process has been driven both from “below” as citizens have demanded more say in the decisions that affect them, and from “above” as authorities have sought to realize certain benefits of involving stakeholders and the public in decision-making. In this sense, the rationale behind the statutory obligation for participation in the WFD is clearly a pragmatic and instrumental one [33,34], as the CIS guidance document on public participation spells out: “Public participation is not an end in itself but a tool to achieve the environmental objectives of the Water Framework Directive” [29] (p. vi).

While numerous definitions can be found in the literature, there is general agreement that participation is a fundamentally multi-dimensional concept. Following Fung [35] and Newig and Kvarda [36], participatory processes may be assessed by considering at least three dimensions: (1) participation may be more or less inclusive of relevant stakeholders and the public; (2) information exchange may be more or less intensive, ranging from simple one-way provision or elicitation of information, to intensive and repeated face-to-face dialogue and deliberation; and (3) power, in the form of process and decision control, may be delegated to participants to a greater or lesser extent, affording differing degrees of influence over the final plan or decision. The literature is replete with

hypotheses on the relationship between participation and environmental impact [37], but evidence is highly conflicting, with findings from numerous empirical studies supporting a variety of competing claims. Despite conflicting evidence, it is assumed that participation can improve the environmental quality of decisions through opening decision-making up to environmental concerns; incorporating environmentally relevant lay or local knowledge; fostering learning, innovation and creative solutions; and producing common-good oriented solutions and mutual gains (e.g., [32,38–40]). Furthermore, participation may improve implementation and compliance by producing more feasibly implementable decisions; generating acceptance among stakeholders; resolving stakeholder conflicts and conflicts of interest; and building trust and social capital relevant for implementation (e.g., [35,40–42]).

2.3. Assessments of WFD Implementation to Date

Research on WFD implementation has proliferated over the last decade. We focus in the following sections on developments relating specifically to the institutionalization of river basin management, and the adoption of participatory planning across the member states. Of course evidence in relation to these shifts is also mixed, and there is considerable (and arguably quite justified) skepticism as to the extent to which the Directive has brought about real change from business as usual [31,43–45]. While many critiques point to the experiences of single countries or particular case studies, there are fewer attempts to arrive at a broader comparative view. That said, several comparative studies have provided some valuable and relevant insights.

The European Commission itself is monitoring implementation of the Directive, and the first comprehensive implementation reports were required from the Commission in 2012. These comprised member state-specific assessments, as well as a “European overview” and a report to the European Parliament and the Council [46,47]. The 2012 assessment noted that 24 of 27 member states had submitted RBMPs, and that 124 of an expected 174 RBMPs had been received [46] (p. 4). Regarding legal and institutional adaptation and the development of appropriate governance structures for integrated river basin management, the report found that this had “not taken place in most Member States, where there is a continuation of the status quo” [46] (p. 8). Furthermore, the designation of hydrologically defined RBDs was found to have taken place in most cases, but with notable exceptions where administrative borders were taken to define RBDs [47]. Coordination among different authorities operating at the RBD scale was also found to be highly variable [47]. The report was less clear on public participation in the planning process, identifying good examples of mechanisms for stakeholder involvement, but also considerable difficulties in establishing the effectiveness and influence of these. Furthermore, the Commission reported having received complaints about participatory processes that have failed to facilitate meaningful input and involvement by stakeholders [47].

Aside from the Commission’s monitoring reports, which are based on member states’ own reporting, several studies have examined WFD implementation in comparative perspective. Analyzing consultation documents produced by all member states up to February 2009, Kampa *et al.* [48] assessed consultation processes around the identification of significant water management issues and the drafting of RBMPs. Regarding active involvement, they found that stakeholders participated in an advisory capacity via working groups in around half of all RBDs, and were involved in actual decision-making in approximately 20%. Working group composition, however, was found to vary depending on the administrative level at which the groups were convened, but overwhelmingly comprised government representatives. Also investigating consultation processes, Scheuer and Rouillard [49] surveyed experts and NGO representatives across Europe in an investigation of stakeholder consultation on significant water management issues and measures. They found that participation processes did not meet the expectations of environmental NGOs, who generally felt they were brought into the process too late and had insufficient influence over decisions. Hedin *et al.* [50] investigated the implications of WFD implementation for national spatial planning in eight Baltic Sea region member states plus Norway. Their detailed country reports showed that WFD implementation up to 2006 was in most cases adapted to prevailing institutional settings in water management, representing a “minimalist approach” to implementation, and rather limited institutional adaptation.

Focusing on the same region, Nielsen *et al.* [51] analyzed six member states. They found a high degree of centralization in the planning process, with less involvement of local authorities than expected. They also observed limited uptake of local knowledge, which they find obstructs integrated river basin management. Keessen *et al.* [52] compared legal provisions for WFD implementation in 11 member states, and concluded that the Directive leaves so much room for policy discretion by member states that it produces vastly different approaches to implementation—including in the realm of policy integration—and hampers comparative analyses of implementation. In their detailed analysis of five member states, Uitenboogaart *et al.* [53] also considered the degree of policy discretion member states have in implementing the Directive, comparing pre-WFD conditions, formal transposition, goal-setting, and policy integration to find widely varying degrees of ambition among the member states studied. Similarly, Bourblanc *et al.* [54], considered different levels of ambition for WFD implementation through an examination of political-institutional systems in four member states. Other studies have compared a variety of governance adaptations and approaches to participation in different member states (e.g., [55–58]).

Many of the studies mentioned above usefully adopt a “before and after WFD” approach, but most broadly comparative research does not cover the full initial planning phase. Further, more attention has been paid to legal adjustments and consultation processes at the earlier stages of the implementation process, than to actual institutional adaptation at the river basin level or the active involvement of stakeholders and the public. However, these studies clearly do provide valuable insights. Above all, the research suggests that progress towards meeting the substantive targets of the WFD has been varied, and fulfillment of its procedural requirements patchy. These diverse experiences are increasingly recounted in the burgeoning literature on WFD implementation, as standalone or small-n case studies. Below we report on our survey of this literature, and aim to structure the variety of experiences across 13 member states in terms of formal institutional shifts to river basin management and innovations in public and stakeholder participation. We chose these 13 states (Austria, Czech Republic, Denmark, England and Wales, France, Germany, Hungary, Ireland, Netherlands, Poland, Scotland, Spain, and Sweden) to reflect the variety of geographical conditions and political, and institutional experiences among the 28 EU member states (although Scotland is not an EU member state, it is handled separately in our analysis due to characteristics of its water management regime that set it apart from England and Wales). The availability and accessibility of sufficient information in scientific literature was also an important determining factor.

3. Materials and Methods

To allow for a structured analysis of WFD implementation across EU member states, we identified two basic parameters as the basis for cross-case comparison: public participation, and river basin-scale management. Regarding participation, we are interested in “active involvement” as provided for by the Directive (WFD Art. 14) and discussed above. Accordingly, our focus lies on activities and initiatives geared towards active involvement of stakeholders and the public in the river basin management planning phase. Building on multi-dimensional conceptualizations of participation as discussed in the previous section, we defined five characteristic dimensions:

- Accessibility of the process: The extent to which access to the process by stakeholders and the public was constrained (e.g., presence of barriers or selection processes that regulated the access of potential participants).
- Representation of interests: Degree to which the constellation of interests involved in the participatory process was representative of the underlying stakeholder field.
- Power delegation to participants: The extent to which participants were able to influence the decisions to be taken (degree of decision-control granted to participants).
- Communication and information sharing: The extent to which the process provided opportunities for participants to engage in communicative interactions with each other and the authorities (e.g., listen as spectator *vs.* deliberate and negotiate).

- Number of participatory processes: Number of separate process types comprising the participatory planning process.

The WFD requires preparation of RBMPs and PoMs on hydrological scales, but this prescription does not necessarily produce institutional adaptation and rescaling of planning competences. Therefore we assess the scalar position of main responsible actors—*i.e.*, whether they are established at hydrological or administrative scales—in the policy process, for which we defined four factors:

- Spatial planning reference: The scale serving as the main reference point for water resources management, either hydrological or administrative.
- Legal responsibility: The institution that is legally responsible for water resources management and designated as Competent Authority under the WFD.
- Planning responsibility: The actor or institution that drives and oversees the planning process.
- Implementation responsibility: The actor or institution with primary responsibility for implementation of measures.

The data basis for this analysis comprises various primary and secondary studies and documentary sources. The first step was a 2010 research workshop, involving the co-authors of this article, which compared the water governance regimes and experiences with WFD implementation in EU member states. In their capacity as country experts, workshop participants provided detailed information on the water management regime for their respective country, both prior to and after WFD implementation. In a second step, these standardized workshop reports were augmented with a thorough literature and document search on water resources management and WFD implementation in the countries of interest.

We chose to examine 13 countries, namely Austria, the Czech Republic, Denmark, England and Wales, France, Germany, Hungary, Ireland, the Netherlands, Poland, Scotland, Spain, and Sweden. This selection was made on analytical and practical grounds. It was our objective to cover a wide variety of environmental and political contexts; hence, we selected cases across most of the European regions. However, our research design also aimed at triangulation of data sources to maximize validity. Hence, we chose to rely only on those cases where the expert judgments of workshop participants could be complemented with sufficient additional information from primary and secondary sources. Scotland is treated separately from England and Wales, as responsibilities for water resource management, and hence the implementation of the WFD, are part of the devolution of competencies from Westminster to Scottish Government.

For each participation and river basin management factor mentioned above we compiled a qualitative assessment of the situation in each country, based on a thorough reading of the workshop reports and collected literature. To contrast post-WFD experiences with pre-WFD water resource management regimes, each factor was observed for two points in time: for the year 2000 (t_0), representing the status quo before WFD implementation, and for post-2009 (t_1), with completion of the initial planning phase and beginning of implementation of measures.

Based on these short written country descriptions we employed a coding procedure to translate the qualitative factors into quantitative variables. For those factors related to public participation (accessibility, representation, power delegation, communication) we used a 5-point Likert-like scale that measured the degree to which a given dimension of participation was present or absent (see Table S1 for further detail). The number of processes was simply counted. The factors for river basin management (spatial, reference, legal responsibility, planning, implementation) were quantified using a binary scale with 1 indicating planning on a hydrological scale (e.g., basin, sub-basin, and catchment) and 0 indicating political-territorial units (e.g., state, county, and municipality). All items were separately coded by one coder and results were later verified by co-authors with the respective expertise. See Table S1 for a detailed description of variables and measurement scales. A full list of literature coded is also provided in the Supplementary Material to this article.

This uniform data set (see Table S2) formed the basis for our subsequent analysis, reported in the following section. Analysis proceeded in two main steps. Initially, in order to map the water governance “trajectories” of each of the 13 countries studied, we calculated an aggregate index for public participation and river basin management. To this end, we standardized and aggregated the single variables (details in Supplementary Material), each measured for two points in time. This underpinned a mapping of the implementation “trajectories” of 13 member states, presented in the following Section 4.1. Next, we did a cluster analysis involving all single variables prior to and after WFD implementation, in order to categorize these transitions. We conducted a hierarchical cluster analysis for the 13 selected countries using Gower’s general dissimilarity coefficient, and Ward’s method of agglomeration. In so doing we take account of the different measurement scales, and aim to minimize within-group variance, while maximizing between-group dissimilarity. On the basis of this cluster analysis, we examine in-depth and compare for illustrative purposes four member states; one representing each cluster. In each case, we discuss pre-WFD water governance arrangements, and consider shifts in river basin management and participation upon completion of the initial planning phase to 2009.

While the WFD calls for the establishment of “competent authorities” at the river basin district level, our analysis here is at the national level for two reasons. First, as we elaborate below, institutional arrangements at the RBD level are not yet sufficiently advanced in most cases to support a comparative analysis. Second, given the lack of specific guidance in the WFD itself, the type and extent of participatory processes required in the formulation of RBMPs is largely determined at the national level, and member states are, after all, the liable parties in case of non-compliance. RBD-scale authorities may evolve in future WFD management cycles, in which case future analysis can focus on developments at this scale.

4. Results

We present the results of our analysis in two steps. First, we provide an overview of the “trajectories” of 13 EU member states according to institutional shifts in river basin management planning, and stakeholder participation in water governance over the period 2000 to 2009 (see Figure 1), and present the hierarchical cluster analysis (Figure 2). Second, we turn to the in-depth analysis of four illustrative cases to explore the different types of implementation experiences.

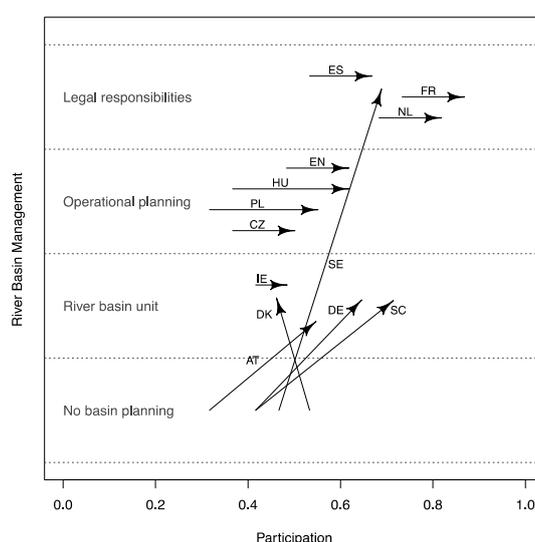


Figure 1. Trajectories of WFD-related governance change in 13 EU member states: AT = Austria; CZ = Czech Republic; DE = Germany; DK = Denmark; EN = England and Wales; ES = Spain; FR = France; HU = Hungary; IE = Ireland; NL = Netherlands; PL = Poland; SC = Scotland; and SE = Sweden. The x-axis is a four-dimensional “degree of participation” index, described in Section 3 and the Supplementary Material. The y-axis is not to be read as a continuous scale, and no distinction is to be made between the position of member states within a given stage or band on the y-axis (arrows have been spaced for presentation and ease of interpretation only).

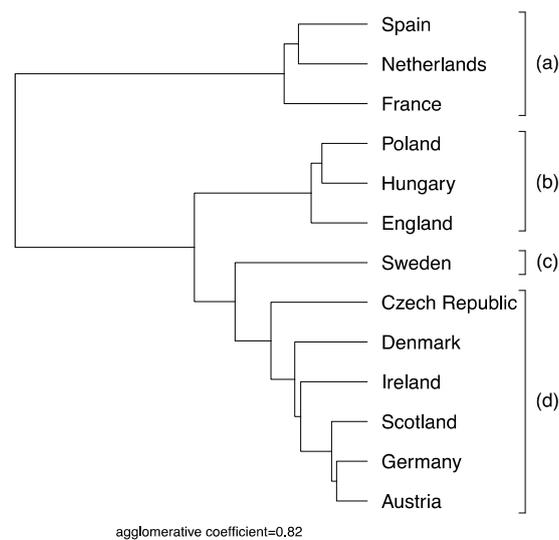


Figure 2. Dendrogram clustering 13 member states on WFD-related governance change. Agglomerative clustering, using nine previously described variables measured for two points in time (see Section 3 and Supplementary Material), Gower’s general dissimilarity coefficient, and Ward’s method of agglomeration.

4.1. River Basin Management and Participation Pre- and Post-WFD in 13 EU Member States

Figure 1 maps institutional shifts in 13 EU member states relating to river basin management planning and public and stakeholder participation. As outlined above, the values for each country represent an index derived from the single factors employed to characterize participation and river basin management in this study. It is important to note that the y axis shows four distinct and qualitatively different fields, which correspond to different stages of institutionalization of river basin management: (a) no river basin planning—water resources are managed according to political-territorial boundaries; (b) river basin unit—river basins are delimited as discrete management units, in accordance with the Directive; (c) operational planning—institutions and organizations for river basin management are established at the river basin level; and (d) legal responsibilities—river basin-level institutions have a legal mandate or formal authority to govern and manage within RBDs. The x-axis is a four-dimensional “degree of participation” index, as described in Section 3.

Figure 1 shows, first, that there is a basic tendency for member states to come into compliance with the procedural and institutional requirements of the Directive. All countries that did not employ river basin-scale planning have implemented this—albeit mostly to the legal minimum required (AT, DE, DK, and SC). Significant reforms have, however, been made in Sweden (SE), which has overhauled its water governance regime in terms of institutionalizing river basin management in line with the WFD. Second, all member states except one have increased the intensity of participation in river basin planning (see Table S3 for additional information). Shifts in this respect have varied, but seem to be slightly less pronounced among countries where river basin management is more entrenched (ES, FR, and NL), although it must be noted that these generally had more participatory approaches to begin with. Other countries, which have experienced more substantial increases in participation, began from relatively low starting positions (AT, CZ, DE, HU, PL, and SC). Ireland (IE) is peculiar in that it has only marginally increased participation in the planning process, despite its relatively low starting point, which is mainly due to the wider reforms in water resource management the country undertook in the late 1990s anticipating the WFD. Denmark (DK) is clearly also unique in our sample, in that it has implemented river basin-scale planning, but curtailed participation. This coincides with broader political shifts in Denmark over the period, which saw a narrowing of the scope for participation by civil society and the wider public in government generally [59].

Beyond these observations, Figure 1 appears to suggest a more general tendency for the persistence of the status quo in terms of participatory river basin management within the first management cycle. This is evident in terms of institutional arrangements for river basin planning: while non-complying member states have implemented the required changes, other, already compliant states do not appear to have shifted, but rather retained existing institutional arrangements (CZ, EN, ES, FR, HU, IE, NL, and PL). Regarding changes in participation, arguably all of the increases are rather modest, although, as noted above, this is less true for member states that had very low levels of participation pre-WFD, and thus perhaps sought to achieve a certain (if still modest) level to be seen to be implementing the Directive (e.g., AT and PL). Certainly these results can be interpreted as corroborating the findings of other studies that claim WFD implementation has not signaled a significant departure from business as usual in many member states (e.g., [46]).

Figure 2 shows four clusters of member states, clustered on “types of experiences” with WFD implementation (as outlined in Section 3). The clusters reflect the different implementation “trajectories” evident in Figure 1, and might tentatively be characterized as follows:

- (a) Water governance pioneers (ES, NL, and FR): Countries in this cluster are characterized by long histories of institutionalized river basin management, also including varying degrees of stakeholder participation, often targeted at particular users. Complying with the WFD therefore required rather minor adjustments for these states. In all three countries, existing structures were amended with additional fora for stakeholder involvement broadening the scope for the participation.
- (b) Water resource planners (PL, HU, and EN): Members of this cluster already had some established river basin structures in place, mainly aimed at hydrological planning and with only limited room for participation. The WFD therefore triggered a broadening of participation possibilities without fundamentally overriding the established planning traditions.
- (c) The leap-frog (SE): As Figure 1 illustrates, Sweden constitutes a special case, having introduced both far-reaching river-basin management and participatory provisions (see Section 4.2.3 for more detail).
- (d) Water resource governance adapters (CZ, DK, IE, DE, SC, and AT): This is the most diverse cluster, encompassing a number of experiences and governance structures. In most of these states the WFD required changes in both river basin management and participation. Only in the Czech Republic and Ireland were some river basin management structures already in place before the WFD.

Below, we explore for illustrative purposes the experiences of four member states—one drawn from each cluster—with respect to river basin planning and participation in water resources management pre- and post-WFD. While the method employed maximizes intra-group similarity, it is important to note that there is some variance between the members of each group. Hence, these clusters suggest a common trajectory, but one which may have evolved differently across cluster members. The Appendix contains tabular information for the four exemplary countries, summarizing their governance shifts (Tables A1 and A2). For additional detail on public participation under the WFD in all 13 member states see the Supplementary Material (Table S3).

4.2. River Basin Management and Participation Pre- and Post-WFD: Four Trajectories

In this section, we describe in detail four country trajectories, one from each cluster presented above: France, Poland, Sweden and Germany. We examine first adaptation to river basin management for each country and then provisions for participation before and after the Directive according the dimensions of accessibility, representation, communication and power delegation.

4.2.1. France: Water Governance Pioneer

France is illustrative of the member states in cluster (a), already meeting many of the structural and procedural provisions of the WFD with some further increases in public participation. France’s

long-standing river basin management tradition involves three levels of water governance: National, river basin, and municipality. The Ministry of Environment is responsible for water management legislation and coordination at the national level. River basin management was introduced early on by the Water Act 1964, which established six Water Agencies at the river basin level [60]. These function as intermediaries between the central state and municipalities [61], providing water-environment project financing to municipalities and other implementing actors through subsidies and a water user tax. Users are represented by a Basin Committee, functioning as a “basin parliament” [61], which sets the tax and subsidies by vote, and advise Water Agencies on basin-scale policy. The Water Act 1992 introduced important new planning tools following an integrative resource management approach: a “master management plan” (SDAGE), similar to a RBMP, developed by the Basin Committees supported by the Water Agencies for every basin, and the “water management plan” for actions compatible with the SDAGE on the sub-basin level [62]. Finally, a steering, coordinating and intermediary function is applied through the *Préfet*, a representative of the central government in every *département* that holds a seat in the Basin Committee and approves the SDAGE.

Given France’s already advanced river basin management regime, WFD implementation altered French water governance only slightly. The Water Act 2006, which transposed the WFD into French law, requires that apart from the Basin Committee voting on the budget for the SDAGE, the National Parliament must also ratify it [61]. A new national agency was established to oversee the organization of monitoring and communication activities. Despite these additions, prior arrangements endured. The *Préfets* were designated as competent authorities at the RBD level. Water Agencies and Basin Committees remained the central planning institutions, while various public- and private-sector actors are involved in implementation [60].

Within the pre-WFD French system, stakeholder participation was already important. The Basin Committees comprised users and non-state actors, local government actors, and state government actors in equal share according to the Water Act 1964 [61] (p. 14). The Water Agency boards of directors mirror this three-part structure, although members are chosen by the Basin Committees [62]. Another entry point for participation was via Local Water Commissions the local branch of the Basin Committees, where governmental and non-state actors held up to 25%, and local elected representatives at least 50%, of seats [60]. Both institutions had a formal planning mandate, since the Basin Committees and the Local Water Commissions developed their respective plans.

After the 2006 law change, the composition of Basin Committees changed in favor of more non-state actors and local government representatives (40% each) in comparison to state representatives (20%) [61] (p. 14). Regarding the Local Water Commissions, the *Préfet* was given greater leeway to compose these bodies [62].

4.2.2. Poland: Water Resource Planner

Poland broadly reflects the type of experience of member states in Figure 2, cluster (b), possessing established hydrological structures for water resource planning and having made a moderate increase in public participation in planning. A river basin management approach was introduced in the late 1980s, with the transformation of the political system [63]. In 1991, Regional Water Management Boards were created, corresponding essentially to sub-basin boundaries [50]. With further reform in 1999, these became responsible for planning and co-ordination among river basins. Provincial governments issue permits and regulate water use, while counties and municipalities manage waterworks and wastewater systems.

The legal framework for Polish water management at the time of Poland’s 2004 entry into the EU (the Water Law 2001), had been drafted in accordance with the WFD, and so required only minimal amendment [64]. While the seven Regional Water Management Boards remained, the Act replaced the sub-basin division with ten RBDs [50]. The role of competent authority was split between the Ministry of Environment through a National Water Management Authority (established 2006), and the Regional Water Management Boards [65]. The national Authority prepares and coordinates RBMPs,

while the Boards are responsible for reporting, providing information, and organizing consultation [50]. However, many water related issues are beyond the Ministry's jurisdiction [57]. This leads to a considerable degree of fragmentation of competences in the water management regime [51]. Implementation of measures remains split between the counties, provinces and municipalities.

Despite institutionalization of river basin management, there had been very little provision for stakeholder participation via the Polish Regional Water Management Boards [63]. Water Management Councils, created in the early 1990s, had no formal mandate, and served rather as information platforms [57], comprising representatives of water users and government. Apart from these mechanisms, some small pilot water management projects included participatory structures [57].

Within WFD implementation, participation has largely been understood as an information or consultation mechanism [66]. Nevertheless, the Water Law Act 2001 does provide for institutionalized participation at the national- and the RBD-level. The Regional Water Management Councils, formed by each of the Regional Water Management Boards, play a major role in this [63], incorporating additional stakeholders, such as environmental NGOs [57]. Further, a 30-person National Council of Water Management was introduced as an advisory board for the National Water Management Authority. Members include representatives of local governments, academics, and social, economic and environmental organizations [63].

4.2.3. Sweden: The Leap-Frog

Sweden is unique among the countries analyzed here, having made marked changes in institutionalizing river basin management and provisions for participation. Hence, Sweden can be characterized as a "leap-frog", occupying its own cluster (c) in Figure 2. Swedish water policy has traditionally been shaped by the central state as the regulatory authority, with municipalities being the main units for long-term water and land use planning [67]. The regional level was relatively less important in this regard [68]. Despite the dominance of municipal-level planning, some limited management activities did occur at the scale of waterways and catchments. For example, several Swedish municipalities formed voluntary joint water quality management associations at the catchment scale, although their activities were mainly limited to monitoring [69].

WFD implementation brought far-reaching change. A new administration for river basin management was established, in parallel with the relevant municipal structures [70]. Five RBDs were designated, and associated River Basin District Authorities assigned. This role is assumed by a County Board in the RBD, which takes on responsibility for coordinating water management between the counties in the basin [9]. Within each RBD, formal decision-making lies with a Water Board comprised of government-appointed experts [70]. The Swedish WFD system is thus mainly based on expert decision-making complemented by some participatory mechanisms (see below). Municipalities remain the supposed chief implementing actors. The overall system for water management in Sweden is therefore highly complex (overlapping administrative scales, mandates and modes of decision-making). With the strong emphasis on RBDs and regional counties, national co-ordination became rather weak and, as a consequence, a new national coordinating authority was set up in 2011 [51].

Public participation in Swedish water management had not been facilitated by formal procedures pre-WFD. However, the aforementioned joint water quality management associations did provide a coordinating mechanism between municipalities, and some opportunities for participation. Association membership included municipal officials and representatives of local businesses, agriculture, forestry and environmental groups [69]. Being focused on monitoring, these associations did not feed directly into local water resource planning [69].

The WFD introduced various mechanisms for public and stakeholder participation. While Swedish legislation does not specify the role of public participation, there are three entry-points for active involvement. First, the main instrument for participation is a system of Water Councils at the sub-basin level [70]. These can be created in a bottom-up manner by municipalities or water associations [9]. Their main purpose is to provide for ongoing involvement of interested parties [71].

Once established, the Water Councils function as sounding boards throughout the planning processes, with the aim of incorporating local knowledge, commenting on official proposals, and preparing and presenting their own proposals [9]. Second, representatives from the business sector and environmental groups can be appointed as experts to the Water Boards [69]. Third, Water Boards and Councils are complemented by open consultations and reference groups at the national and regional levels. Reference groups comprise relevant actors from the RBD, such as farmers associations, and forestry and water companies, and provide a platform for information exchange and discussion of policies [71].

4.2.4. Germany: Water Resource Governance Adapter

Germany is broadly illustrative of the experiences of countries in Figure 2, cluster (d), having adopted river basin planning and established various procedures to encourage stakeholder participation. Given Germany's federal system, WFD implementation has varied across the different federal states (*Länder*), but a degree of generalization is nevertheless possible. Prior to the WFD water resources management in Germany aligned almost exclusively with administrative rather than natural boundaries, and there was a strong tradition of state water policy and governance among the *Länder*. Administrative powers were, and still are, clearly divided between the federal government, which sets the general standards for planning and management through legislation (*i.e.*, the Federal Water Act), and the *Länder*, which have primary responsibility for water policy [50].

Despite this political-territorial regime, river basin management was a recognized approach in Germany, but it was practiced mainly in informal initiatives [72]. A joint working group of the *Länder* (and later the Federal Ministry of the Environment), called LAWA (*Länderarbeitsgemeinschaft Wasser*), was formed in 1956, and produced guidance documents for the harmonization of management of cross-state water resources. Institutionalized forms of river basin management also emerged, albeit rarely, on municipal and sub-basin levels [72].

The transposition of the WFD into German law did institute a river basin planning regime, but it did not result in a radical shift from the status quo, as river basin management arrangements remained almost entirely based on pre-existing administrative structures. Ten German RBDs were designated under the Directive, and the Federal Ministry of the Environment and the relevant state ministries—mainly the state environmental ministries—are the assigned competent authorities. The LAWA acted as an important coordinating body, providing guidelines for common procedures among the *Länder* (e.g., [73]) and thus opting for a co-ordination-based model over independent river basin authorities [74]. While this model envisaged close cooperation among *Länder* within RBDs, there are few joint RBMPs given the existence of shared basins. Instead, it was common for *Länder* to develop their own, separate contribution to a joint RBMP, which resulted in 35 plans covering the 10 RBDs [75].

There were established procedures for public participation in water resources planning in Germany prior to WFD implementation. However, these centered around formalized consultation with the public and affected stakeholders, and provided only very limited scope for active involvement. Public works and environmental impact assessment, for example, usually required public involvement, and public consultation in water resources management constituted an entry point for participation. Such processes were not, however, established in all *Länder*, and involvement usually did not surpass information and consultation in the final stages of decision-making [72].

As WFD implementation is primarily a federal state responsibility, there is no overarching framework or common procedure for participatory river basin management planning. Neither the amended Federal Water Act of 2002 nor the LAWA established special rules or harmonizing requirements. Nevertheless, a two-tier structure is rather common among the *Länder*. On the state level advisory boards, affiliated to the respective environmental ministries, were established in 12 of the 16 *Länder* [76]. Despite their diverse compositions, these boards generally serve as an information platform on WFD implementation procedures. On the local sub-basin level, stakeholder involvement in planning varies widely, ranging from active collaboration (e.g., in “water forums” and working groups) to relatively restricted information and consultation procedures. Overall, within this two-tier

consultative procedure, greater emphasis is usually on the local, sub-basin level. For the most part, it is organized stakeholders that are addressed in these procedures rather than the general public [72].

5. Discussion

The Water Framework Directive set bold targets for water quality across the EU, and also made ambitious procedural prescriptions—specifically regarding river basin management and participatory planning. The assumption, on the part of the European Commission, was that these procedural innovations would help achieve the substantive goals of the Directive. Whether these innovations have fostered implementation towards the Directive's water quality goals is questionable, however. A recent report of the European Commission found that implementation of more than 70% of measures is still ongoing or has not yet started [77]. Nonetheless, timely compliance with the Directive was rather high, as only four member states did not issue RBMPs on time in 2009 [46]. While it is perhaps too soon to draw overarching conclusions regarding implementation, it is useful and timely to examine from a comparative perspective procedural and planning adaptations that have taken place, and how the "transition" to participatory river basin management has played out across the member states. While academic debate continues over the conditions under which participatory governance and integrated water resources management can effectively be implemented [11,36,39], the potential for these policy innovations to produce better environmental impacts under certain circumstances compels us to explore how they are evolving in the context of European water governance.

Overall there is a shortage of comparative analysis of WFD implementation—especially relative to the number of single case studies available—but assessments suggest that institutional change and governance adaptations have been slow and irregular. In particular, transition away from pre-existing institutional structures and governance processes has been negligible in many cases, and even the EU's own monitoring has highlighted a tendency towards persistence of the status quo over the first planning cycle [46]. Exceptions exist, of course, and some notable shifts and transitions have taken place at national and local scales, but these are not necessarily typical. Here, we briefly discuss insights from our study, and consider implications for European environmental governance and further research on WFD implementation.

The WFD has driven a shift to river basin-level planning among the member states, but this shift has not been uniform (see Figure 1). Countries that did not have a river basin planning system prior to 2000 have come into compliance with this requirement of the Directive by designating RBDs, but have generally not exceeded their basic obligations under the Directive in this regard. This is reflected in the case of Germany (see Appendix A), which designated RBDs but appointed state-level environment ministries as competent authorities, essentially leaving water resources planning and implementation with the existing authorities. None of the countries that were already compliant increased the degree of institutionalization of river basin management. For some member states with more established river basin management regimes, such as France, yet greater institutionalization may not be feasible or necessary. However, for others like Poland, for example, there would be scope to further consolidate the roles of competent authorities. Substantial transformation of water governance structures has occurred, as demonstrated by the post-WFD reforms in Sweden, but certainly is not typical. As has been observed in other studies in environmental management (e.g., [78,79]), established institutional arrangements proved durable and were usually amended rather than replaced by new WFD-induced governance structures. Even in the Swedish example, the planning mandate of the municipalities did not vanish but coexists with the newly implemented water resource administration. These findings highlight the high costs and barriers facing member states adapting their governance systems, in particular if shifts include a scalar redistribution of competencies [80]. Nevertheless, it is notable that Poland, France and Sweden did strengthen national-level coordination with the establishment of new governance institutions and, in the case of Poland, even assigned river basin management competences at this level.

The introduction of arrangements for participatory river basin management planning across the EU has been mixed. Overall, it can be observed that there has been a general trend in the initial

implementation phase towards greater formal provision for public and stakeholder participation but, again, this has occurred in the context of very different baselines given varied political-cultural contexts from country to country. Similarly, broader processes of socio-political change may have shaped the shifts we observe here, and caution must be exercised in attributing change solely to the WFD. For example, it is possible that EU member states have been undergoing a broader “shift from government to governance” in all sectors, and would have increased active involvement of interested parties whether the WFD required it or not. By the same token, national political change can thwart or reverse the opening up of planning, as happened in the case of Denmark.

As discussed above, while the WFD is quite concrete about information provision and consultation procedures, it affords member states a great deal of discretion in relation to encouraging active involvement. Despite this, we do see initiatives to facilitate active involvement in most member states. As to convergence in terms of type and level of participation, we find some evidence that member states are tending towards active involvement through the establishment of advisory groups that bring organized stakeholders into the planning process. This can be seen in Poland with the creation of the National Council of Water Management, and in Germany with the two-tier system of advisory boards at the state level and the sub-basin level. In Sweden the Water Councils and Water Boards fulfill a similar function, although the former are more oriented towards incorporation of local knowledge than we see in most other countries. In France the established mechanisms for collaborative river basin management were not changed significantly, although the rules governing Basin Committees were adjusted to provide greater access for non-state actors.

6. Conclusions

The WFD has imposed common targets and a common timeline for implementation on the member states, and made particular procedural prescriptions. These, however, have encountered a diversity of political-cultural contexts and a variety of pre-existing institutional structures for the management of water resources. Naturally, this has meant a wide variety of experiences with implementation of the Directive at national and sub-national levels. A certain degree of legal and institutional adaptation has been required by all member states, but given the leeway afforded by the Directive, many have opted to retain existing structures and procedures as far as possible. Where the WFD did bring about institutional change, this occurred mainly on an operative level, without transferring real political responsibilities and power to new river basin bodies or the public. Only in countries with already established river basin management (plus Sweden) did political power reside with river basin authorities or participatory structures, also allowing for binding political (allocation) decisions. All other countries followed a rather managerial approach, seeing participation and river basin management structures as contributing to established routines of environmental decision-making. What the various adaptations will mean for the achievement of the substantive goals of the Directive, and for water quality in Europe, remains to be seen. Certainly the water quality target of “good status”, to be achieved by 2015, was too ambitious, and has not been achieved for all waters by any member state.

While broad engagement of “all interested parties”, including the general public, communities and stakeholders, at all stages of the planning process has not materialized, perhaps the emergent “advisory board” model and the selective involvement of organized stakeholders will prove to be the most feasible and effective means of stakeholder engagement for competent authorities. On the other hand, general failure to truly open up participation beyond business as usual could well hamper the identification of innovative measures and diminish the capacity of authorities to tackle new and emerging pressures on the water environment. Similarly, participation and involvement that does not afford participants real influence may serve to alienate stakeholders, further damage public trust in authorities, and undermine the legitimacy of resultant plans and measures. These questions are beyond the scope of this study, but certainly should be a focus of future research on WFD implementation. Indeed, we have largely set aside here unresolved debates as to whether public participation or

integrated river basin management are appropriate or potentially effective approaches for sustainable water resources management, but these remain crucial questions. How, and under what conditions such approaches can succeed in delivering good water status as well as other social and ecological gains, will require further empirical research and in-depth case studies of the kind we have drawn upon for this comparative analysis. Research should closely examine the functioning, legitimacy and actual effectiveness of the new institutions and procedures that have come into being as a result of the WFD. The cyclical nature of WFD implementation brings the opportunity for ongoing observational case study research and attention to processes of adaptation and learning in European water governance. Insofar as WFD implementation is “learning by doing” [81] (p. 233), research should continue to examine the experiences and trajectories of particular member states and river basin districts with a view to drawing lessons from progress and innovations in institutional adaptation for river basin management and participatory planning over future planning cycles. Further comparative research should both help track progress at the European level with respect to the implementation of the WFD, and provide potentially useful insights that might benefit “horizontal” governance learning across the EU member states.

Supplementary Materials: The following are available online at www.mdpi.com/2073-4441/8/4/156/s1, Table S1: Variable descriptions; Table S2: Raw and aggregate data of public participation and river basin management in 13 EU member states for t0 and t1; Table S3: Public Participation in 13 EU member states under the WFD; Text S1: Method of aggregation for indices used; Text S2: Literature drawn on in coding: European water resources management before and after EU Water Framework Directive implementation.

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Abbreviations

The following abbreviations are used in this manuscript:

AT	Austria
CIS	Common Implementation Strategy
CZ	Czech Republic
DE	Germany
DK	Denmark
EN	England and Wales
ES	Spain
EU	European Union
FR	France
HU	Hungary
IE	Ireland
LAWA	<i>Länderarbeitsgemeinschaft Wasser</i> , federal states working group for water resource management
NGO	Non-governmental organization
NL	The Netherlands
PL	Poland
PoM	Program of Measures
RBD	River Basin District
RBMP	River Basin Management Plan
SC	Scotland
SDAGE	<i>Schéma directeur d'aménagement et de gestion des eaux</i> , Water Management and Development Scheme
SE	Sweden
WFD	Water Framework Directive

Appendix A

Table A1. Institutional Arrangements for Water Resources Management and Participation before (t0) and after (t1) the WFD in Four Member States.

Water Resource Management	Germany		Sweden		Poland		France	
	t0	t1	t0	t1	t0	t1	t0	t1
Planning Unit	Administrative boundaries	River Basin Districts	Administrative boundaries	River Basin Districts	River basin level	River Basin Districts	River basin level	River Basin Districts
Responsible Actors	Shared responsibility between federal and state (<i>Länder</i>) level: Ministry of Environment and 16 <i>Länder</i>	Shared responsibility between federal and state (<i>Länder</i>) level: Ministry of Environment and 16 <i>Länder</i>	Central state level: through regulatory authority (Swedish Agency for Marine and Water Management)	River basin level: Water Authorities	Central state: Ministry of Environment	Central state and River basin level: National Water Management Authority (Ministry of Environment), Regional River Management Boards	Central state: Ministry of Environment	Central state and regional level: Ministry of Environment and its regional offices/river basin coordinators (<i>Préfet coordonnateur de bassin</i>)
Planning Competences	<i>Länder</i> level: State Ministries of Environment, District Governments	<i>Länder</i> level: State Ministries of Environment, District Governments	Local level: Municipalities	River basin level: Board of Governors of the Water Authorities	River basin level: Regional Water Management Boards	Central state and River basin level: National Water Management Authority, Regional Water Management Boards	River basin level: Water Agencies, Basin Committees	River basin level: Water Agencies, Basin Committees
Implementation Competences	Local level: Cities, Rural Districts, Municipalities	Local level: Cities, Rural Districts, Municipalities	Local level: Municipalities	Local level: Municipalities	Regional and local level: Provinces, Districts, Municipalities	Regional and local level: Provinces, Districts and Municipalities	Local level: Municipalities	Local level: Municipalities, Private contractors

Table A2. Institutional Arrangements for Participation before (t_0) and after (t_1) the WFD in Four Member States.

Participation	Germany		Sweden		Poland		France	
	t_0	t_1	t_0	t_1	t_0	t_1	t_0	t_1
Status of participatory processes	Without formal mandate: Public planning	Formal mandate: Advisory bodies	Without formal mandate: Joint water quality management organizations	Formal mandate: Water Boards, reference groups and Water Councils	Without formal mandate: Regional Councils of Water Management	Formal mandate: National Council of Water Management, National Water Forum, Regional Councils of Water Management	Formal mandate: Basin Committees, Local Water Commissions	Formal mandate: Basin Committees, Local Water Commissions, Board of Water Agencies
Number of processes	One	Two: Federal state and mainly sub-basin/local level	One	Three: River basin and sub-basin level	One	Three: National and river basin district level	Two	Three: River basin and sub-basin level
Access	Limited	By invitation (except in two <i>Länder</i> with open access)	Limited	Open	Limited	By invitation (self-selection structures exist)	Wide access	Wide access (election of participants)
Representation	Not balanced	Certain balance	Not balanced	Highly balanced	Not balanced	Certain balance	Certain balance	Certain balance
Level of Participation	Information and some consultation	Consultation	Information	Involvement	Information	Consultation	Collaboration	Collaboration

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