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Integrated Water Resources Management as a Compromise: Renewing the Water Act in the Canton of Fribourg, Switzerland

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1 Introduction

Even if it is considered as a paradigm to model water policy, integrated water resources management (IWRM) remains a polysemic notion. By referring to quantitative methodology to analyse 353 selected manuscripts on IWRM literature, Gallego-Ayala (2013) points to a great variety in the conceptual and theoretical foundations of IWRM. This analysis validates Biswas' conclusions (2004), which identified thirty-five sets of issues that should be integrated under the aegis of IWRM. Generally speaking it refers to a quest for governance modality that seeks to link various uses (drinking water, irrigation, etc.), upstream and downstream perspectives (supply, recycling, etc.), different water resources (surface, underground, unconventional, etc.) and ecosystem dynamics.

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A regulatory space defined by the hydrological/hydrogeological basin (the watershed) is often implicitly added to this holistic dimension; this space is supposed to help in decentralising water management to the “lowest appropriate level” (Kemper et al. 2004). If this assertion can eventually be considered as true in the case of centralised states, for fragmented areas, conversely, the watershed offers a space for regionalising water management. IWRM is a well-documented research object: decades of research and practice have helped in identifying both its outlines and its limits (Biswas 2004, 2008; Savenije and Van der Zaag 2008; Baron and Petit 2009).

In this chapter, we do not address this type of management as such but we question the gap between theory and practice. By doing so we intend to discuss laudatory discourses’ performative aspect and to overpass the naturalised and functionalist visions of IWRM. We show that beyond the quest for a miraculous solution, the establishment of IWRM falls within a regionalised institutional compromise that results from collective action. It is particularly true when democracy mechanisms are active, as in our case study.

First, we briefly introduce the notion of IWRM by focusing on two intertwined controversies: the scope of sectoral integration (which uses are regulated?), which echoes with horizontal integration; and the regulatory spaces advocated by each protagonist, which refers to vertical integration. This second controversy relates to the scale finally adopted compared to the limits of the watershed, presented as the perfect functional space for regulating water use, and to the mechanisms to articulate the watershed with other scales.

Then, the case study refers to the renewal process of the Water Act in the canton of Fribourg (Switzerland), implemented in 2011 and wrapped up with the delineation of regulatory spaces in 2014. We have identified four stages since the first draft in 2001, detailing the objections (critiques) and arguments between the two main protagonists: first, the cantonal government of Fribourg, which promotes IWRM invoking its technical relevance, which could transcend institutional, administrative and territorial fragmentation; second, the representative of municipalities, in charge of supervising local autonomy.

Finally, a diachronic and comprehensive approach is developed in order to characterise the nature of the compromise adopted as regard to the two intertwined controversies. Theoretically, we refer to institutional economics, and particularly to economics of conventions to illustrate the process of “critique” and “tests” (Boltanski and Thévenot 2006; Boltanski and Chiapello 2007) in shaping the regionalised institutional compromise finally adopted.

2 IWRM as a Regionalised Institutional Compromise: Integration and Rescaling

As Biswas points out (Biswas 2008), IWRM is an old notion. First introduced in the mid-twentieth century it has officially been promoted since the United Nations Water Conference in 1977 (Mar del Plata, Argentina) (Biswas 2004). Erroneously, it is often directly associated with the International Conference on Water and the Environment (in Dublin, 1992) and, more particularly, with the four principles mentioned in the final declaration (GWP 2003). The literature is reviewed with a specific emphasis on two main controversies: the scope of integration and the scale advocated to regulate resources and uses.

2.1 What Should Be Integrated?

There is no single definition of IWRM. The different interpretations are even conflicting (Baron and Petit 2009). For some authors IWRM implies holism, participatory processes and the involvement of women in decision making, as well as the acknowledgement of water as an economic good as a prerequisite for a paradigm shift: thus achieving simultaneously three often contradictory objectives (the three Es): Efficiency, Equity, Environmental sustainability, thanks to a “pragmatic” and technical approach (Molle 2008). International institutions, including the International Network of Basin Organizations (RIOB) and the Global Water Partnership (GWP), a World Bank and UNDP joint initiative

established in 1996, support this view. Thus, for some, IWRM meets the efficiency principle (cost recovery, private sector involvement through multiple partnerships, etc.) due to the recognition of the economic value of water (GWP 2000; Winpenny and Camdessus 2003; Kemper et al. 2004). For others, it allows for adaptive (Pahl-Wostl 2007) and supportive management (equity principle) (Van der Zaag 2005) by strengthening consultation processes and user involvement.

This foggy notion is a perfect example of a “nirvana concept” (Molle 2008), i.e., an idealised ontology of the world as it should be, supplemented by a set of recommendations to implement it. Nevertheless this functionalist perspective is challenged by local contingencies, either social or natural, and by national and regional historical trajectories, e.g., India (Saravanan et al. 2009), Israel (Fischhendler and Heikkila 2010) and South Africa (Merrey 2008). IWRM does not necessarily lead to decentralised, democratic, or even more sustainable (Jewitt 2002) management.

Following Coase (1960) and Williamson (1996), the transaction cost theory developed for decades tends to link together transaction costs and governance mechanisms. These costs (associated with time, effort and resources involved in obtaining information, in negotiating, in bargaining, etc.) are primarily related to asset specificity, to uncertainty and to the frequency of transactions. The collective action problem linked to water management is complex: first, water is highly specific (geographic and seasonal variability, risk linked to human and environmental safety, etc.); second, water management involves many actors, several sectors, several scales, and so on, thus information can be highly asymmetric; finally, no rupture in service delivery is allowed. Therefore, integration would allow users to avoid the transaction costs related to local and repeated coordination (Saleth and Dinar 2004; Dagdeviren, and Robertson 2016). Nevertheless, integration itself is costly, particularly due to bureaucracy and coordination. That is why when Hering and Ingold (2012) ask what should be integrated, they consider that integration should be moderated, at least initially: “less ambition may result in better delivery” (Schreiner and Hassan 2011, 273).

It appears that there is no ideal perimeter for integration. This is particularly obvious in the institutional resource regimes (IRR) literature (Gerber et al. 2009): on the one hand, it confirms the great diversity of

IWRM forms (analytical dimension) and on the other hand, it contributes to the debate about the relationship between the degree of integration and sustainability potential (prescriptive dimension). As we show in our case study, and more specifically in the aborted attempt to extend the scope of integration to drinking water, the perimeter of sectoral integration cannot be delineated a priori through transaction costs estimation. It merely depends on actors' coordination and on power relations (sectoral integration may change actors' "state of worth").

2.2 Looking for Regulatory Spaces: Is the Watershed Natural?

As Molle recalls (2009) the management procedures circumscribed to perimeters defined by waterways are ancient, e.g., in Sri Lanka since about 1000 BC, in China and Mesopotamia since 300–400 BC. With the development of natural and technical sciences, particularly in the nineteenth century, the positivist paradigm postulates the existence of "natural" areas for water management and tends to question previous political and administrative perimeters. Thus it materialises authorities' wishes to "control" nature.

From a technical perspective, the reference to the watershed is particularly justified by its ability to articulate upstream and downstream from the two points of view of uses and resources (from the ridgeline to the outlet). For some authors, historically, this technical argument has reinforced civil engineers' social and political power, notably in France in the nineteenth century and in Spain in the twentieth century, where hydrographic confederations played a decisive role in the emergence of "hydraulic bureaucracy" under Franco's regime (Swyngedouw 2007). Conversely, today, anchoring governance modalities within the perimeter defined by the watershed is one of the prerequisites for "good" water governance, which is promoted by international funds providers (as conditionality of structural adjustment plans): the establishment of river basin authorities supports the decentralisation of water governance and policies (e.g., the creation of river basin agencies in Morocco since 1995). The basin as a functional space has been internationally recognised as the

“logical” regulation scale (GWP 2000, 24): “one of the internationally accepted principles of river basin management is to decentralize decision making to the lowest appropriate level” (Kemper et al. 2004, 5). Ghiotti (2006) questions this assertion regarding the French case and this shows how this basic form of management is only apparent: “By becoming a political territory, the watershed is being overtaken by a logic it must overcome, to shape a hybrid form at the crossroads of political, administrative, socio-economic and environmental influences.”

From a theoretical point of view the concept of “functional regulatory spaces” (Varone et al. 2013) offers an alternative to the triple breakdown that characterises public policies’ traditional formatting: sectoral, territorial and scalar (between levels of government) divisions. On the one hand, the sectoral approach, which has been the main justification to grasp “territorial contingencies,” limits the ability to understand the issues and items that overtake the respective fields of action. On the other hand, this territorial contingency is materialised by sometimes obsolete politico-administrative boundaries in light of the new distribution of resources, development of activities, infrastructure and populations. A functional regulatory space is an area of rivalries and conflicts for access, ownership and redistribution of goods and services as well as a social, political and economic resources pool to build collective action to regulate these rivalries and conflicts. It is a field of power relations, whose boundaries are defined by the protagonists of these tensions themselves; it “is thus a space of inextricable rivalries and conflicts, as well as a space of political regulation of these rivalries. The more or less clearly territorialized boundaries of this field of power are defined by the stakeholders who act independently from the boundaries of the preexisting sector-specific policies and institutional territories” (Varone et al. 2013).

Regarding these cannot be automatically considered a functional regulatory space, as the protagonists defining features, the watershed do not necessarily understand all the issues related to the regulation of uses and resources as the result of upstream-downstream relationships. Other (social, economic, political, technical and historical) determinants as other scales and territories (living areas, water demand and consumption areas, etc.) are involved in the governance process (Mollinga et al. 2007; Asmamaw 2015; Norman et al. 2015). Thus the concordance

between basin and regulatory space has to be questioned. The porosity of ridgelines (watershed limits) can be huge due to large-scale infrastructures. This finding is particularly obvious in the case of urbanised areas where the disconnection of resources and uses may be important from a territorial point of view. It may also be true in some mountain areas, e.g., in Valais (Switzerland), where irrigation channels involve extending the perimeter of uses' regulation beyond the basin (Netting 1974; Schweizer 2014). Mapping the territorial coverage of a watershed is not easy, especially if you move away from the traditional supply approach (resources) in favour of the analysis of multiple spatialised water demands. These findings lead some authors to promote the notion of “problemshed” especially characterised by a “network issue” rather than the watershed (Mollinga et al. 2007; Davidson and de Loe 2014).

Therefore, research challenges the axiomatic neutrality of the watershed as the perfect regulatory space transcending other issues: the watershed can be seen as apolitical (because given by nature) contrary to its adoption as the most appropriate space to manage water rivalries. Rather it expresses the “naturalisation” of a primarily political choice (Graefe 2011) that leads to partially disqualifying existing political (and even democratic) spaces. Indeed according to Bertrand (2009, 74): “These attempts remain tied to a techno-administrative perspective on ecological problem solving. Yet strengthening the power of a structure that makes local politics meaningless, while wishing for its appropriation by the local population through ‘participation’, is inherently antithetical.”

The terms of the debate can be summarised in the confrontation of two approaches of rescaling for the regulation of environmental issues: “functional fit” and the “politics of scale” (Guerrin et al. 2014) (see Chap. 7). The first more normative approach aims to reveal the concordance between institutional arrangements and the ecological processes they should frame: this concordance is then considered a condition of their effectiveness (Ostrom 1990; Ekstrom and Young 2009). The second approach encourages the adoption of a comprehensive and historical perspective to understand the process whereby the scale was legitimised and finally adopted (Swyngedouw 2007; Molle 2009; Norman et al. 2012; Norman et al. 2015). There is no good scale a priori, thus validating the idea that “mentioning scale is admitting that something else

than size changes when the size changes” (Levy 2003, 285). Taken as a process, rescaling affects actors and the distribution of powers between them (winners and losers). It is not a zero-sum game, as it involves complex movements in terms of agenda, interests and norms (Faure and Muller 2007).

To illustrate the idea that IWRM is a protean notion, we detail a case study: the renewal process of the Water Act in the canton of Fribourg (Switzerland). It illustrates the previous general findings on the gap between theory and practice, at least regarding two main controversies: the scope of sectoral integration and the scale to regulate resources and uses (and the coordination mechanisms to articulate scales). The second controversy is particularly intense as it questions not only the articulation of scales but more fundamentally the role of actors in water and land management.

3 IWRM in a Fragmented Context: The Regionalisation of Water Policy in Switzerland

From the political point of view, Switzerland is characterised by direct democracy and executive federalism (Knoepfel et al. 2010; Art 46, Cst.) establishing complex subsidiarity (including on the issue of water resources [76-4 art. Cst.]) between the Confederation and the twenty-six sovereign cantons with their own constitution (Art. 51 Cst.). Municipalities benefit from some financial and fiscal autonomy within the limits set by cantonal legislation (Article 50 Cst.). Since the 1990s the institutional water regime at the federal level has been relatively integrated in terms of the number of goods and services regulated (extent) and the coherence between public policies and the property rights system governing the use of resources (Mauch and Reynard 2004). However the implementation of IWRM experiments is more contemporary and comes under the responsibility of cantons and municipalities. Contrary to the well-admitted mantra (water policy decentralisation), IWRM is promoted here as a means to regionalise water policy in the fragmented context of

Switzerland, i.e., institutional fragmentation linked to the multiple layers of governance (federal, cantonal, municipal) and natural fragmentation due to its geographical characteristics (alpine country, multiplicity of valleys and small watersheds).

3.1 From the Integration of the Institutional Resource Regime to IWRM Promotion

Several research projects based on the corpus of institutional resource regimes have focused on the case of water policy in Switzerland (Mauch and Reynard 2004; Mauch and Knoepfel 2004). The historical approach in the long run (since the constitution of 1874) suggests the gradual integration of the institutional water regime. Recently, this trend has been further increased, particularly thanks to two amendments to the Water Act in 2011 (renaturation of rivers and lakes) and in 2014 (funding mechanisms to eliminate micropollutants), that led to an extent of the regime's scope and to an improvement of its internal coherence.

The Waters Protection Act and its regulative ordinance is a major step towards the implementation of an integrated water regime (WPA-LEaux 1991; WPO-OEaux 1998). This holistic approach includes the three sectoral policies for protection against water, e.g., floods, water use and water protection, and considers preservation of the hydrosystem as a whole. It takes qualitative, quantitative and natural aspects into account, thus consolidating a trend to "greening and integration" (Mauch and Reynard 2004). However, Switzerland does not promote a unified and single law: hydraulic power, waterways and drinking water remain framed by specific legislation.¹ Until the early 2000s IWRM was not topical in Switzerland. Yet two earlier points reflect the trend toward integration. Section 46.1 of the WPO-OEaux ordinance, though not legally binding, promotes infra- and inter-cantonal coordination for measures pertaining to land and water protection. More fundamentally, articles 4 and 5 establish regional wastewater planning: regional wastewater master plans frame local and municipal wastewater plans (Art. 5). Several elements in these articles convey the paradigm shift and echo the definition of IWRM. In addition to the integration of different issues (ecological, flood prevention, water

treatment, etc.) they refer to the hydrological unit of the watershed to delimit regionalization. Even today, federal water law does not mention the establishment of IWRM.

IWRM officially appears in the political agenda in 2003, when an official publication presented “integral management” as an imperative for sustainable water management at the watershed scale (FOWG 2003). The second milestone occurred in 2007, which was the most prolific year regarding publications on this issue, most of them mandated by the Federal Office for the Environment (FOEN). Moreover on November 28, 2007, the Federal Council mandated the Swiss National Science Foundation (NSF) to implement National Research Programme 61, entitled “Sustainable Water Management,” in which the issue of IWRM is key, which is particularly reflected via the IWAGO project (PNR 61 2015). The very same year the *Water Management in Switzerland 2007: Current situation and theses* investigation was launched (Aschwanden et al. 2008; Schaffner et al. 2009). Twenty-seven years after the previous report (Federal commission 1980), this survey aims at assessing water governance and identifying future challenges. Through an iterative and participative approach, twenty-eight theses were identified. Four of them related explicitly to IWRM, which was also mentioned in most other theses (thirty-five occurrences of “integrated management” and eight occurrences of “integrated approach”).

IWRM is presented as an imperative to renew Swiss water governance. A significant involvement of the Confederation is required, particularly to support the process of redefining the distribution of power and responsibilities between users, cantonal and municipal scales. This implication must not strengthen federal centralism (as there is no single federal water act). In this assessment, users and managers express their willingness for emancipation from existing limits by advocating “functional spaces” rather than political and administrative boundaries (Schnaffner et al. 2009, 17).

Considering the claim that “water management [has] reached its limits” and requires a “paradigm shift” (Dazio 2013), the Confederation (through the FOEN and the Water Agenda 21) encourages IWRM with the provision of practical guides and support tools (FOEN 2013).² In these documents the assumed link between integration and sustainability is posited with three requirements: protection of the natural environment,

economic efficiency and social equity (FOEN 2012, 4–5). IWRM seems to offer an ideal solution to rivalry issues and potentially conflicting uses, notably through the adoption of the watershed as reference space: “With the watershed as reference area, the integrated management of water is primarily based on the natural system. The area in which the interactions occur and the decision-making scope coincide. The problems are solved where they are caused.” (Water Agenda 21 2011, 13).

Across Switzerland, cantonal, communal and regional initiatives are numerous (thirty-eight identified by the IWAGO project [NRP 61 2015, 85]) and very heterogeneous (Scheuchzer et al. 2012). The case of the canton of Fribourg is relevant as it is much larger than other initiatives across Switzerland: it concerns the whole canton, most uses and it aims at regionalising water management through new scales, namely through watersheds.

3.2 Renewing Fribourg’s Water Act: Four Stages to Shape the Compromise

Our research is based on the diachronic analysis of the renewal process of the Water Act in the canton of Fribourg (Switzerland). It draws on a genealogy of the law finally adopted in 2009, set up in 2011 and supplemented by its ordinance (WA-LCEaux 2009 and WO-RCEaux 2011). The act is compared to the three former drafts put out to public consultation. We focus more particularly on the role played by two kinds of protagonists: on the one hand, managers and technicians of the cantonal services responsible for the drafting of the law and its implementation, mainly the Department of Land Planning, Environment and Constructions (DLPEC), but also to a lesser extent other departments such as the former Department of Public Works, the Department of Public Health and Social Affairs, and the Department of Institutions, Agriculture and Forestry; on the other hand, the Association of Fribourg Municipalities (AFM) in charge of representing municipalities’ interests (all municipalities in the canton are members), particularly with regard to respect for their relative autonomy. Four stages are identified. They reveal the protagonists’ respective weight in shaping the institutionalised compromise.

First an outline of the cantonal organization in Fribourg has to be specified: the State Council holds executive power and each of the seven councillors heads one department of the cantonal administration. Within each department bills are drafted and then put out to public consultation (iterative process). Once the bills are finalised they are submitted to the Grand Council, i.e., a parliament that holds legislative power and is responsible for voting laws. Municipalities' support constitutes a prerequisite for the implementation of the law. This explains why we focus on the role played by the AFM.

3.2.1 Stage 1 (2001–2006): Cantonal Funds as Original Hubris

In 2001 an initial draft written by the services of the cantonal administration (Department of Public Works and Department of Public Health and Social Affairs) was put out to consultation. This new act (including the law and its ordinance) aimed at establishing “global, economic and efficient” management by including the two previous sectoral laws (without mentioning the term “integration” but explicitly referring to “watershed management”): the 1974 Waters Protection against Pollution Act and the 1975 cantonal Water Planning Act.

This first draft (D1) can be seen as the will to create an integrated, i.e., extended and coherent, institutional regime at the cantonal level. First, the scope of regulated goods and services is high: (i) all uses are dealt with (hydropower infrastructures, recreational uses, productive uses, sanitation) except drinking water supply (considered as food) and water use for hydraulic power (within the scope of public domain legislation); (ii) the law relates to surface and groundwater resources; (iii) it was designed to frame water uses, to protect against floods as well as to establish mechanisms for the revitalisation of waterways (protection of natural rivers, protection areas, restoration and renaturation of rivers to retrieve natural ways and biotopes close to the natural state [art. 17]).

Moreover, this project aspires to increase water governance coherence by redefining actors' responsibilities and by implementing regional planning (internal coherence). Then it takes into account the law on spatial planning and constructions (1983) and limits the access to the water

public domain (withdrawal authorisations are required) by proposing to amend the 1972 Public Domain Act to lower the limit defining whether water belongs to the public domain from 200 l/min. to 50 l/min. (external coherence with other public policies and with the regulative system).

Planning should be circumscribed to eight watersheds through their related basin master plans, which integrate the functions of the former regional wastewater master plans and comprehend the cantonal master plan. Apart from other changes, such as the implementation of the polluter-pays principle, the major novelty appears in the introduction of two cantonal funds: a cantonal fund for wastewater, comprising fees proportional to the pollution load, and a cantonal fund for water resources, with flat fees based on the volume of water consumed. They were considered as the main mechanisms to implement rescaling by reinforcing the power of cantonal services to supervise the management of water and infrastructures through the cantonal master plan that aims at harmonising practices across watersheds, in particular wastewater recollection and treatment (economies of scale, implementation of federal ordinances, etc.). Nevertheless, these funds crystallised the rejection of the draft during the consultation, especially by municipalities through the AFM regarding the principle of municipal autonomy (AFM 2002). This opposition means that the bill could not go through the Grand Council, because it had no chance to be voted. Subsequently, between 2002 and 2005, two major topics were addressed, at first with an attempt to extend the project to drinking water. Nonetheless, for political reasons (see later in the chapter), this competence remained within the prerogatives of the Food Safety and Veterinary Issues Board, which is under the supervision of the Department of Institutions, Agriculture and Forestry (DIAF). Finally, the major shift dealt with the redesign of cantonal funds and the financing of water protection.

3.2.2 Stage 2 (2006–2009): Responding to Critiques Addressed to Cantonal Funds

Based on the analysis of 206 standpoints vis-à-vis the first draft (D1), a new draft (D2) was put out to consultation in May 2006. In addition

to changes related to grants rates, timelines, etc., and despite the radical opposition to cantonal funds expressed by the AFM, the major shift consisted in merging the two previous cantonal funds within a single one: a cantonal water resources protection fund, supplied by a maximum fee of 5 cts(CHF)/m³ of water used. Furthermore, D2 defined communal financial planning by establishing three distinct taxes (water connection taxes, water operation taxes and taxes based on an annual basis). In addition, watershed perimeters were “rounded” (DLPEC 2006, 14) to reflect the organisational structures of existing associations and actors (in particular wastewater plants). This stage reveals an improvement in actors’ coordination compared to the first stage: the first draft was rejected with no other explanation than the problem of cantonal funds, meanwhile the second draft was discussed article by article. Nevertheless, the project was also rejected by the AFM, as the fund administered at the cantonal level and the municipal taxation recommended (not because of the introduction of the polluter-pays principle, but because the law specified the rate and nature of taxes) would have compromised the principle of local autonomy (AFM 2006).

To prevent a third failure, the Department of Institutions, Agriculture and Forestry and the AFM arranged direct coordination between 2006 and 2007 over several meetings. The Department suggested amendments in February 2007 (D2’) but justified the creation of a cantonal fund, arguing that water belongs to the public domain under the responsibility of the cantonal state (also arguing that seven other cantons already had adopted such a system).

3.2.3 Stage 3 (2009–2013): From Cantonal to Regional Funds

The Waters Act was finally passed in 2009 (WA-LCEaux, December 18, 2009) and set up in 2011. Compared to D2’, the major shift reflected the power of the AFM to shape the institutional compromise (AFM 2007): the abandonment of the mechanism of cantonal fund in favor of regional funds, not legally binding and administrated by local actors such as municipalities.

3.2.4 Stage 4 (2013–2014): Delineating Regulatory Spaces

This phase is related to the delineation of regulatory spaces, the so-called watersheds. Eight basins were delimited in the first draft (2001). Then, in 2013, the Department delimited twelve basins. Though their perimeters did not strictly respect hydrological and topographic limits, they took into consideration several criteria classified in three priority levels: (i) municipal boundaries, topographic and hydrologic basins, wastewater drainage basins; (ii) municipal merger plans, spoken language, number of inhabitants; (iii) surface of basins, common issues within each basin, and so on (DLPEC 2014). Supplemented by an explanatory report, this delineation was put out to public consultation during the winter of 2013–2014. Following the consultation and after the analysis of the ninety-six standpoints expressed by local actors, a new delineation of fifteen basins was finally decided by the Department (DLPEC 2014). Fundamentally, basins are inter-municipal associations (art. 9.2 WA-LCEaux). At this scale a fund may be created, financed by a maximum fee of 5cts (CHF) /m³ of water used, to develop, for example, the watershed master plan (art. 39.2 WA-LCEaux). Municipalities remain mostly responsible for the tasks specified by the watershed master plan.

4 Discussion: The Role of Critique for Institutional Change

In this research, we question IWRM through two main controversies that are intertwined and lie on the issue of integration: horizontal integration regarding regulated uses and vertical integration regarding spaces. In the case outlined previously, both controversies implied to renew the coordination of actors and to reach an institutional compromise in order to be stabilised. We refer to institutional economics, which focuses on actor's coordination and collective action through institutions (as rules). As Dequech pointed out (2005), three types of function of institutions are intertwined: a "restrictive function" that constrains and enables behaviours (this double function was particularly developed by

Commons 1934); a “cognitive function” that provides information and conditions representations; a “teleological function” that refers to the ends that people pursue. By considering that the “justification process” (coordination of actors and evaluation of constraints, resources, objects, etc. involve coordinating social representations) is fundamental to understand institutional change, the economics of conventions (Boltanski and Thévenot 2006; Boltanski and Chiapello 2007; Favereau 2011) helps in grasping the second and the third functions of institutions and, thus, in characterising an institutional compromise finally adopted and in understanding the process whereby it was shaped.

This theoretical approach can be summarised in three main proposals. Firstly, coordination involves coordinating representations. An institution can work—as a “working rule” (Commons 1934)—only if it is founded on a “constitutive convention” (i.e., a social representation of the world, to interpret the situation in which an actor is involved) that includes both the prescriptive and evaluative dimensions. As a corollary, an institution cannot be considered as a routine because it is necessarily the product of reflexive activity (even if it is implicit) thanks to the “justification” process. Secondly, because there are several constitutive conventions to account for interest and justice there are several solutions for each coordination problem. As expressed by Rawls (1993), “the fact of reasonable pluralism” leads to admit a plurality of justified forms of action. Thirdly, institutional change is a process that involves critique and tests: “Critique and tests are intimately related. Critique leads to tests in so far as it challenges the existing order and casts suspicion upon the status of the opposing beings. But tests—especially when they claim legitimacy—are vulnerable to critique, which reveals the injustices created by the action of hidden forces” (Boltanski and Chiapello 2007, 32). Because it helps in explaining the long volitional process swayed by various actors with diverging interests, this approach can be relevant to specify the positions of the actors involved in a coordination process, in particular in environmental issues (Boisvert and Vivien 2005; Blok 2013). For our case study, this approach is useful to specify the process whereby the institutional compromise of IWRM was shaped.

Considering the first controversy, the high sectoral integration promoted by cantonal authorities is efficiency oriented and justified

by technical arguments (grasping the water system as a whole); and by economic arguments (economies of scale and transaction costs). Nevertheless, the aborted attempt to extend the scope of integration to drinking water illustrates one of the main limits of traditional public policies, particularly denounced by the proponents of “functional regulatory spaces” (Varone et al. 2013): sectoral divisions are difficult to transcend, notably when they are materialised by administrative divisions shaped to carry out specific missions (departments, agencies, etc.). Furthermore, the non-homogeneity of states appears: departments and offices as organisations may have antagonistic, and even conflicting, interests and strategies (Crozier and Friedberg 1980). The second controversy, regarding rescaling and the mechanisms to articulate scales (namely, the role of funds), leads to question the coordination of actors (municipalities and cantonal services). The protagonists involved in this coordination process since 2001 advocate for different coordination solutions, which refer to distinct constitutive conventions: as successive drafts tend to reinforce and clarify the role of cantonal authorities, municipalities nevertheless express their will to continue to manage resources and uses in practice. Theoretically, the rescaling process and the funds lead to question the “state of worth” (what are the “worthy beings” and the “less or un-worthy beings”) (Boltanski and Thévenot 2006). Here the “teleological” function of institutions (see earlier in the chapter) appears. On the one hand, the cantonal administration presents itself as the guarantee of general interest considering its ability to cope with intertwined issues related to water management (human and environmental safety, economic and technical issues related to infrastructures, etc.), which justifies the creation of cantonal funds (see earlier in the chapter) by invoking its technical relevance: to tackle these crucial questions requires to rely on specialists. On the other hand, by invoking patrimonial arguments, municipalities defend their water and land-use prerogatives (and particularly to charge taxes and fees) expressed through the principle of “who pays, orders” (AFM 2006).

Thus, theoretically, the successive stages articulate tests (drafts put out to consultation) and critiques (standpoints). The test is always a test of strength (i.e., a game of power), “but when the situation is subject to justificatory constraints, and when the protagonists judge that these constraints are being genuinely respected, the test of strength will be regarded

as legitimate” (Boltanski and Chiapello 2007, 31), which is the case for the consultation process. The two first critiques expressed by the AFM were “radical” and led to the rejection of the two first drafts (the critiques were based on justifications radically different from those which supported the initial drafts). The following critiques were “corrective” and led to a draft that was finally accepted by the parties, voted and implemented. The process of test and critique is inherent in shaping a compromise. It is also the case for the delineation of watersheds. Even though Fribourg hydrography did not evolve between 2001 and 2014, the various drafts refer to eight, then twelve and finally fifteen basins. Thus the regionalisation of water governance relies on institutional compromises rather than to perfect natural boundaries: in the law, the perimeter of a basin constitutes a common denominator between administrative, natural, social, administrative and technical boundaries. Note that the scope of action of sewage treatment plants (mostly determined by the scope of the wastewater collection, usually based on gravity) has been determining for basin delineation (technical justification).

Considering that a compromise does not annihilate conflicts but merely suspends them (Amable and Palombarini 2005, 154), its viability is at stake. Thus, the process of tests and critiques, even if tedious, can be considered as beneficial for the implementation of any institution: as protagonists reveal and express their respective positions, the compromise has more chance to be shaped by taking into account various critiques—at least by answering to them—and finally it may reinforce its legitimacy (see Chap. 6). It supposes that the test of strength is considered as legitimate, which is particularly true for our case study.

5 Conclusion

The detailed analysis of the renewal process of the Water Act in Fribourg shows that both aspects of IWRM, i.e., the perimeters of integrated uses and regulatory spaces, are constructed through collective action. Thus the implementation of IWRM is a regionalised institutional compromise, distinct from the theoretical model defined a priori (the “nirvana concept”): drinking water was not taken into account (for political issues linked

with the distribution of prerogatives between departments); and regulatory spaces correspond to technical, administrative and natural spaces. Ultimately, these functional spaces partially delimited by the wastewater collection area remain inter-municipal associations characterised by conventional democratic functioning. Considering there is no good scale a priori, this case study illustrates the relevance of a comprehensive and historical perspective to understand rescaling as a process that affects actors and the distribution of powers between them (i.e., “politics of scale”).

Nevertheless the establishment of IWRM has helped in rationalising infrastructures, in particular for the treatment of micropollutants (the federal Waters Protection Act was modified in 2014 and a new tax was implemented in January 2016), and in clarifying water governance through a long process of proposal, consultation and counterproposal. It has led to water regionalisation, which seems essential to counteract the institutional and natural fragmentation that characterises Switzerland.

Far from criticising IWRM, this chapter aims at showing how a case study can be useful in illustrating the distance between the theoretical model and its implementation. A diachronic approach coupled with institutional economics helps in understanding the process whereby the compromise was shaped through collective action.

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Notes

1. Federal Law on the Use of Hydroelectric Power (1916); Federal Law on Watercourses Management (1991); Law on Foodstuffs (1992) and their respective ordinances.
2. See the online *Watershed Management Guide* (10 volumes), www.bafu.admin.ch.

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