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Climate Change Adaptation as a New Global Norm in the Water Sector? Between Symbolism and Dilution

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1 Introduction

The way we deal with certain social problems at subnational scales is influenced by global trends in the values and prescriptions that shape collective responses (Bernstein and Cashore 2012). Such constructs can be referred to as *common global norms*, which we define as: “intersubjective understandings that constitute actors’ interests and identities, and create expectations as well as prescribe what appropriate behaviour ought to be” (Björkdahl 2002).

Common global norms are sets of influential ideas that are used to frame domestic policies (Keohane and Goldstein 1993). For instance, the call for *integrated water resource management* (see Chap. 3) after the Rio summit of 1992 strongly influenced environmental policymaking

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C. Bréthaut, R. Schweizer (eds.), *A Critical Approach to International Water Management Trends*, Palgrave Studies in Water Governance: Policy and Practice, DOI 10.1057/978-1-137-60086-8_8

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in developed countries (Jordan et al. 2003). Old-fashioned command-and-control policies came under heavy criticism for being inefficient (Cole and Grossman 1999). As a result, voluntary and market-based instruments were widely introduced in environmental policy, notably in the form of tradable water rights (Dales 1968). Starting from the early 2000, integrated water resource management came to be seen as the best and unique way to achieve sustainable development in the water sector (Rahaman and Varis 2005).

However widespread and dominant they might be, norms are not cast in stone. They evolve through time and may fade, sometimes very abruptly. As some authors suggest, we may very well be witnessing a form of paradigmatic shift in environmental thinking. The concept of *sustainability* might be ceding ground to that of *adaptation* to environmental changes such as climate change (Theys 2014). More specifically in the water sector, concerns about climate change are allegedly fueling a change of policy perspective from integrated management towards *adaptive management* (Engle et al. 2011).

To what extent *climate change adaptation* (CCA) can be considered as a new global norm, and what this is implying for water governance, is a question that needs to be addressed. Climate change adaptation has indeed become one of the trendiest topics in international debates on water governance, and more generally, on environmental management. Until the early 2000s, adapting to climate change was considered a taboo (Pielke et al. 2007). Reducing greenhouse gas emissions (GHGs) to mitigate global warming was originally defined as the priority of the United Nations Framework Convention on Climate Change (UNFCCC) of 1992. As and when the political failure to limit the ever-growing GHG emissions grew patent, the attention of policymakers seemingly reorients from mitigation towards adaptation to the unavoidable symptoms of climate change.

It is scientifically indisputable that climate change causes significant alterations of social-ecological systems and that forms of adaptation are necessary. Climate impacts affect the capacity of ecosystems to deliver goods and services of upmost importance for the development and livelihood of societies, for instance freshwater, arable land, or natural disaster regulation (Daily et al. 2009; Schröter et al. 2005). Adaptation is hence a matter of concern for a multitude of policy sectors such as water

management, biodiversity, agriculture, spatial planning, health or economic development (Hallegatte 2009). In the water sector, climate risks are numerous, for instance: streamflow and water quality alteration, increased flood magnitude and frequency, biodiversity loss or sea-level rise (Settele et al. 2014).

The last Intergovernmental Panel on Climate Change (IPCC) report defines adaptation in a relative neutral way as: “the process of adjustment to actual or expected climate and its effects.” (IPCC 2014). In substance, CCA includes all to efforts to anticipate and prevent the effects of climate change, to reduce the magnitude of climate stimuli, but also to pool the risks, or even to bear some losses (Smit et al. 2001). Article 4.1 of the UNFCCC stipulates a duty to implement and report adaptation measures. To what concerns European countries, these have been supplemented by guidelines from the European commission (Commission of the European communities 2007, 2009). However, these legal requirements are very “soft” in nature (Dreyfus and Patt 2012), meaning their coercive power remains weak.

Scientists working on adaptation have played a central role in setting adaptation on the international policy agenda (Agrawala 1998). This contributes to explain why the adaptation research community has mostly focused on the societal, economical or political barriers to the development of adaptation responses (Eisenack et al. 2014), rather than contributing to comprehensively analyze decision-making processes in relation to adaptation, or to evaluate their impacts (Biesbroek et al. 2015). If the literature generally advances the idea that climate vulnerable sectors must take stock of climate impacts in decision-making (Smit and Wandel 2006), only a few authors have discussed critically what this really implies for water governance (Becker et al. 2015; Huitema et al. 2009).

In this chapter, I will address three key dimensions in relation to the potential impacts of climate adaptation for water governance. If adaptation has become a global common norm, then we should be witnessing a process of institutionalization within states (Bernstein and Cashore 2012), which I will first discuss. Second, norms are always based on a normative justification, namely a discourse on the moral and societal imperatives implying the appropriate actions (Björkdahl 2002). I will, therefore, try to elaborate on the normative content of adaptation. Third,

a norm should provide with clear substantive prescriptions on the adequate behaviors to adopt (March and Olsen 1998). I will try to decipher what the substantive implications of adaptation ought to be with regards to the water sector. And finally, I will conclude this chapter reflecting on how this discussion draws the shapes of a future research agenda on adaptive water governance.

2 Adaptation Institutionalization in Water Governance: Integration and Interplay Management

In order to be effective, soft norms stemming from the international level must find ways to influence collective behaviour at the domestic level. Beyond cultural channels of diffusion such as the standardized language used to depict collective problems and how to solve them (Johnston 2001), one of the most direct norms diffusion pathways is the direct legal translation in national constituencies (Bernstein and Cashore 2012). Another channel is their integration in less formal institutions such as private laws, social contracts or collective norms of behaviour (Adger et al. 2013).

Empirical studies have described how adaptation is being institutionalized in developed countries (Biesbroek et al. 2010; EEA 2014). The rise in importance of adaptation in policy discourses can hardly be disputed (Schipper 2006). Most states have incorporated adaptation in their policy framework, but in current practices, adaptation is seldom developed as a stand-alone policy sector. A “mainstreaming” approach is said to predominate, which refers to an incremental process where adaptation is incorporated as a new layer in the existing institutional structure rather than through dedicated administrations and policies (Lesnikowski et al. 2015). If autonomous adaptation by private actors has been observed (Tompkins et al. 2010), little evidence exists that climate impacts are yet systematically integrated in private decision-making.

Adaptation mainstreaming as a process of institutional integration leads to complex settings of rules that some scholars refer to as “regimes”

(Gerber et al. 2009; Jochim and May 2010). In these contexts, the challenge becomes to integrate and bring adaptation objectives in coherence with the existing set of rules and norms that already tend to mutually conflict. Such endeavour requires to manage the vertical interplay between various layers of institutional structures with heterogeneous attributes, and to deal with the horizontal interplay between regulations and norms with conflicting goals or effects (Vatn and Vedeld 2012; Young 2002).

Institutional coordination has precisely been identified by the literature as one of the main factors that hamper adaptation development (Krysanova et al. 2010). According to existing assessments, even recent pieces of legislation such as the European Water Framework Directive (WFD) of 2000 poorly integrate climate impacts into risk assessments and decision-making, although goal attainment by the WFD is clearly climate sensitive (Brouwer et al. 2013; Wilby et al. 2006).

Against similar backdrops, several authors proposed frameworks around the concept of “environmental policy integration,” originally in order to assess the progress of states in incorporating sustainability into their development policies (Knoepfel 1995; Lafferty and Hovden 2003). Many scholars working on environmental policy integration in the aftermath of the Rio conference simply assumed a normative tone regarding the need to give priority to sustainability in the management of policy interplay. These authors suggested that environmental concerns should be integrated vertically, in all layers of governance and at all stages of policymaking; and horizontally, through the coordination of environmental and non-environmental policy, as to “minimise contradictions between environmental and sectoral policies by giving principled priority to the former over the latter”; (Lafferty and Hovden 2003, 9).

By analogy, the same principle could apply to adaptation; in order to be effective, adaptation goals should be coherently articulated with and given priority over potentially rival policies and rules. The adaptation literature hence emphasizes the need to better integrate adaptation in institutional frameworks, notably in the governance of water, and to make existing policies more supportive of adaptation (Urwin and Jordan 2008). However, under the current circumstances, it is relatively unclear

how coherence is to be reached and to what extent adaptation should be prioritized over other policy objectives.

Indeed, institutionalizing adaptation may produce erratic results. In the current context of soft obligations, high uncertainty with regards to climate impacts, and low public pressure on the climate issue, the institutional integration of adaptation is prone to symbolic policymaking (Gustafsson 1983), that is, actions intended to demonstrate government activity on a given problem, but with no hope of contributing to its resolution. Adaptation often gives rise to a process of policy recycling or relabeling, by which already-existing measures are given a second political life under the etiquette of “adaptation.” Dupuis (2015), for instance, demonstrates how the huge integrated watershed management program (NWDPPRA) launched by the Indian government in 1991 was first framed as sustainable development policy, before being newly presented as an adaptation measure in 2008.

Worse, when insufficiently coordinated with social welfare or environmental protection policies, institutionalizing adaptation in the water sector can lead to outcomes that are highly questionable in terms of legitimacy (see Chap. 6). The dam project of Sivens in the Tarn region of France is a sadly famous example of that. The project, financed by the water ministry, the European Union and the Tarn department, was supposed to balance the effect of climate change on water availability to the benefit of farmers downstream of the Tescou river. The most important wetland of the region was to be flooded, however, even though it contained a rich biodiversity of about ninety-four protected species.¹ The launch of the deforestation work triggered uproar and protests, which peaked with the death of a twenty-one-year-old demonstrator. Two days later, an assessment commissioned by the national Ministry of Ecology strongly criticized the project (Conseil général de l’environnement et du développement durable 2014). The project was finally abandoned two months later, leaving the wetland ecologically damaged. The case of Sivens is certainly extreme, but must be considered as a cautionary tale about the fact that the lack of institutional coordination between adaptation and environmental conservation leads to unpredictable effects on the ground. Had the planning procedures integrated biodiversity and local

people aspiration ahead in the process, alternative adaptation options with less dramatic consequences might have been advanced.

The case of Sivens strongly reminds that adaptation is being institutionalized, but without a clear blueprint on how to articulate and prioritize with existing policies (Jordan and Lenschow 2010), which can lead to erratic results in case of deficient coordination.

3 The Normative Content of Adaptation: The Attractiveness of Polysemy

Common global norms necessarily entail a form of teleology, that is a moral justification of the societal purpose or problems they were designed to address in the first place (Habermas 1998).

At the ontological level, Eakins et al. (2009) consider that adaptation goals can be viewed through at least three different theoretical lenses: the risk-hazard literature (McCarthy et al. 2001), political economy (Adger and Kelly 1999) and socio-ecological system theory (Gunderson and Holling 2002).

These theoretical frames imply different priorities for adaptation goals in water governance. The risk-hazard approach focuses primarily on physical exposure to climate impacts and involves straightforward risk reduction responses such as building dikes or giving more room to rivers (Füssel 2007). Political economy tends to adopt a more holistic approach, in which climate change impacts are just a factor that aggravates the deeply rooted social-economical vulnerabilities of people at risk (O'Brien et al. 2004). In this approach, reducing structural social inequities through empowerment and capacity building represents the cornerstone of adaptation policy. Finally, socio-ecological system theory rather puts the emphasis on water management systems that are flexible enough to absorb external shocks while retaining the same function and structure (Nelson et al. 2007). The point here is to build institutions that allow for adaptive management. Studies that systematically analyze and compare how these theoretical lenses diffuse into real-world politics, and how they impact water management, are still scarce (Dupuis and Knoepfel 2013;

Eakin et al. 2009). More work is needed to identify which policy goals seem to best work in what context as well as trade-offs and synergies.

Interestingly, adaptation seems to have generated an image far less accurate of the societal goals to be reached than the one to be avoided. The term “maladaptation” is used to designate these negative features. A plurality of interpretation certainly exists, (Magnan et al. 2016), but maladaptation designates primarily policy objectives that program large increases of GHG emissions (Hasson et al. 2010), contradict sustainability principles (Brown 2011; Eriksen et al. 2011), or lock in irreversible pathways (Hallegatte 2009). Other than the Sivens case, Barnett and O’Neill (2010) demonstrate that the water policies designed by the municipality of Melbourne to deal with climate impacts such as declining rainfalls and water availability through means of desalinization and water transport largely increase GHG emissions, and disproportionately burden most vulnerable actors. By contrast, other studies show how adaptation programs that develop irrigation potential to fight against droughts and erratic rainfalls can positively affect the social welfare of vulnerable actors, but also contribute to groundwater depletion, thereby reinforcing the adverse impacts of climate change (Dupuis and Knoepfel 2013).

Hallegatte (2009) convincingly demonstrates that positive obligations can be derived from the concept of maladaptation. He suggests that decision in the water sector should be robust to climate uncertainty by planning soft options that are reversible. He calls for a strengthening of the precautionary principle, by using safety margins for defining stricter-than-necessary targets in order to account for the additional risks of climate change. All this policy advice revolves around the concept of low-regret or no-regret strategies, namely policy options that would yield benefits even in the absence of climate change (Wilby and Dessai 2010).

Robust adaptation may seem the most policy-relevant way to frame adaptation goals. At the same time, however, it carries a conservative tone and dilutes the specificities of adaptation. The precautionary approach emphasized to deal with the uncertainty carries the risk of excluding innovative and progressive measures designed to specifically address future climate change impacts. Robust adaptation therefore leads to a focus on the most proximate causes of climate vulnerability, and omits

the systemic changes that might be needed in order to cope with future climate impacts of larger magnitude (Wise et al. 2014).

It is also questionable whether robust adaptation adds any value to current water policies. The inclusion of safety margins in the design of flood prevention systems, for instance, is not new per se. Similar advice was made to strengthen flood risk policies well before climate change became a policy issue (Burton et al. 1978). These redundancies have raised the skepticism among scholars within the disaster risk reduction community about the novelty and added value of adaptation (Mercer 2010).

In reaction to the incrementalism and precautionary approach underlying robust adaptation, the recent literature, and notably the last IPCC report, emphasizes the need for transformational adaptation (Kates et al. 2012; Klein et al. 2014; Preston et al. 2013). Transformational adaptation can be understood as the opposite image of robust adaptation. In answer to the risks of climate impacts of unpredictable magnitude, transformational adaptation are interventions of a paradigmatic nature that ambition to transfigure the existing practices in water management. At the same time, transformation is more likely to encounter resistance and typically represent less feasible options to decision-makers (Dupuis and Knoepfel 2013). Moreover, promoting transformation is more at risk of ending up in maladaptive options, if the climate and other contextual conditions evolve differently than anticipated.

Robustness and transformation form a continuum of targeted societal change in relation to adaptation. While trade-offs are inevitable between the two approaches, some scholars argue that they are not mutually exclusive and might in fact be complementary (Wise et al. 2014). Robust adaptation can constitute a first response to most proximate vulnerabilities while incrementally supporting transformation. How such pathways of change can occur in current water governance structures is an open question, since identifying the social-political mechanisms that may conduct to these pathways of change needs further research (Gillard et al. 2016).

Adaptation hence hardly comes with univocal expectations about the societal goals to be reached. This might come as a reason not to consider adaptation as a norm, since norms are precisely defined as normative “standards” that leave a narrow margin of interpretation (Axelrod 1986).

But one should also recall that contested notions such as sustainability can act as global norms, as long as they produce ethics and identities that can be appropriated (Lafferty 1996). Even more so in the case of sustainability, normative indistinctness allowed for social forces pursuing antagonist interests such as non-governmental organizations (NGOs) or business organizations to commonly support sustainability as an objective they could interpret according to their stakes. The uncertainty resulting from unclear norms in turn allows a process of translation or “transcoding” (Lascoumes 1996) through which actors strive to clarify the norm according to their own interests and beliefs, in order to strengthen their position in existing policy networks.

Turning back to adaptation, scholars make the empirical observation that adaptation initiatives are discussed almost everywhere, but the values shaping adaptation goals differ contextually (Adger et al. 2009). The norm broadness here clearly results in a process of norm translation, whereby states and private actors have an important leeway in interpreting the meaning of adaptation according to their own values and interests. For instance, the government of India views adaptation as something that would be reached through social welfare development, whereas, Switzerland defines it as a way to seize the new economic opportunities offered by climate change (Dupuis 2015). In a certain sense, adaptation can be considered as a contested norm that suffers from polysemy. Goal unclarity is paradoxically turning adaptation into a globally attractive policy idea, since it allows government or other policy actors to recycle “old wine in new bottles,” and to use adaptation to fuel their own political project.

4 The Substantive Content of Adaptation: The Gospel of Flexibility and the Omission of Policy and Politics

Norms also carry expectations and prescriptions about the appropriate behaviour to adopt, the ought and the ought not, in relation to a given issue. At the policy level, norms act as a reference that bounds the choice

of desirable rules, instruments and procedures by decision-makers (Hall 1993).

In relation to climate change adaptation, a powerful discourse has emerged in scientific as well as in policy circles about the conditions enabling “the good governance” of natural resources. Inspired by the work of Nobel Prize winner Elinor Ostrom (2005), and by the literature on adaptive management (Olsson et al. 2004a), these ideas have exerted a strong influence in water policy debates and practices, where they often go by the name of “adaptive water governance.”

Adaptive governance can be traced back to the work of Holling (1973), who strongly criticized centralized governance systems, fixed top-down procedures and environmental protection policies for unfitting the complex and non-linear attributes of change dynamics in ecosystems. Formal policies that aim to increase the predictability of actors’ behaviour by formulating wrongs and rights were viewed as too rigid and myopic to manage always-evolving ecosystems. Holling argued that “bureaucracies are an exercise in variance reduction through regulation and control,” which ultimately contributes to creating bigger environmental problems than the ones they were supposed to solve in the first place (Holling and Meffe 1996, 331). Decision-making structures deployed in water and natural resources governance were also considered as too centralized and hierarchical to leave room for deliberation with local stakeholders, which prevents the types of innovative, creative and reactive management needed in order to adapt to environmental changes (Holling and Gunderson 2002; Holling and Meffe 1996).

A growing literature sought to use cross-case comparisons and meta-case analysis to demonstrate empirical regularities between the features of adaptive governance and successful adaptation in the water sector, as well as the lack of adaptive capacity of centralized and command-and-control types of water governance systems (Huntjens et al. 2011, 2012; Pahl-Wostl 2007; Pahl-Wostl and Knieper 2014; Pahl-Wostl et al. 2012).

While this literature prudently recalls that no panacea exists, it strongly asserts that successful adaptation is both theoretically and empirically related to the existence of flexible institutions that are able to deal with complexity and uncertainty. It is claimed this requires new institutional

arrangement in many cases. Such institutions would combine three features: polycentrism (multilevel and nested structure with many centres of decision-making that are formally independent, but interconnected and partially redundant); adaptive management system; and strong stakeholder participation (Huitema et al. 2009).²

It is claimed that flexible policies allow for experimenting innovative policy solutions and constantly evolving practices based on permanent monitoring and knowledge management. Decision-making should occur at the lowest level of governance in close collaboration with the higher levels on cross-scale issues, as to allow both social learning across levels as well as leadership at the individual level (Armitage et al. 2008; Lebel et al. 2006). Moreover, these polycentric decision networks should facilitate stakeholder participation and the use of local knowledge to inform governance choices (see Chap. 2). All in all, adaptive management in polycentric governance settings would facilitate trust-building among water stakeholders, and enable the emergence of innovation in response to climate change impacts.

Adaptive water governance has become the dominant discourse in policy debates on climate and water (Reghezza-Zitt et al. 2012). Few scholars have attempted to challenge what seems to have become a doxa about the way to bring water governance to a climate adaptive state (Huitema et al. 2009; Plummer et al. 2012).

However, both the conceptual and methodological foundations of the prescriptions around adaptive governance remain fragile. Indeed, the implementation of adaptation initiatives in the water sector is yet too recent to allow for solid comparative analysis and outcomes evaluation (Dupuis and Biesbroek 2013). The empirical studies that posit the superiority of adaptive governance use indicators of adaptive capacity such as the existence of explicit adaptation strategies or adaptation measures, which unfortunately says very little about the effectiveness of these policy outputs to deal with climate impacts (Huntjens et al. 2012).

Another problem relates to the fact that concepts such as polycentrism are complex theoretical constructs that are difficult to apply to the social reality through easily measurable proxies. Existing studies tend to build exaggeratedly clear dichotomies between polycentric and centralized system that do not hold in reality. Centralization only opposes to

decentralization and both systems can be more or less polycentric (Pahl-Wostl and Knieper 2014). The normative tone surrounding the debates on polycentrism also eludes discussion on the drawback of this model for water governance. Polycentrism can well imply higher transaction costs, less accountability, and more coordination conflicts than a hierarchical governance with clearly divided competence and responsibilities (Huitema et al. 2009).

Advocacy in favour of adaptive management generally omits to discuss the qualities of traditional environmental policy. The formalization of environmental obligations in laws and policies impede rapid adaptation, precisely because they seek to make fundamental norms such as equal access to natural resources or just redistribution resistant to political changes (Ruhl 2012). Moreover, in many cases, flexibility has already become an intrinsic feature of water policy. For instance, the WFD, which is nothing less than a top-down policy, stipulates the introduction of water-pricing instruments and broad stakeholder participation (Aubin and Varone 2004). In that sense, neither formalization nor top-down policy precludes flexible management at the lower levels of decision-making (Ebbesson 2010).

Implementing adaptive management systems can be considered as the principal substantive prescription in relation to adaptation. However, it is important to note that adaptive governance addresses mainly the structure of governing institutions (the polity), whereas it has only little to say about policy instruments, nor does it seem to consider politics and power. For example, when the WFD began to be implemented in European states, one of the main worries of political scientists concerned the lack of policy instruments for influencing water quality in cases where water disturbances originate from private owners of adjacent land (Aubin and Varone 2004). In this situation, adaptive governance is ill equipped to advise which of water pricing, payment for environmental services or land exchange would be the most “adaptive” or effective policy instruments to solve the environmental problem.

Moreover, the idea of adaptive governance entails a very naïve vision of power relations in collective action. A very optimistic view dominates that natural resource stakeholders are rational thinkers willing to adopt innovative behaviour and strategies to sustain ecosystems, if institutions

are correctly designed (Olsson et al. 2004b). Such perspective omits agency. Collective decision-making is a process formed by actors' interactions that is at least as chaotic and unpredictable as climate change. Moreover, social learning is unlikely in polycentric networks of decisions that involve highly heterogeneous actors in terms of interest and a strong degree of power fragmentation. One just need to think about the difficulty of finding agreement on optimal environmental protection levels between small-scale resource users and multinational firms, which always have the possibility to opt out (Dupuis and Knoepfel 2015; Lima et al. 2006). In such settings, the exercise of hierarchy by public authority with democratic legitimacy might represent the only option to reach a decision outcome (Knoepfel and Kissling-Naf 1998; Papadopoulos and Warin 2007).

Finally, in complex social-political systems, implementing adaptive governance in the water sector will not necessarily benefit all actors, but implies winners and losers. In Switzerland, the third Rhone correction is a very ambitious project that aims to increase the capacity to deal with floods of a return period ranging from 100 to 1000 years. The project incorporates features of adaptive governance, notably an emphasis on social learning and flexible decision-making (Arborino 2011). Farmers of the region strongly opposed the project and felt prejudiced by it. Indeed, the proposed solution to increasing the resilience to flood risks involved using arable land as submersible zones. Yet the buildings that surrounding municipalities allowed constructing too near from the riverbed will be maintained, although it constitutes the main cause of present and future vulnerability.

As outcomes of water governance reforms always depend to some extent on past choices and on the balance of power between local stakeholders, it appears doubtful that adaptive governance will universally be perceived as a progress. Enhancing the capacity to deal with environmental changes in the water sector is certainly a good thing that adaptive governance might be able to do; but simultaneously contributing to economic development and social equity in resource access is another, which might stay out of hands. Here the case of the third Rhone correction demonstrates but one thing: that an analysis in terms of actors and politics cannot be omitted if the impacts of adaptation are to be understood.

5 Conclusion

In this chapter, I discussed whether climate change adaptation can be considered as a new global norm, and what this is implying for the water sector. I have focused on three dimensions of norms, investigating whether adaptation is being institutionalized in water governance; what normative content is being conveyed; and whether clear substantive prescriptions on the collective behaviour to adopt exist. I have reviewed the evidences, drawing from the literature and existing case studies to make the following observations.

First, adaptation acts as a global norm with respects to the fact that signs of institutionalization can be distinguished worldwide. However, this process is plagued by symbolism and coordination problems, which contributes to producing erratic results.

Second, adaptation has not yet crystallized into a common understanding of the societal goals to be reached, but several conceptions coexist. If this indicates that the normative foundation of adaptation still lacks solidity, the solubility and broadness of the concept actually participate to its attractiveness for policymakers. The diluted meaning of adaptation may very well be exploited in politics, as a way for actors to legitimate old policy solutions or to consolidate their position in policy networks.

Third, adaptation conveys strong prescriptions on the need to make water governance more flexible, polycentric and participative. Confronted to power and politics in concrete decision-making, these advices tend to lose their substance, however.

In a nutshell, adaptation to climate change can be considered as a global norm that has penetrated water governance, but symbolic policymaking, goal unclarity and abstract prescriptions contribute to creating erratic outcomes. This situation draws a clear research agenda: there is a need to analyze comprehensively adaptation processes in the water sector; to develop an in-depth understanding of the pathways of change towards adaptive governance; and to advance implementation studies that seek to identify common patterns in policy outcomes. Because adaptation has long been the poor relation in climate research, it is quite understandable that existing studies focused on providing theoretical guidance on adaptation, and on identifying barriers and deficits. It is, however, time to switch from a normative and descriptive agenda towards an analytical and explicative one.

Notes

1. www.collectif-testet.org/31+la-zone-humide-du-testet.html
2. According to Huitema et al. (2009), “bioregionalization,” namely the geographical rescaling of governance institutions to ecosystem frontiers, constitutes another dimension of these prescriptions.

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