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Taking Up Practical and Intellectual Challenges Posed by International Water Management Trends: Some Introductory Remarks

Christian Bréthaut and Rémi Schweizer

"*Water governance deserves its place on the global agenda before it's too late*." This is with such a call that a vibrant editorial of the journal *Nature* concluded in December 2016 (Nature 2016: 170). The author(s) underlined how human activities, rather than mere hydrological dimensions, were responsible for most changes and crises in Earth's water system. The inherently political dimension of water governance—a "*hard-won human compromise*"—as well as the necessity to recognize the "*long process that aims to guide policies*" at the global level were emphasized.

C. Bréthaut (✉)
Geneva Water Hub, UNESCO Chair in Hydropolitics, Institute for Environmental Sciences, University of Geneva, Geneva, Switzerland

R. Schweizer
Natural Resource Policy Group (NARP), Swiss Federal Institute of Technology (ETH), Zürich, Switzerland

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As a matter of fact, the idea that water governance matters has been around for some time now. The notion of a "global water crisis" has gained interest since the 1990s (Biswas 1999) and is now widely recognized as a crisis of governance (e.g., Biswas and Tortajada 2010; Bogardi et al. 2012; Pahl-Wostl et al. 2012; Gupta et al. 2013; Grafton et al. 2013). The extraordinary and continuously growing number of freshwater uses, underlined by its vital dimension, its unequal distribution on the earth's surface and the numerous uncertainties linked to climate change have raised some serious thoughts on the importance of water governance for human and ecosystems needs (Gleick 2000). The "long process" that the *Nature* editorial refers to was thus initiated several decades ago.

Numerous initiatives have been launched in order to address the challenges of minimizing anthropic impacts and ensuring a balanced interaction within socio-ecological systems, two key issues related to sustainable water uses (Gunderson and Holling 2002; Berkes et al. 2000). The Global Water Partnership (GWP) celebrated "20 years of impact" in 2016, the Water Governance Initiative, run under the umbrella of the Organisation for Economic Co-operation and Development (OECD), held its 8th international meeting in Rabat, Morocco (12–13 January 2017), and the 2030 Agenda for Sustainable Development explicitly places, under goal number six, water governance at the very core of sustainable development (United Nations 2015).

The actors involved in such initiatives, be they practitioners, activists or scholars, work to set governance principles, to disseminate good practices and to define and promote indicators allowing measurement of progress. They reflect on the definition of relevant tools to address the intricate challenges that water management is facing. At the same time, an expanding number of scientific articles, activists' calls and policy papers have been published, illustrating the lively debates regarding how water should or could be governed. It is to such approaches, concepts, principles and models that we refer to in this volume when we talk about "international water management trends."

In this regard, this book aims to reflect critically on these different trends by holding them up against what is happening in the field. The main objective is to revisit a selection of trends and to promote discus-

sion with the help of empirically grounded research mainly conducted in Switzerland. This Introduction is structured around five sections. Firstly (1), we focus on, along with the work of several authors, water crisis that is considered a crisis of governance. Secondly (2), we reflect on different international water management trends, on their contexts of origin and on relationships that occur between the different approaches. Thirdly (3), we present the nature of this volume. Fourthly (4), we reflect on the relevancy of case studies mainly conducted in Switzerland and explain why it represents an interesting laboratory for analyzing water trends. Finally (5), we introduce the structure of the book.

1 Water Crisis as a Crisis of Governance

Building upon resilience theories (Gunderson and Holling 2002; Berkes et al. 2000), we share the vision of water resources as a system characterized by strong interplays between society and the environment. Based on a multiplicity of feedback loops and interconnections, this system is particularly complex, fragile and unstable. Its renewal capacities and sustainability greatly depend on anthropic dimensions that entail both quantitative (water intakes, effects on water flows, etc.) and qualitative (pollution, increase of temperature, etc.) impacts on the resource. These interplays have become even more significant with the Industrial Revolution, which had two main consequences for the water sector: an increase in the goods and services derived from water resources; and an intensification of localized pressure due to spreading urbanization. Nowadays, these two continuous tendencies are followed by new challenges and uncertainties linked with climate changes. Among other illustrations, one can mention the growing occurrence of extreme events or the rise of temperature affecting the melting of glaciers and the overall ecosystem functioning.

In other words, the combination between the nature of the resource and its use by society may lead to what Hardin (1968) called a *tragedy*, in the form of resource overexploitation and/or pollution threats. As argued by many authors, the triggering factors of this tragedy generally arise

from governance failures (Pahl-Wostl et al. 2012), i.e., from incapacities to govern human behaviours in a sustainable way. The multifaceted characteristics, the diversity of acceptance and the complexity of governance processes imply a multiplicity of possible deficiencies that may, as this volume will show, occur in diverse settings and at different scales. Although for different reasons, this is just as much the case in developing as in already developed countries. As stated by Biswas and Tortajada (2010: 130): "*Because of the changes that are likely to take place, water governance has to change more during the next 20 years than it has in past 2000 years if societal needs for water-related activities, including environmental requirements, are to be met successfully in a timely, equitable and cost-effective manner*." As uncertainties grow, providing a solution to these governance failures becomes an even greater challenge.

The water crisis increasingly calls for the definition of governance instruments aiming at answering these weaknesses and anticipating possible changes. In this regard, our objective is to contribute to this lively debate by considering the different perspectives proposed to solve the water crisis through multiple analytical lenses and by anchoring our perspective in evidence-based research.

2 International Water Management Trends: Contexts and Filiations

In recent years, water management challenges have been embraced by a variety of approaches. Following incremental dynamics and under the influence of different objectives and agendas, several management trends have risen at the international level in order to define solutions to persisting water crises and to overcome the weaknesses of previous governance practices. Among others, one can mention Integrated Water Resources Management (IWRM), adaptive governance, water security or, more recently, the Water–Energy–Food Nexus.

These trends materialize both in normative approaches supported by international organizations as well as in more analytical frameworks produced by the academic community. This dual nature—normative and analytical—is, however, not so clear-cut and both dimensions interact

and nourish each other. In several instances, these trends have been developed firstly as an answer to practical and empirical concerns and have been (more or less) critically assessed by research only in a second step. This is particularly true for IWRM (GWP 2000a; Biswas 2004, 2008; Rahaman and Varis 2005; Giordano and Shah 2014), water security (GWP 2000b; Cook and Bakker 2012; Zeitoun et al. 2016) or the nexus approach (Waughray 2011; Hoff 2011; Allouche et al. 2014).

A number of publications, often following a historical perspective, track the origins of and critically explore these international water management trends. They contribute to identify their rationale and the main drivers for their emergence, development and, sometimes, revival. Researchers focus on their conceptual and ideological foundations, identifying underlying objectives, power games and political stances. They highlight their "why" (the specific agendas of their promoters) and "how" (the strategy by which they are initiated), as well as their shortcomings (among others: Biswas 2008; Rahaman and Varis 2005; Benson et al. 2015; Cook and Bakker 2012; Zeitoun et al. 2016; Allouche et al. 2015). Some authors, considering the web of multiple water management trends, also reflect on existing filiations and possible entanglements that exist among the different trends (among others: Engle et al. 2011; Varady et al. 2016). As an attempt at classification of such contributions, two main categories are brought forward.

The first element that emerges (1) is the building of a common filiation. Water management practices develop in relation to the sector needs but also follow deeper ideological tendencies. With the recognition of water uses diversity, the emergence of sustainable development principles and the increasing uncertainties related to climate changes, management practices and concerns evolve from a command-and-control perspective (Engle et al. 2011) to more horizontal, adaptive and transversal modes of governance. This evolution is supposed to imply changes in the way the water sector is governed, from centralized top-down dynamics to the development of decentralized and polycentric systems taking into consideration bottom-up dynamics and asking for growing flexibility. Despite substantial differences, similarities and overlaps in the definition of governance innovations are not rare. Complementarities and hybrid models do exist, more especially as new trends do not emerge in a vacuum. They

are shaped by political choices and can be confined or inhibited by the legacy of previously implemented perspectives. For instance, the rise of) IWRM heavily structured succeeding water policies and institutional reforms. Consequently, new path dependencies constantly occur, limiting or blocking the rise of new tools and perspectives regarding the management of water resources (Engle et al. 2011; Benson et al. 2015).

The second category of contributions (2) deals with the identification of shortcomings. On the one hand, several trends are criticized for their vagueness. They present the risk to remain *idealistic buzzwords* (Rahaman and Varis 2005) or *nirvana concepts* that do not fit real-world concerns (Petit 2016; Allouche et al. 2014; Molle 2008; Biswas 2008) and can only have a limited influence on concrete policies. On the other hand, authors built on the identification of weaknesses to highlight the causal links that sparked off new developments. For instance, Varady et al. (2016) demonstrate how one concept (IWRM) was subject to criticism for not being adaptive enough, having no clear objectives and not being sufficiently integrative. Following these three critiques, the authors establish the link with three concepts that emerge as an answer: adaptive management, water security for clearer objectives and the nexus approach for reinforced integration.

3 Nature of This Volume

Water management is seen to have evolved from centralized, top-down government to decentralized, more adaptive, multiscalar and bottom-up governance. This evolution conveys a change in the perception of the environment, of water resources and of existing interactions with society. The growing concerns regarding the environment, the emergence and continuous reinforcement of sustainable development principles and new concerns related to climate changes have been strong drivers for a reinforced consideration of water as a complex socio-ecological system. In this regard, this book addresses a non-exhaustive number of closely interlinked international water management trends that we consider as deeply structuring for the water sectors (see Fig. 1.1):

Fig. 1.1 Structure of the book

- Local Community Governance (LCG)
- Integrated Water Resources Management (IWRM)
- Transboundary Water Management
- Multi-Level Water Governance
- Water Privatization
- Water Market-Based Regulation
- Climate Change Adaptation and Water
- Water Security
- The Nexus Approach

A specific chapter is dedicated to each of these trends. The plurality of the contributions should enlighten the volume and contribute to the following three main objectives: Firstly, this book aims to critically reflect on the nature of the different trends. Each chapter explores their underlying assumptions, providing an overview of existing literature as well as a critical viewpoint. They question their nature and shortcomings from a diversity of perspectives (see later in the chapter). Secondly, the chapters are also organized to provide additional food for thought regarding the analytical and explicative power of these trends. On this basis, we want to build concrete analytical recommendations for water research as well as for practitioners that are confronted with such management trends in their everyday life. Finally, authors were asked to address the diversity of the "real-world" transpositions of these trends, with the underlying goal to assess the extent to which abstractly formulated goals influence domestic policy-making, the (sometime unintended) consequences their implementation reveals and the perceptions that actors have of them.

This book assembles contributions written by social scientists from diverse disciplinary backgrounds (political science, heterodox economics, political geography). In our view, such perspectives are essential in dealing with the inherently political profile of water governance. As already stated, we are convinced that socio-ecological systems are strongly influenced by anthropic components and that water management trends represent social constructs that are nourished by particular agendas, implying power relations and concrete impacts in the field. We are thus strongly convinced that, in addition to providing "information on water use and resources" as emphasized in the *Nature* editorial (Nature 2016: 170),

a crucial role of the scientific community should consist in disentangling the social, political and economic dimensions of water governance.

4 Switzerland as a Laboratory

Switzerland is a low-populated and relatively small country (about eight million inhabitants, 41,285 km^2) located in Western Europe, at the heart of the Alps mountain range (see Fig. 1.2). Despite being at the geographical centre of Europe, it is not part of the European Union. From the economic perspective, the country is a remarkable example of long-lasting stability that resulted in a strong economy (second-highest GDP per capita in the world[1]), ranking at the top of global competitiveness (Schwab 2016).

Switzerland is a water-rich country that receives close to 1500 mm of precipitation every year (Beniston 2012), although some areas in the

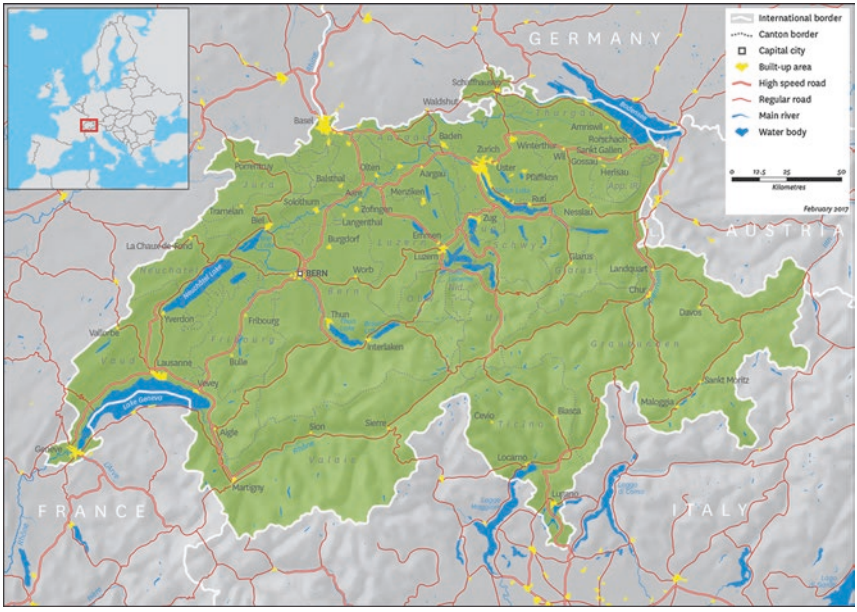

Fig. 1.2 Switzerland, geographical positioning

Swiss Alps prove to be dryer (e.g., only 600 mm of annual precipitation in some places along the Rhône valley). Overall, the Swiss mountainous topography ensures high annual rainfall, about twice the average of European values. Albeit the country covers only 0.4 percent of the European continent, its water resources represent about 5 percent of the continental reserve. Switzerland is therefore often depicted as the water tower of Europe (OFEV 2012), being the source of major European rivers, including the Rhône and the Rhine, and linked with important continental river systems such as the Danube and the Po. The country is particularly affected by climate changes. Since 1900, temperatures have risen at a rate about three times higher than the global average in the twentieth century (Beniston 2012). These changes imply less snow precipitation, heavy melting of glaciers (between 30 percent and 40 percent since 1900; see Haeberli and Beniston 1998) and an increase of intense rainfalls (Beniston 2006) and droughts (Reinhard et al. 2005).

We consider Switzerland as a very relevant laboratory to reflect on international water management trends. The country is characterized by both political and geographical specificities that provide valuable settings to analyze how international water management trends relate to domestic water policies and practices in a Western, politically stable context.

4.1 The Swiss Political System: Specificities

Switzerland is a country of cleavages (Linder and Steffen 2007): linguistic of course, but also religious and geographical (urban vs. rural). It is organized as a federal system relying on three interacting levels: the Confederation, the cantons (member states) and the communes (municipalities). Based on a compromise between a liberal-Protestant majority and a conservative-Catholic minority, the Swiss federal system was created "with limited powers for the central Government and a considerable degree of autonomy for the 'member states' in order to protect their cultural (i.e., linguistic and religious) differences" (Linder and Steffen 2007: 16). Modern Switzerland is shaped by this federalist structure as well as by extended popular rights, which both had a profound impact on the practice of "conflict resolution through negotiation" (Linder and Steffen 2007: 17).

The current organization of political institutions is based around a series of core principles (see Vatter 2007) such as the division of power: the Federal Council (composed of seven members) acts as government, the bicameral Federal Assembly (National Council and Council of States) as parliament, and the Federal Supreme Court as the judiciary authority. The Swiss political system is, in addition, deeply structured around the principle of subsidiarity, according to which "*nothing that can be done at a lower political level should be done at a higher political level*."[2] The twenty-six cantons that compose the Swiss Confederation, as well as the thousands of municipalities, thus benefit from far-reaching responsibilities both in elaborating policies that are not explicitly attributed at a higher level (principles of cantonal and municipal autonomy) and in implementing federal, respectively cantonal, policies (principle of executive federalism). Overall, the Swiss political system is characterized by a strong degree of decentralization, and the water sector makes no exception.

4.2 Regulation of the Swiss Water Sector

In Switzerland, the main regulatory competencies related to water are attributed to federal authorities. According to the constitution (Article 76), the Confederation shall lay down principles and legislates on water conservation and exploitation, on the use of water for the production of energy and for cooling purpose, on water protection or on appropriate residual flows. The regulation of the water sector is thus mainly dependent on federal legislations that cantons and municipalities are responsible to enforce and specify.

The Swiss water sector has already been extensively analyzed by scholars focusing on the evolution of its institutional regime (Gerber et al. 2009). This approach argues that the management of water resources is mainly controlled through specific protection and exploitation policies, on the one hand, and through property regimes that define ownership, disposition and use rights, on the other (Mauch et al. 2000; Varone et al. 2002). These analyses illustrate an evolving collective-action problem and the development of specific answers driven by the central state. Authors identify four phases of development for the Swiss water public policies ranging between 1871 and 2000 (Varone et al. 2002: 91):

The first phase (1), from 1871 to 1908, is structured around three main collective problems to be addressed: flood protection, acute pollution concerns and the need to reinforce energy production capacities from hydropower. Without being materialized by the development of a concrete water policy, this first phase sees the development of several sectorial policies dedicated to solve these different issues. Flood risk is mainly targeted through the protection of forests (federal forest law of 1876), water quality is subordinated to the protection of fish stocks (federal law on fishing of 1888) and the increase of hydropower capacities comes along with the will to exploit watercourses extensively (federal law on the use of hydroelectric power after 1908).

The second phase (2), from 1908 to 1953, is characterized by the expansion of water use policies with a focus on energy and food production. In parallel with the aim to reinforce the protection against flooding, public policies are defined in order to reinforce the energy and food production capacities of Switzerland in a context of the World Wars. On the one hand, concessions are awarded in order to increase hydropower production capacities while, on the other hand, measures are adopted in order to improve and extend capacities regarding land use and agriculture (Agriculture Law of the 3 October 1951).

In the third phase (3), from 1953 to 1991, Swiss lakes strongly suffer from eutrophication. As an answer, the Confederation adopts (1955) the Federal Law on the Protection of Water (1956), which is materialized by different measures aiming at protecting water against pollution, including the subsidization and construction of water treatment plans. After a second period mainly concerned with the maximization of water use, this phase is dedicated to attenuation of the negative effects that this production-centred perspective induced. In this regard, this phase is characterized by an aim "to improve co-ordination of all efforts and to take into account the entire water cycle in the protection policy" (Varone et al. 2002: 90).

The fourth phase (4) begins in 1991 with the definition of a new water policy materialized by the Federal Act on the Protection of Waters. This phase sees the development of more holistic water policies targeting the "*the global preservation of water, in terms of quality, quantity and landscape*" (Mauch et al. 2000: 56). In this regard, it's a period focused on the

development of a reinforced integrated policy design. On the one hand, it targets the reinforcement of coherence among different sectorial policies. On the other hand, it aims at expanding the perspective, considering water quality but also water quantity issues (the definition of minimum flow), notably in relation with maintained biodiversity and landscape functions of water resources.

4.3 Emerging Issues and Implementation Challenges

Currently, one can say that the Swiss water regulatory framework tends toward integration, with a great extent of regulation (high number of goods and services effectively regulated, strong capacities of rules enforcement by the state) and strong coherence (weak number of counterproductive messages between regulatory sources or regulatory levels, right targets and implemented policy instruments). This affirmation appears, however, relativized by a series of emerging issues and of implementation challenges that should be dealt with.

The regulatory framework is facing, on the one hand, growing complexities and uncertainties related to socio-economic and climate changes, two tendencies that are very likely to increase the pressure on the resource. Along with the reinforcement of environmental norms in the last decades, the sector will need to deal with new issues (e.g., micro-pollutants) that are currently growing on the political agenda and will require specific actions. More generally, it will also be confronted with a growing number and intensification of uses, leading to new and amplified rivalries to be arbitrated. As a consequence, transversal and intersectoral thinking is very likely to become key. In the Alps regions and in Switzerland in particular (Beniston 2012), climate changes also come with new uncertainties requiring rethinking water management and raising new needs related to institutional flexibility and adaptation.

On the other hand, and despite the political and economic stability that may be seen as a catalyst for the enforcement of policies, authors have shown how gaps and discrepancies may arise during implementation processes (Bréthaut 2013; Schweizer 2015). The multi-level dimensions inherent to the Swiss political system (principles of cantonal

autonomy and of executive federalism), the remaining gaps and incoherencies of the regulatory framework, the importance of localized contexts, distribution of water uses and administrative structures, the configuration, power relations and diverging strategies of actors that are not necessarily willing to implement environmental prescriptions–these are some of the elements that may disturb the linear implementation of rules decided at the federal level.

5 Structure of This Edited Volume

This book is structured around three clusters that cover nine international water management trends, perceived as normative or analytical frameworks (if not as both) (see Fig. 1.1). Switzerland is mobilized as a relevant laboratory for interrogating the nature of these trends, their analytical potential and the diversity of their transposition on the ground. Some of the contributions focus only on this country, providing in-depth case studies or surveys of actors' preferences at the federal, cantonal or local level. Others initiate a dialogue with other parts of the world, which allows putting this mainly Swiss focus into perspective.

The first cluster compiles contributions that reflect on dynamic interactions across scales, sectors and territories. Four trends are discussed: local community governance, IWRM, transboundary water management and multi-level water governance.

In Chap. 2, Rémi Schweizer explores local community governance of water in the canton of Valais, one of the driest regions of Switzerland. He questions the argument that water is a *common* that would better be governed locally and collectively, an idea that increasingly spread since the work of Elinor Ostrom (1990) and her colleagues. Using the case of water irrigation systems, the author focuses on existing governance structure to explore three issues: the delimitation of community boundaries (also meaning exclusions), the power balances and inequalities within local community and the interplay between these communities and public authorities. The analysis provides a more contrasted image than the romanticized illusion conveyed by some of the literature and argues for thicker institutional and political analyses in order to avoid falling into a "commons" trap.

In Chap. 3, Arnaud Buchs explores the concept of IWRM. Internationally promoted for decades, integration has been considered as an imperative for sustainable water use by Swiss federal authorities since the early 2000s. However, the operationalization of the notion leads the author to question the gap vis-à-vis the theoretical model. To do so, he draws on an analysis of the different phases leading to the renewal of a cantonal water act in the canton of Fribourg. Mobilizing an economy of convention approach, he shows how integrated management has to be considered, in the end, as a regionalized institutional compromise that is far from a purely functionalist vision: first, the scope of sectoral integration is not given; second, the scale finally adopted does not fit exactly the watershed, even though it is presented as the perfect functional space for regulating water use.

In Chap. 4, Christian Bréthaut focuses on the transboundary water management of the Rhône River, involving Switzerland and France. On the one hand, the chapter explores the evolution of the Rhône's Functional Space of Regulation (Varone et al. 2013). The author reflects on the evolution of the public problem, of the role of the state in the operational management of the river, and of the geographical boundaries and forms of regulation. On the other hand, he analyzes the river's evolving configuration of actors and notably the role played by non-state actors coming from different sectors. In the end, he shows how a non-state actors' perspective allows considering transboundary river management through different lenses that are crucial in understanding its evolution: power relations, actors' strategies to secure different water needs and the evolving role played by central states.

In Chap. 5, Emilie Dupuits deals with the multi-level governance (MLG) framework, which emerged as a new approach to analyze the fragmented nature of socio-ecological systems. This chapter is the only one that does not address the Swiss case but, rather, focuses on Ecuador. This is justified by the author's goals to show, first, the Eurocentric cultural bias that many water management trends entail and, second, the inherently political nature of scalar politics. Many trends analyzed in this book emerged, indeed, in a Western context, often with the support of strong international organizations. This chapter aims to address a case outside the Western contexts and to put the trend of multi-level water

management into perspective with non-Western viewpoints and concepts such as neo-extractivism (Andrade 2013).

The second cluster puts in the spotlight the link between water management and economic issues. More specifically, it reflects on concepts that aim to view water as a financial commodity. Two trends are addressed: privatization and market-based instruments (MBIs).

Chap. 6 focuses on privatization trends of the water sector in Switzerland. Eva Lieberherr leads a comparative analysis between two Swiss cities (Zurich and Bern) considering the specificities of a federal system. In particular, the author focuses on the relationship between privatization of the water sector and democratic legitimacy. The cities chose two different water management systems: direct public management in Zurich, formal privatization and delegated public management in Bern. The comparison of management processes allows an assessment of democratic legitimacy in both cities.

Florence Metz and Philip Leifeld contributed Chap. 7. They focus on the use of MBIs to govern emerging issues related to water quality (e.g., micro-pollutants). Environmental economists have advocated MBIs for their effectiveness, cost-efficiency and flexibility, but lessons from past experiences indicate that issues related to administrative complexities, legitimacy or uncertainty can arise. Turning the academic debate into an empirical one, the authors take an actor perspective and assess the potential for introducing MBIs in Switzerland. In the end, the preferences of Swiss policy actors show that support for command-and-control or voluntary instruments exceed market-based approaches for reducing emerging pollutants in water, recalling the necessity to consider political dimensions and stakeholders' objectives when reflecting on the definition of policy tools for water management.

Finally, and to echo the work of Varady et al. (2016), the tendencies described in the first two clusters also raised criticisms that generated the development of alternatives. In this regard, the third cluster concentrates on three innovative perspectives on water stakes: climate change adaptation, water security and the nexus approach.

Chapter 8 is written by Johan Dupuis and examines the status of climate change adaptation in water governance. The author questions, on the one hand, the meaning of a concept that encounters a strong polysemy

in practice and, on the other hand, the complex and erratic nature of adaptation policy processes, which may result in outputs that highly diverge from the positive expectations held in the literature and in international fora. As for other types of concepts (and notably IWRM), stakeholders may use the fuzzy and encompassing notion of climate change adaptation strategically. In order to illustrate these issues, the author uses different examples situated in Switzerland, India and France.

In Chap. 9, Thomas Bolognesi and Stéphane Kluser focus on the concept of water security. They discuss, in a first step, the different indicators that have been developed to measure water security, showing the strong heterogeneity that existing assessments reveal. Then, in a second step, they reflect on the reciprocal relationship between the integration of water regimes (reinforced regulatory capacities of goods and services) and water security improvement. In particular, the authors suggest that water security represents a crucial trigger for water regime evolution by anticipating issues in governance fitting and evolution and new uses rivalries. They conclude that water security would better be conceived as a governance principle for the adaptive management of water regimes rather than as a normative goal to reach.

Luc Tonka is the author of Chap. 10. He concentrates on the nexus approach in order to provide elements of explanation regarding the reasons why, to date, its promises have not been fulfilled. To do so, he provides a detailed assessment of extent by which the water management strategies developed by the Swiss cantons of Bern and Valais match the principles of a "nexused" approach. By bringing institutional and actorial analytical dimensions to the foreground, he highlights the triggers and obstacles to a "nexused solution" and illustrates the intrinsically political dimension of use allocation choices.

Given the crucial importance of water resources, great complexity and lively debates are not surprising. Thus, trends addressed in this book illustrate several attempts to grasp and provide answers to the practical and intellectual challenges posed by water management. In this regard, this book aims to critically question different trends that heavily structure the way water resources are considered, the way water policies are defined or the way water projects are financed. Taking advantage of evidence-based perspectives founded into recent fieldworks that have been

conducted in similar areas, this volume illustrates the diversity of approaches and the complexity of the tasks. It shows the close interplay that arises between normative and analytical viewpoints. By doing so, we hope that this volume will provide insightful and reflexive considerations to practitioners, scholars or users interested by the management of water resources.

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Notes

1. http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?year_high_desc=true (visited 9 January 2017).
2. www.admin.ch/gov/en/start/federal-council/political-system-of-switzerland/swiss-federalism.html (visited 9 January 2017).

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Christian Bréthaut is an assistant Professor at the Institute for Environmental Sciences at the University of Geneva. He leads the Education and Knowledge component of the Geneva Water Hub and co-leads the UNESCO Chair on

Hydropolitics from the University of Geneva. His work focuses on challenges interlinked with transboundary contexts and with intersectorality. He is a co-editor of the Palgrave Series in Water Governance.

Rémi Schweizer is a senior researcher and lecturer at the ETH Zürich. His research focuses on environmental and food governance, with an interest in power relations, policy implementation and innovation and local community governance. Author of several books and articles, he conducts research with a strong empirically grounded approach.