



# River Basin Management in the Twenty-first Century

## Understanding People and Place

**Editors:** Victor R. Squires • Hugh M. Milner  
Katherine A. Daniell



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# **River Basin Management in the Twenty-first Century**

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## Understanding People and Place

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# Scope and Purpose

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## Scope and Purpose

The book is written by leading authorities on the current and latent issues relating to river basin management (RBM) and brings to the reader an up to date analysis and provides a window into this important subject. A key aspect of the work is that of achieving *balance*. Technical approaches can address some issues such as hydropower generation, flood mitigation, provision of water for irrigated agriculture to feed burgeoning populations, recreation and navigation, etc. but balancing these is the negotiated outcome of social processes. Ultimately it is these social processes that are the hard part, and often the stumbling block, for improving RBM.

This book is divided into four Parts.

## PART 1 IWRM—Principles and Practices

Integrated Water Resources Management (IWRM) is seen by many as the way forward towards food, water, and energy security. It ideally offers a way and means to better manage water across a territory; managing demand and using limited water more efficiently; adopting new policies in order to cope with climate change and variability, including flood and drought events; increasing water supply through the use of non conventional water resources, especially waste water; adopting approaches of stakeholder participation and information exchange; and raising public awareness of the value of water.

This Part comprises 6 chapters detailing experience with IWRM formulation, transfer, adaptation and implementation in both developed and developing countries. It draws on the rich experience of water management practitioners and puts into sharp focus the strengths and limitations of the IWRM approach. *Mukhtarov and Cherp* take a global perspective. *Maurel et al.*, provide insights into how IWRM can be merged with territorial development to better account for people and place in river basin management. *Mitchell* focuses on experiences from Canada while *Ffolliott and Brooks* give a synoptic overview of experience from USA. The little known situation in China's arid north west, where inland rivers

predominate, is outlined by *Li and Squires* in their study on the Shule River basin in north-west China, and *Marr and Raut* examine issues and experiences in working with local farmers in India.

## **PART 2 Transboundary River Management and Politics**

No problem is so vexed as how to manage rivers that pass through several jurisdictions, especially international transboundary rivers. It has been predicted that access to water will create conflict between countries, even if initial conflict eventually leads to heightened cooperation. In Africa, central Asia, west Asia and the Americas, some countries are already arguing fiercely over access to rivers and inland seas, and confrontations could arise as water shortages grow. Countries currently or potentially involved in international disputes over access to river water and aquifers include: Turkey, Syria and Iraq (the Tigris and Euphrates Rivers); Israel, Jordan, Syria and Palestine (the Jordan River and the aquifers of the Golan Heights); India and Pakistan (the Punjab Rivers); India and Bangladesh (the Ganges and Brahmaputra Rivers); China and South-East Asian countries (the Mekong River); Tajikistan, Kyrgyzstan and Uzbekistan (the Amu Darya and Syr Darya Rivers); Ethiopia, Sudan and East African riparian countries, including Kenya, Tanzania, Rwanda, Burundi, Uganda and Egypt (the Nile River) and Iran and Turkmenistan over the Atrek River and Caspian sea.

The 4 chapters here draw on examples from many countries. *Hassenforder and Noury* examine 8 case studies on transboundary water management projects drawn from their work in 4 continents, *Kibaroglu and Ahmetova* address the real life issues in the Tigris-Euphrates river basin, *Sullivan* deals with the largest river in Southern Africa that rises in Lesotho, flows across south Africa and enters the Atlantic ocean via Namibia. Water management policy and practice in the Nile River system receives scrutiny from *Thuo and Riddell*.

## **PART 3 Water Management Policy, Politics and Economics**

Water, especially freshwater, is such a vital resource. Policies and projects focused on freshwater ecosystem alterations have been carried out through much of modern history, with the intensity of modifications increasing in the early to mid-1900s. Common waterway modifications, such as the construction of dams and irrigation channels, inter-basin connections and water transfers, can impact on the hydrology of freshwater systems, disconnect rivers from floodplains and wetlands, and decrease water velocity in riverine systems. This, in turn, can affect the seasonal flow and

sediment transport of rivers downstream, impacting on fish migrations and changing the composition of riparian ecosystems. All of these issues require a balanced approach to their resolution. Legislation, policy formulation and the role of socio-economic forces are all part of the complex matrix that represents modern day responses to increasing demand for water and its dwindling supply relative to global population.

The five chapters examine aspects of the responses of societies concerned about ensuring a continuing supply of freshwater to service the needs of agriculture, industry, domestic use and the environment. *Du et al.*, use the Yellow River Commission in China as a case study of how a large but mainly arid country supporting the world's largest human population has legislated to manage and allocate water from one of the world's longest rivers, *Loch et al.*, elaborate on the issues and conflicts involved in managing Australia's largest river system that services water users in five separate jurisdictions. *Xu et al.*, present an analysis of how China has tackled the management of a large inland river basin in an arid part of north-west China, and *Krutov et al.*, summarize the present situation in the Aral Sea basin and examine the role of the Republic of Tajikistan in the Inter-state Aral sea commission. *Kingsford et al.*, analyze the issues in the Lake Eyre basin in central Australia.

## **PART 4 People and Place**

The successful implementation of river basin management, integrated or not, depends on how the local stakeholders (urban, rural, industrial, environmental, etc.) behave in relation to water. It depends on their perceptions of the role of the water. Place is paramount because inevitably those upstream will have different priorities from those downstream in a river basin. Agriculture, collectively the world's biggest user of freshwater, lays claim to vast quantities of water to produce food for the worlds' burgeoning population. Increasing awareness of impending water shortages (at crisis point in some countries or regions) and the concern about ecosystems invariably lead to a clash of opinions over water allocation priorities. Some of these issues are dealt with in this Part of 5 chapters. *Squires* looks at the pivotal role of people and the importance of place. The national water policies in Nepal are outlined and assessed by *Pradhan et al.*, while *Wenger* looks at the consequences of devastating floods, often exacerbated by human interference with rivers, and the lessons drawn from experiences on four continents. *Plant et al.*, then investigate the importance of information and communication arrangements for people working together across the Thau water territory in France. Finally *Daniell, Milner and Squires* provide an overview of a number of key issues raised in this book.



There are no quick or easy solutions to the complex land and water problems faced by many countries. If this book can help in the process of advancing better RBM, we will feel truly rewarded.

The Editors are grateful to Raju Primlani and the team in the Editorial Department for their help and support in the preparation of the manuscript for publication and to our colleagues who provided feedback and advice on the earlier drafts. Thanks are due to those who prepared or upgraded the graphics or supplied photos.

**Victor R. Squires, Adelaide**  
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# **Preamble**

## **An Introduction to People and Place in River Basin Management**

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Integrated Water Resources Management (IWRM) is seen by many as the way forward towards food, water, and energy security. It ideally offers ways and means to better manage water across a territory; managing demand and using limited water more efficiently; adopting new policies in order to cope with climate change and variability including flood and drought events; increasing water supply through the use of non conventional water resources and managing water quality, especially of waste water; adopting approaches of stakeholder participation and information exchange; and raising public awareness of the value of water.

River Basin Management (RBM), a subset of IWRM, can be characterized in a number of ways, although it often entails working through sets of trade-off decisions, where the potential (or very real) benefits from one choice are relinquished in favour of another choice that is perceived as more desirable or beneficial (see Loch et al., this volume; Mitchell, this volume). The development of RBM decision-making processes have been given further weight in recent decades by public policy requirements to satisfy triple-bottom-line (i.e., economic, social and environmental) objectives. Sustainable management is an often-stated but difficult to define objective of management of any river basin. It entails judicious

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governance arrangements to manage alternative choices between economic, environmental, social, cultural, and other outcomes that will support and allow future generations to gain similar or greater value from the basin, its water and environment, as current generations.

People and place are major determinants of success of any measures taken. There will be continuing struggle between the needs of people (in terms of economic and social dimensions) and the needs of place (in terms of the environment). Such a struggle is made even more complicated by the fact that the needs of place overlap with economic and social dimensions as well (see Squires, this volume). We characterize *people* as the economic, social and community aspects of RMB, while *place* is comprised of environmental attributes that vary from one river basin to another, but also within river basins, with important aspects including upstream users vs. downstream or the reconciling the water needs of urban vs. rural (mainly irrigated agriculture). Water allocation is another dilemma. Retaining a balance between people (i.e., economic focus on water market and rural social welfare improvements via infra-structure projects) and place (i.e. environmental flow provision) issues puts pressure on RBM authorities.

Over-allocation presents an issue when the full volume of water that is able to be extracted at a point in time exceeds an environmentally sustainable level of extraction. As the various case studies in this volume show, various countries have adopted market-based instruments as a means of reallocating water between various users. Effective markets manage rising demand for water among competing users and ensure that it is used efficiently for desired ends, while still promoting environmental, economic and social sustainability. Managing a river basin as a single entity, rather than its management by various local administrations, has the potential to facilitate recognition of social, economic and environmental factors. However, it should be remembered that management of the basin remains an inherently political process, and it would be naive to assume that technical information alone will be sufficient to arbitrate disputes between key stakeholders; notably those related to the economic, social, cultural and environmental aspects within the basin.

At a time when populations are rapidly rising, demand for food is on the increase and climate change is setting in, it is inevitable that water for agriculture must have high priority. There needs to be more market-based instrument policy development to increase farmers' adaptive capacity to climate change. The efficiency and effectiveness of on and off-farm irrigation infrastructure investment need careful reconsideration (e.g., because of return-flow issues, increased future energy costs, increased future water charges). The increasing over-extraction of groundwater and its use as a substitute for surface water allocations will also gain increasing prominence over the next few decades. There will be an increasing need for markets to

offer new products that optimize flexibility in water use for both irrigators, other community members (including urban residents) and the environment. Such developments include trade in allocations for environmental flows, counter-cyclical trade between irrigation and environmental water holders, option contracts in both rural and urban markets.

Trading requires well defined and administered water rights, and comprehensive public information on water resources, water environments and water use. In many river basins these conditions are not yet met and introducing water trading systems only threatens sustainability by encouraging exploitation by powerful and elite groups. Until low level water rights and information systems are established, control of water use should be exercised by authorities that have access to information and capability to understand the changes which will be induced in natural water systems. Checks should be encouraged through regular public status reports of the river system by these authorities so that judgment can be made on how the 'triple bottom line' is being met.

Climate change greatly exacerbates the effects of mismanagement while introducing major additional challenges of its own. Sea level rise for instance could result in salinization and, in extreme cases, permanent inundation of major food producing areas, especially in South and South East Asia but also in the Nile delta, regions which are characterized by vast areas of cropland in the coastal lowlands. Even where permanent inundation is not a risk, climate change induced storm surges could result in catastrophic flooding, sometimes with saline water, of the same areas. Sea level rise could also compromise the sustainability of essential ecosystems in the coastal shallows, ecosystems on which, as we have already seen, major food chains depend. Increasing temperature (and the other factors mentioned above) will also affect these ecosystems—hence the claim regarding the need to find alternative sources of food for the 1 billion people that currently depend more or less directly on them for their food security.

The severity of floods and droughts is forecast to increase under the influence of more powerful heat-driven climate systems. Management of extreme conditions will be put to the test.

Climate change is also causing glaciers both to retreat and to thaw early (Li & Squires, this volume). Glacial retreat, which results from annual melt rates that are greater than annual precipitation rates, compromises the long term ability of glaciers to supply water using sectors downstream. These crucially include large areas of irrigated agriculture that have hitherto depended on such glacial melt such as those in Central Asia (see Krutov et al., this volume). That this is a problem will be obvious, but there is something else. Early thaws mean that instead of being used for productive purposes, significant amounts of water leave the system before ambient temperatures downstream are high enough for crops to be planted. Thus

not only is the overall glacial resource diminishing, the usefulness of that which remains is also diminishing—a double whammy as it were. A similar picture is also emerging with respect to rainfall both in terms of its total quantum but also in its seasonal distribution and intensity. Water supplies depend on runoff from mountains, much of which originates as snowmelt in forested watersheds. Water is one of the critical ecosystem services provided by forests and grasslands. Vegetation has a large effect on the water budget through both transpiration and interception, with an inverse relationship between forest cover and streamflow demonstrated for many forested landscapes.

In snow-dominated, forested catchments, water yields are affected by the energy budget of the forest, which determines the accumulation and melt characteristics of the snowpack, and by the magnitude of evapotranspiration, that is, amount of vegetation; both can be manipulated by forest management. The impact of any reduction of vegetation on snow accumulation is significant and is a result of the combined effect of interception loss and alteration of the depositional pattern. Clearing of forests may lead to accelerated soil erosion and increased sedimentation.

Because changing climate is expected to dramatically affect the amount and seasonal distribution of rainfall and snowpack, land managers have acknowledged the need for new strategies and effective approaches to address these changes.

Although experts are not as yet fully confident in the convergence of their models, especially with respect to inland continental areas, the degree of consistency that is emerging shows that many important food producing areas (existing or potential) will become hotter and drier. Thus the overall water resource represented by precipitation that results in usable runoff will trend downwards. Additionally, in typical situations, precipitation events are expected to become more intense rendering the water less manageable, in that less of the water that does fall is retained in the root zone, the natural drainage systems (including any aquifers) and artificial storage dams—the double whammy once again. Conversely, where rainfall is expected to increase—and this is expected in some important food producing areas—there is the associated risk of flooding, thereby increasing either the risks or costs associated with sustainable agriculture and having implications for urban and industrial areas downstream.

Sustainable water management and allocation is a complex issue involving legal, governance, institutional, policy and economic factors, as well as wise use practices. But this does not obviate the need to get it right. The effects of poor water management and allocation on food security can be summarized as follows.

Where irrigation is concerned, over-abstraction can lead to water logging and hence long-term or permanent soil deterioration and reduced

productivity. It furthermore reduces environmental stream flows, which clearly reduces access to water for productive (as well as other) uses by downstream stakeholders. These uses include not only more irrigation, but also capture fisheries which in some locations have a vital food security role. Capture fisheries are also severely compromised as a result of gene pool degradation when water bodies (including rivers) become fragmented due to badly planned storage, over-abstraction or wastage of water.

Excessive sedimentation has a detrimental effect on marine fisheries. This should not be taken to mean that sedimentation is bad per se. In fact in most large river systems the opposite is true. The vast, complex and usually economically significant food chains living within these systems have generally evolved on the basis on an annual flood and turbidity cycle. Disruption of these cycles by means of badly planned dams, excessive abstractions and unseasonal sediment loads (which can be less than required as well as more) can have a catastrophic effect on fisheries on both the rivers themselves and the marine environments into which they discharge.

Finally on sediment, is the fact that natural sediment loads carried during normal flooding usually increase fertility when left in the soil when the flood recedes. It was this very benefit that sustained Egypt as a superpower for thousands of years. Construction of the Aswan High Dam means that this sediment no longer reaches the farms along the Nile Valley upstream (Thuo and Riddell, this volume). Farmers now depend on expensive artificial fertilizers to do the job. When these are unaffordable, food security suffers; and when they are financially affordable, use tends to be excessive, with predictable environmental cost increases. To compound the difficulty of devising and implementing better RBM is the need to provide for trans-seasonal storage in many cases due to the seasonality of river flow, and take account of increasing potential for competition at the point of use, and sensitive transboundary issues.

As river basins have been developed with greater levels of infrastructure and intensity of agriculture, urbanization and industry, the need to move beyond traditional local-level and individual governance of water and land access and rights has increased. Large infrastructure systems such as dams, canals, pressurized water distribution systems and large-scale water treatment plants rely upon high levels of technical expertise for their effective management. Likewise complex water allocation arrangements, including environmental flow releases, the use of markets and legislation, can also not effectively function without high levels of monitoring and evaluation, and the associated capacity to enforce compliance. This has driven the development of large water bureaucracies in many places. However, especially for the latter issues of allocation, it has necessitated the need for increasing engagement with stakeholders, including agricultural, community, public sector and industry water and land managers across river



basins and at different levels of government. The organizational challenges associated with the development of a range of participatory approaches that can be used to allow these stakeholders to negotiate decisions and work more effectively together is one of the most significant global water governance issues (Daniell 2012). To what extent such challenges can be overcome and how in each river basin is very much a matter for people, the specificities of the places they inhabit and the governance systems supported by the governments of the countries in which they lie.

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## PART 1

# IWRM—Principles and Practices

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Integrated Water Resources Management (IWRM) is seen by many as the way forward towards food, water, and energy security. It ideally offers a ways and means to better manage water across a territory; managing demand and using limited water more efficiently; adopting new policies in order to cope with climate change and variability including flood and drought events; increasing water supply through the use of non conventional water resources, especially waste water; adopting approaches of stakeholder participation and information exchange; and raising public awareness of the value of water.

This Part comprises 6 chapters detailing experience with IWRM formulation, transfer, adaptation and implementation in both developed and developing countries. It draws on the rich experience of water management practitioners and puts into sharp focus the strengths and limitations of the IWRM approach. *Mukhtarov and Cherp* take a global perspective, *Efolliott and Brooks* give a synoptic overview of experience from USA while *Mitchell* focuses on experiences from Canada. The little known situation in China's arid north west, where inland rivers predominate, is outlined by *Li and Squires* in their study on the Shule River Basin in north-west China. *Marr and Raut* examine issues and experiences in working with local farmers in India and *Maurel et al.*, provide insights into how IWRM can be merged with territorial development to better account for people and place in river basin management.



# 1

## The Hegemony of Integrated Water Resources Management as a Global Water Discourse

Farhad Mukhtarov<sup>1,\*</sup> and Aleh Cherp<sup>2</sup>

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### SYNOPSIS

The early form of Integrated Water Resources Management (IWRM) emerged in the USA in the 1900s in order to manage interactions between water, land, eco- and social systems. By the end of the last century, IWRM has become a globally prominent policy concept. We concern ourselves with three questions, namely, a) “why did IWRM become a globally popular concept”?; b) “how did IWRM become a globally popular concept”?; and c) “what are the effects of IWRM being a globally popular concept”? We argue that this popularity can be explained in term of a neo-Gramscian concept of hegemony and the three-dimensional model of power. The hegemony of IWRM relies on: a) providing material incentives to engage with IWRM; b) directing normative persuasion in order to create and diffuse the norms; and c) building up organizational hierarchies to support IWRM

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planning. Using water management in Kazakhstan as a case study, we demonstrate some of the risks associated with an uncritical embrace of IWRM which may stem from its global hegemony.

**Keywords:** fragmentation, global water initiatives, holistic management, IWRM, Kazakhstan, neo-Gramscian, neoliberalism, technocratic elites, transnational actors, USA

## 1 Introduction

It is widely held that current practices of water resources management on the global scale are inadequate (Watkins 2006). The roots of this inadequacy lie not so much in poor financing or technology or natural scarcity of water, as in “poverty, inequality and unequal power relationships, as well as flawed water management policies that exacerbate scarcity” (Watkins 2006: 1). Many agree that the *fragmentation* of water management by sectors, resources and users is the main cause of the problem (e.g., UNEP 1994). In response to this consensus, the need for a holistic management approach has been advocated in the form of Integrated Water Resources Management (IWRM) presented as a tool for efficient, equitable and sustainable development and management of the world’s limited water resources and for coping with conflicting demands for water (UN-Water 2008: 4).

Since its emergence in the early 20th century in the conservation movement of the American president Theodore Roosevelt, Integrated Water Resources Management (IWRM) has taken various forms and is currently embraced by most international policy actors. IWRM can be defined as the process which “promotes coordinated development and management of water, land and related resources, in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital systems” (GWP-TAC 2000: 22).

Today, IWRM boasts global popularity and is currently being implemented in over 100 countries (UN-Water 2008; 2012). The UN-Water, United Nations coordinating mechanism for global water initiatives, monitors the progress towards IWRM planning and has produced two status reports (UN-Water 2008; 2012). In addition, the official mandate of the United Nations Commission for Sustainable Development (UN CSD) includes the facilitation and monitoring of the IWRM efforts globally (Baumgartner and Pahl-Wostl 2013). Promoted by international organizations, transnational actors and the Internet, IWRM ideas travel from the international to the national policy arena and are widespread on a global scale (Mukhtarov 2008).

Despite its sweeping popularity with academia, policy-makers and general public, there is little agreement on what IWRM actually constitutes

(Biswas 2004a; 2004b). There is an on-going debate on the basic meaning, utility, scope and nature of IWRM and over thirty IWRM definitions can be found in the literature (Saravanan et al. 2009; Mukhtarov and Gerlak forthcoming).

There are many fronts on which the IWRM debate is taking place. The supporters of IWRM, such as Mitchell (1990; 2005) and White (1998), argued for the need of reform towards more integration and coordination in water management, however challenging this task may be. At the same time, donors and think-tanks continue to promote IWRM planning and monitoring procedures (Baumgartner and Pahl-Wostl 2013: 3). Those opposing IWRM, in turn, argued that the beliefs in integration are 'idealistic' (Walther 1987), that integration is inevitably impeded by the politics (Saravanan et al. 2009), and that IWRM has degenerated into a policy 'buzzword' which served technocratic elites who continue business as usual under the new banner (Biswas 2004b; 2008).

One of the most contested is the relationship of IWRM with the neoliberal approaches to water governance, which can be defined as "a politically guided intensification of market rule and commodification" (Brenner et al. 2010: 184). The privatization of water supply and sanitation services and the greater role of the private sector in irrigation and hydropower have often been mentioned under the banner of IWRM (ICWE 1992; Conca 2006). Another heated debate is about the importance of public participation in IWRM and whether it is a façade promoted by IWRM for what is mostly technocratic measured. While the ethos of participation is strong in the discourse of IWRM supported by the Dublin Principles (ICWE 1992) and various Global Water Partnership (GWP) guidelines, there is no literature known to us which would examine the extent to which the views of stakeholders have been accommodated. The recent literature on IWRM has argued that the debate has been polarized "with theoreticians and donors on the one side promoting and requesting IWRM definitions, plans and monitoring procedures, and practitioners on the other side who are torn between living up to the expectations of donors and simply trying to "get on with their job"" (Baumgartner and Pahl-Wostl 2013). Despite this polarization, new attempts to define and frame IWRM still emerge; for example Groenfeldt (2013: 14) suggested that a new concept of "*water ethic*" must be built upon IWRM as it "incorporates a holistic view of water which gives particular recognitions to environmental sustainability social welfare, and governance arrangements".

The diversity of definitions of IWRM and the heat of the debate around this concept are not surprising *per se*. What is striking is that despite being vaguely defined and lacking any solid proof of effectiveness on the ground, IWRM has become popular on the international water policy arena (Biswas 2004b; 2008; Mollinga et al. 2006). The ubiquitous scope of IWRM's

implementation under the conditions when it is not well-defined and agreed upon, and the policy expectations attached to IWRM nevertheless make it important to understand what is behind the dominant position of this policy discourse in the water policy arena. There are numerous studies on IWRM implementation and effectiveness. However, very few studies attempt to explain the popularity of IWRM worldwide with a systematic and theoretically grounded framework (e.g., Biswas 2004a).

This paper examines the reasons for the strong global stature of IWRM by looking at the academic and policy literature which discusses global water governance. We concern ourselves with three questions, namely, a) “why did IWRM become a globally popular concept”?; b) “how did IWRM become a globally popular concept”?; and c) “what are the effects of IWRM being a globally popular concept”?

In Section 2, we discuss the theoretical framework for understanding the domination of IWRM, namely the neo-Gramscian ideas on hegemony. Section 3 makes the case for the hegemonic status of IWRM by discussing its prominence globally, whereas Section 4 addresses the process and mechanism through which IWRM has come to dominate the global water discourse. In Section 5, we illustrate the hegemonic status of IWRM and the impacts it produces at the national level with an example of Kazakhstan national water policy. Finally, Section 6 discusses the implications of the hegemonic status of IWRM for Kazakhstan and broadly and concludes the paper with suggestions for the future research.

## **2 A neo-Gramscian Approach to Global Water Discourse**

The phenomenon of integrated water management is certainly not new in water governance, various authors have argued for integration since the 1900s conservation movement led by Theodore Roosevelt (e.g., Hays 1959). What is new, however, is the centrality of integrated water resources management as a discourse in global governance of water resources. In other words, the multiple initiatives, events and efforts pursued by a wide array of global actors in the area of water management have coalesced around one single policy concept of IWRM, which gave it an additional symbolic and discursive dimension. A discourse theory is a promising approach to analyse and explain how certain policy concepts become prominent, or hegemonic in neo-Gramscian conception, to what effect, and what conditions and mechanisms are involved in this process.

### **2.1 Discourse theory and hegemony**

We approach IWRM as a policy discourse, which in a broad sense can be defined as “an ensemble of ideas, concepts and categories through

which meaning is given to social and physical phenomena, and which is reproduced through an identifiable set of practices" (Hajer 1995: 44). Discourse analysis accentuates the role of structure, institutions, symbols, identities, and language in constituting agents and shaping their preferences and behaviour.

Despite the rich literature on discourse theory and its application to the environment, no unified approach exists for examination of the path through which discourses become dominant (Mukhtarov and Gerlak 2013). Diverse approaches such as critical discourse analysis (Fairclough 1992), discursive policy analysis (Hajer 1995), and interpretative policy analysis (e.g., Yanow 2009) exist to approach policies as discourses. A prominent discursive approach to the study of politics is an adaptation of post-Marxist thought of an Italian politician and social theorist *Antonio Gramsci*. This approach focuses on explaining the dominance of some discourses over others and has been elaborated by Laclau and Mouffe (1985) and more recently by Howarth (2010), Newell and Levy (2005), and Newell (2008b).

The starting premise of this work is Gramsci's analysis of the dominance of one social class over another through the means of a mixed use of persuasion and coercion. A *neo-Gramscian perspective* on discourse analysis emphasizes the notion of *hegemony* and focuses on the description and explanation of how some discourses acquire *hegemony* over others. The notion of hegemony "refers to the alignment of material, institutional and discursive power" in such a way which favours certain coalitions of actors sustaining the status-quo (Newell 2009: 38). The persistence and the strength of hegemony as a form of power stems precisely from the submission of the dominated to the ruler, or rather, in the normalization in their eyes of the relationship of domination. The neo-Gramscian thinkers emphasize the importance of co-opting, or enrolling others rather than dominating them in an exercise of durable form of power (e.g., Cox 1993). According to Newell and Levy (2005: 50), hegemony is rooted in the institutions of civil society, such as the church, academia, and the media, which play a central role in ideological reproduction, providing legitimacy through the assertion of moral and intellectual leadership and the projection of a particular set of interests as the general interest.

This school of thought is also explicit about the mechanisms through which hegemony is achieved. Having developed the original thoughts of Gramsci to the area of discourse analysis, Laclau and Mouffe (1985) posit that hegemony is inseparable from the hegemonic coalitions of actors who coalesce in order to promote a certain system of power relations. For Gramsci, hegemony brings about "not only a unison of economic and political aims, but also intellectual and moral unity" (Gramsci 1971: 182). Thus, hegemony can be seen as the most sophisticated and durable form of power (Zeitoun 2008). Furthermore, as a lenses to study policy issues, the



neo-Gramscian perspective draws attention to a combination of ideological means and material concessions by certain policy actors in order to build, sustain or block alliances and promote certain 'ways of knowing' policy issues (Fischer and Forester 1993).

Newell and Levy (2005) and Newell (2008b) have suggested that actors engage across three pillars of power in their struggle. On the *material level*, there are various rewards and punishments for compliance to the order of hegemony. On a *discursive level*, the frames of seeing reality are provided and sustained so that to maintain the relations of domination. And on an *organizational level*, coalitions between actors are built in order to support the ideational and material pillars of a certain discourse.

The three pillars approach to hegemony has been applied to explain the role of business in international environmental politics (Newell and Levy 2005), the dominance of agricultural biotechnology in India and China (Newell 2008a), as well as in Argentina (2008a), the spread of forest certification (Bloomfield 2012). Although in a slightly different context, the concept of hegemony has also been applied quite broadly to the study of transboundary water governance (Zeitoun and Warner 2006; Wegerich 2008), and discourses in water although under the title of 'sanctioned discourses' (Allan 2003). The next section uses the three pillar model of hegemony in order to explain the lasting prominence of IWRM as a discourse at the global water arena.

### **3 The Current Hegemony of IWRM as Global Water Discourse**

As mentioned earlier, IWRM has received much attention during the last 15 years, since the Dublin International Conference on Water and the Environment in January 1992 and the Rio de Janeiro United Nations Conference on the Environment and Development in June 1992 (GWP 2005; Watkins 2006). A number of high-profile organizations have embraced IWRM throughout this period. Examples include the United Nations Development Programme (Watkins 2006), the United Nations Environmental Programme (UCC-IWRM), World Bank, the Asian Development Bank (2006), the World Water Council and the EU (EU Water Framework Directive). The concept was mentioned in the UNEP's Agenda 21 (Article 18) (UNEP 1994), as well as the UN World Summit on Sustainable Development (WSSD) in 2002.

The Johannesburg Plan of Implementation accepted at the Johannesburg World Summit on Sustainable Development in 2002 (WSSD) required that countries-signatories produce national IWRM and Water Efficiency plans by 2005. Thus, IWRM became an institutionalized international obligation,<sup>1</sup>

<sup>1</sup> Although formally binding, no enforcement mechanism have been discussed, and the Plan of Implementation remained legally toothless.

while UN-Water now conducts regular assessments of the planning progress world-wide. The latest UN-Water assessments of IWRM implementation have been carried out in 2008 and 2012 and show an increasing trend in countries adopting the concept (UN-Water 2008; 2012). As a summary of the dominating status of IWRM in the global water arena, Conca (2006: 127) wrote the following:

IWRM has become *the* discursive framework of international water policy—the reference point to which all other arguments end up appealing. Much like a thoroughly picked-over concept of sustainability, IWRM combines intuitive reasonableness, an appeal to technical authority, and an all-encompassing character of such great flexibility that it approaches vagueness. ... Vague or not, actors in each of the other institution-building venues analysed in this book routinely appeal to IWRM arguments, concepts, and rhetoric to bolster their respective positions.

One striking conclusion of scholars interested in IWRM is its panacea-like features (Ingram 2008; Pahl-Wostl et al. 2012). In many of policy reports, IWRM has been promoted as relevant and beneficial to implement regardless of the context and problems at hand. Another observation is that IWRM has acquired a life of its own as a symbolic concept (Molle 2006; Mollinga et al. 2006), and IWRM ideas may travel with very little regard to the problems on the ground which they are supposed to tackle. The hegemony of IWRM best presents itself in the promotion of the taken-for-grantedness of its universal relevance and policy value. At the same time, the meaning and interpretation of IWRM have remained very broad:

What this, by no means exhaustive, list of examples of ‘buy-ins’ to the IWRM agenda suggests is that different categories of people appropriate the different meanings of ‘integration’ in different ways and for different purposes. This is only to be expected: the same is true for the participation and privatization notions, or any other policy concept (Mollinga et al. 2006: 30).

The hegemonic status of the IWRM discourse is also supported by the concept of ‘the universal’ in the thought of Laclau, which is to a certain extent similar to an idea of ‘floating signifiers’ of Levi-Strauss. In Laclau’s words “(t)he universal is an empty place, a void which can be filled only by the particular, but which, through its very emptiness, produces a series of crucial effects in the structuration/restructuration of social relations” (Laclau 2000: 58). In that sense, IWRM is the ‘universal’ panacea-like concept which produces the effects of structuration of social relations favourable to technocratic and engineering elites. The IWRM then is a ‘floating signifier’,

or a concept which is “lacking any sense (and) serve(s) to take on any meaning that is given them” (Callinicos 2007: 270).

Thus, it occurs that the ill-defined nature of IWRM and its malleability to take various meanings, in fact only contributes to its popularity at the global scale. Its appeal lies in the fact that it can act as a ‘boundary object’ (Jeffrey and Gearey 2006; Mollinga et al. 2006) to allow for discussing water resources among various actors with different backgrounds. At the same time, in addition to conceptual vagueness, it has the warm normative appeal of what Molle (2008: 132) called ‘nirvana concepts’: “(a)lthough, just as with nirvana, the likelihood that we may reach them is admittedly low, the mere possibility of achieving them and the sense of ‘progress’ attached to any shift in their direction suffice to make them an attractive and useful focal point”.

The emptiness of IWRM in terms of the content has not only attracted a universal agreement on its acceptance as a ‘lingua-franca’ of global water governance, it has also played a role in smoothing up a number of sensitive conflicts in the area of water resources, such as the debate on neo-liberalization of water governance, the debate over the scale at which water resources are managed best, and about the roles and responsibilities of various policy actors. The contentious politics of water needed at least a semblance of a consensus at a global scale, which has finally precipitated around the notion of IWRM (Conca 2006; Baumgartner and Pahl-Wostl 2013).

However, understanding the hegemony of IWRM without discussing the actors and strategies involved in this process is impossible, and therefore the next section will deal with the process through which IWRM has achieved its hegemonic status.

#### **4 The Pathway to IWRM Hegemony: A Three Dimensional Model of Power**

Among the actors who actively promote IWRM are the International Network of Basin Organizations (INBO), GWP, World Water Council (WWC), and United National Development Programme’s (UNDP) initiative of capacity building (CAP-Net), who legitimize and institutionalize the norms of integration as part of good water governance. Global actors may pursue various strategies in order to promote a particular discourse, or frame a discourse to reflect changing values of civil society, leverage incentives for stakeholders to buy in certain discourses, construct and market best practice examples, and link to other discourses and concepts (Mukhtarov and Gerlak 2013). Using the three-pillar model of hegemony developed by Newell (2008b), we can illustrate below how IWRM has been advanced on three grounds: the material, the ideational and the organizational.

On the *material* side, IWRM provides better access of actors who adopt it to international funding: preparation of IWRM national plans is often funded by international organizations or research councils. This could be observed in dozens of IWRM projects implemented with donor funding in Central Asia and Africa (Mukhtarov 2009; UN-Water 2012). At the same time, the framing of IWRM as a cheaper solution also contributes to material incentives for its adoption. For example, the UK Department for Environment, Food and Rural Affairs (UK DEFRA) sent a clear message that the 'Making Space for Water' programme for integrated flood risk management is cheaper than conventional engineering flood defence (UK DEFRA 2005). As Mukhtarov (2009) illustrated by Kazakhstan's national IWRM planning and the narrative of sustainable human development adopted in the South-eastern Anatolia Project in Turkey, material incentives also exist for individuals championing IWRM in national contexts. IWRM advocates gain access to international expert and policy networks, and boost their prestige at home. Subsequently, these champions are imitated and change rhetoric and practice in their national and local networks of influence.

Apart from the material incentives, the strong *ideational* appeal makes it hard to ignore IWRM for nation states and individuals. Often IWRM represents entrance of a country into a community of progressive (western) nations concerned with the current state of water resources management and eager to improve it (Tarlock 2008), just as the dams in the 20th century symbolized the modernity era and the imagined victory of humanity over nature. On the ideational side, linking IWRM to sustainability and other values, has acquired a strong normative power and the "taken-for-grantedness" that presumes that IWRM is good under all conditions (Ingram 2008). An important part of the ideational hegemony of IWRM is the constant presentation of normative guidelines on implementation and the success stories. The IWRM Tool-Box released in 2003 and regularly refreshed since then represents the epitome of normative guidance on 'how-to-do' approaches to the concept. The Tool-Box provides 'best practice' examples and models of IWRM in various contexts and sectors. The recent INBO handbook on IWRM and the Leibniz Institute for Regional Development and Spatial Planning (IRS) guidelines on implementing IWRM (Beveridge et al. 2012) provide further examples of support to promoting the image of IWRM as a desirable, implementable and a proved manner of dealing with water resources sustainably.

The *organizational* pillar of the IWRM hegemony is represented by international organizations and formal and informal networks which facilitate and develop this discourse. The hegemony of IWRM thus comes from the proliferation of professional membership organizations, specialized publications, professional journals, international congresses, technical

meetings and issue-oriented global summits, bringing to both ideational domination and the organizational manifestation of the hegemony (Conca 2006: 132; Zeitoun 2008). The UNESCO's International Hydrological Programme prepared a draft report of IWRM in river basins, sub-basins and aquifers. It stated the following:

The new organizations still do not have real influence globally to assist co-ordination or actions on a global scale. ... As a result, there is no entity in the world that stands out as the leader in co-ordinating knowledge of IWRM actions. As a result, there are many dispersed efforts that are not strong or effective. Even those of INBO (International Network of Basin Organizations) fall mostly in the category of "event publicity" and have no real basis for co-ordination (UNESCO-IHP 2007: 29).

Thus, the organizational pillar of the IWRM hegemony seems to be the weakest, incomplete and would require further strengthening if the IWRM is to retain its dominant status. A recent study of the global water governance by Baumgartner and Pahl-Wostl (2013) further corroborated on our view by arguing that "UN-Water has just started to scratch on the surface of the issue" referring to the rise of the IWRM discourse. They have argued that while the involvement of UN-Water is welcome and the promotion of IWRM falls within its mandate, coordination with GWP and other global actors is necessary to avoid duplication of tasks and rivalry.

Not only the three pillars of power have contributed to the rise of IWRM, the historical conditions in the 1990s and 2000s have been favourable as well. First of all, there was a clear *institutional vacuum* at the global level in terms of policies, legal regimes or frameworks involving in-land water management amidst the greater recognition of water as a global issue of extreme importance (Varady and Iles-Shih 2005; Conca 2006). By the 1990s, the UN-designated periods, events and other initiatives had not resulted in any consistent strategy to deal with diverse water problems (Varady and Iles-Shih 2005; Conca 2006). Thus, there was an acute need to accommodate deep conflicts over fundamental issues regarding water. In other words, there was a need for a "*consensus*" on global water governance which required an agreed upon policy concept. Secondly, expert networking and "conferencing" had built-up by the 1990s and resulted in the increasing professionalization of the water policy field. This resulted in the positioning of IWRM on the political agenda as a distinct subject where management and economics played as important role as engineering. Thirdly, and most importantly, the sustainability discourse created a window of opportunity for IWRM to become popular, as it is still often conceived as a mere extension of sustainability thinking in the water sector. Thus, the convergence of the three pillars of hegemony and favourable historical conditions have

catapulted IWRM into the global prominence by the early 2000s. At the same time, the global hegemony of IWRM has direct bearing on water planning at the national level, especially in cases with involvement of donors and international consultants. In the next section, we discuss some of the adverse impacts the uncritical embrace of IWRM may have at the national level.

## **5 The IWRM Hegemony in the Context of Kazakhstan**

The water resources of Kazakhstan, a country in Central Asia, are poorly managed (UNDP 2003; 2005). Among the most notable problems are industrial pollution of rivers and lakes, the shrinking of the Balkhash lake, the competition for water between hydroelectricity production and irrigation, inefficient water use and transportation, especially in agriculture, and the absence of water demand management (UNECE 2008). Comparatively little attention has been paid to water quality with the traditional and inherited from the Soviet epoch focus on water quantity, especially due to the transboundary character of water resources management in Central Asia at large as discussed in more detail in another chapter in this volume (see Krutov et al. 2014). Water supply and irrigation infrastructure is dilapidated, water efficiency in irrigation is as low as 50–60%, and water lost in the pipe system causes water-logging and the salination of land. The inefficient use of irrigation water results in estimated 200 million USD lost for Kazakhstan in crop value, whereas at the Central Asian scale this figure was 1.7 billion USD or 3% of the GDP of the region in 2007 (Borishpolets and Babadjanov 2007). One of the biggest problems in Kazakhstan is the poor access to drinking water sources for the population, mostly in rural areas. According to UNECE (2008), over 39% of the population did not have permanent access to safe drinking water in 2006. This is currently a priority area for the government as it is implementing the State Programme on “Drinking Waters: 2002–2010” (Genina 2007).

Generally, the dire state of water management in Kazakhstan, the transboundary character of many of its problems, the Soviet legacy of inter-dependencies between Kazakhstan and its neighbours, and the crucial importance of water for survival in the region have elevated the issue on the political agenda both regionally and globally. As a result, Central Asia has been an area of much attention from donors and international consultants alike since the dissolution of the Soviet Union (Mukhtarov 2013).

Overall, the main cause of the crisis is in the poor water management system and such problems as centralized administration, poor and over-bureaucratized communication between government agencies, and weak cross-sectoral co-ordination amidst common fragmentation of responsibilities (Zimina 2003). A large number of stakeholders are

engaged in water management, and there is no single agency well-placed to co-ordinate policies and their delivery. For example, according to the Water Code of Kazakhstan, articles 37–40, the Committee for Water Resources is the main state agency charged with water-use planning and authorization (Parliament of the Republic of Kazakhstan 2003). However, many tasks of the committee went beyond its capacity with the low staff levels and weak organization (UNECE 2008). With such conditions in Kazakhstan and the international popularity of IWRM as a preferred framework for water management, many have called for a project on Integrated Water Resources Management in Kazakhstan.

Among many internationally funded water projects, the UNDP Project “Preparation of the National IWRM and Water Efficiency Plan for Kazakhstan” has introduced the idea of national IWRM planning to Kazakhstan in 2005. The project was initiated jointly by the Norwegian and the Kazakh governments, supported by the UNDP, GWP and the UK Department for International Development (UNDP 2008). It has resulted in the preparation and eventual approval of the plan by the State Budget Programme of Kazakhstan for 2009–2011 (Nikolaenko, personal communication, August 16, 2008; Nee, personal communication, February 02, 2009). The plan recommended restructuring several governmental agencies, such as the Committees for Water Resources, the introduction of river basin councils, the national information system for monitoring of the water use and quality, cost-recovery, improvements in water efficiency, capacity building and education programs.

The hegemony of IWRM meant that there was virtually no resistance to the introduction of this concept to the policy arena of Kazakhstan within the government actors. On the other hand, outside of the government there has been little awareness and support to IWRM.

However, it became apparent. ... that very few people knew what IWRM is. Many had heard of it and even used the term quite freely but did not actually understand its concept. Some dismissed it as a ‘western concept’ that has no applicability to Kazakhstan. Others were concerned that the introduction of IWRM and the integration that is its main point would weaken their organisations by removing or reducing their functions and budget allocations. The first forum was therefore very difficult as the assumption of a general understanding was incorrect and there was little support for IWRM outside of those organisations directly involved in water resources management. Subsequent forums included presentations to educate participants and to reduce their concerns (Hannan 2006: 6).

Even those actors who welcomed IWRM disagreed about its meaning. For example, Dukhovny and Sokolov (2003), the representatives of the Central Asian branch of the GWP, saw IWRM as a systemic approach to water management reminiscent of a rationalistic tradition of comprehensive rational planning (see their comments on the draft Kazakh IWRM plan consultation document (UNDP-IWRM 2007)). Others believed that IWRM was similar to the *river basin management plans* practiced in the USSR since the 1970s and still existing in Kazakhstan (Kazgiprovodkhoz official, personal communication, August 15, 2008). Called the “complex schemes of use and protection of water resources,” those basin level plans include the inventory of all water and related land objects and socio-economic trends. In addition, since 1986 there have been eight government-based river basin organizations (or Basin Water Authorities) in the country, which means that river basin management had already been introduced in Kazakhstan. This led the government of Kazakhstan and some independent experts to claim that Kazakhstan has been complying with IWRM for the last twenty years (Kazgiprovodkhoz official, personal communication, August 15, 2008). In short, IWRM is viewed by policy actors in Kazakhstan in three different ways:

- 1) as a *process of management* that is new to Kazakhstan and needs to be established from scratch through a comprehensive legal and institutional reform;
- 2) as a *managerial addition* to the old system of “river basin plans” (e.g., the former manager of the UNDP IWRM project, Alexander Nikolaenko, has defined the ‘new version of IWRM’ as adding the environmental and participatory elements to the previously practiced ‘schemes’); and
- 3) as completely *identical to the* already practiced “*river basin plans*”.

Such disagreement on the essence of a policy is typical to hegemonic concepts as they represent ‘floating signifiers’ designed to enrol support through illusionary agreements. The context of Kazakhstan, where river basin planning and comprehensive rational planning approach to water had been practiced before, contributed to the confusion over its meaning.

As mentioned earlier, prior to the commencement of the UNDP-IWRM project which formally introduced IWRM planning, there were some fifteen international IWRM-related projects in Kazakhstan. However, no single dominant interpretation of IWRM had emerged and, therefore, no normative notion of what was good and therefore should have been implemented. As Tirtishniy (2005) put it, the Global Water Partnership promoted IWRM in Kazakhstan, but it did not suggest *how* to make it work (Tirtishniy 2005). There is an unresolved tension between the notion of IWRM identical to the Soviet schemes of river basin management in the 1980s and the



notion of IWRM that embodies public participation, equal consideration of environment and economic interests (ICWE 1992). This is an important testimony to the discursive richness of water policy. Such diversity needs to be made explicit through the creation of various venues where policy deliberation can take place.

When the hegemony of IWRM makes it a 'floating signifier', it is important that there is an opportunity for actors to engage in a discussion of what it means and how to implement it. Such deliberative process is necessary to make discursive diversity explicit and reach the normative consensus on its practical implementation. In the case of Kazakhstan such deliberation has been attempted by the UNDP-IWRM project with an extensive consultation of the concept notes and draft plans. However, this has not resulted in a consensus over its meaning and the path of implementation.

## **6 Reflections on the IWRM Hegemony and Conclusions**

There are three major risks or negative aspects of hegemony of a policy concept. First of all, the hegemony is based on ideational power which in turn is promoted by the knowledge elites and experts. Therefore, the hegemony promotes the expert knowledge that is often based on codified and model-based epistemology which Mukhtarov and Gerlak (forthcoming) called the '*prescriptive way of knowing*'. By privileging the model-based expert knowledge, the IWRM hegemony pushes aside other ways of knowing, such as indigenous knowledge, or knowledge based on values and ethics as opposed to the science. This expert-oriented inclination of IWRM has been well noted by Conca, who argued that 'the central forum of IWRM in global water politics is the global expert conference, not the diplomatic arena; its currency is the task force report, not the treaty' (Conca 2006: 127). This elitist character of the discourse suggests that local knowledge is often overlooked in national discourses.

The second negative aspect of the hegemony of IWRM, is the inclination of the 'universal' to take prevalence over the particular in policy context. The IWRM rhetoric obscures the importance of the context in policy issues. The recent work on contextual relevance in water resources management and the absence of panaceas emphasizes this malady of IWRM (Brugnach and Ingram 2012; Pahl-Wostl et al. 2012). This can be observed in the case study of Kazakhstan presented above where IWRM has been adapted and the managerial and quality aspects of water management were prioritised under the conditions where the priorities of water management have lied with the quantity aspects of water availability for irrigation and the aspects of infrastructure. Indeed, the case of Kazakhstan asserts that international discourses, actors and funding have been instrumental in putting the

IWRM plan on the policy agenda of Kazakhstan. The policy context, the pre-existent discourses and institutions in Kazakhstan and the interests of policy actors have been as important as the external drivers of the policy reform of Kazakhstan.

The third negative impact of hegemonic concepts is that of actors buying into the language without committing to the principles of a certain policy or approach. In other words, the 'floating signifiers' in Levi-Strauss's words produce 'fake agreements' between actors, on the one hand allowing for more boundary space and opportunity to build a shared understanding, and on the other hand, building the dialogue on completely false assumptions and misunderstandings. That could also be observed in Kazakhstan where the adoption of the language of IWRM has effectively meant reinforcement of the technocratic elite and the agenda of the comprehensive river basin planning practiced in the 1980s in the Soviet Union times. Studying the hegemonic discourses and revealing the mechanisms through which they acquire power and pose danger to water resources sustainability in order to ameliorate those, therefore, remains an important goal of both academics and practitioners.

In summary, we would like to recall the three questions which we set forth for ourselves in the introduction. The first question concerned the reasons for the global domination of IWRM, and we argued in this chapter that the convergence of historically favourable period in the 1990s and 2000s and the interests of global policy actors have been key in the rise of IWRM. The second question concerned the mechanisms through which IWRM rose to power, and we argued that the neo-Gramscian approach to global water governance with the three-pillar model of power helps explaining how IWRM has reached its hegemony. Finally, the third question asked about the global and national impacts of the domination of IWRM, and we illustrated the risks of the hegemony of IWRM by the example of national water planning in Kazakhstan. Our analysis showed that hegemonic concepts are risky in three ways:

- 1) they privilege expert knowledge and abstract-scientific way of knowing (as opposed to value-based knowledge or knowledge which emerges from practice);
- 2) they denigrate the importance of the specific and particular in policy contexts; and
- 3) they incentivize actors to adopt the vocabulary of integrated management and participation without real commitment to the latter, which creates difficulty in meaningful monitoring of the progress towards IWRM on the ground.

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