

DIIS REPORT

WATER AND CONFLICT
CONFLICT PREVENTION AND MITIGATION
IN WATER RESOURCES MANAGEMENT

Edited by
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Contents

Introduction	3
Executive summary	
Conflict prevention and mitigation in water governance: lessons learned and options available <i>Helle Munk Ravnborg</i>	5
Chapter 1	
From water 'wars' to water 'riots'? Lessons about trans-boundary water-related conflict and cooperation <i>Helle Munk Ravnborg</i>	17
Chapter 2	
Addressing water conflicts: Governance, institutions and functions <i>Mikkel Funder and Helle Munk Ravnborg</i>	31
Chapter 3	
Privatisation of water and environmental conflict: The case of the Cochabamba 'Water Riot' <i>Olaf Westermann</i>	65
Contributors	99

Introduction

Helle Munk Ravnborg

In May 2003, the Danish Ministry of Foreign Affairs (Danida) asked the Department of Development Research, Danish Institute for International Studies (DIIS) to undertake a study into *Conflict Prevention and Mitigation in Water Resources Management: Lessons Learned and Challenges Ahead*. The objectives of the study are to take stock of the current understanding of water-related conflicts and lessons learned with respect to governance, conflict prevention and resolution in integrated water-resources management.

This report provides the findings of the study. Following the executive summary of the main conclusions and recommendations from the study, the remaining three chapters present the more detailed discussions of the main issues dealt with in the study. Chapter 1 provides insight into recent findings on the nature of transboundary water-related conflict and cooperation. Chapter 2 discusses the role of governance institutions in addressing water-related conflicts and focuses specifically on how to ensure stakeholder participation in water governance and conflict resolution. Finally, using the case of Cochabamba, Bolivia, Chapter 3 discusses a water governance issue which, during the past decade, has caused widespread concern in many countries and in some cases violent conflict, namely the issue of the privatization of water resources and of water supplies.

In addition to the present report, DIIS arranged as part of the study, a conference entitled 'From water "wars" to water "riots"? The role of the poor and implications for water management institutions in future water related conflicts', held in Copenhagen, December, 2003. The papers commissioned for this conference have been published in the report *From water 'wars' to water 'riots'? Lessons from transboundary water management*.¹ In addition to papers presented at the conference, these proceedings also include two overview papers prepared as part

¹ Boesen, Jannik and Helle Munk Ravnborg, Eds. 2004. "From water 'wars' to water 'riots'? Lessons from transboundary water management.' Proceedings of the International Conference, December 2003. *DIIS Working Paper 2004/6*. Danish Institute for International Studies, Copenhagen.

of the study commissioned by the Ministry of Foreign Affairs (Danida). These are the papers entitled ‘Transboundary Water Management in the Mekong: River of Controversy or River of Promise?’, written by Poul Erik Lauridsen, and ‘Interstate Collaboration, Local Conflicts and Public Participation in the Nile River Basin’, prepared by Olaf Westermann, both of which provide more detailed accounts of water-related conflicts, conflict resolution and cooperation in the two river basins.

On behalf of DIIS and the Water and Conflict Study group, I would like to thank the Ministry of Foreign Affairs (Danida), and in particular Kurt Mørck Jensen, Leif Hommelgaard, Jørgen Jensen and Ole Winkler Andersen, for taking the initiative in commissioning this study, for taking part in discussions throughout the study, and for providing financial support for it.

Copenhagen, June 2004
Helle Munk Ravnborg
Study Coordinator

Executive summary

Conflict prevention and mitigation in water governance: lessons learned and options available

Helle Munk Ravnborg

The nature of water-related conflicts

Over the past decade, policy debates have increasingly associated water scarcity with conflict both at the international level as conflict or even war between nations sharing water resources, and at the national or local level as conflict over access to and use of water between different users and sectors.

In 1995, World Bank Vice-President Ismail Serageldin said that ‘many of the wars of this century were about oil, but wars of the next century will be about water’ (New York Times, August 10, 1995). In a similar vein, in 2000, UN secretary general Kofi Annan suggested that ‘fierce competition for fresh water may well become a source of conflict and war in the future’.

These ‘warnings’ have in part been supported by research undertaken within the field of ‘environmental security’. Wolf (1998) mentions several authors who have suggested that, for example, ‘competition for limited ... freshwater ... leads to severe political tensions and even to war’ (Westing 1986), and ‘history is replete with examples of violent conflict over water’ (Butts 1997). Such comments have contributed further to the commonly held notion of water scarcity leading to international conflict. The basic argument behind this notion is that, because water is such a vital and yet finite resource, scarcity of water, which is often measured by using the Water Stress Index (Falkenmark 1989), leads to intense political pressures. Because water ignores political boundaries, such political pressures might spill over into or lead to international conflicts.

However, according to Wolf, claims of a direct causal relationship between water scarcity and international insecurity or war are based on rather selective evidence and, in some cases, speculation rather than in-depth analysis. In the literature, there has been a tendency merely to select case studies from the ‘hottest’ basins, such as the Jordan, Tigris, Euphrates, Indus and Nile, thus making attempts to draw general conclusions from these case studies to international basins *as a whole* questionable. Moreover, there has been a tendency to exclude cooperation

from studies on the relationship between water scarcity and international relations, which makes tests of causality incomplete in that the counter-hypothesis – that water scarcity leads nations as well as people to cooperate – is totally ignored (Wolf 1998).

Lessons about transboundary water-related conflicts

In 1994, researchers at Oregon State University, in collaboration with the Northwest Alliance for Computational Science and Engineering, initiated the Transboundary Freshwater Dispute Database project.² Besides several publications, this project has produced the International Water Event Database,³ which contains an inventory of all reported cases of international water-related events (a total of 1,831 events), both conflictive and cooperative, between 1948 and 2000.

As a result of this database project, our knowledge of the nature and characteristics of transboundary water-related conflicts has substantially increased during the past few years. Among the interesting insights provided by this database (e.g. Yoffe *et al.* 2001, Wolf *et al.* 2003, summarized in more detail in Chapter 1, this volume) into the nature of water-related transboundary conflict are:

- cooperative international water events outnumber conflictive water events
- cooperative international water events tend to take place with respect to a wide range of issues, while two issues have dominated conflictive international water events, namely water quantity and infrastructure (e.g. the construction of dams and diversions)
- there is no evidence that water related conflicts are more likely to occur in situations of water scarcity than in situations of water abundance
- the presence of treaties between two or more nations and the associated institutional capacity to deal with instances of potentially conflicting interests between nations significantly reduces the risk of conflict, for example, in the case of large-scale dam or diversion projects.

This latter point obviously underscores the importance of continued international support to encourage transboundary water-related cooperation, framed by transboundary water treaties.

² TFDD – www.transboundarywaters.orst.edu

³ <http://ocid.nacse.org/cgi-bin/qml/tfdd/eventsearch.qml>

Local water-related conflicts might be growing in number and intensity, but we lack a systematic overview

As was the case before the development of the TFDD, we currently lack a systematic overview of local water-related conflicts, our knowledge of which is to a large extent sporadic and case-based, making it difficult to assess their character, number and intensity. However, it is becoming increasingly clear that many water-related conflicts that take place in transboundary river basins are in fact *local* conflicts which just happen to take place in a transboundary setting. At the same time, there is a widespread sense that the number and intensity of local water-related conflicts is increasing, both within and outside transboundary basins. In this situation, it is particularly problematic that only sporadic, case-based information exists with respect to the nature, extent and social, political and economic implications of local water conflicts, as well as instances of cooperation. One option contributing to the provision of such systematic knowledge would be to undertake an inventory in a limited number of countries, for example, one in Asia, one in sub-Saharan Africa and one in Latin America, drawing on the methodology developed for the TFDD, of reported collaborative as well as conflictive water events, within a period of ten to twenty years. This would help provide a much needed insight into the actual scale and nature of local water-related conflicts, thus providing a basis for further steps in adjusting and developing targeted interventions and policies.

Generally marginalized groups also tend to be marginalized in relation to water

A review of the limited, case-based knowledge that we do have on local water-related conflicts indicates that they tend to reflect conflicts in general in society, in the sense that those stakeholders and concerns who tend to become marginalized in society at large are also those who become marginalized in the context of water management. These include:

- the rural poor, who
 - ♦ lack sufficient economic resources to develop the water resources available to them for purposes of either consumption or production
 - ♦ lack information about and access to legal institutions and thus risk losing their access to water to which they hitherto have enjoyed customary rights, particularly in situations of legal reforms, for example, as in the case of Chile (Bauer 1997 and 2004)
 - ♦ lack sufficient political power, institutional knowledge and organizational

- capacity to negotiate payments for conserving water for downstream users
- ♦ are rarely consulted in cases of infrastructure investments, for example, construction of dams or diversions, whose livelihoods are rarely adequately valued in either social, cultural or economic terms (e.g. the case of the fishery sector in general in the Mekong (Hirsch 2004; Lauridsen 2004) and the Pak Mool Dam in particular (Lang 2004)), and who also often bear the costs of hydropower generation in terms of lost livelihoods while rarely receiving a fair share of the benefits, for example, in the form of rural electrification.
 - the urban poor, who often are not served by existing piped water supply schemes, either public or private, and whose concerns in receiving safe and affordable water tend to be given only lip service and be overshadowed by the concerns of the urban middle class who have already been supplied in cases of public protests over public or private water provision (e.g. as appears to have been the case in the Cochabamba ‘riots’ in Bolivia; see Chapter 3, this volume); and finally
 - groups representing environmental concerns in terms of ecosystem conservation and water-resource conservation, for example, ensuring the replenishment of aquifers and other water bodies with clean water.

Thus, it is recommended that specific attention is given to including such stakeholders and associated concerns in efforts to promote stakeholder participation in water governance, whether through public institutions, civil-society groups or community-based organizations.

Water-related conflicts can only be dealt with through effective water governance

Rather than water scarcity in itself, water-related conflicts are caused by the way in which water and its use are governed. In its framework for action, entitled *Towards Water Security*, the Global Water Partnership stated that water crises are often crises of governance, and identified making water governance effective as one of the highest priorities for action (Rogers and Hall 2003). The Global Water Partnership defines water governance as ‘the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society’ (ibid.: 16). Governing water inevitably involves governing conflicting interests. As Postel describes it, ‘water, unlike other scarce, consumable resources, is used to fuel *all* facets of society from biologies to economies to aesthetics and religious

practice. As such, there is no such thing as managing water for a single purpose – *all* water management is multi-objective and is therefore, by definition, based on conflicting interests’ (quoted from Wolf 2002: xvii-xviii). Fundamentally, therefore, conflict prevention and mitigation in water-resource management is a matter of recognizing and understanding conflicting interests relating to water governance at different levels, from the local to the international level, and of mediating and arbitrating in negotiations between these conflicting interests. Such approaches to conflict prevention and resolution, focusing on the negotiation of conflicting interests, have become known as alternative dispute resolution, or (in the case of water) environmental dispute resolution (ADR or EDR) (see further below). This focus on the recognition and negotiation of conflicting interests relating to water is not only important in situations of actual conflicts or disputes, but also as an aspect of the formulation of policy, legislative and regulatory frameworks which form a core part of water governance.

Water governance adds a political dimension to Integrated Water Resources Management

Since the International Conference on Water and the Environment (ICWE) held in Dublin in 1992, there has been broad international consensus on the need for integrated water resources management (IWRM). IWRM aims to ‘ensure the coordinated development and management of water, land, and related resources by maximising economic and social welfare without compromising the sustainability of vital environmental systems’ (Solanes and Gonzalez-Villareal 1999). In 1996, the Global Water Partnership was created to promote IWRM, while the World Summit on Sustainable Development (WSSD) in Johannesburg 2002 called for countries to develop Integrated Water Resources Management and Water Efficiency Plans by 2005 (Jøneh-Clausen 2003).

While in no way contradicting the so-called Dublin principles on water and sustainable development of 1992,⁴ the recent focus on water governance and on conflicting interests adds a political dimension to the ecological/hydrological, institutional, social and economic dimensions that are the main focus of the Dublin principles and most IWRM efforts. Further emphasizing this political dimension, the introduction to the GWP report on Dialogues on Effective Wa-

⁴ Available at: <http://www.dundee.ac.uk/law/iwlri/Documents/Treaties/International%20Policy%20Instruments/Outcomes%20of%20International%20Meetings/1992%20Dublin%20Statement%20On%20Water%20And%20Sustainable%20Development.pdf>

ter Governance states that '[g]overnance looks at the *balance of power* and the balance of actions at *different levels of authority*' (GWP 2003: 2). Thus, donor organizations who wish to support conflict prevention and mitigation in relation to water governance at the local, national and international levels are recommended to encourage the political aspects of water governance being explicitly addressed.

Clear water rights can contribute to reduce water-related conflicts, but they are difficult to clarify

In the context of increased competition between users and uses over water, clear water rights can contribute to reduce conflicts. In part, this explains the increasing pressure to formalize water rights (Rogers and Hall 2003). However, as forcefully argued by Meinzen-Dick (2003), security of tenure – in this case to water – does not necessarily come from state-granted 'ownership' of the resource, no matter whether ownership is issued to the state itself, to private companies or individuals or to communities or groups. The state is not the only source of water rights in a given setting. Other sources include customary law, religious law, international law, project regulations and local norms within a territory, community or group. In an effort to promote clarification of water rights, Meinzen-Dick therefore recommends that, rather than 'taking a top-down view of water right that begins with state law, it is more useful to begin with people's own experiences with access to and control over water, in which individuals [and groups] draw upon a range of strategies for claiming and obtaining resources' (Meinzen-Dick 2003: 64). If marginalized groups are not to be further marginalized as an outcome of such efforts, it is essential to pay specific attention to the sources through which marginalized groups obtain their water rights and how they do so.

In addition to flowing from many sources, water rights should be conceived as bundles of rights, not simply as ownership. In many countries water is regarded as state property, while groups or individuals may enjoy varying degrees of *use rights* (e.g. in-stream uses, drawing rights, using water as recipient of waste products), and to a lesser degree *control* (deciding how water is managed, whether to change its flow etc.) and *transfer rights* (rights to sell, lease or otherwise reallocate water to others). These bundles of rights can be assembled in different ways and be distributed among different users. Transfer rights are currently receiving considerable attention because they constitute a precondition for the establishment of water markets which some see as a mechanism for ensuring that water is allocated where it will be used most effectively. Chile is the country which has gone

furthest in this respect, and there are mixed assessments with respect to both the extent to which Chilean water markets have actually been established and to which they have resulted in effective water allocation (Bauer 1997 and 2004; Rogers and Hall 2003; Solanes and Gonzales-Villareal 1999).

Privatization of water resources and of water supply are two distinct issues

Currently, two issues related to water governance are causing widespread public concern and – as illustrated in the case of Cochabamba, Bolivia (Chapter 4, this volume) – conflict, namely issues of the privatization of water as a resource and the privatization of water supply. While both issues relate to privatization and are often approached simultaneously in policy reforms, as was the case in Cochabamba and is currently the case in Nicaragua (*La Prensa, various issues*), it is important to recognize that these are two very distinct issues, which raise separate concerns, involve distinct stakeholders and interests, and entail different potential conflicts. Thus, it is recommended that efforts are made by, for example, donor organizations wishing to support effective water governance to ensure that these two issues are analyzed and discussed separately rather than confused, as is currently happening both within governments and among civil-society organizations and stakeholders.

Alternative dispute resolution

While a clearly formulated, widely consulted and thus known and to a large extent shared legal framework with respect to water rights – that is, rights to use, control and transfer water – is certainly desirable and a useful element in conflict resolution, it cannot prevent or resolve water-related conflicts in itself. Water uses and users change over time, as do political priorities, and this requires the legal framework to be constantly interpreted and re-negotiated. But even then conflicts will occur, challenging the legal framework. To deal effectively with such conflicts, alternative or environmental dispute resolution (ADR or EDR) is increasingly being resorted to (Clark *et al.* 1991; Painter 1995). The key to ADR is the negotiation of conflicting interests. ADR refers to ‘a wide variety of consensual approaches with which parties in conflict voluntarily seek to reach a mutually acceptable settlement’ (Bingham *et al.* 1994; here quoted from Wolf 2000). This negotiation may be unassisted – that is, it takes place between the parties to a dispute on their own – or assisted by a third-party mediator. In addition to possible mediation, ADR frequently requires resources to be available to be used for data-collection, modelling or gaming upon request from the negotiating par-

ties during the negotiating process (Painter 1995; Rajasekaram *et al.* 2003). The way in which the Moon River communities have used funds allocated by the Thai government to contract a research team from Ubol Ratchathani University in order to help them provide research-based data in support of their cause (Lang 2004) provides an illustrative example of the role of data-collection as part of the negotiation process. Promising experiences are being acquired with respect to applying ADR principles, for example, through the PCCP Water for Peace programme⁵ in the context of transboundary river basins and from the Managing Water Conflicts in the Nakanbe River Basin project, being supported by IDRC in Burkina Faso in the context of local conflicts (see Chapter 2, this volume). Obviously, there is a need to draw special attention to ensuring that marginalized groups have access to ADR.

Hydrologically based governance

A recurrent discussion in Integrated Water Resources Management (IWRM) is whether water should be managed within a hydrological unit (e.g. a basin, watershed or aquifer) or within existing institutional structures, following political or administrative units (see Chapter 2, this volume). Apart from the well-known problems of often incoherent boundaries existing between hydrological and political/administrative units, and the competing claims for authority being made by the associated institutions, there is another and, from a conflict perspective, much more profound issue at stake, namely the issue of democratic control over and accountability of hydrologically based institutions. Based on research conducted in the United States, Barham (2001) has introduced the term 'watershed rule' to reflect situations in which hydrologically based water management has resulted in 'nondemocratic, authoritarian, and exclusionary processes of social control, exercised to meet a perceived need to address environmental sustainability (ibid.: 189). While the choice of the watershed or another hydrological unit as the organizing principle for water management seems to be a matter of simple practicality, Barham reminds us that 'gains in human freedom and democratic self-rule have never been given but have always been won, sometimes only after long and bitter struggle' (ibid.: 190). By transferring authority from conventional political and administrative institutions like district and national governments and ministries to hydrologically based institutions, there is a risk of

⁵ <http://www.unesco.org/water/wwap/pccp/index.shtml>

losing the institutions and mechanisms for democratic control and accountability which have gradually been gained. The concerns raised in the dialogues on effective water governance conducted through the Global Water Partnership as well as research conducted on stakeholder participation in river-basin management in South Africa indicate strongly that this risk is real (GWP 2003, Wester *et al.* 2003).

In each case, it is therefore important to balance the risk of losing painfully won spaces and mechanisms of democratic control and accountability with the potential gains – hydrological or otherwise – of introducing new hydrologically based water-governance institutions.

Institutionalizing conflict resolution as part of water governance

In many places, the response to concerns over ensuring stakeholder participation and negotiation has been the creation of water-user boards whose aim is to include representatives of all the relevant stakeholders. However, as discussed in Chapter 2 (this volume), experience to date has been disappointing in at least two ways. First, comprehensive stakeholder participation in water governance as a whole – that is, including the formulation and renegotiation of the policy, legal and regulatory frameworks as essential elements in water governance – has been limited. Secondly, within their limited and often unclear mandates, water-user boards have had a tendency to reproduce existing power balances among stakeholders and thus have come to legitimize rather than challenge and alter these relations (Wester *et al.* 2003).

Despite the lack of a comprehensive understanding of local and national water-related conflicts, it seems safe to say that water-related conflicts are issue-based (rather than universal) and diverse and that they change over time as a function of changing demands and options for water use. Thus, rather than assuming that a single organizational structure like a water-user board would be capable of identifying, representing and negotiating the interests involved in this multitude of water-related conflicts, the institutional arrangement for effective water governance, including conflict resolution, should aim to create opportunities – an enabling environment – for the articulation of water-related conflicts and the negotiation of the associated conflicting interests. To conclude, therefore, four elements seem essential in an enabling environment of this sort:

- A water ombudsman-like institution, with the triple function of receiving

and registering cases of water-related conflicts; providing third-party mediation in situations of water-related conflicts; and providing third-party arbitration in cases where conflicts cannot be solved through mediation.

- Improved options and increased space for the involvement of water-users in discussions of and decision-making regarding water-policy principles and priorities locally and nationally. The need for such efforts will differ from setting to setting, but a general thrust towards more inclusive and transparent processes of governance is necessary.
- Capacity enhancement among water-users within legal aspects of water management. This may include legal literacy campaigns, the dissemination of information and two-way communication regarding the establishment of local and (where relevant) national regulatory frameworks, by-laws etc. (see also Meinzen-Dick (2003).
- Access to water-related knowledge and information, that is, to general hydrological assessments of the quality and quantity of water available within specific geographical areas, as well as to a fund to which different stakeholders could apply to have assessments made of the potential or actual impacts of projected or actual water uses.

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Chapter I

From water 'wars' to water 'riots'?

Lessons about trans-boundary water-related conflict and cooperation

Helle Munk Ravnborg

If there is to be water related violence in the future, it is much more liable to be like the 'water riots' against a Bechtel development in Bolivia [Cochabamba] in 1999 than 'water wars' across national boundaries. (Wolf et al. 2003: 50)

Does water scarcity lead to water-related conflict?

Over the last decade, water scarcity has increasingly been coupled with international security. Due to the nature of water – a fluid that is necessary for life and a key ingredient in economic development, driven by gravity across boundaries – it has been anticipated that water may trigger international conflicts, so-called water wars, in the future.

In 1995, World Bank Vice-President Ismail Serageldin stated that 'many of the wars of this century were about oil, but wars of the next century will be about water' (*New York Times*, 10 August 1995). In a similar vein, in 2000 UN Secretary General Kofi Annan suggested that 'fierce competition for freshwater may well become a source of conflict and war in the future'.

These 'warnings' have in part drawn support from research undertaken within the field of 'environmental security'. Wolf (1998) mentions several authors who have suggested that 'competition for limited ... freshwater ... leads to severe political tensions and even to war' (Westing 1986), and that 'history is replete with examples of violent conflict over water' (Butts 1997), thus endorsing the commonly held notion that water scarcity leads to international conflict. The basic argument behind this notion is that because water is such a vital and yet finite resource, scarcity of water, often measured through the Water Stress Index (Falkenmark 1989), leads to intense political pressures. Because water ignores political boundaries, such political pressures might spill over and lead to international conflicts. The thinking within the environmental security research field is further discussed by Møller (2004) and Hirsch (2004).

Conceptually, this notion of water scarcity leading to international conflict is

rather simplistic, due to its focus on the supply side while ignoring social and political issues related to water management and distribution (Metha 2001). Implicit in the water scarcity narrative is the assumption that water scarcity – and water abundance – are equally distributed within a nation (or a basin). This, however, is far from always being the case. As most states tend to represent only some of the interests related to water within their national boundaries, not all situations of water scarcity are equally likely to lead them into situations of international conflict (or cooperation), but mainly those related to their most important political constituencies.

However, according to Wolf and his colleagues, such claims of a direct causal relationship between water scarcity and international insecurity or war are based on anecdotal and rather selective evidence. In the literature, there has been a tendency to select case studies from the ‘hottest’ basins such as the Jordan, Tigris, Euphrates, Indus and Nile, thus making attempts to draw general conclusions from these case studies to international basins as a whole questionable. Moreover, there has been a tendency to exclude cooperation from studies on the relationship between water scarcity and international relations, which makes tests of causality incomplete (Wolf 1998) in that the counter-hypothesis – that water scarcity leads people to cooperate – is totally ignored.

In order to fill in these empirical gaps, researchers from Oregon State University, in collaboration with the Northwest Alliance for Computational Science and Engineering, have developed the Transboundary Freshwater Dispute Database (TFDD – www.transboundarywaters.orst.edu), which contains a comprehensive inventory of all reported cases of international water-related events between 1948 and 1999.⁶ This inventory covered all the world’s international river basins (=261 basins covering 45.3% of the land surface of the earth (Wolf *et al.* 1999)⁷ and every reported interaction between two or more nations, whether conflictive or cooperative, which involved water as a scarce and/or consumable resource or as a quantity to be managed, that is, where water is the driver of the event. All these events – a total of 1,831 – are assessed according to a ‘water event intensity scale’, ranging from ‘formal

⁶ Besides the water events database, the TFDD comprises a treaties database containing over 400 water-related treaties, along with the full text of each (see also UNEP and Oregon State University, 2002), and an annotated bibliography of the state of the art of water conflict resolutions, including approximately a thousand entries (see also Wolf, 2002).

⁷ Due to the splitting up of countries, the world today has 263 international basins (Wolf *et al.*, 2003: 45).

Table 1. Water Event Intensity Scale

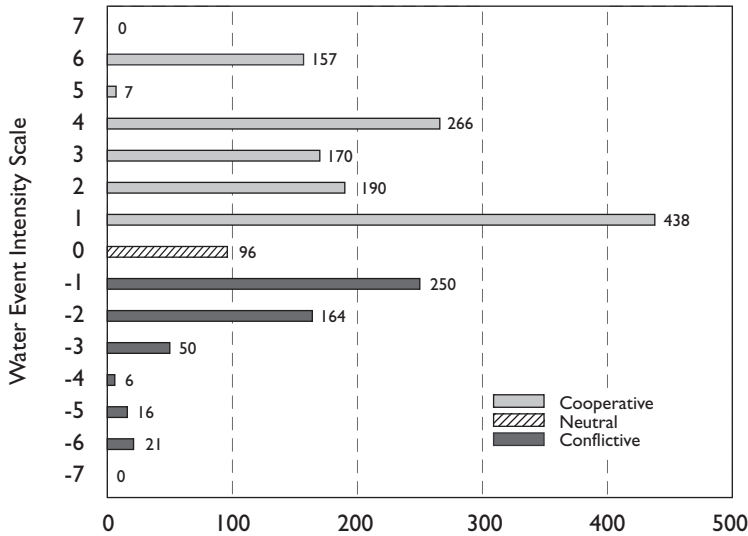
Description of conflictive events	Score	Description of cooperative events
Formal declaration of war	-7 7	Voluntary unification into one nation
Extensive military acts causing deaths, dislocation or high strategic cost	-6 6	International freshwater treaty; major strategic alliance (regional or international)
Small scale military acts	-5 5	Military economic or strategic support
Politico-military hostile actions	-4 4	Non-military economic, technological or industrial agreement
Diplomatic-economic hostile actions	-3 3	Cultural or scientific agreement or support (non-strategic)
Strong verbal expressions displaying hostility in interaction	-2 2	Official verbal support of goals, values or regime
Mild verbal expressions displaying discord in interaction	-1 1	Minor official exchanges, talks or policy expressions - mild verbal support
Neutral or non-significant acts for the inter-nation situation	0	Neutral or non-significant acts for the inter-nation situation

Source: http://www.transboundarywaters.orst.edu/projects/events/bar_scale.html. The Water Event Intensity Scale has been modified from Azar's COPDAB (Conflict and Peace Data Bank) International Conflict and Cooperation Scale.

declaration of war' (-7) through to 'voluntary unification into one nation' (+7) (Table 1), as well as according to a range of other variables such as the issue of the water-related event and the characteristics of the basin in which it took place.

Overall, two-thirds of recorded internal water-related events (1,228 events) were cooperative, while 28 percent (507 events) were conflictive, the remaining 5 percent (96 events) being neutral or non-significant. Moreover, no events were found at the extremes of the intensity scale – no formal declaration of war over water and no countries voluntarily unifying into one nation over water (Yoffe *et al.* 2001). Figure 1 summarizes the overall profile of the international water events. This overall picture of cooperative events outweighing conflictive events in numerical terms holds true for all regions except one, namely the Middle

Figure I. Number of international water events by Water Event Intensity Scale, N=1,831 events



Source: Yoffe et al. 2001, Figure 4.1.

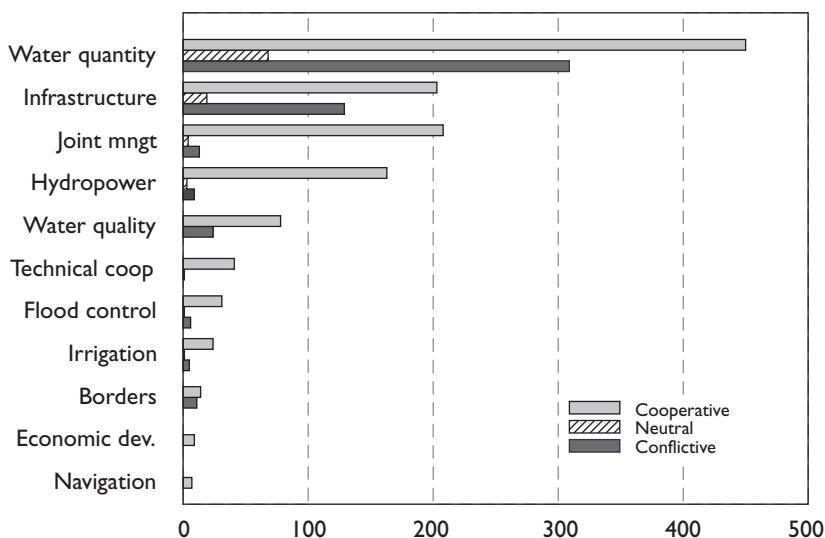
East/North Africa region, which is also the region with by far highest number of events, cooperative as well as conflictive.⁸

While cooperative international water events involve a wide variety of issues – water quantity, joint management of water sources, infrastructure, hydropower etc. – two issues, namely water quantity, or the sharing of water, and infrastructure account for 86 percent of all registered conflictive water events (Figure 2).

Also, in the two international river basins dealt with in more detail in our study, namely the Nile and the Mekong river basins, the cooperative international water events by far outnumber the conflictive events (Figures 3 and 4). In the Nile basin, the conflictive events constitute 23 percent of all registered international water events, while in the Mekong river basin, conflictive events constitute merely four percent of the 83 registered international water events.

⁸ As many as 531 (29%) of the 1,831 international water events contained in the database relate to basins in the North Africa/Middle East region, followed by South Asia and eastern Europe from where 231 (13%) and 210 (11%) events have their origin respectively.

Figure 2. Number of cooperative, neutral and conflictive international water events by issue area (N=1,831 events)



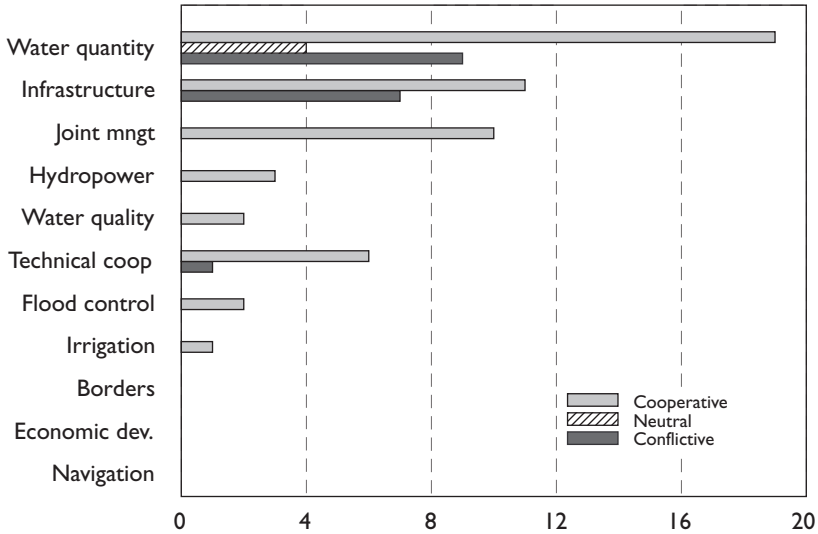
Source: Yoffe et al. 2001, Table 4.3.

The Nile and Mekong river basins also resemble the overall picture in the sense that, whereas cooperative events take place with respect to a wide range of issues, the conflictive international events relate to a more limited set of issues. While hardly any conflictive events are registered in the Mekong River Basin (two events relating to hydropower and one event relating to joint management), the conflictive events recorded in the Nile River Basin relate to water quantity (nine events), infrastructure (seven events) and water quality (one event).

Thus, at least when judging on the basis of such descriptive profiles of water events in transboundary water basins, the conclusion is that the fact that two or more nations share freshwater sources up till now has been more likely to make them cooperate than to enter into conflict. Moreover, nine out of ten of the conflictive international events which were registered between 1950 and 1999 took the form of verbal expressions or diplomatic or economic hostile actions,⁹ but involved no military action.

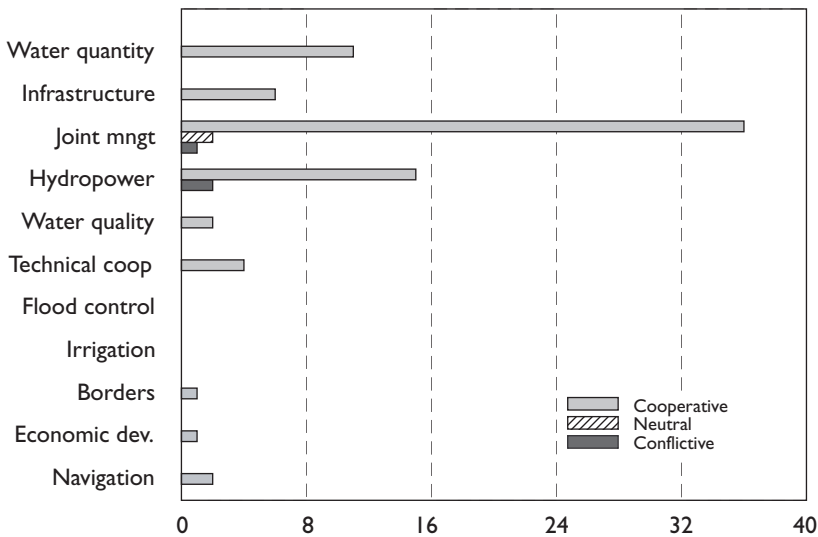
⁹ I.e. ranging -1, -2 or -3 according to the water event intensity scale.

Figure 3. Number of cooperative, neutral and conflictive international water events in the Nile River Basin by issue area (N=75 events)



Source: TFDD

Figur 4. Number of cooperative, neutral and conflictive international water events in the Mekong River Basin by issue area (N=83 events)



Source: TFDD

Digging one step deeper by using the data generated through the TFDD, Yoffe and her colleagues have tried to test some of the assumptions relating to the narrative of 'water scarcity leading to water wars', as well as alternative factors which might contribute to explain the occurrence of conflicts with respect to transboundary water sources.

As described above, water scarcity is often measured using Falkenmark's Water Stress Index (WSI), which divides the volume of available water resources for each country by the latter's population.¹⁰ If the resulting average amount of water available per inhabitant falls below a certain threshold value (1,700 m³ per year), the country is considered to be 'water stressed'. If it falls below 1,000 m³ per person per year, it is considered 'water scarce', and finally, if it falls below 500 m³ per person per year, it is considered 'water poor'. Based upon the TFDD, Yoffe and her colleagues (2001) calculated the WSI at the basin scale in order to analyze the extent to which water scarcity could predict cooperation or conflict over freshwater resources. The result was negative, meaning that no significant association was found between water scarcity and the occurrence of conflictive, neutral or cooperative events related to freshwater resources. Nor was climate – another factor often mentioned as a cause of water conflict – found to be associated with the occurrence of water-related conflict or cooperation in a basin. Thus, the TFDD does not support the hypothesis that water scarcity – whether calculated in absolute terms, i.e. the amount of water available to a country, or in relative terms, i.e. the average amount of water available per person in a country – leads to water-related conflict, let alone, water 'wars'.

Alternative factors potentially causing water-related conflicts

Another factor commonly considered to be associated with water-related conflict is the nature of relations overall between countries sharing a water source. Basins with unfriendly relations overall were found to be more likely to conflict over water issues too. Interestingly, with the exception of the North Africa/Middle East region, countries appear to enjoy friendlier relations concerning water than they do overall (Yoffe *et al.* 2001: 81–2). Moreover, 'countries with more rapidly growing populations tended to be more internationally conflictive overall, but not more conflictive over water resources' (*ibid.*). These findings, Yoffe and her colleagues state, 'suggest that the drivers of water conflict and cooperation are

¹⁰ When launching the water stress index, Falkenmark expressed it as number of persons per 1,000,000 m³ of water per year.

not the same as for overall conflict and cooperation' (ibid.: 82).

As an alternative to the hypothesis of water scarcity causing water conflicts and wars, Wolf and his colleagues suggest that increases in the magnitude and amount of physical or institutional change relative to the capacity to absorb such changes increase the likelihood and intensity of conflict in a basin (Wolf *et al.* 2003). From an institutional point of view, the most radical change, they suggest, would be the internationalization of basins, that is, the division of basins whose management was developed institutionally under one single jurisdiction into two or more nations. Wolf and his colleagues show that periods of intense internationalization in, for example, the Middle East and South Asia (during the dismantling of the British Empire) and in Eastern Europe and the former Soviet Union have been significantly more conflictive for these regions than more stable periods. Hence they suggest that 'recent internationalization seems to be one of the most significant indicators of dispute' (ibid.: 44).

From a physical point of view, the most rapid change would be the development of a large-scale dam or diversion project, this being one of the two dominant issues associated with conflictive international water events (cf. Figures 2–4). Interestingly, basin development, using dam density as an indicator, does not in itself predict water-related conflicts. As Wolf and his colleagues also note, here too the existence of the institutional capacity to ameliorate the political impacts of such physical changes makes a difference (ibid.). Hence, they find that unilateral basin development in the absence of a cooperative transboundary institution, for example a treaty, significantly increases the likelihood of conflictive water events.

This is, therefore, a strong argument in favour of continued support to facilitate the negotiation of transboundary treaties on the sharing of water and benefits, on shared investment plans and shared responsibility for the implementation and monitoring of the agreements as a necessary albeit not in itself sufficient element in efforts to prevent water-related conflicts. Currently, less than half (117) of the world's 263 international basins have treaties (Wolf *et al.*, 2003: 45).

Using the indicators which were found to be significantly associated with the occurrence of conflictive events, the TFDD was used to identify basins at risk of future conflict over freshwater resources (Table 2 and Figure 5). The indicators used are:

- high population density (more than 100 persons/km²)
- low per capita income (less than US\$765/person/year)

- generally unfriendly relations
- politically active minority groups that may lead to internationalization
- proposed large dams or other water development projects
- no or only limited freshwater treaties.

Table 2. Basins at risk

Basin name	Basin riparian countries
<i>Potential conflicting interests and/or lack of institutional capacity:</i>	
Lempa	El Salvador, Guatemala, Honduras
La Plata	Argentina, Bolivia, Brazil, Paraguay, Uruguay
Senegal	Guinea, Mali, Mauritania, Senegal
Lake Chad	Algeria, Cameroon, Central African Republic, Chad, Libya, Niger, Nigeria, Sudan
Kunene	Angola, Namibia
Okavango	Angola, Botswana, Namibia, Zimbabwe
Orange	South Africa, Namibia, Botswana, Lesotho
Incomati	South Africa, Mozambique, Swaziland
Limpopo	Botswana, Mozambique, South Africa, Zimbabwe
Zambezi	Angola, Botswana, D.R. Congo, Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe
Kura-Araks	Armenia, Azerbaijan, Georgia, Iran, Turkey
Ob	China, Kazakhstan, Russia
Han	North and South Korea
Ganges-Brahmaputra-Meghna	Bangladesh, Bhutan, Burma, China, India, Nepal
Salween	China, Burma, Thailand
Mekong	Burma, Cambodia, China, Laos, Thailand, Vietnam
Tumen	China, North Korea, Russia
<i>Recent disputes; negotiations in progress:</i>	
Nile	Burundi, D.R. Congo, Egypt, Eritrea, Ethiopia, Kenya, Randa, Sudan, Tanzania, Uganda
Jordan	Israel, Jordan, Lebanon, Palestinians, Syria
Tigris-Euphrates	Iran, Iraq, Jordan, Saudi Arabia, Syria, Turkey
Aral Sea	Afghanistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan

Source: Wolf et al., 2003:47 and Yoffe et al. 2001:100.

The need to extend the focus beyond transboundary water-related conflicts

However, it is far from being the case that all situations of water-related conflict and cooperation are international in origin or are best dealt with at the international level. First, some conflicts which are regarded as transboundary conflicts are essentially local conflicts which just happen to take place in a transboundary basin. An example is the conflict reported in the Senegal River basin in 1999, in which thirteen people died in communal clashes along the border between Mauritania and Mali. The conflict started when herdsmen in a village in western Mali refused to allow a Mauritanian horseman to use a watering hole. The horseman returned with some of his clansmen, attacking the Malian village and causing two deaths. In the retaliation that followed, eleven more people died (TFDD). It is hard to imagine how to prevent and manage such 'transboundary' conflicts without locally negotiated agreements. International agreements might become useful in such situations, only if the claims made by the conflicting communities are backed by their respective states and these essentially communal conflicts develop into international conflicts.

Secondly, whether in transboundary river basins or not, water-related conflicts (as well as cooperation) take place within nations among different interest groups or stakeholders and affect the lives of millions of people. One of the suggestive conclusions to emerge out of the research undertaken by Wolf and his colleagues is that, in the future, water-related violence is much more likely to take the form of 'water riots', such as those against a Bechtel development in Cochabamba, Bolivia,¹¹ than 'water wars' across national boundaries, and that conflicts are increasingly being driven by internal or local pressures (Wolf *et al.* 2003: 50–1.). States tend to represent only some of the water-related interests within their national boundaries, and unfortunately it tends to be the same types of interest which go unrepresented by different states, such as those of the poor rural and urban consumers, artesian irrigators and fishers, people living close to dams and those related to environmental concerns. The likelihood is that no or only inadequate institutions exist for negotiating such local conflicts, that is, conflicts which are nationally contained, regardless of whether they take place in a transboundary basin or not.

¹¹ For more information on the Cochabamba riots, see the paper by Westermann, Chapter 3, this volume.

As was the case with respect to transboundary water-related conflicts before the development of the Transboundary Freshwater Dispute Database, only sporadic information exists today with respect to local conflicts and cooperation. Thus, there is a lack of systematic knowledge of the character, extent and social, political and economic implications of local water-related conflicts.

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Chapter 2

Addressing water conflicts: Governance, institutions and functions

Mikkel Funder and Helle Munk Ravnborg

Approaching conflicts in water governance

How should we understand the basic role of governance institutions in water resource conflicts? Traditionally, water resource institutions have emphasized technical and procedural aspects of the water governance process, with little attention being given to issues of conflict resolution and local stakeholder representation. As a result, the organisational structures and specific functions of water governance have tended to reflect blueprint planning approaches, often with very limited regard for the real-world dynamics with regard to which they were being implemented.

Recent years have seen the advent of more carefully reflected approaches, recognizing to a greater extent the need to accommodate stakeholder interests and address conflicts (Giordiano and Wolf 2003, GCI 2003). However, even in these efforts there often remains a notion that the way of preventing or overcoming such conflicts is simply a matter of creating ‘better plans’, that is, plans that are rational from a hydrological, economic and narrow organisational perspective, and thus assumed to be acceptable to all parties (e.g. Donkor and Wolde 2000).

Yet, what appears rational or valuable to some may not seem so to others. If we are to take water conflicts seriously, we need to recognize them for what they basically are: different interests held by different stakeholder groups within a highly political context. Water is *the* multi-purpose resource, applied in all areas of life and production by stakeholders at all levels, and as such it is almost by definition a contested resource.

A conflict perspective of this sort has important implications for the way development interventions approach water governance institutions and their associated functions.

- First, it suggests that substantial attention be given to issues of governance,

representation and the development of political space for negotiation between stakeholders. These are enduring features of water governance issues: conflicts can be prevented and resolved to some extent, but new tensions are bound to appear as societies change and new needs and stakeholder groups develop.

- Secondly, it implies giving attention to institutional processes, not just to static organisational arrangements. While specific outputs such as water management plans are crucial, they are unable to address different interests and tensions if they are not developed through careful processes of planning and negotiation between stakeholders.
- Finally, and importantly, it involves an approach that not only addresses conflict *resolution* mechanisms, but also works to address conflicts before they become deadlocked. Institutionally this entails a focus on ensuring stakeholder involvement in the water resources management process *as a whole*, not just in conflict situations.

Water governance can be conceptualized as consisting of the following set of main elements or functions, including the development of the institutional framework within which these functions should be carried out (Table 1). Thus, water governance is far from being merely a process of assessing and allocating available water among different uses and users within a hydrologically defined unit. Indeed, it is a complex process, involving a wide range of political, social, cultural, environmental, technical and economic decisions to be taken in relation to the full range of functions, from defining overall water policy objectives to defining the need for and producing knowledge of impacts of current and future water governance, and reaching far beyond the hydrological unit for water governance to the wider institutional and social structures. Thus, potential issues are related to all of these functions. Stakeholder participation and conflict resolution mechanisms are thus needed throughout the full water governance process.

Taking the onset in the approach outlined above, we turn in the following to a brief review of the current status of mechanisms of collaborative water management and conflict resolution at the transboundary, national and local levels. On this basis, we move to a discussion of the governance dimensions of three key features in current approaches to water management, namely Integrated Water Resources Management, Stakeholder Participation and Conflict Resolution. Lastly, we seek to outline how conflict resolution and stakeholder involvement relates to specific water management functions.

Table I. Main water governance functions

- | | |
|---|---|
| <p>1. Overall policy development (<i>priorities and principles for water management</i>)</p> <p>2. Water resource policy/regulatory framework (<i>water ownership, access and management obligations; monitoring; institutional framework</i>)</p> <p>3. Domestic water supply policy/regulatory framework (<i>standards, coverage, price policy for water provision; monitoring; institutional framework</i>)</p> <p>4. Hydrological and environmental water resource assessments (<i>water availability and environmental needs</i>)</p> <p>5. Allocation of water rights (<i>permanent or temporal withdrawal and discharge</i>)</p> | <p><i>rights; monitoring</i>)</p> <p>6. Inter-level ('transboundary') coordination and negotiation (<i>deal with interdependencies between levels/units for water allocation</i>)</p> <p>7. Intra-level coordination and negotiation (<i>deal with competing claims from multiples users and for multiple uses</i>)</p> <p>8. Independent appeal and dispute resolution (<i>provide investigation and arbitration in cases of dissatisfaction with negotiated settlements</i>)</p> <p>9. Independent knowledge production (<i>assess state of the water and social, economic and environmental impacts</i>)</p> |
|---|---|

Experiences of water management and conflict resolution at the transboundary level

Recent decades have seen a considerable expansion in the number of international declarations and agreements relating to transboundary water-resource management. In global terms, the 1992 Dublin Statement on Water and Sustainable Development and subsequent Agenda 21 declarations in Rio have been reaffirmed on several occasions, including the 2002 Johannesburg Ministerial Declaration. Likewise, several international freshwater organisations have appeared since Rio, such as the World Commission on Water, with funding from the World Bank, FAO, UNDP and other major donor agencies. In legal terms, the UN Convention on the Law of the Non-navigational Uses of International Watercourses of 1997 in principle provides a legally binding framework for member states who have ratified the Convention, including the development of institutional mechanisms for collaboration and the recognition of equitable water utilization and aquatic conservation.

Despite these efforts, critics have pointed to the lack of practical means and modalities to implement these globally oriented declarations and conventions on the ground. There is a tendency to operate on the level of principles rather than concrete action plans, and in particular a lack of tangible multilateral institutions for execution, enforcement and conflict resolution (Beach *et al.* 2000, Haftendorn 2000, Giordano and Wolf 2003). Moreover, globally oriented water agreements have tended to lack subsequent action and commitment from signatories. The above-mentioned UN Convention on International Watercourses, for instance, is currently ratified by just a dozen countries, despite being more than twenty years in the making before its adoption in 1997.

Turning to the individual river-basin level, agreements between riparian nations have fared somewhat better, although experiences do present a somewhat mixed picture. A substantial number of multilateral and bilateral agreements have been drawn up at the basin level in recent decades, particularly in Europe, but increasingly also in Latin America, Africa and Asia. These reflect the limited but growing attention being given to issues of conflict resolution, and a shift in emphasis from primarily addressing water rights and their allocation towards more collaborative approaches focused on joint benefit optimisation (Hamner and Wolf 1998).

Some, though far from all of these agreements have included the actual formation of joint commissions and related collaborative mechanisms, although these have often been developed as ad hoc responses to current situations rather than deriving from any overall strategic planning among collaborating nations. Even where more substantial collaborative mechanisms have materialized, they have typically developed out of long-term processes over several decades, involving an erratic but gradual build-up from single-issue agreements via set-backs and diversions to a gradually wider scope of collaboration (e.g. the Nile Basin Initiative and the Mekong River Commission: Westermann 2004, Lauridsen 2004). Yet despite the ad hoc and erratic nature of much transboundary collaboration at the basin level, such agreements have often proved surprisingly enduring in the longer term. Indeed, analysis of existing agreements suggest that transboundary treaties between two or more riparian nations tend in the longer term to lead to expanded collaboration on both water and other issues, with reduced nation-to-nation tensions as a result (Sadoff and Grey 2002; Wolf *et al.* 2003b).

But while this is in itself a significant feature suggesting the need for continued efforts at the transboundary basin level, there are also substantial problems.

First, many transboundary mechanisms still lack the practical capacity to undertake the functions required for truly integrated cross-border basin planning and management (GCI 2000, UNEC 2000). Secondly, and more challengingly, issues of stakeholder representation continue to constitute a major problem area in most such mechanisms. One dimension of this is the tendency for some riparian countries to stay out of transboundary agreements, usually as a result of regional power politics and/or skewed upstream–downstream relationships, as in the case of China within the Mekong River Commission, or Guinea within the Senegal River Interstate Committee. A further and equally important dimension is the widespread lack of civil-society stakeholder representation in regional collaborative mechanisms. Given their international nature, such mechanisms have tended to be seen and developed as pure Government-to-Government fora, despite the obvious impact of basin planning and development on everyday concerns and livelihoods at local levels. This has led to local protests and tensions from the grassroots and NGOs – especially over regional infrastructure projects – which transboundary institutions have had difficulties responding to due to a lack of formal fora for voicing and discussing such protests in the first place (Ratner 2000, Hirsch 2004).

But while such problems of stakeholder representation in multi- and bilateral water collaboration constitute significant challenges in transboundary basin planning and management, there is a further, more fundamental question to be addressed: to what extent do transboundary agreements and collaborative mechanisms actually address the real-world water conflicts taking place today? According to recent analysis and monitoring, a substantial proportion of water conflicts taking place in transboundary water basins originate locally, while, as documented by the Transboundary Freshwater Dispute Database (TFDD), only a very few cases exist of actual open water-based conflict between nations to date (Hamner and Wolf 1998, Wolf 1998). A case in point is the conflict, already mentioned above, reported in the Senegal River basin in 1999, in which thirteen people died in communal clashes along the border between Mauritania and Mali. The conflict started when herdsmen in a village in western Mali refused to allow a Mauritanian horseman to use a watering hole. The horseman returned with some of his clansmen, attacking the Malian village and causing two deaths. In the retaliation that followed, eleven more people died (TFDD). The problem in dealing with such local water conflicts in transboundary basins is that, because they are local in nature, existing transboundary mechanisms are generally poorly equipped to address them or their related problems, nor do they usually

have the mandate to do so. This does not mean that transboundary collaboration is by any means irrelevant, but it does suggest the need for greater emphasis on the national and especially local dimensions of conflict resolution and governance in water-related interventions.

Experiences of water management and conflict resolution at the national level

In recent years, a growing number of countries have revised or developed national water-management strategies and associated plans along relatively progressive lines, in most cases following the 1992 Dublin principles (Solanes and Gonzalez-Villareal 1999, Jaspers 2003). To boost this process further, the 2002 Johannesburg Conventions stipulate that all signatories must draw up national water plans by 2005. The more recent national strategies tend to emphasize in particular:

- the application of Integrated Water Resources Management approaches
- cross-sectoral institutional harmonization and capacity development, especially in river basin management
- support for market development and user-pays principles
- the development and refinement of legal frameworks for water use and management
- attention to long-term environmental impacts and associated Environmental and Strategic Impact Assessment
- the decentralization of water resource management functions according to subsidiarity principles
- the increased involvement of water users and other relevant stakeholders in the management process

The central level mandate to implement these policies has in most cases been vested in the relevant line ministry, with overall coordinating functions typically allocated to a national water agency. In some cases, water management councils at national and catchment levels have been developed for political representation in respect of policy guidance and decision-making, ideally linking to water-user associations at sub-catchment levels.

However, in many cases the actual operationalization of these national policies and strategies has been constrained by significant institutional problems on the ground (see, for instance, Gonese 2002 on Zimbabwe and Malawi; Wester

et al. 2003 on Mexico and South Africa). The application of Integrated Water Resources Management (IWRM) approaches and cross-sectoral institutional harmonization has been a particular problem. Internal competition and power struggles between government institutions within the different sectors have often seriously restricted collaborative efforts, and functions such as joint planning and data-sharing have often amounted to little more than token activities (Ratner 2000). In some countries, this has been the case even within the water sector itself, with, for instance, irrigation departments and water-conservation agencies working in different directions or applying different interpretations of national goals, strategies and legal frameworks (e.g. Gonese 2002).

Another frequent problem is that some stakeholders have succeeded in making water-related government institutions back their claims or interests at the expense of those of other stakeholders. The conflicts between upland and lowland farmers in northern Thailand is an example of such a situation. As part of this conflict, lowland farmers in conjunction with government institutions have attributed the problem of water scarcity increasingly being experienced in the north to forest degradation caused by upland farmers, rather than as a problem of increased water use by lowland as well as upland farmers. These causal claims have been used by government institutions as an argument to impose restrictions on upland farmers' access to and use of forest resources. Walker (2003), however, convincingly argues that, while forest degradation is undisputable in northern Thailand, there seems to be no evidence in support of claims that it has led to a decreasing availability of water. Rather, current water scarcity must be explained by the increasing use of water for the dry-season cultivation of soybeans by both upland and lowland farmers. Such problems are compounded by a general lack of attention being paid to functions related to dispute resolution and independent monitoring and appeal. Unlike the limited but growing emphasis on conflict resolution in transboundary water-management institutions, the national level has seen very few efforts being made to develop actual dispute resolution mechanisms, especially for local level stakeholders wishing to take their cause to higher levels. Behind the limited attention being given to dispute resolution mechanisms lies a widespread perception among policy-makers themselves of national governments as guardians of the 'common good', leaving little room for more pluralistic and incorporative approaches.

However, one positive development in some water management settings has been the advent of national decentralization policies, which use the subsidiarity principle

that management should be provided at the lowest appropriate levels. Hence in countries such as Mexico, South Africa, Tanzania and Thailand, water-decentralization policies have aimed at transferring selected management functions to other, sub-national water-management institutions, such as basin- or sub-basin water-management bodies. The application of such approaches to issues of water management is relatively recent, and the longer-term effects remain to be seen in most cases.

To the extent that such bodies incorporate real opportunities for stakeholder representation in associated committees and management boards, they have potential for some enhancement of water governance systems. Experience to date, however, also highlights the substantial constraints encountered in applying integrated and devolved water-management policies, as exemplified here in the case of Zimbabwe (Box 1), as in other countries where similar policies have been pursued (Chiozho 2002a, Wester *et al.* 2003).

A particular problem with efforts to decentralize has been that although issues dealing with overall management functions may be formally devolved to a lower level, they may actually be retained within (local) government institutions. In this way, authority remains within the government system, and top-down implementation may actually continue unhindered (Jaspers 2003). Such an approach defeats the notion of involving water users in actual planning and management functions and may lead to increased discontent as expectations are not met.

Another reason explaining the limited success so far in decentralizing water management and conflict resolution and facilitating broad-based knowledge of and participation in such efforts might be the strong organizational focus that has characterized these efforts. Much focus has been placed on the boards and committees themselves and who should be elected or appointed to them, but much less on the issue of representation as such, as well as on the functions to be carried out (cf. Table 1).

Experiences of water management and conflict resolution at the local level

Interventions aimed at local-level water-resource management have typically targeted local government institutions as part of the decentralization efforts discussed above and/or the development of water users' associations (WUAs) and associated water-user councils or boards at catchment and sub-catchment levels. WUAs in particular were widely tried during the 1990s and continue to

Box I. Reforming water management in Zimbabwe

The Zimbabwe Water Policy of 1999 recognizes increasing competition among users and emphasizes equitable access to water and enhanced stakeholder involvement in decision-making. The water management process is based on integrated land and water resources management on a catchment basis, seeking the coordination and harmonization of sector policies.

A Water Act introduced in 1998 devolves authority to stakeholder institutions at three levels: Overall Catchment Councils (river-basin level), Sub-Catchment Councils and local user levels. Catchment Councils are charged with issuing water permits, based on recommendations from Sub-Catchment Councils. Stakeholder groups are identified by law and must be represented at all levels through an elective process. At the central level, a National Water Authority aimed at the overall coordination of water management has been set up, with designated 'Catchment Managers' serving as executive officers to the Catchment Councils.

Findings from studies of the Zimbabwe reform process point to the following key issues (Chikozho 2002b, Gonese 2002, Latham 2002):

- The reforms have brought about a certain degree of *de facto* devolution of water management to lower levels and have improved the options for the involvement of some stakeholders to some degree. However, resourceful large-volume water users such as commercial farmers have been able to enter the participatory process with distinct advantages, such as better knowledge and experience of water-management issues. These stakeholders have therefore in many cases come to dominate decision-making processes, despite numerically equal representation on water councils.
- Because no distinct appeal or conflict-resolution mechanisms have been developed alongside the devolved water-management councils, marginalized groups have had nowhere to take their grievances. Although the 1998 Act provided for broadened stakeholder representation at the national Water Court, few marginalized groups possess the resources to take their complaints to this level.
- There is substantial ambiguity as to the actual roles and functions of the institutions involved, in terms of both division of authority *within* the new water-management structure, and between the water-management authorities and other organisations. Thus the role of the National Water Authority vis-à-vis the devolved water-management councils is being contested and remains to be clarified. Likewise, water-planning and management functions under the Catchment Councils overlap with water-supply functions resting with local government authorities.
- Third-tier decision-making at local/community level has been given relatively limited attention, and is only vaguely catered for within the legal framework. Some pilot efforts have been made with local Water User Boards (WUBs), but these have met with only limited success. In one pilot area, the WUBs conflicted with a wide variety of existing local water-regulation institutions, such as small 'water point committees', village assemblies, chief/headman structures and rural district councils (Latham 2002). In other areas, surveys have shown that more than eighty percent of the inhabitants had never heard of the WUB, nor indeed of the wider catchment management programme (Chikozho 2002).
- Finally, long-term financing has proved to be a substantial problem in implementing the new water-resources institutions in Zimbabwe. As donor funding has come to an end, the Catchment and Sub-Catchment Councils have suffered from a lack of resources, leading to an indefinite suspension of the latter in 2002.

form an important element in national and donor-backed water programmes and projects in countries, especially within irrigation management.¹² Some positive experiences have been generated, but the lessons drawn from the experience with WUAs also point to a range of constraints and the need to pay more attention to local complexities in water-resource management.

The institutional development of water-user associations has taken place at varying levels. Often, a three-tier structure has been introduced, that is, an overall catchment or basin level, an intermediate sub-catchment level and a local, tertiary level. In the context of integrated water-resource management specifically, government-led efforts have tended to focus on the catchment and sub-catchment levels because of the substantial challenges involved in developing the new institutional structures and the tendency to emphasize larger hydrological units as the appropriate level of management.

Hence, within Integrated Water Resources Management specifically, the development of WUAs at the tertiary level has been relatively slow to date, and is still in its early stages in many national programmes. Within other areas of water management, programmes emphasizing irrigation development and more broadly focused community-based programmes have also involved WUAs. In many cases, these have focused more specifically at direct-user and community levels, and can therefore form an important source of experiences for local-level water management. Taken as a whole, experiences with WUAs within these programmes, as well as the pilot experiences of IWRM efforts at local levels, emphasize the following aspects.

A limited number of community-based WUAs have managed to become relatively well-functioning units for management, with reasonable local ownership (e.g. IFAD 1996, Kibi 2003). In these cases, emphasis has been placed on linking WUA involvement directly with a *careful analysis of livelihood strategies*, land-use patterns and markets, in recognition of the intimate connection between these features and local stakeholder participation. Likewise, attention has been given to the *involvement of all major interest groups*, including those normally marginalized from decision-making processes

¹² E.g. Turkey (MCSD 1999), Kazakhstan (Burger 1998), Bangladesh (Quassem 2002), Thailand (Höyneck and Rieser 2002), Mexico (Kloezen 1998), Gambia (IFAD 1994, 1995), South Africa (Govt. of South Africa 1998a, 1998b).

(e.g. women and the poorest). We return to these issues in our discussion of stakeholder participation below.

The majority of WUAs, however, have had problems in becoming embedded within social, economic and institutional structures at local levels, as is illustrated by the case of Zimbabwe described above. Efforts to develop water-user associations have often assumed that, as long as good organisational structures are in place, community members will automatically participate. Many WUA initiatives have therefore suffered from *low community support* because of a lack of attention to what actually makes people join and collaborate within WUAs (IFAD 1994, 1995; Höynck and Rieser 2002, Quassem 2002). Likewise, some projects report how WUAs have been ‘captured’ by local elites and powerful stakeholders, leading to skewed interest representation.

Many programmes have experienced a frequent *lack of clarity over the actual mandate and functions* of individual WUAs within the management framework (e.g. Burger 1998, Chikozho 2002b). Because they tend to be developed as an add-on to higher-level water-management institutions, their everyday functions and integration with other tiers of water management is often unclear or entirely lacking. This has been compounded by a lack of follow-up on the actual impacts of or experiences with pilot WUAs in relation to resource management and local livelihoods more generally.

The establishment of WUAs has sometimes led to *conflicts with other institutions and stakeholders*. Because of their mainly hydrological definition, WUAs often span administrative, socio-cultural and land-use boundaries, sometimes leading to confrontations over mandates and authority with other stakeholder groups and customary or government institutions. Such situations are often not catered for in the institutional design of WUAs, and even where overall joint management boards exist, they often do not incorporate the necessary conflict-resolution mechanisms to be able to transcend such institutional deadlocks. At community level specifically, there has been a tendency to overlook already existing institutions – whether indigenous or otherwise – related to water management, leading to overlapping mandates and functions (Maganga 2002, Latham 2002).

Lastly, WUAs have suffered from having *poor institutional and human-resource capacity within government agencies* to be able to work with participatory

approaches, which is sometimes compounded by a lack of will among government staff to engage in such activities in the first place. This has contributed to poor implementation or, in some cases, WUAs that function as little more than a legitimising medium for continued top-down approaches (Gonese 2002). A related but sometimes underestimated issue is that of information dissemination. In some projects, it was found that local water-users were insufficiently informed of the relevant issues, plans and interventions taking place in the wider basin or watershed context (Chikozho 2002a, Höynck and Rieser 2002). Given the close interdependence between the basin and sub-basin contexts, this is problematic both in terms of sustainable management and stakeholder collaboration.

It is important to note that the above features apply mainly to formal water-user associations created from 'above' or from the outside. Many rural communities in the developing world have water committees formed through local initiatives. Such local water committees undertake tasks relating to the management of drinking-water supply schemes, including construction and maintenance, fund-raising and regulation of water use, that is, the extent to which water can be used for watering crops, gardens, animals, etc. As an example, a survey from Nicaragua showed that two-thirds of the communities in two rural districts had local water committees. We return below to the feasibility of basing water-resource interventions on indigenously developed structures. That said, the fact that water committees are locally developed does not, of course, in itself guarantee that they are representative of all local interests. In the following we turn to a discussion of three key cross-cutting issues emerging from the above outline of experiences to date, namely integrated management, stakeholder participation and conflict resolution.

Governance challenges in Integrated Water Resources Management

Integrated Water Resources Management (IWRM) has for some time represented the cutting edge in water-related thinking, although in the context of developing countries the challenges involved have slowed down the actual adoption and implementation of this approach on the ground (Jaspers 2003). Like all such concepts, there have been different interpretations of what IWRM actually is. Solanes and Gonzales-Villareal (1999) define it as the 'coordinated development and management of water, land, and related resources by maximising economic and social welfare without compromising

the sustainability of vital environmental systems'. In some contexts, the notion has been taken to imply simply sectoral institutional integration, focusing mainly on coordination between government sector agencies. But while this is certainly an important issue in itself, more recent interpretations have emphasized the need for a broader perspective as laid out in the so-called 1992 Dublin Principles (see Box 2). Most IWRM approaches that have so far been implemented have thus featured a) an emphasis on hydrologically defined boundaries, b) a focus on both qualitative and quantitative aspects of both surface and sub-surface water management, c) the incorporation of wider land- and resource-use dynamics, and d) attention to social and economic conditions and associated development needs and processes.

Box 2. 1992 Dublin Principles

1. *Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment*
 Since water sustains life, the effective management of water resources demands a holistic approach, linking social and economic development with the protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer.
2. *Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels*
 The participatory approach involves raising awareness of the importance of water among policy-makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and the involvement of users in the planning and implementation of water projects.
3. *Women play a central part in the provision, management and safeguarding of water*
 The pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water-resource programmes, including decision-making and implementation in ways defined by them.
4. *Water has an economic value in all its competing uses and should be recognized as an economic good*
 Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging the conservation and protection of water resources.

(Source: 1992 Dublin Statement on water and sustainable development)

In terms of conflict prevention, it is clear that, if it were to be fully implemented, this integrated approach would incorporate important elements. The attention to social and economic aspects and to wider land-use dynamics provides good scope for a better understanding of stakeholder claims, rationales and livelihood needs, just as the holistic approach to the water resource itself can help highlight and address conflicting interests between different types of resource users. That said, however, three important points need to be made.

First, the actual process of changing from a traditional single-sector strategy to an integrated approach poses substantial demands and strains on the institutions involved, typically creating upheaval in established practices, customs and areas of authority. This can lead to conflicts over authority and mandates among existing institutions, or, as mentioned above in the context of water-user associations (WUAs), between existing and new institutions. Interventions aimed at introducing IWRM therefore need not only to anticipate and avoid such conflicts in their design, but must ensure that the actual restructuring process incorporates specific fora and approaches for resolving such conflicts if and when they emerge. Likewise, there is a need to work explicitly towards the development of mutual acceptance and understanding among the institutions and stakeholders involved, in order to overcome the often very fundamental differences in outlook and rationale that exist, both between government staff and stakeholders, and among government institutions themselves (e.g. Gonese 2002). In such efforts, it may be important to examine carefully the extent to which reorganization is really necessary. Recalling that IWRM entails hydrological as well as social, political and economic functions (Table 1), it is worth considering whether all water-management functions need to take place at hydrologically defined levels, or whether indeed IWRM could take place in an organizational structure comprising hydrologically as well as politically or administratively defined entities.

Secondly, as pointed out by the IWMI–TATA Water Policy Research Programme in India, there is a distinct need to ensure that IWRM is developed on the basis of the existing institutional and socio-cultural settings. To date, concepts such as Integrated River Basin Management have been largely conceived and developed in the Western context, and have sometimes been transferred more or less uncritically to developing countries. Given the large differences not only in cultural setting but also in the way water is traditionally used and managed, this can result in major problems. For instance, a primary emphasis on organisational development and legislative regulation may be effective in the formalized water

management sectors of the West, but may fail entirely in developing countries, where water rights are often managed according to informal right systems, with multiple and often differentiated stakeholders, and in a context of weak institutional capacity in government organisations (IWMI 2002).

Thirdly, it is important to emphasize that IWRM is not *necessarily* participatory. Indeed, along with an emphasis on wider hydrological units (e.g. river basins and watersheds) comes the need for overall coordination and planning in order to address upstream/downstream issues and overcome barriers imposed by existing administrative boundaries and the primarily local outlook of most institutions at lower levels. This raises the risk of a water management process in which crucial policy development and planning are effectively centralized in a single coordinating entity. Hence, whatever might be the most appropriate institutional arrangement for any given context, hydrologically defined management requires special attention being given to ensuring stakeholder representation both at overall catchment coordinating levels and through grassroots involvement in cumulative planning from the local level upwards (Barham 2001). Apart from the issue of stakeholder representation itself, a further significant element is communication between the different tiers of water management. As mentioned above, experiences to date indicate that many water-resource management efforts, including community-based ones, have suffered from an acute lack of awareness at the local level that integrated planning and management is actually being undertaken in their area, followed by an uncertainty as to what it actually entails.

It is important to emphasize that the solution to such communication problems involves more than simply informing local stakeholders through extension workers etc. Rather, it is a wider question of enhancing the means for two-way communication between stakeholders and technical staff and planners, as well as ensuring that integrated approaches move beyond being a (predominately Western) 'planners concept' only. This includes paying attention to the existing indigenous know-how stored among many local water-users, as well as ensuring that the various formal as well as informal water-user associations are actually involved in local-level management.

Understanding stakeholder participation

Like integrated approaches, stakeholder involvement has come to be a 'must have' in water-related donor interventions, and it is increasingly represented in one form

or another in government programmes and policies. Thus, the legal frameworks concerning water management in countries such as Mexico, South Africa and Thailand all explicitly require public involvement in the water-management process. On the ground, such public involvement has often taken the form of the local water-user associations described earlier, often complemented by higher-level water-management committees incorporating stakeholder representatives.

In practice, stakeholder-oriented approaches have had some success, though they have also highlighted the challenges faced. In particular, there is a need to move beyond the notion of participation as a 'magic bullet' and to focus instead on coming to grips with the everyday practicalities and complexities of stakeholder participation (Guijt and Shah 1998). This has several dimensions.

First, although many policy documents and strategies praise the values of public involvement and community participation, there is often considerable confusion as to what this actually entails in everyday management terms, and what the specific aims of participation actually are (Kothari 2001). Within water management, in some cases this has led to casual or ad hoc interventions that approach stakeholder participation as simply an add-on to water resources management, rather than a central aspect in itself (Jaspers 2003, Quassem 2002, Dungumaro and Madulu 2002).

There is thus a need for greater clarification of what the participatory approach actually involves each time a particular water management project is designed. What, for instance, are the actual mandates and functions held by water-user associations at the various levels? Should they be permanent organizational entities, or would more fluid, issue-based ways of organizing be more feasible? How will disputes between stakeholders be settled in practice when they arise? How will the representation of marginalized groups be ensured? What are the specific flows of information between stakeholders and government agencies?

A crucial element in clarifying such issues is the active involvement of stakeholders themselves in the design process. Many water management interventions to date have featured what might be termed 'designer participation', that is, externally designed modalities that pay little attention to local contexts. As discussed above, many efforts have therefore ended up designing participatory structures that functioned poorly in practice or missed the intended target groups and often totally neglected locally organized water committees, while others have become little

more than tools for legitimising the implementation of policies and interventions that actually remain top-down. The potential consequences of such an approach are illustrated in the case of the Phitsanulok Irrigation Programme in Thailand (Box 3). There is a need to involve stakeholders in the actual institutional design process from the outset, addressing those questions that are often left to external experts and government staff, that is, what is the 'lowest appropriate level', who are actually the 'stakeholders', and what are 'the right incentives'?

In developing institutional arrangements for stakeholder participation, the issue of incentives is particularly significant. Many efforts to develop stakeholder participation have rested on the logic that, as long as the participatory structures are there, stakeholders will automatically participate. However, past experience has shown that stakeholders, and not least local ones, carefully evaluate the perceived benefits of participating in conservation or management efforts and may well choose other options in their pursuit for access to water. In this respect, it becomes particularly important to take the wider issues of livelihood strategies and social and economic trends into account, as when farmers in the Gambia ignore efforts to establish participatory irrigation management as a result of careful assessments of changing crop-market structures (IFAD 1994, 1995).

While incentives are thus a crucial aspect of securing stakeholder participation, several factors are equally significant in determining stakeholder participation. Different power relations, networks and bargaining positions among stakeholders are obvious examples that are nonetheless rarely addressed in practice within participatory water management. This includes not only overall differences between stakeholder groups (e.g. between commercial and community farmers, as in the case of Zimbabwe described earlier), but also differences within these groups themselves, as exemplified by the Phitsanulok WUAs described above. Likewise, participatory water management efforts are often dominated by men, despite the fact that women tend to be crucial end-users in many cases (Clever 1998). Such examples defy the basic rationale of stakeholder involvement as a means of user representation and are particularly problematic when they lead to the marginalization of already hard-pressed resource users such as the poorest.

Two things are therefore needed in water interventions. First, active attention and support needs to be provided to marginalized stakeholders who enter negotiation and decision-making processes at a disadvantage, such as women or the poorest. Secondly, participatory water management needs to move away from the tendency

to treat communities (and stakeholder groups in general) as ‘black-boxes’ whose internal dynamics are irrelevant to water management (see also Mosse 1998).

In summary, there seems to be a need to take water-management functions rather than the organizational structure of water supply as the starting point when considering how to ensure broad stakeholder participation in water management. That would imply focusing more on strengthening broad-based hearing processes in relation to new water management initiatives, whether legislative or investment-based; ensuring that information of water rights and management opportunities and obligations is widely disseminated; and making dispute-resolution mechanisms widely available, known and accessible, including to marginalized stakeholders, as sources of help in settling conflicts caused by competing water management claims either among water users or between water users and water management institutions. Indeed, we suggest that donor-funded interventions focus more on the development of simple mechanisms for arbitration and negotiation (such as a water *ombudsman*), rather than any large-scale efforts to organize stakeholders as such.

Key issues in dispute resolution

While stakeholder participation is a crucial element in preventing competing water claims from escalating into serious conflict, it by no means rules out competing water claims being made either now or in the future. Even where governance processes are fully participatory and transparent, disputes may well continue to arise on occasion, as in times of major changes in resource pressure, unforeseen market fluctuations or political circumstances. Rather, the role of stakeholder participation is to provide an opportunity to have potentially conflicting interests and claims articulated in a ‘peaceful’ way, so that they can be known, analyzed and negotiated among stakeholders at the various levels. That is the role of dispute resolution.

Specific formal mechanisms for conflict resolution are still a rarity in water-management structures at transboundary and in particular national and local levels. Typically, conflicts in water management at these latter levels have been dealt with on an *ad hoc* basis, and usually when they have already escalated. While conventional political and legal procedures certainly have an important place in such situations, they have often proved insufficient on their own, as they tend to produce short-term solutions and often favour the more resourceful stakeholders. There is a need, therefore, to investigate further the options and approaches for

Box 3. Participation in Water-User Associations in Thailand

Stakeholder participation in Water-User Associations (WUAs) has not been widely studied, and most that have stem from irrigation systems management. The following outlines findings from a study of farmer's participation in WUAs in the extensive Phitsanulok Irrigation System in Northern Thailand (Höyneck and Rieser 2002):

The project, implemented by the Royal Thai Government, sought to develop local participation in the management of gravity irrigation through the establishment of WUAs at two levels: At the lowest distribution level, 513 Water-User Groups (WUGs) have been formed, with up to 86 registered members in some groups. Farmers are entitled to one membership per land-owning household, led by an elected chairman. In principle, members pay a minor operating fee and contribute labour for the maintenance of canals in return for free provision of water through the irrigation system. The individual WUGs are formed into overall Water-User Cooperatives (WUCs), each consisting of some 40 WUGs. Membership of these cooperatives is optional and on a farmer-by-farmer basis, allowing access to credits and subsidised farming inputs.

The study of the Phitsanulok system also found that:

- A major issue in the programme has been the lack of an appropriate legal framework for the WUAs in national law. This has meant that neither WUGs nor WUCs have any substantial legal status with regard to the overall management and control of the irrigation scheme. While the formal functions of the WUGs are mainly related to organising the maintenance of the canals and tending to everyday operations, the WUCs have become little more than a platform for individual farmers to appropriate government subsidies and funding.
- Farmers have responded quite differently to the WUAs. Some have engaged in the WUCs and WUGs in order to secure water from the irrigation system and access government funds. Others are formerly registered as WUC members but do not actually participate, either out of frustration over the lack of control, or because they have found other means of accessing water (e.g. water pumping).
- Government attempts to organise large-scale collective activities such as canal maintenance and conservation planting proved difficult under the WUAs. By contrast, informal activities developed by active WUA members have themselves met with more success, and have come to form the everyday basis of the local organisation of water use and maintenance in the irrigation system.
- Within the WUAs, wealthy or influential local farmers have taken on leading roles, developed and maintained through patronage structures. Likewise, changes in the ownership structure of land since the WUAs were set up in the early 1980s have meant that many farmers now rent rather than own land. Because membership is based on landownership, these farmers are effectively marginalized from the WUAs.
- Among WUA members, open conflicts over water resources have been limited, partly because of the lack of direct control over water supplies, partly because of customary conventions suppressing such conflicts and partly because alternative means of accessing water have existed. However, infringements on other farmers' water rights (e.g. tapping water from neighbours) continues, and an increasing disregard for downstream users of the system is evident.
- Finally, participation in the WUAs is also being affected by changing farming and livelihood needs among farmers. The increasing use of other means of accessing water, such as tube wells, and improved access to markets and off-farm employment opportunities have reduced economic and agronomical dependence on water supplies through the WUAs.

developing alternative conflict-resolution mechanisms for addressing local-level conflicts. Past efforts in this direction have been limited within water-resource management, but some experiences and approaches already exist that may be used initially.

Recent years have seen the development of a range of approaches under the overall label of Alternative Dispute Resolution (ADR). Though relatively well-known within the study of conflict resolution generally, ADR approaches have only been applied to a limited extent within water-resource management specifically (the UNESCO/Green Cross 'Water for Peace' Programme is a notable exception; see GWP 2003). Essentially, ADR approaches seek to develop non-judicial procedures and modalities for arbitration, mediation and negotiation in dispute situations. They generally aim to shift negotiation procedures away from a focus on positions, rights and power-relations and towards a focus on interest-based negotiation, where stakeholder interests are voiced and jointly analysed and compared in an attempt to establish win-win situations (Pendzich et al. 1994, Shamir 2003). Institutionally, ADR approaches tend to place particular emphasis on the role of third-party actors as mediators and facilitators in the resolution process, with the associated development of human resources, methods and procedures in order to undertake such functions.

The ADR approach has obvious elements for application in water-resource management, given its emphasis on making interests explicit and its focus on water benefit sharing rather than water sharing per se. That said, it also has some aspects that need to be carefully considered before the approach can be applied. Developed mainly in the United States, ADR approaches require stringent adaptation to the context of developing countries generally, and individual cultures and politics specifically. Moreover, while third-party actors may be an important element in conflict resolution, it is important to ensure that these are a) sufficiently autonomous from political structures, and b) do not overshadow alternative options for conflict resolution where these already exist locally.

The latter issue in particular should be highlighted here. There has been a tendency in conflict resolution to emphasize the development of new, externally conceived institutions and procedures, especially concerning conflicts over water, which have often been dominated by assumptions that local conflicts are the result of incapable indigenous institutions. However, in reality traditional

Box 4. Local conflict resolution in Burkina Faso

From 1999 to 2003, the project 'Managing Water Conflicts in the Nakanbe River Basin' was implemented in Burkina Faso with funding from the Canadian International Development Research Centre (IDRC). Through a combination of action research and practical development interventions, the project sought to address local stakeholder conflicts over water resources for domestic consumption at selected local sites in the Nakanbe Basin.

- Learning from the failure of earlier conventional water-management efforts implemented by government agencies and donor organisations in the area, the project developed a strongly participatory approach involving the following main elements
- Development and implementation of a participatory communication strategy, including clearly defined objectives, activities and main target groups. The aim of the communication strategy was to facilitate dialogue and communication between the different stakeholders at relevant levels during and after the project activities. A variety of formal and informal fora and methods for inter-stakeholder dialogue and participatory data collection and assessment were defined.
- Interest-based stakeholder identification. Through a participatory process, stakeholders were divided into a variety of specific interest groups, taking care to avoid rigid perceptions of 'community members' versus 'government staff'. This included paying attention to issues such as differences in livelihoods, gender and age, as well as differences between individual government departments according to sectoral focus and spatial location.
- Collaborative identification of conflicts in water use and management. Through discussions, round-table meetings and other fora, the various interest groups were required to make explicit their interests and perceived conflicts and problems in relation to water use. This process identified three main sources of conflict, namely social conflicts (stemming from ethnic and religious differences), technical conflicts (relating to water quality and quantity) and socio-sanitation conflicts (relating to water pollution).
- Joint identification and assessment of solutions. All stakeholders were asked to propose, discuss and prioritise solutions to conflicts and perceived water management problems, including clear statements of how and with what stakeholders could contribute to these solutions. Arbitration by external facilitators was employed when confrontations and disagreements arose, and a decision-making process directed to selecting solutions was agreed. Technical experts representing different disciplines were employed to assess the viability and efficiency of the various solutions proposed and to provide experience from other contexts. Not all stakeholder interests could be accommodated fully, but attempts were made to reach as much consensus as possible.
- The organisation and execution of solutions. The participatory process pointed out the necessity of adapting existing decision-making structures within water management. Stakeholders jointly defined the scope, size and mandate of village water management committees (WMCs), for which elections were held. The WMCs were then linked closely with the wider village committee, the local government administration and the village chief structure through mutual representation and legal recognition by central government. Information and awareness-raising activities were also carried out, and community stakeholders undertook conservation and pollution-prevention activities.
- Impact studies were undertaken during and after project implementation. These showed that while some disputes remained (particularly those relating to traditional community hierarchies), there had been a distinct and continuing drop in the number of disputes between stakeholders. The revised WMCs had also been highly successful in involving women, who are the main users of water resources in the area.

systems of conflict resolution are widespread and can in some cases be drawn on for wider application or simply strengthened in their own setting. Thus, Wolf (2000) found long-established conflict-resolution practices in relation to customary Berber and Bedouin irrigation systems that were, in effect, local versions of ADR procedures (see also Maganga 2002 for a similar example from Tanzania). Moreover, many stakeholders and interest groups tend to be organized already, such as business-sector stakeholders, farmers organized in farmer unions and civil-society organizations representing, for example, urban consumers or environmentalists. Clearly such mechanisms may incorporate constraints similar to those currently seen in many formal government structures, and they are not necessarily the right solution in any given context. But where they are viable and relevant, they offer important opportunities to ground conflict resolution in local practices. Efforts to develop conflict-resolution mechanisms that do not pay attention to such existing modes of organisation may end up doing more harm than good by imposing new structures that overlap and conflict with existing ones.

In situations where conflict-resolution mechanisms do need to be established from the outset, it is essential that they are developed in intimate collaboration with the stakeholders concerned. Experience with this form of participatory institutional development is still relatively rare within water-resource management, not least in relation to conflict resolution, and this is an important issue for further exploration and piloting through donor-funded efforts. One promising pilot effort working at community level in Burkina Faso is outlined in Box 4. While such approaches constitute an important way forward in local dispute resolution, it is also clear that they need to be considered as part of the larger water-governance process. If this is not done, conflict resolution becomes a case of treating the symptoms rather than the disease.

Addressing conflict resolution in practice

What are the institutional implications of encouraging enhanced stakeholder participation as an important ingredient in conflict resolution throughout the entire water-governance process, rather than merely within water-user associations, to voice local needs and negotiate local conflicts? Table 2 provides an attempt to address these issues with relation to major functions. Based on the main water-governance functions listed earlier (Table 1), Table 2 expands upon the contents of these functions, identifies the main issues for stakeholder participation and lists the institutional implications.

The table seeks to highlight three issues in particular:

First, Table 2 illustrates the increasingly recognized fact that water governance entails a wide range of functions which are political rather than simply hydrological in nature, such as overall policy formulation, monitoring and enforcement, appeal and dispute resolution. Thus, it is hard to conceive of inclusive and democratic water governance in a context where these features do not characterize governance in general. This point is also emphasized in the Dialogues on Effective Water Governance carried out through the Global Water Partnership (GWP 2003).

Secondly, there is a need to clarify how functions are divided and integrated across the different levels of scale within an integrated water resource management context. In doing so, it is important to keep in mind that society is not, at heart, hydrologically determined. On the contrary, everyday water resource management takes place within a social reality determined by a range of political, institutional, economic and socio-cultural factors. While this may seem straightforward, it has important implications for the way approaches such as Integrated Water Resources Management are organized. This means that we cannot institutionalize water resource management solely according to hydrological boundaries – we need to incorporate broader forms of political and administrative organization also. Hence, Table 2 suggests that only the hydrological assessments need to be done within a strictly hydrologically defined boundary: the allocation of water rights needs to be institutionalized in a way that combines both hydrological concerns (to avoid water which is shared by, for example, two districts being allocated twice) and political concerns – that is, in a setting which facilitates the inclusion of stakeholders and the negotiation of priorities and competing claims, and not least where mechanisms exist to hold representatives accountable. Again, while some commentators argue strongly in favour of hydrologically based water management as a *sine qua non* to achieve IWRM (e.g. Jaspers 2003), others, including the Dialogues on Effective Water Governance, argue in favour of a less rigid and more contextualized approach based on a combination of technical and political or democratic concerns (Barham 2001; GWP 2003).

Finally, Table 2 advocates stimulating stakeholder participation in water governance by creating opportunities for participation, that is, institutional mechanisms such as public hearings and consultations, accessible appeal and dispute-resolution mechanisms (an ombudsman), and a strong emphasis on broad-based communication from national water ministries and authorities as

Table 2. Main water-governance functions, issues for stakeholder participation and institutional implications

<i>Selected main functions</i>	<i>Issues for stakeholder participation</i>	<i>Institutional implications</i>
<p>Overall policy development</p> <ul style="list-style-type: none"> defining overall priorities and principles for water management, e.g. ensuring the entire population access to clean drinking water, protection of environmental /ecological functions; ensuring the conservation of water resources; power generation; agriculture; industry, etc. organize public consultations and hearings; and communicating these priorities and principles to the public as well as to relevant institutions 	<ul style="list-style-type: none"> participation in consultation processes to negotiate overall priorities and principles 	<ul style="list-style-type: none"> ministries and authorities with responsibilities for water governance and management
<p>Water resource policy/regulatory framework:</p> <ul style="list-style-type: none"> development (and updating) of the regulatory, legal framework for water management which stipulates: <ul style="list-style-type: none"> water ownership, access and management rights (use, discharge, etc.) and obligations; and which institutions have the responsibility to oversee the implementation of this regulatory legal framework at the various levels – whether administrative or hydrological or any combination thereof widely disseminate information about this regulatory, legal framework and its implications to the public as well as to relevant institutions 	<ul style="list-style-type: none"> participation in consultation processes to negotiate the regulatory framework as well as institutional responsibility and level of implementation resolving potential conflicts between traditional or de facto water-access and management rights 	<ul style="list-style-type: none"> ‘water’ ministry, probably through a multi-institutional, multi-level and multi-stakeholder task force, including the representatives of water authorities, districts, environmental authorities, etc. national oversight committee/authority or water ombudsman to monitor implementation of the policy and regulatory framework
<p>Domestic water supply policy/regulatory framework</p> <ul style="list-style-type: none"> development (and updating) of the regulatory framework for water provision (whether public or private) with respect to standards, coverage, price structure, etc. widely disseminate information about this regulatory, legal framework and its implications to the public as well as to relevant institutions 	<ul style="list-style-type: none"> participation in consultation processes to negotiate the regulatory framework as well as institutional responsibility 	<ul style="list-style-type: none"> ‘water’ ministry, probably through a multi-institutional, multi-level and multi-stakeholder task force, including the representatives of water authorities, districts, environmental authorities, etc. national oversight committee/authority or water ombudsman to monitor implementation of the policy and regulatory framework

Table 2. (continued)

<i>Selected main functions</i>	<i>Issues for stakeholder participation</i>	<i>Institutional implications</i>
<p><i>Overall policy development</i></p> <ul style="list-style-type: none"> assessment of overall water availability (quality and quantity) within basins, watersheds and aquifers, and of the amount and quality of water required for environmental protection as the basis e.g. for the allocation of water rights, whether on a temporary or permanent basis, as well discharge rights communicate the results of these assessments to civil society organizations, including universities, active in the area of water management, as well as to relevant government and district institutions be available for undertaking water availability assessments upon request 	<ul style="list-style-type: none"> achieve insights into (and checking) the assumptions and results of water availability assessments checking the assumptions and results of assessments of water needs for environmental protection 	<ul style="list-style-type: none"> basin and watershed authorities ensure close collaboration between hydrologically connected or interdependent levels
<p><i>Allocation of water rights:</i></p> <ul style="list-style-type: none"> within the general policy framework, allocate water rights (ownership, if relevant); access and management rights and obligations, as well as discharge rights at the levels stipulated by the general water resource policy/regulatory framework soliciting water claims communicate the allocation of water rights, as well as cases of refusal of water rights, to the general public, as well as to relevant institutions 	<ul style="list-style-type: none"> demand public insight, i.e. transparency in the allocation of water rights demand open procedures for soliciting water claims draw attention to potential conflicts between traditional or de facto water-access and management rights 	<ul style="list-style-type: none"> district authority in consultation with basin or watershed authority or basin or watershed authority in consultation with district authority (<i>depending on prospects for democratic insight and control in the respective organizations</i>)
<p><i>Inter-level ('transboundary') coordination and negotiation:</i></p> <ul style="list-style-type: none"> depending on the level for the allocation of water rights, stipulated by the overall water-resource regulatory framework, due to the hydrological interdependencies there will be a need for one or many mechanisms to ensure coordination of the allocation of water rights and the negotiation of competing claims and allocations between the various levels (e.g. hydrologically connected watersheds) communicate the proceedings of such coordination and negotiation to the public, as well as to relevant government and district institutions 	<ul style="list-style-type: none"> participate in consultation processes concerning which issues should be coordinated and negotiated with other districts, watersheds, aquifers, basins, etc. demand insight into the outcome of these coordination and negotiation efforts 	<ul style="list-style-type: none"> inter-district or inter-watershed forum for discussion, assisted by basin (or watershed) authority and possibly facilitated by the national water oversight committee/authority in order to prevent any party benefiting from not participating in such for a

Table 2. (continued)

<i>Selected main functions</i>	<i>Issues for stakeholder participation</i>	<i>Institutional implications</i>
<p><i>Intra-level coordination and negotiation:</i></p> <ul style="list-style-type: none"> developing a mechanism for the negotiation of competing claims and allocations between various users and users communicate information about this mechanism to the public, as well as to relevant government and district institutions communicate the proceedings of these coordination and negotiation efforts to the public, as well as to relevant government and district institutions 	<ul style="list-style-type: none"> participate in consultation processes concerning which issues should be coordinated and negotiated with other districts, watersheds, aquifers, basins, etc. demand insight into the outcome of these coordination and negotiation efforts 	<ul style="list-style-type: none"> district authority to organize regular consultations or hearings concerning recent water allocations and competing water claims
<p><i>Independent appeal and dispute resolution:</i></p> <ul style="list-style-type: none"> provide the service of an independent water ombudsman or water court, which undertakes to examine cases of competing claims concerning water rights monitor the transparency of the allocation of water rights and consistency with overall policy and principles widely disseminate information about the existence of this institution and how to gain access to it communicate the outcomes of cases examined to the public, as well as to relevant government and district institutions 	<ul style="list-style-type: none"> participate in defining the rules of conduct of the institution participate in nominating candidates for the institution participate in providing information in support of various claims participate in monitoring the allocation of water rights 	<ul style="list-style-type: none"> district-level but independent water ombudsman or a water court
<p><i>Independent knowledge production:</i></p> <ul style="list-style-type: none"> undertake independent research and assessments in order to assess the 'state of the water' and the social, economic and environmental impacts (<i>ex-post</i> as well as <i>ex-ante</i>) of water management and to propose changes as necessary 	<ul style="list-style-type: none"> participate in or contract independent research to assess the impacts of water management issues, such as specific cases of allocation of water rights or of actual or projected water management 	<ul style="list-style-type: none"> a competitive fund with designated allocations for the main types of water-user, e.g. 'environment', small-scale farmers, medium- and large-scale farmers, urban consumers and rural consumers, to enable them to propose assessments they wish to undertake/ have undertaken

well as district authorities, rather than by designing an organizational structure for participation. A key feature of such institutional mechanisms is that they should ensure greater transparency and downward accountability among such government management institutions, as well as enhancing vertical integration among institutions from the local level upwards

Moreover, the aim is to avoid oversized and unmanageable organizational structures. Rather than establishing new organizational structures, there are great benefits to be gained in terms of taking the point of departure in what already exists, thus helping to avoid the risks of institutional duplication and over-engineering and the potential conflicts associated with it. Moreover, as discussed above, even where new institutional arrangements are required, they need not necessarily be complex. One example of this is the establishment of a simple ombudsman institution at basin level, which could serve as the main authority dealing with grievances, independent monitoring and, where appropriate, dispute resolution.

Conclusion

Above we have argued for an approach that accepts water management as a highly political field where many interests occur and that emphasises the development of management structures that provide space for such interests to be voiced and negotiated. By making differences of interest explicit at an early stage and ensuring that modalities exist for collaborative planning and solutions development, conflicts can to a large extent be addressed before they become transformed into open disputes and deadlock situations. To achieve this, however, requires conflict resolution to be seen as an integrated part of everyday water management, with particular emphasis on actual stakeholder involvement in the broader process of water governance. If this is not done, efforts at conflict resolution will be unable to obtain the required legitimacy among stakeholders and will be seriously constrained in providing long-term solutions.

In addressing these issues, we have argued in particular for an increased focus at the local level, which is where attention to water conflicts is most urgently needed, but also where existing government mechanisms for dispute resolution and stakeholder participation are often most inadequate. Current efforts to implement integrated and devolved water-resource management in a number of countries have pointed the way forward, but they also have also produced problems. In most cases they have yet to achieve convincing results at the tertiary

level, and there is a need to locate hydrologically defined management institutions and interventions more firmly within the larger institutional, economic and social landscape at local levels.

The challenge for development interventions seeking to address water conflicts is therefore to ensure that participatory processes are fully integrated within the everyday functions of water management, rather than constitute the occasional add-on activity that has been typical of many efforts to date. Once this is secured, the good news is that the actual process of dispute resolution need not itself require an extensive new institutional framework. In many cases, an emphasis on adapting existing informal arrangements and/or developing relatively simple mechanisms for dispute resolution and the voicing of concerns will not only be sufficient, it will also help ensure long-term sustainability.

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Chapter 3

Privatisation of water and environmental conflict: the case of the Cochabamba ‘Water Riot’¹³

Olaf Westermann

Introduction

As the risk of water wars between nations sharing a transboundary water resource does not seem to be imminent (Postel and Wolf 2001; Wolf *et al.* 2003), other types of conflict on different scales are emerging. Water-related conflicts have occurred at any time in human history, but as Wolf states (2002: 5), this ‘is a history of incidents at the sub-national level, generally between ethnic, religious, or tribal groups, water-use sectors, or states/provinces’. Water-related conflicts at the local, regional and other sub-national levels have different sources and assume different forms, such as disputes over access and (property and user) rights to water from a common source; disputes over the quality of water involving issues of externalities; disputes over fishing rights and management etc.

However, in recent years the world has seen a new type of sub-national conflict emerge that is becoming increasingly important, namely conflicts that arise from the privatisation of public or communally owned water resources, water supplies and sanitation services. As Postel and Wolf state (2001: 4), referring to the latter, ‘a new cause of water-related tension has surfaced in just the last few years – the transfers of water system ownership and/or management from public authorities to private multinational corporations’.

Privatisation of water can take many forms, and the term itself is often misunderstood and misinterpreted. It is particularly important to distinguish between privatisation of water supply and privatisation of water resources. According to Gleick and his colleagues (Gleick *et al.* 2002: 26), ‘Only the most absolute forms [of privatisation] transfer full ownership and operation of water systems to the private sector. Much more common are forms that leave public ownership of water resources unaffected and include transferring some operational

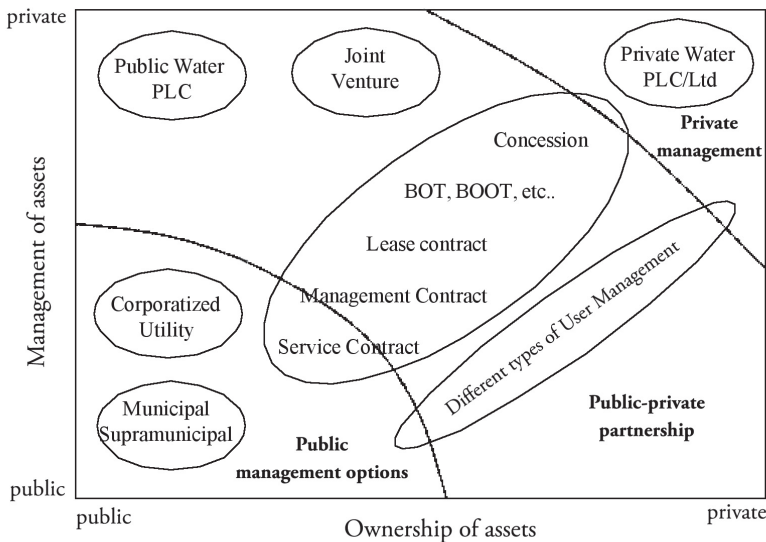
¹³ The water conflict in Cochabamba is most often referred to as the Cochabamba ‘water war’ (Guerra de Agua). However, here we shall use the term ‘riot’ to emphasize the local level nature of the conflict as opposed to interstate water wars.

responsibilities for water supply and wastewater management from the public to the private sector’.

Water supply is usually privatised in order to finance much needed investments in drinking water and sewerage provision and to make water management more efficient, that is, to reduce waste. However, the economic principles guiding the privatisation of water supplies often run counter to the social and cultural aspects of water management, that is, the principle that water is a basic need and a human right. Among the criticisms of privatisation is a concern that privatisation, based on pure market mechanisms, cannot and will not meet the basic needs of the poorest sections of the population. It is argued that private companies centred on profit will naturally strive to achieve the highest return for the lowest level of investment and thus have little incentive to invest in providing water infrastructure and thus water to poor neighbourhoods.

The argument for privatising the water resource itself is rather to ensure its allocation to the most valuable use through the market. However, the mere idea of commercialising something that is perceived by many to be a human right and a national patrimony makes the privatisation of water resources a real battleground over diverging interests and values.

Figure 1. Types of public and private water providers



Source: Blokland et al. 1999 in Gleick et al. 2002

Figure 1 shows different forms of privatisation arrangement and models with varying degrees of public/private ownership and management responsibilities. The Cochabamba privatisation scheme analysed in this paper was a concession involving a high degree of private management and ownership (long-term exclusive user rights).

Another important feature of conflict arising from both types of water privatisation is that it is most likely to occur 'where privatisation takes place in the presence of poverty and inequality, which is to say in most of the developing world' (Postel and Wolf 2001: 4). Examples of such conflicts have been reported from Bolivia, Chile, Argentina, the Philippines and Ghana, as well as other third-world countries. In some cases, poor families have either not been provided with the necessary amounts of water to meet their basic needs or, still more seriously, have been disconnected from the water supply. Sometimes the result of such action has been that the poorest have had to travel further for access to clean water, or, where this was not possible, have had to use polluted water, causing health problems. In other cases, as in La Paz in Bolivia (Gleick *et al.* 2002; World Bank 2002) and Buenos Aires in Argentina (Hardoy and Schusterman 2000), cost recovery is claimed to have made it profitable for a privatised water supply to serve poor areas at lower costs than those paid to previous water vendors collecting their water from the public system.

In light of the growing importance of privatisation as an institutional mechanism for water management, endorsed by a number of multilateral¹⁴ and bilateral¹⁵ financial organisations, and of the resistance and conflicts that have occurred in the Third World as a result of this, the present paper seeks to explore the reasons for resistance and conflicts, how they can be analysed within the framework of environmental conflict, and what their implications are. Although most privatisation schemes are mainly concerned with water-supply systems, the analysis in this paper relates to the privatisation of both water-supply systems and water as a resource.

The paper is divided into four sections. The first section provides a short introduction to the theoretical and conceptual discussion of environmental resources and conflict in order to develop an analytical framework for the analysis

¹⁴ World Bank, IMF, Inter-American Development Bank, EU, etc.

¹⁵ USAID, DFID, GTZ, etc. (Afrol News 2002a).

of the case study. The second section briefly examines the history of privatisation in third-world countries, in particular Latin America, and discusses some of the lessons learned. On this basis, the third section offers an in-depth analysis of the Cochabamba 'water riot', a case of conflict arising from the privatisation of water supply and user rights to the water resource, and discusses the principles and regulations of the privatisation of the water-supply scheme, as well as possible alternatives to it. Finally, the fourth section summarizes the findings of the analysis.

Conflict and environmental resources

The study of the relationship between the environment and conflict is complex, and it is outside the scope of this paper to offer a complete analysis of these discussions. The purpose of this section is to provide a short introduction to the theoretical and conceptual framework within which water conflict can be analysed, as well as to develop an analytical framework to understand the privatisation of water as a type of environmental conflict.

Marchi (2001) identifies three 'conceptual clusters' around which the analysis of environmental conflict has been organised.

Environmental scarcity

The environmental scarcity approach is probably the best known or at least the most publicised of the three. It originates from the work of the 'Toronto Group' coordinated by Thomas Homer-Dixon, who found that there was a direct causal relationship between environmental change and social conflict (1991). He later refined his model, shifting the focus from environmental change to environmental scarcity, as well as including the role of institutions in the analysis (1994).

Ohlson (2000, in Molen and Hildering 2003), using the scarcity approach, further divides environmental conflict into first-order conflicts resulting from natural-resource scarcity and second-order conflicts resulting from the adaptation strategies by which societies try to overcome natural resource scarcity, for example, when large numbers of people are displaced due to the construction of dams. He also talks about demand-driven scarcity, supply-driven scarcity and structural inequalities. By demand-driven scarcity, he means change in the demand for water due, for example, to population increase and changes in production systems (for example, from rainfed to irrigation farming), while supply-driven scarcity refers to situations in which rivers run dry, water tables go down and water sources

become polluted. Lastly, structural inequalities refer to disparities in access and rights to water.

Two of the most important processes identified by the Toronto group, by which environmental scarcity leads to social conflict, are what they label 'resource capture' and 'ecological marginalisation'. Resource capture describes a process through which powerful groups, anticipating future shortages due to increased population growth (demand-driven scarcity) and/or a decrease in the quality and quantity of the resource (supply-driven scarcity), shift distribution in their favour. By ecological marginalisation is meant a process through which unequal access to a resource (structurally driven scarcity) combined with population growth (demand-driven scarcity) force population groups to migrate to more ecologically fragile regions such as steep upland slopes, areas in risk of flooding or low-quality land in urban areas (Homer-Dixon and Percival 1996).

Despite being widely cited, the environmental scarcity model has been criticised in two main respects: first its failure to account adequately for the causality between environmental scarcity, its social effects and the violent conflict it causes; and secondly, and maybe more importantly, the notion of scarcity as something that occurs naturally. Referring to Amartya Sen, Marchi states that scarcity is more often a matter of accessibility than a matter of availability. Therefore, he argues, 'it is important to question the role of institutions and the political dimension of the scarcity...' (Marchi 2001: 2). In other words, scarcity is more a question of how a resource is being managed and distributed than of a natural occurrence over which humans have little control. Likewise, it can be argued that supply-driven scarcity (natural resource scarcity) is almost always a result of demand-driven scarcity and/or structural inequalities (that is, the result of social and political processes) (Ohlson 2000). I shall discuss this approach later in relation to the perceived water-scarcity problem, which led to privatisation in Cochabamba.

Environmental negotiation

The environmental negotiation approach is unique in its sole focus on solutions rather than the causes of conflicts and is famous for its models for Alternative Dispute Resolution (ADR) and Environmental Dispute Resolution (EDR). The basic assumption of this approach is that most winner–loser conflicts can be converted into win–win solutions. This paper will not go into details concerning this approach, as there is little information available on the particular processes of negotiation in the Cochabamba concession and conflict.

Environmental rights

The environmental rights approach is the last approach discussed by Marchi (2001), but also the most interesting for the Cochabamba case study. It is characterised by being a multi-scale and multi-actor analysis based on in-depth knowledge of context and actors and with a focus on local groups, institutions and the analysis of power dynamics. The researchers behind the approach come mainly from developing countries, and Marchi mentions the Quito Group, ‘Desarrollo Ecológico y Conflictos Socio-Ambientales’, as a good example of this approach. In order to operationalise the complexity of the environmental rights approach, we have turned to Rijsberman’s (1999) typology of natural resource conflicts, which identifies four key features that characterize the sources, levels and types of conflict in a given situation and the relationship between the stakeholders in the conflict:

Data or facts: Natural resource management conflicts often have their origin in disagreement over data and facts, not least because natural resources and particularly externalities are hard to see and quantify. This makes natural-resource management subject to assumptions and rumours. However, conflict over natural resources owing purely to disagreements over data and facts can mostly be resolved by obtaining more data, carrying out more studies etc.

Needs and interests: Diverging needs and interests are at the centre of almost all kinds of conflicts, and conflicts over natural resources are no exception. Some of the characteristics of natural resources are that they often have multiple uses and are shared by multiple users with different needs and interests. Moreover there are frequently overlapping user and/or property rights, as well as biophysical (and social) interdependencies and related externalities among users.

Values: Conflicts over different values – here understood as deeply held beliefs – are hard to resolve and must be reformulated into negotiable conflicts of interest.

Relationships: Rijsberman distinguishes between two different kinds of conflict over relationships: 1) personality conflicts between stakeholder representatives; and 2) conflicts among groups of stakeholders. The latter he further divides into three categories: unitary relationships (conflicts of interest among a small number of stakeholders); pluralist relationships (conflicts over values among

equal parties); and coercive relationships (conflicts over values among unequal parties – a situation where one of the stakeholders is powerful enough to enforce its own value system upon others).

The environmental-rights approach to environmental conflict and Rijsberman's conflict typology will form the basis for the following analysis of the privatisation of water and water supply in Cochabamba. However, I shall also discuss some of the concepts related to the environmental scarcity approach because it is so widely used and because it provides some clarity to the analysis, even though some of its main assumptions are doubtful.

Privatisation in the third world: potential benefits and failures?

Infrastructure services like power supply, telecommunications, transportation and water and sanitation have long been inadequate and inefficient in Latin America, as elsewhere in the developing world. In 1999 the Inter-American Development Bank estimated that investments of nearly \$70 billion annually were needed just to maintain and run the existing infrastructure in Latin America. On top of this was a pressing need for the rehabilitation and expansion of infrastructure services in Latin America. In 1995, the total investment needed for water and sanitation alone was estimated to be approximately \$12 billion (World Bank 1995). Due to the magnitude of these requirements and the lack of financial capacity of many states, many governments started to look at privatisation as an alternative economic mechanism to finance public infrastructure services in general and to ensure the economic efficiency of water supply management in particular. This has coincided with, and has to a great extent been triggered by, international pressure to initiate macro-economic reforms, especially the structural adjustment programmes advanced by the World Bank and IMF (Postel and Wolf 2001). The basic assumption behind privatisation initiatives is that 'Wider private sector participation [in water supply and sanitation] is likely to improve operational efficiency, while at the same time attracting private finance and improving the efficiency of investment' (World Bank 1995: vi).

The simultaneous campaign for privatisation and commercialisation spearheaded by the World Bank did not make it any easier to maintain the complementarity, as seen particularly in the counter campaign by a number of developing country NGOs. This was particularly because they were also involved with yet another issue raised by many water-supply donors at the same time, namely the necessity to require cost recovery in water supply and sanitation services as a prerequisite

for sustainability. Although, as demonstrated by many consumer association-run water utilities, cost recovery does not necessarily require privatisation, these issues have often been equated in policy debates.

Some of the potential benefits of ensuring cost recovery include:¹⁶

1. A (higher) price that takes into account the full costs of water supply and management will reduce demand. It shifts the water-management paradigm from one of supply to one of demand management, thus making water management more efficient.
2. Less demand and more efficient water use will make more water available for other uses and other users. This, combined with increased profit from higher prices, could potentially benefit poor users through investment in creating/repairing water supply infrastructure in the areas where they live.
3. This scenario would lessen poor users' dependence on water vendors or other alternative water sources and may improve the quality and even reduce the price of the water they use. Poor people relying on private water vendors tend to pay far more for the same quantity of water than people with piped water (Postel 2000; Gleick *et al.* 2002).
4. Improved revenues can be used to improve infrastructure, train staff and generally help maintain the economic sustainability of the system.

However, despite the potentials and often well-intended water policies based on cost recovery, the principle of cost recovery often seems to clash with the social principle that access to water is a human right. It is generally recognized that water must be considered both an 'economic and social good' (Rogers *et al.* 1998; Danida 2000; Savenije and Van der Zaag 2002). Agenda 21 (UNEP 1992) states that while priority should be given to satisfying basic human and ecosystem needs, otherwise water should be managed on economic principles. Likewise Danida still acknowledges the economic principles of water management, but also states that 'In relation to poverty alleviation, it is always important to take the social aspects of water into consideration, and Danida therefore takes the viewpoint that the social aspects and meeting basic human needs have to go hand in hand with rational economic value aspects' (Danida 2000: 35). However, the meaning of water as a social good and how economic instruments can meet the

¹⁶ Based on Rogers *et al.* (2002).

social objectives of water management is not clearly defined.

The lack of attention to the social principles of water management and/or lack of understanding of how to integrate the economic and social principles of water management has led to conflict over the privatisation of water and sanitation in a number of third world countries. In South Africa, privatisation began in 1994 as a result of a combination of factors, including a poorly managed supply system unable to satisfy basic needs, and international pressure and lobbying by transnational water corporations. However, it has been claimed that more than ten million people have been disconnected since privatisation started in 1994 because they were not able to pay their bills. Of these, two million are said to have been evicted from their homes through the legal process of recovering debts from customers. Moreover, in 2000 it is estimated that over 120,000 people have been infected with cholera because of a lack of access to clean drinking water, with about 290 people having died (Cottle 2003). The outbreak of cholera was directly linked to the installation of water meters (Afrol News 2002a). Despite the Free Water Policy implemented by the South African government in 2001, which allows for 6000 litres of free water per household per month, the serious consequences for the poor resulting from privatisation and the growing protests and conflicts against it have not been resolved (Postel and Wolf 2001). This opposition has arisen mainly because the amount of free water granted under the policy does not meet the basic requirements of an average poor household of eight members (Afrol News 2002a). In November 2000, South Africa's Anti-Privatisation Forum, a collective of community-based organisations and labour unions, organised a two-day strike to protest against the privatisation of local government services, including water (Afrol News 2000). This event was repeated on a much larger national scale in October 2002, when the country's main trade union, the Congress of South African Trade Unions, mobilised an estimated two million people in a general strike and massive demonstration of protest against privatisation (Afrol News 2002b). The creation of the Johannesburg Water Pty Ltd, controlled by the multinational water conglomerate Suez-Lyonnaise, added to the serious level of unrest in Johannesburg, in which four people were wounded (Afrol News 2001).

In Ghana, the government has been forced to halt privatisation due to civil protest (Afrol News 2000). In Sri Lanka, conflict may emerge over the privatisation of water involving the international water company Bechtel, which has become 'famous' for the failure of the private-sector concession in Bolivia

(EDC 2001). Leif Ohlson states that the Sri Lanka case is 'a most illustrative example of how arguably necessary efficiency measures may lead to a new kind of conflict within countries. Water users' organisations may inadvertently, through the seemingly unavoidable mechanisms involved, turn from being merely distributive organisations to powerful lobbying groups, in conflict with state authorities' (EDC 2001). Likewise, Edward Cottle of the Johannesburg-based Rural Development Services Network said at the Copenhagen EU SADC Civil Society Conference in 2002 that 'we have yet to see the social explosion' that may result as a consequence of the continuous water disconnection of mostly poor people (Afrol News 2002a).

The reasons for the growing number of water conflicts in the third world are, in the view of Gleick and his colleagues (Gleick *et al.* 2002: iii), 'concerns over the economic implications of privatising water resources, the risk to ecosystems, the power of corporate players, foreign control over a fundamental natural resource, inequities of access to water, and the exclusion of communities from decisions about their own resources'. They identified the following risks involved in the privatisation of water resources and supply which, if not addressed, may contribute to creating opposition and conflict (*ibid.*: iii-v):

- Privatisation may bypass already under-represented and under-served communities
- Privatisation may worsen economic inequalities and reduce the affordability of water
- Privatisation agreements may fail to protect public ownership of water and water rights
- Privatisation agreements often fail to include public participation and contract monitoring
- Inappropriate privatisation efforts ignore impacts on ecosystems or downstream users (e.g. in cases of dam construction)
- Privatisation agreements may lessen the protection of water quality
- Privatisation agreements often lack dispute-resolution procedures

Should privatisation of water supply and sanitation in third-world countries then be discarded as a viable solution to resolving some of the massive financial and infrastructural problems facing public water and sewerage providers? Probably not! Rather, we should look at the principles and processes through which the privatisation of water supply and sanitation is being implemented, as well

as at other alternatives. Actually few financial institutions nowadays consider privatisation to be a panacea in their policy formulation (World Bank 2002), although practice may be different. Privatisation is much needed to mobilise financial capital, but to succeed and avoid conflict, it is important to adopt a flexible approach that includes social objectives adapted to local circumstances through civil-society participation and institutional capacity-building (Hardoy and Schusterman 2000; Dalton 2001). As Postel and Wolf emphasise (2001: 5), ‘Unless governments and lenders strengthen municipal water agencies and steer private-sector involvement toward equity as well as efficiency and toward social justice as well as shareholder profit, more violence like that in Cochabamba may be forthcoming’.

Gleick and his colleagues propose a very useful set of standards and principles that should be incorporated into any privatisation agreement to make it work successfully and avoid conflict. These are listed in Table 1:

Table 1. Standards and principles for the privatisation of water

Water supply as a social and environmental good	<ol style="list-style-type: none"> 1. All residents in a service area should be guaranteed a clearly defined water quantity under any privatisation agreement 2. The water requirement for users should be provided at subsidized rates when necessary for reasons of poverty 3. Natural ecosystems should be guaranteed a basic water requirement under any privatisation agreement
Sound economics in water-supply management:	<ol style="list-style-type: none"> 4. Water and water service should not be free but be provided at fair and reasonable rates 5. Proposed rate increases should be linked with agreed-upon improvements in service 6. Subsidies should be economically and socially sound 7. Private companies should be required to demonstrate that new water-supply projects are less expensive than projects to improve existing water supply as well as water conservation and water-use efficiency before they are permitted to invest and raise water rates to repay the investment
Strong government regulation and oversight	<ol style="list-style-type: none"> 8. Government should retain or establish public ownership or control of water resources 9. Public agencies and water-service providers should monitor water quality. Governments should define and enforce quality regulations 10. Contracts that lay down the responsibility of each partner are a pre-requisite for the success of any privatisation 11. Clear dispute-resolution procedures should be developed prior to privatisation 12. Independent technical assistance and contract review should be standard 13. Negotiation over privatisation should be open, transparent, and include all affected stakeholders

Source: Gleick et al., 2002.

We shall return particularly to three of these standards and principles for the privatisation of water supply in the following discussion of the Cochabamba case.

The conflict over the privatisation of water supply in Cochabamba

Bolivia was one of the first countries in Latin America to endorse structural adjustment programmes and has often been mentioned as a pioneer in this respect. In 1984, Bolivia started a process of privatising several public infrastructure services, which, towards the end of the 1990s, came to include water and sanitation. At that time access to urban water supply was one of the lowest in Latin America – only 75 percent of urban households had water supply

Figure 2. Map of Bolivia and Cochabamba



connections and only 36 percent had sewerage connections (Nickson and Vargas 2002). Moreover, provision of water was critically deficient and the quality very poor. It was in this context that private sector participation in water supply and sanitation in La Paz was introduced in 1997. A consortium headed by the French multinational, Suez-Lyonnaise des Eaux, was contracted to operate and expand the water supply and sanitation system in the capital and the nearby municipality of El Alto (Nickson and Vargas, 2002). As an innovative model for private–public co-management, this project has often been mentioned as a success story of privatisation (Gleick *et al.* 2002; World Bank 2002).

Water management, access and scarcity in Cochabamba

In Bolivia, Cochabamba is one of the cities that has been most affected by water scarcity. The valley in which Cochabamba is situated is one of the most fertile, but also driest areas of Bolivia, and at the same time also one of the most densely populated. Rainfall is only approximately 450 mm per year, and water requirements are high due to extensive irrigated agriculture as well as growths in population and urbanization. Water resources basically come from lagoons in the mountain range surrounding Cochabamba as well as from ground water in the valley. At the time of privatisation, it was estimated that urban water demand in the valley would increase from 600 litres per second in 1999 to 7300 litres per second in 2015 (Dalton 2001).

Marvin and Laurie (1999, in Dalton, 2001) estimated that just before privatisation about 61 percent of households had house connections (with water available for only 4-5 hours per day), 25 percent of households relied on water from private wells, 12 percent had to buy water from private vendors, and the last two percent had their own private wells. The price of water was estimated to be US\$ 0.1/m³ for piped water and US\$ 4/m³ (or 40 times more!) for vended water. Marvin and Laurie (1999) and Assies (2003) claim that it was especially the poor who had to rely on access to private wells or private vendors to satisfy basic needs. Dalton (2001), on the other hand, questions the ability of poor households to pay such exorbitant prices for water. She believes rather that poor households relied on free water sources like collecting rainwater or obtaining their water free from private wells.

The MISICUNI project

In order to increase water availability, the municipality company SEMAPA (Servicio Municipal de Agua Potable y Alcanterillado or Municipal Water and

Sewerage Services) completed the construction of a number of deep wells during the 1970s and again in the 1990s in the neighbouring provinces, causing a depletion of groundwater and conflict with local user organisations. An alternative option that had been discussed for more than fifty years was the development of the MISICUNI Multipurpose Project to supply drinking water to five municipalities in the Cochabamba valley from the basins of the Misicuni, Viscachas and Putucuni rivers forty kilometres away, while at the same time producing hydroelectric power and water for irrigation. Although the MISICUNI project was very expensive and, according to the World Bank, highly problematic in terms of feasibility and profitability, it was considered to be the long-term solution to the city's water problem by both local authorities and the national government (Nickson and Vargas 2002). At the same time, it was very attractive to some of the largest national engineering companies due to the potential for obtaining large contracts (Dalton 2001).¹⁷ Due to the high investment costs involved in the MISICUNI project, the local and national authorities regarded a privatisation concession as a viable option in funding the project.

The privatisation concession

The combination of persistent water scarcity and poor performance of the municipality water service company SEMAPA, together with international pressure for structural adjustment in Bolivia, led to a decision to initiate a privatisation process for water supply and resources in Cochabamba based on the MISICUNI project. Although ten different companies showed interest initially, they soon withdrew from the bidding process due to concerns about the viability and profitability of the project, thus forcing the government to make the conditions more favourable to the private sector. At that time only one consortium, Aguas del Tunari, had maintained interest in the project, but instead of initiating a new bidding process, the government decided to negotiate directly with Aguas del Tunari.¹⁸

Some of the most important elements of the concession that was eventually agreed upon include:

¹⁷ Another alternative, the Corani project, was considered (and favoured by the World Bank), but although it was cheaper than the MISICUNI project, the latter was preferred by the local population, the authorities and national business interests.

¹⁸ One of the results of these was a substantial reduction of the MISICUNI project in terms of capacity to store water and produce electricity.

A progressive price structure. Although Aguas del Tunari refused to publish its price structure, it has been estimated by the Financial Times' *Global Water Report* to be socially progressive (*Global Water Report*, 2000 in Dalton, 2001). The poorest 42 percent of the population would pay around US\$ 0.25/m³ for drinking water; the middle income (38 percent of the population) US\$ 0.40/m³ and the richest (20 percent of the population) US\$ 0.71/m³. This meant a substantial price increase for those who already were connected to the public water network (from US\$ 0.1/m³ before privatisation), while those who previously relied on private vendors would experience an even greater reduction in water-related expenses (from US\$ 4/m³ before privatisation).

Ownership of water resources. Prior to the privatisation concession in Cochabamba, the Bolivian government passed Law 2029, which made all water the property of the state and in practise defined water as a marketable commodity through licenses or concessions to institutions with legal status, including private companies (Dalton 2001). Licenses were for five years, while concessions were for a maximum of forty years. Hence, the ownership of water resources remained in the hands of the state on long-term basis, but the concessionaire would have exclusive rights over water resources in the concession area for the period of the concession, regardless of traditional institutional arrangements previously established to define access to and control over the water supply. The Cochabamba concession, backed by the new law, gave Aguas del Tunari control over all the wells drilled privately in the Cochabamba valley and the right to install water meters on them at the cost of the users (Nickson and Vargas 2002; Assies 2003).

Quantity, quality and price. In the concession contract, Aguas del Tunari was allowed to raise tariffs by 35 percent initially and later, in 2002, by another 20 percent. On the other hand, the concession also included mandatory expansion targets for water service, including 57,600 new water connections and 58,200 new sewerage connections by 2004. Coverage targets were set to be 90 percent for water supply and 88 percent for sewerage in 2004 to reach 100 percent by 2034 (Nickson and Vargas 2002).

The battles over privatisation

The concession contract was signed on November 1, 1999 but was immediately contested by local organisations because of anticipated tariff increases and reductions in the quantity of potable water, irrigation water and electricity. The

College of Engineers calculated that the anticipated elimination of the social criteria previously applied by SEMAPA would cause prices to increase by up to 180 percent for the poorest section of the population (Assies 2003). As mentioned above, the concession signed with Aguas del Tunari actually included social criteria, but it was still widely believed to be detrimental for the poor. Soon a number of local organisations began to work together in a network of organisations called the *Coordinadora por la Defensa del Agua y Vida* (the Coordinator for the Defence of Water and Life) led by Oscar Olivera, a shoe-factory worker and President of the Departmental Federation of Factory Workers of Cochabamba (FDTFC). The *Coordinadora* organised the first protest march on December 28, 1999, and when prices increased as expected by up to 150 percent for some users in early January 2000, the network called for a boycott of bills and the shutting down of the city on January 11. The protest was supported by the spontaneous closure of strategic roads by the irrigators' association FEDECOR and potable-water committees in neighbouring communities and the city and shoe-factory and transportation workers joined in massive protest marches (Assies 2003).

The first battle for water ended with an agreement between the authorities and local organisations on the creation of a commission to study the possibility of ensuring the full implementation of the MISICUNI project, the modification of the general water law, the revision of water rates and the alteration of the newly acquired user rights of Aguas del Tunari to all water resources, including privately owned water systems. However, in reality the government was reluctant to change the concession contract and sought to marginalize the *Coordinadora* in the negotiations. Instead it came up with a 'final proposal' of a 20 percent rate increase, which immediately led to a massive demonstration on February 2. This time the government tried to suppress the opposition by sending in the special security forces. By the time a truce finally was reached on February 5 through the mediation of the archbishop of Cochabamba's and the national ombudsman, 70 civilians and 51 policemen had been wounded and 172 people arrested.

Ironically, the outcome of the second battle was an agreement very similar to the first one, and negotiations soon ended in another deadlock. The *Coordinadora* held a public referendum on the issue and received massive support from the 48,276 votes cast. However, the authorities declared the referendum illegal and announced that the *Coordinadora* could not be recognized as a formal interlocutor. The conflict took off again with general

strikes, roadblocks and a large demonstration in the central square leading to an ambush in which the leaders of the Coordinadora were arrested on April 6. This of course escalated the conflict, and early in the morning of April 8 the government declared a 90-day state of siege. This merely mobilised further protest and determination to fight the privatisation concession. Finally, and only after the death of a student from Cochabamba, who was apparently shot by the military, Aguas del Tunari's concession was officially suspended and water supply and sanitation returned to SEMAPA under the supervision of the Coordinadora (Assies 2003).

Table 2. Main events in the Cochabamba 'Water Riot'

Sept. 3, 1999	Concession contract signed between Aguas del Tunari and the government
Nov. 1, 1999	Aguas del Tunari begins operations
Nov. 4-5, 1999	Roadblocks by farmers' organizationorganisations
Nov. 15, 1999	La Coordinadora de Agua y Vida created
Jan. 1, 2000	Water tariffs increased by up to 150% (35% on average)
Jan. 12, 2000	Roadblocks and strikes in the city
Feb. 4, 2000	Shutdown of the city (Toma de Cochabamba)
Feb. 5, 2000	Police repression, resulting in 22 injured and 135 imprisoned
March 24, 2000	48,276 votes in favour of cancellation of the contract
April 4, 2000	The Coordinadora calls for the final battle against the contract
April 8, 2000	State of emergency. Riots in Cochabamba. Six dead and 38 injured
April 10, 2000	Cancellation of concession contract

The Cochabamba concession, environmental conflict and the failure of privatisation

The Cochabamba 'Water Riot' as an environmental conflict

Although precipitation is low in the Cochabamba valley, water scarcity should not be defined as a natural phenomenon or what Ohlson (2000) calls supply-driven scarcity. Water scarcity in Cochabamba, particularly the low water table, is a result of agricultural intensification and the associated increased use of water for irrigation as well as of deforestation of the surrounding mountain range, urbanization and population increase. Such demand-driven scarcity is combined with structural inequalities in relation to access and rights to water resources, as well as an unequal distribution of water supply networks. There may also have been a process of resource capture by wealthy urban dwellers (construction of deep wells and storage tanks with sufficient capacity to supply water, e.g. for swimming pools), industries and farmers using irrigation.¹⁹ Likewise a process of ecological marginalization can be seen in terms of immigrants and new settlers who move into the Tunari National Park surrounding Cochabamba. However, these kinds of settlement may be driven more by a search for land than for water.

Hence, from a water scarcity perspective, conflict over rights, access, allocation and control over water have been latent and sometimes expressed openly for decades in Cochabamba (Alfredo Duran, personal communication, 2004). The conflict over privatisation of the water supply and sanitation in Cochabamba in this context can be understood as what Ohlson (2000) calls a second-order conflict, that is, a conflict arising as the result of the adaptation strategies society uses to try and overcome water scarcity. Privatisation in this case is the mechanism by which the national government and regional and local authorities have tried to adapt to water scarcity. In this process, one may identify almost all of the elements mentioned by Rijsberman (1999) in his conflict typology.

First of all, in relation to disputes over facts and data, initial resistance against the privatisation scheme came from engineers who questioned the technical

¹⁹ E.g. the Taquina brewery, situated on the outskirts of Cochabamba, has bought large areas of land around the high-altitude lagoon in the Taquina watershed. This lagoon also supplies water for irrigation and to urban settlers, including poor immigrants. Farmers using irrigation in the Cochabamba valley practise the same kind of resource capture.

analysis and comparison of the MISICUNI proposal (Carlos Crespo, personal communication, 2004). Disputes arose particularly over the tariff increase. The engineers claimed that tariffs would have to be increased much more than the government and the international water consortium were proposing in order to finance the MISICUNI project, and history has showed that they were right. However, the claim that such tariff increases would actually have made water unaffordable for the poorest section of the population, which was a main reason for the water riot breaking out, remains questionable. Although a few examples of such dramatic rate increases for poor families were invoked by the Coordinadora and other organisations, prices were actually based on pro-poor principles of subsidies. In addition, obtaining household connection would probably have reduced water-related expenses for those households that were having to buy water from private water vendors. Although Dalton (2001) argues that the poorest would not have been able to pay for water but rather got it for free (rainwater or water from private wells), Postel (2000: 7) states that generally 'the problem is not that poor people cannot afford to pay for water but that they are paying unfair prices...it is not uncommon for poor families to spend more than a quarter of their income on water'. In any case, the lack of clear data and confusion about the facts (among other things as a result of Aguas del Tunari's refusal to publish its price structures) meant that these issues never caught public attention. At the same time, it may be claimed that the poverty argument became mixed up with, and was used to mobilise, large-scale protests, while the real interest of some stakeholders was to maintain access to and control over water resources. This will be discussed further below.

In order to examine more closely disputes over interests and needs as well as values and relationships, it is necessary to understand which institutional stakeholders were involved in the Cochabamba water conflict. These may be divided into five groups with homogeneous interests and stakes in the conflict. These include a number of organisations under the coordination of the Coordinadora, the municipality authorities, the national government, the international financial institutions and the international water conglomerate, Aguas del Tunari. Some of these obviously consist of various subgroups with diverging interests, especially within the Coordinadora:

- The Coordinadora (*La Coordinadora por la Defensa del Agua y la Vida*) emerged as a broad-based rural–urban poor–middle class coalition when the Committee for the Defence of Water and the Popular Economy fused with the

factory workers' union and the irrigators' organisation in protest against price increases and, at a more general level, against political corruption, structural adjustment and globalisation.

- The Committee for the Defence of Water and the Popular Economy had been formed earlier on the initiative of engineers from the Society of Bolivian Engineers and the Cochabamba College of Engineers. These were professional organisations, which had originally started to question the drilling practices of SEMAPA (as a technological fix) and had come up with a qualified technical analysis of the MISICUNI project. They were the first to organise protests against the Aguas del Tunari contract, due in particular to the reduction of the MISICUNI project and the estimated price increases.
- The factory workers had obtained great legitimacy among the workers and poorer sections of the city due to its creative responses to a crisis that hit the Bolivian trade unions in the mid-1980s and due to its open door policy. Its main concern was the rate increases, which in some cases amounted to 150 percent. Their president, Oscar Oliviera, later became the leader of the Coordinadora.
- The irrigators' organisation was outraged by the fact that Aguas del Tunari obtained long-term user rights to water from private wells, an important source of irrigation water. Since the 1990s, it had been the main vehicle of protest in the rural areas and was extensively involved in the debate over water legislation. It contributed significantly to making the protest efficient by closing strategic roads leading to the city.
- Besides these key stakeholders, a range of other organisations sympathised with and supported the Coordinadora. These included potable-water committees and neighbourhood associations organised in the Federation of Neighbourhood Associations, which spontaneously organised a large number of small barricades in the city; urban transport workers and heavy transport workers, who participated in massive protest marches; private vendors of water, including truckers and owners of private wells; and finally and interestingly, street kids well organised in gangs of 'water warriors', who 'asserted their membership in the movement and their loyalty to the city, general patriotism, and willingness to die for the cause' (Assies 2003: 29), thus gaining recognition and a voice in the city.

- The protest in Cochabamba was also supported by the Unitary Union Confederation of Bolivian Peasant Workers or CSUTCB, which organised roadblocks throughout the country to pursue its own interests, among them the withdrawal of the official proposal for a general water law.

The needs, interests and values of all these stakeholders vary both within the groups and between them. Within the Coordinadora and those sympathising with them, the clearest interests relate to those concerned about tariff hikes and the affordability of water for the poor (the factory workers union, transport workers and potable water committees), those with a strong interest in maintaining property and user rights to water (the irrigators' organisation and the owners of private wells) and those interested in maintaining their businesses (private vendors of water). Although catch-phrases like 'el agua es nuestro, carajo',²⁰ referring to water as a public good,²¹ were common during the crisis, the stakeholders in the Coordinadora seem to have mixed values with respect to water ownership and user rights.

On the one hand, these stakeholders to some extent shared a commonly held belief in the Andean region that any regulation of water management should respect traditional uses and customs (known under the term *usos y costumbres*), that is, that laws concerning water should recognize original users and property rights to water based on centuries of use and management. This includes well-owners' and private vendors' right to (sell) water, as well as irrigation farmers' right to (exclude others from) large water resources. On the other hand, access to and control over water resources in rural communities is also based on customary forms of organisation and norms, for example, that water should to some extent be accessible to all (that is, should satisfy basic needs, even though some get more) and that it should not be commercialised or rented without the community's permission.

Under different circumstances, such as in a situation where there would be no 'common enemy', one might even talk about what Rijsberman has termed a unitary relationship (conflict of interest among a small number of stakeholders) among some of these stakeholders in conflicts over access, rights, allocation and

²⁰ *'It is our water, damn it'* – slogan from the 'Water Riot'.

²¹ Referring to the public ownership of water resources and water-supply systems.

control over water. Thus the only thing apparently uniting these stakeholders in the Cochabamba water riot was the rejection of the privatisation scheme monopolising the ownership of water supply and control over water resources by outsiders, because this would have a negative impact on their individual but diverging interests.

The municipality and SEMAPA clearly had an interest in improving the water supply and sanitation infrastructure, but it is questionable how much influence they have exerted over decision-making. The privatisation process was mostly driven by the national government, although under influence of international financial institutions, principally the World Bank. The national government had an interest in complying with its responsibilities to provide basic water services for its people, but its decisions may also have been influenced by individual national business interests in infrastructure development and maintenance. The World Bank obviously had ideological reasons for its pursuit of privatisation as the solution to financial problems and inefficiencies in water management, coupled with a professional persuasion that these are the best solutions. The international water consortium Aguas del Tunari, on the other hand, was driven by purely economic motives.

The interesting aspect of this, taking into account Rijsberman's conflict typology, is the clash between two different value systems and the shifting relationship and power balance between the stakeholders.

Although the Coordinadora and its supporters did not seem to have an entirely coherent view regarding principles of water management, there was a prevailing discourse that the law should respect *usos y costumbres*, that is, traditional user and property rights, as well as the values of the satisfaction of basic needs and non-commercialisation associated with these. Although private vendors (well-owners and truckers) could hardly argue for the latter position, they still formed part of the strategic alliance made up of different stakeholders in the Coordinadora. By contrast the national government, the World Bank and Aguas del Tunari shared a clearly articulated vision of water as an economic good, subject to commercialisation.

Moreover, although the privatisation scheme was based on consumer subsidies in favour of the poor, at least Aguas del Tunari expressed little concern with meeting basic needs. In reply to the price increases and subsequent protests, Aguas del

Tunari publicly stated that ‘in cases of non-payment, the water supply will be cut off’ (Assies 2003: 24).

According to Rijsberman, conflict over such opposing values are very difficult to deal with because values ‘are not amenable to negotiation or other conflict resolution techniques’ (Rijsbermann 1999: 10). With respect to the relationship between the stakeholders and the balance of power between them, it is interesting to notice how a coercive relationship, in which the national government initially forced its (and the international players’) value system upon the local stakeholders, was rejected and replaced with a more pluralistic situation, at least for the time being.

Privatisation failure in the Cochabamba ‘Water Riot’

Returning to Gleick’s and his colleagues’ identification of elements of risks to privatisation, as well as the principles and standards that should be met in order to avoid conflict (Gleick *et al.* 2002), the Cochabamba case provides a most illustrative example in support of their arguments.

Water as a social good

According to Brook Cowen (in Hardoy and Schusterman 2001: 67), private companies engaged in the pursuit of profit are unlikely to ‘respond to the array of problems relating to informal settlements or other low-income areas’, because they have no incentive to invest in low-income neighbourhoods. Unlike non-profit organisations such as national authorities or local user groups, private-sector operators will ‘tend to focus provision in areas where it will receive the highest return for the lowest level of investment’ (Hardoy and Schusterman 2001: 68), that is to say, in more developed areas, where infrastructure is good and consumers can pay. To ensure that the basic needs of the poorest are satisfied, a social component must be included, based on the principle that tariffs should be proportional to income (Hardoy and Schusterman 2001; Postel and Wolf 2001; Dalton 2001). This can be achieved either by diversifying standards for the quality of the technology and for water quantities, or through subsidy structures in which water prices are subsidised by the operator, the government or other consumer groups (cross-subsidy).

Thus, applying economic principles of water management and privatisation to water and sanitation provision does not in itself secure access to clean and sufficient water for the poorest section of the population. In the worst case, these

measures may have the opposite effect, leading to price increases, disconnection, health hazards and possibly violent conflict, as happened in South Africa.

In the case of the Cochabamba concession, expanding the supply network and increasing the number of household connections were actually laid down in the contract, as were pro-poor subsidised rates. However, it was not clear how many people or who would benefit from infrastructure extensions and improvements, leading to a general feeling of insecurity of access and rights among the water-users in Cochabamba. At the same time, subsidised water tariffs benefiting the poorest did not receive much attention from the critics of the privatisation scheme, even though tariff increases, particularly for the poor, were one of the main causes of the conflict. The reasons for this could be that a) as in the case of infrastructure improvements, these benefits were not made clear due to a lack of transparency and low participation in the negotiation process, and b) the conflict was influenced by other interests than the affordability of water for the poor, such as property and user rights (farmers using irrigation and well-owners) and income-generation (private vendors), who used the 'poverty and value discourse' to promote their own interests.

Multiple stakeholder participation and transparency in negotiation and management processes

The Cochabamba case shows that a progressive tariff structure is not enough to prevent protest and violence. The most important factor contributing to the conflict may have been the lack of an open and transparent process of negotiation involving all affected stakeholders. Stakeholder participation could have improved the public's understanding of rate increases and the subsidy principle involved. Likewise it might have helped to deal with the problem of ownership. There is no doubt that the loss of ownership of water resources in Cochabamba was one of the most important factors in the violent protests. This was due first of all to the way privatisation and its economic principles and values were imposed upon and collided with people's value systems with regard to water, and secondly to the threat that this represented to the interests of particular stakeholder groups' (farmers using irrigation and private vendors). Stakeholder participation might have helped reformulate value differences into negotiable conflicts of interest (Rijsberman 1999).

Unfortunately, broad-based stakeholder participation and transparency in the negotiation and management processes are not common practices among

multinational water conglomerates, due either to a lack of willingness or a lack of capacity. In Johannesburg, Afrol News reported that the South African Municipal Workers Union (SAMWU) was prevented from seeing any of the contract documents when water supply was privatised through the creation of Johannesburg Water Pty Ltd., which is owned by the multinational Suez-Lyonnaise (Afrol News 2001). Similarly, Hardoy and Schusterman report (2000: 75) that one of the conclusions reached at the World Bank Water Week in 1997 was that 'the lack of capacity of private operators to work in a participatory way was...one of the factors contributing towards their failure to work with low-income groups'. One of the objectives of their study is to suggest different organisational models of privatisation that, in varying degrees, guarantee stakeholder participation in decision-making.

Regulation and control of the privatisation process

The last main feature of privatisation to be discussed here is the importance of government and external regulation and control of the privatisation process before, during and after its implementation. Governments should have the capacity and authority to protect the public interest (social principles of water management) in the bidding process and contract negotiations. The best way to do this is to establish mechanisms for the evaluation and comparison of bids in order to be able to assess differences in a qualified manner; to define clearly pro-poor targets for investment, coverage, service standard and water quality, as well as for costs and tariffs; and finally to determine the type, quality and timing of the installation and the location of the connection (Hardoy and Schusterman 2000). One of the important lessons to be learned from the Cochabamba case is that it is important to separate initiatives to privatise water as a resource from initiatives to privatise the water supply, otherwise it is not clear what is being privatised, and conflict may arise on false grounds.

As mentioned earlier, Gleick and his colleagues also recommended that the responsibilities of each partner are made clear, for example, that the government retains public ownership of water sources, as well as defining and enforcing laws and regulations about water quality, and that clear dispute-resolution procedures are developed prior to privatisation (Gleick *et al.* 2002). Unfortunately, 'The greatest need for water services often exist in those countries with the weakest public sector; yet the greatest risk of failed participation also exists where governments are weak' (*ibid.*: iii). This dilemma is often caused by discrepancies in experience, information and human and financial resources between government and private

operators (Hardoy and Schusterman 2000). In order to resolve these problems, independent technical assistance and an overview of the contract are essential.

In Cochabamba, few of these recommendations were met. Although the bidding process originally included ten different companies, most of these pulled out due to the financial non-viability of the MISICUNI project. As no second round was carried out, the government was left in the very unfortunate position of having only one company left to negotiate with, namely Aguas del Tunari. This left the enterprise 'in a position to impose conditions on a government anxious to proceed' (Assies 2003: 21), which, for example, resulted in a considerable reduction of the MISICUNI project in terms of storage and power production capacity (Dalton 2001).

Alternative models to privatisation and public-sector water supply and sanitation

After the privatisation scheme failed in Cochabamba and control was given back to SEMAPA – which was restructured with the participation of local authorities and user organisations related to the Coordinadora – the focus has obviously been on the possibility for this organisation to perform better and meet the demands that the privatisation concession could not. According to Dalton (2001: 15), 'progress to date has been formidable' in both technical and organisational terms. Water is now cheaper and storage capacity has improved, with more than 400 new communities and 800 additional individual households having been connected to the system. Organisationally, SEMAPA has won the full support of its workers and of local communities through extensive participation in public hearings and by prioritising local needs.

The World Bank, on the other hand, has stated that 'its [SEMAPA's] performance has been unsatisfactory' (World Bank 2002: 3). The new SEMAPA faces huge challenges due to the \$25 million debt inherited from the old SEMAPA and its relationship with the Coordinadora, which has led the political and business elite in Cochabamba to boycott the organisation and refuse to pay water tariffs. This in turn may have a serious effect on the company's ability to raise finance and therefore to solve the continued problems of water supply and sanitation. Cochabamba still has only five hours of water a day, and more than 60 percent of farmers in the areas surrounding the city do not have access to clean water.

Despite these constraints, Dalton concludes that the cooperative management

model 'is infinitely more successful than privatisation in Cochabamba and represents the only immediate institutional structure for managing the city's water' (2003: 16). Barry Walton, on the other hand, believes that although SEMAPA should have good opportunity for a 'neat water business', given its small number of consumers, it is 'beset by difficulties, unable to satisfy those it serves under whatever structure' (2003: 16). However, between these two contradictory opinions, a range of options exists that may be worth considering, both in the specific case of Cochabamba and in respect of any other example of reform of the water supply and sanitation.

Alternatives to private-sector participation in urban water supply include a range of cooperative models, as well as a mixture of public-private partnerships. Some of these models were implemented long before the current focus on privatisation and have achieved substantial success and recognition.

In the case of the world's largest consumer cooperative in Sucre, Bolivia, called SAGUAPAC (Cooperativa de Servicios Publicos Santa Cruz Ltda.), the World Bank actually found that 'cooperative solutions can be superior to either public or private approaches to utility management' (World Bank 2002: 3). In SAGUAPAC all consumers (more than 90,000) are automatically members of the cooperative, with the right to vote in the general assembly held every second year at district level. In a comparative study made by the World Bank of urban water supply in Bolivia, SAGUAPAC outperformed both private and public water-management schemes in La Paz and Cochabamba respectively. Nickson and Vargas suggest (2003) that it may be one of the best-run water companies in Latin America. It is based on the principles of participation, financial independence and transparency, as well as the economic principles of full-cost recovery and the social principles of equity though progressive pricing. Not only are water tariffs low and collection efficiency high, SAGUAPAC has also been praised for low leakage, high levels of staff productivity, timely repayment of loans and minimal political interference. Again according to the World Bank, the water company has an 'efficient and transparent administration that appears to have virtually eliminated corruption' (World Bank 2002: 2). The main problems are low turnout at the elections and failed attempts to include the rapidly expanding neighbourhood on the outskirts of the city inhabited by poor shantytown dwellers (Nickson and Vargas 2000; Birchshall 2003; CEO 2003).

Another good performer is the water company of the city of Porto Alegre

(Departamento Municipal de Agua e Esgoto or DMAE) in Brazil, which is publicly owned by the municipality but financially independent of the state. According to the Corporate Europe Observatory (CEO 2003), about 96 percent of the population of Porto Alegre have access to clean water, significantly more than any other Brazilian city. At the same time the tariffs are some of the lowest in Brazil and leakage has been reduced. Some of the characteristics of DMAE that have contributed to this success include 1) it is financially independent and fully self-financed; 2) it is a non-profit company, which means that any surplus is reinvested to improve water supply; 3) it is based on broad participation and democratic control over its operations and investments; and 4) it has a pro-poor progressive price structure based on cross subsidy (*ibid.*). In other words, DMAE is based on the same economic principles of full-cost recovery as privately owned companies, but does not have to make a profit (rate of return of capital investments in water privatisation schemes range between 15-20 percent (Nickson and Vargas 2002) mostly through water tariffs). At the same time, the system allows for raising awareness, transparency and involvement in decision-making, fostering a feeling for ownership and responsibility.

Other successful examples of participatory water management in Brazil include the departmental water company for Rio Grande del Sur, CORSAN (Companhia Riograndese de Saneamento), and the involvement of community organisations and NGOs in the campaign against privatisation and in the restructuring of the public-owned water company in Recife (*ibid.*).

Conclusion

In this paper, we have seen that privatisation theoretically has the potential to be a useful and effective instrument to resolve scarcity and infrastructure problems related to water supply and sanitation facing third world countries, including in Latin America. Privatisation is not only thought to attract alternative financial resources, the economic principles of full cost recovery also provide mechanisms to make water management more effective and technically and economically sustainable. Ideally, privatisation also has the potential to benefit the poorest sections of the population by creating both water surpluses (less demand and more effective water use by other sectors and population groups) and economic surpluses (increased profit from higher prices) that can be invested in water infrastructure, for example, in un-serviced urban settlements.

Nevertheless, in the last decade a growing number of conflicts related to the

privatisation of water have emerged, particularly in the third world – related both the privatisation of water supply and sanitation, and the privatisation of the water resource itself, as well as a combination of the two, as in the case of Cochabamba. There are numerous reasons for these conflicts, including an insufficient or absent supply (particularly to the poorest section of the population), price increases, the transfer of ownership of water (from public to private), a lack of public participation, poor water quality, a lack of dispute-resolution procedures etc.

In the case of Cochabamba, we analysed these (and other) potential elements of privatisation failure under three headings: water as a social good (water as a basic need and a human right, involving issues of poverty and ownership of the resource); public participation and transparency in negotiation and management processes; and regulation and control of the privatisation process.

As water supply and sanitation were progressively subsidised in the Cochabamba concession to the benefit of the poorest sections of the population (particularly those who previously had to rely on private vendors), this paper argues that the real battle in Cochabamba was over the ownership of the water resource and diverging stakeholder interests (and needs) and values. Arguments against price increases on the basis of their impact on the poor, as well as the need to protect water as a human right, were to some extent used by some stakeholders as a strategic argument against privatisation, while the real argument was about protecting user and property rights to water (farmers using irrigation and well-owners) and business interests (private vendors like well-owners and water-truckers). However, the violent protest against the Cochabamba concession also had its roots in traditional and deeply held beliefs among the population in the Andean region that water is a public good. Consequently, the Cochabamba ‘water riot’ also represented a clash between two opposed value systems (water as a public non-commercial good versus water as a resource subject to commercialisation), which, according to Rijsberman, made it difficult to resolve through conventional conflict-resolution mechanisms.

The analysis of needs, interests and values in this paper has been based on the natural resource conflict typology developed by Rijsberman (1999), which has been applied here to examine the privatisation of water as a type of environmental conflict. Other elements of this typology include conflict over data and facts, as well as an analysis of the relationships between the stakeholders involved and their balances of power. We also discussed the Cochabamba ‘water riot’ in relation

to the environmental scarcity approach. In this context, the conflict over the privatisation of water supply and sanitation in Cochabamba should be regarded as a consequence of the adaptation strategy which both national governments and regional and local authorities sought to apply in order to overcome water scarcity.

This paper has argued that the failure of privatisation in Cochabamba to a large extent was caused by the lack of participation of all interest groups (and the deliberate attempts to exclude the Coordinadora), as well as the lack of transparency of the concession contract. Both of these factors contributed to obscuring the fact that social principles of water management were actually included in the agreement. Likewise, it is maintained that multiple stakeholder participation might have helped reformulate value differences into negotiable conflicts of interest. Concerning public regulation and control, the government was under great pressure from the World Bank to go forward with the privatisation of water and sanitation in Bolivia.²² At the same time, national stakeholders (powerful business groups) and local stakeholders (municipality authorities) had great interest in the MISICUNI project, although this alternative was excessively expensive and left the government in a difficult position in negotiating and controlling the terms of the concession contract. On the other hand, the national government showed very little concern for protecting public interests and hence, did not meet some of the very basic principles of ensuring public regulation and control in privatisation processes.

In general, there seems to be an important role for donor organisations in supporting national governments in formulating the policy frameworks within which privatisations can take place, in negotiating contracts with private companies that meet national water-policy principles, and in inviting civil-society groups to take part in these processes and thus ensure participation and transparency in the privatisation process.

²² However, the World Bank favoured the less expensive Corani project and did not necessarily opt for a solution with exclusive user right to the privatisation company.

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