

CHAPTER 12

Shared freshwater resources: Management or governance?

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Abstract

Trading off the extent to which water is an economic or a social good, introduces a gap between private and public actors. On the one hand, water managers from the private sector aim at making sure that water provided is duly paid for, so that infrastructure investment and operational costs can be covered. On the other hand, public authorities are expected to make sure that enough water (quantitatively and qualitatively) is provided to people. In this sense, there is a *management-governance* duality in the water resource sector.

The purpose of this chapter is therefore to consider how market-oriented water management could be integrated in governance processes. The design of balanced agenda-setting and decision-making processes will be discussed, which would involve public authorities, elected decision makers and private sector stakeholders. This aims at establishing socially acceptable (and/or accepted) water allocation patterns, and the design of technically feasible, economically realistic and environmentally sustainable water management practices.

First, the public-private interaction is considered in the context of river basin management. Lessons learned from participatory processes in water management are reviewed, with a focus on public participation. Suggestions are made on how these lessons can be useful in the design and implementation of public-private arrangements. Focusing on basin development planning, conclusions are drawn that can hopefully be of use in the Okavango River basin.

Introduction: Water market versus water welfare?

Water is not the only environmental medium about which the question is raised whether it should be considered as a common good or as a commodity. For example, much has been said and written about the so-called ‘pollution permits’ – titles or licences authorising holders to emit predetermined quantities of CO₂ – and about the new ‘air’ market that such permits may generate (with ‘rich’ countries, for example, buying the right to pollute from poorer countries). This silently destroys the possibility for least developed countries to count on future industrial development and slows down innovative processes to reduce pollution in industrialised countries.

On the one hand, considering environmental media like air or water as *common goods* means that equitable (or even free) access of all people to these media should be maintained, because they are vital to human life. Therefore, air and water can be understood as basic human *rights*. On the other hand, water is considered as an economic resource, with scarcity and distribution costs reflected by water pricing.

The question here is not so much whether water should be distributed free of charge to people or not, but rather who should design water *allocation patterns* (so that equitable access to water can be maintained for all) using which procedure, and upon which criteria, principles and values such tradeoffs should be based. Furthermore, it should be established who should be tasked to operate the management and distribution of water resources and how much users should pay to receive water. The underlying question is to clarify how water authorities and managers can avoid poor users (those who cannot pay the price) from being excluded from the water distribution system, and whether the state is considered as being in charge of caring – and paying – for those left out by a commercial allocation system.

In 1992, the *International conference on water and the environment* (Dublin, 1992) stated that water is both an economic and a social good. In turn, considering water as a commodity legitimates market forces requests for a liberal approach to water management, while water as a social good questions state and institutional capacity to balance equitable allocation and allocative efficiency, thus introducing a *governance impetus* in water management policies.

This statement has several consequences for the management of shared freshwater resources. Actually, water resources are by definition always *shared* by a diversity of water users. The question is rather at what scale the water-sharing process should be considered. For example, in the context of an international river basin, the sharing of freshwater at basin level involves different countries and states, or multilateral agencies. From another point of view in the same basin – at national level, for instance – other categories of water users (farmers, companies, municipality officials, dwellers, and others) will be involved. Quite naturally, there are interrelationships and influences between basin and sub-basin scales, as well as between the various categories of stakeholders. The media largely contribute here to the dissemination of water-related issues in public opinion.

The (sometimes controversial) opposition established between water considered as an economic versus a social good stresses one of the many dimensions of water uses and reveals a fundamental tension in the management of freshwater resources.

Indeed, deciding whether, or to what extent, water is an economic or a social good, introduces a gap between two parties. On the one hand, the public authorities have the duty to make sure that enough water (quantitatively and qualitatively) is provided to people. On the other hand, water managers from the private sector aim to make sure that water provided is duly paid for, so that infrastructure investment and operational costs can be covered. In this sense, a *management-governance* duality is clearly evident in the water resource sector.

It is thus important to consider how market-oriented water management could be integrated in governance processes. In this regard, balanced agenda-setting and decision-making processes could be designed, involving public authorities, elected decision makers and private sector stakeholders. These would aim to establish socially acceptable (and/or accepted) water allocation patterns, and to design technically feasible, economically realistic and environmentally sustainable water management practices.

Who should decide what is – or is not – acceptable, and for whom? The human nature of water consumption actually changes the very nature of the resource. It calls for water management solutions that can integrate or balance ecological, environmental, technical, sociocultural and economic factors. The integration of these parameters should be – and sometimes actually is – the task of a proper water *policy*.

Should the market or the state take the first step in terms of water policy design? A ‘centralised’ conception of the state would advocate for public authorities to take the lead in establishing guidelines for water allocation and distribution. Yet other views may consider that such water policy in fact more likely derives from a socioeconomic context that is more favourable in terms of water demand and supply. For instance, according to Allan and others (1999):

“water service provision is part of the cure. Stimulating economic growth and enhancing livelihoods remain the development imperatives that will create a context where water policy reform can be considered and implemented. But only if we can get the right balance between caring for the resource and water service provision for livelihoods.”

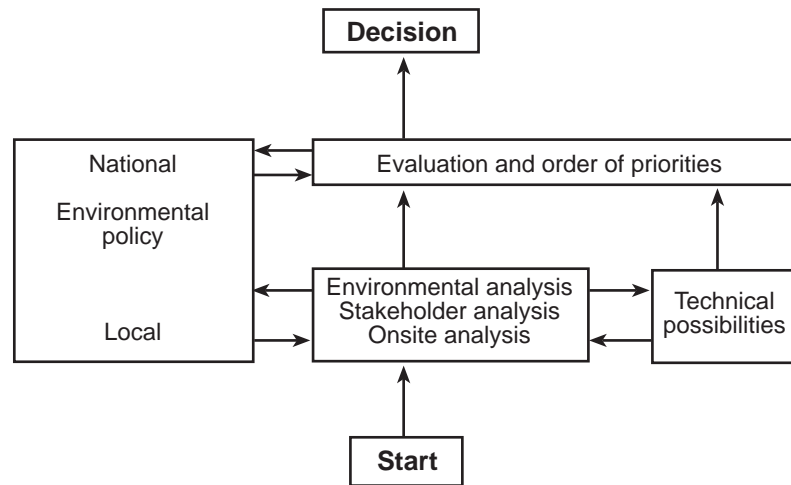
Based on the outline of a method to assess the sustainability of water management solutions, Eilersen and others (1999), as well as Matsui and others (2001) show that the decision-making procedure over water is an iterative process involving sociotechnical factors, as well as policy-relevant considerations (see figure 1). Together with water shortage, lack of funding, and lack of expertise, these authors also list the lack of institutional support to water-planning decisions as one of the problems facing developing countries today.

How should such water policy be designed, implemented and enforced? Who should be responsible for building consensus between numerous water users, and who should be accountable for tradeoffs between various uses of water? Should these duties be the responsibility of the state or the market, or should ‘hybrid’ options be established for decision-making? Eventually, could it be possible to get out of the state/market alternative, and in such a case, which other stakeholders should also be involved?

Market pressures and increased pricing of water resources are indeed growing trends in both developed and developing countries, although for different reasons. In so-called developed countries, both the management and marketing of drinking water are increasingly delegated by municipalities to private sector companies. State

Figure 1

Assessment method



Source: Eilersen et al 1999, in Matsui et al 2001.

intervention usually takes place at either national (for example, the establishment of safety regulations and quality standards for drinking water), or regional levels (policy design, institutional arrangements for basin-scale management of water resources and mitigation of water-related hazards, among others). The European Union established water quality regulations even at supranational level.

In so-called developing countries, the management of water at local level has frequently been characterised by community-based or spontaneous initiatives (small settlements, ‘home’ wells), possibly with the support of non-governmental organisations (NGOs) and/or international aid (technical and financial). Water management and sanitation in larger cities have increasingly involved service providers from the private sector (both private and semi-public funded companies).

Yet, at national level, ‘conditionality’ criteria put forward by development agencies, or promoted by lending institutions, have introduced a strong liberal influence on the design of public water policies, thus drawing the recipient countries towards an increased privatisation of water resource management.

The underlying discourse of this policy considers that privatisation would lead to a more cost-efficient management of water resources, alongside with an increased

transparency of action in public services and institutions. In addition, the pricing of water is expected to discourage users from wasting water and other irresponsible behaviour and practices unfit to a water scarcity context. In short, making people pay for water is seen to have the potential of making them more responsible, resulting in the saving of water resources.

But, what happens when people cannot pay for the water they need, or if water users cannot pay the price that their neighbour can afford (competition over access to water)? And what if the parties consist of a community, on the one hand, and a large water-consuming industrial plant, on the other?

In other words, how can the equitable access of all users to water be maintained in a market context, and what role should be played by the different parties, both public (state) and private (market and private sector), as well as by stakeholders from civil society? Answers to these questions have to take into account technical, environmental, social, economic, political, cultural and ethical factors.

Below, issues are addressed that are related to the interaction between the public and the private sector, with particular attention to partnerships over water within the context of river basin management. With the focus on shared water resources, lessons learned from participatory processes in water management are reviewed. The purpose is to discuss the possible architecture of water governance methods and tools at both basin and sub-basin scales. This aims to contribute to the ongoing and future efforts of different stakeholders in the Okavango River basin.

River basin management and public-private partnerships over water

River basin management: A sociotechnical challenge

River basins sustain ecosystems, are essential sources of water for households, agriculture and industry, and fulfil many non-consumptive uses. Yet, due to population growth and overexploitation, the water demands made on river basins are increasing while the capacity of basins to meet these demands is decreasing (UNESCO 1999).

Over the last years, two key concepts in water management have gained ground internationally: that of ‘integrated management’ and ‘river basin management’ (Zoeteman 1999).

According to Mostert and others (1999), following the logic of sustainable development, the aim of river basin management can be defined as ensuring the multifunctional use of rivers and their basins for present and future generations. Yet, different levels should be distinguished in river basin management: institutional framework, planning, analytical framework, operational management and river basin users (see figure 2).

Both integrated management and river basin management conceptually enlighten the limits (technical, environmental, social and political) of a mere ‘engineering’

Box 1

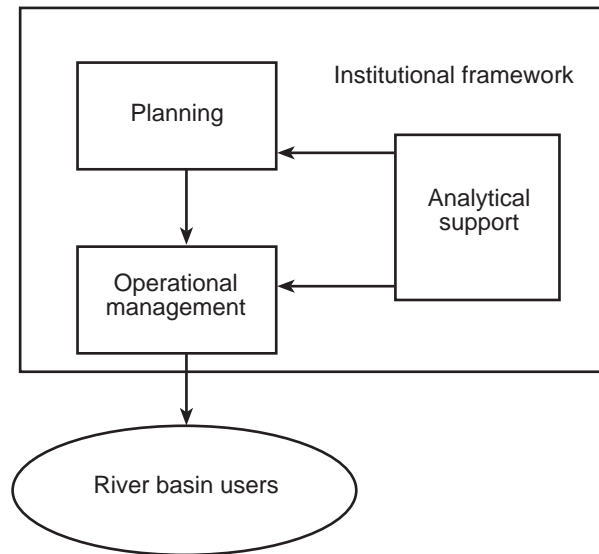
Definitions

Integrated management refers to an approach that takes into account all relevant stakeholders, all functions, and all aspects of water, including quantity and quality issues, with the aim to manage water resources in a sustainable way.

River basin management (RBM) refers to the water system or geographical scale that is considered the most relevant for sustainable water management.

Figure 2

Levels in river basin management



Note: No feedback mechanisms are indicated.
Source: Mostert et al 1999.

approach to solve water problems. In addition, water-related institutional solutions deriving from these concepts are not universal and must be tailored to basin characteristics (Keijts 1999). River basin management has increasingly been presented by water authorities, planners and managers as a way to achieve multiple water-related purposes, both technical (including ecological and environmental) and social (including political). Because it helps stakeholders to arrive at decisions based on consensus over conflicting water *uses* and challenging water *users*, effective river basin management is considered to contribute to the prevention of conflicts about water (for instance, in contexts of water scarcity) and so-called ‘water wars’, which are thought to derive from such contexts.

In national and international river basins, an open dialogue is necessary between water sector cooperators on different policy levels; water managers and water users; water managers and land-use planners; and the government, farmers, industry, NGOs and citizens. In some cases, legislation establishes basic principles of water management, and clarifies the expected role of the private sector (Carmo Vaz 1999). In Mozambique for instance, water legislation consists mainly of the 1990 Constitution Act and the Water Law (Law 16/91 of 3 August 1991; see Ibraimo (1999) for a detailed description of Water Law, Rights and Supply in Mozambique). The National Water Policy was approved in 1995 (Resolution 7/95 of 8 August 1995) and includes the following principles:

- Water is a scarce resource.
- It has to be conserved and used sustainably.
- Water has economic value.
- Water pollution must be prevented and combated.
- Water is in the public domain.
- Water abstractions and effluent discharges must be licensed.
- Private initiative has a role in water development.

The multiple functions of river basin management point to the need for present and future managers to be trained in both technical and non-technical topics, such as hydrology, hydraulic engineering, environmental issues, decision-making processes, the involvement of stakeholders, and national and international water law (Overbeek 1999). More generally, it is advised that training programmes in water management result from a design jointly drawn up by representatives of the public and private sectors. The purpose would be to ensure that water practitioners from both sides share the same *professional and occupational culture* (language, methods, tools, and more) regarding water issues.

Consequences for public-private partnerships

The conventional strong reliance on a combination of technical solutions and a supposedly benevolent state that arranged for a substantially subsidised supply of

water is no longer a feasible strategy. Yet, the expectation that the government shall provide water remains a common attitude (Lundqvist et al 2001).

Striking a sound balance between water-related public and private interests raises the issue of institutional arrangements that are designed to establish water *allocation* patterns (between water users), and clarify water *management* practices within specific water-use sectors (including the allocation of responsibilities for agenda-setting and decision-making).

Participants at the international river basin management workshop (27-29 October 1999, The Hague) identified generic features usually observed in (more or less) successful river basin management initiatives. Some of their conclusions that are relevant to public-private partnerships around water in river basin management include:

- “The institutional structure for RBM should facilitate the necessary co-ordination within the water management sector and between the water management sector and other sectors such as land-use and environment ... the institutional structure should also be a means of empowerment [of] all stakeholders, including economic interest groups, local communities, environmental NGOs and women” (II.a.7-9).
- “Decentralisation should be pursued as much as possible in order to bring RBM as close as possible to the individual citizens and to facilitate local variation in response to differing local conditions and preferences [subsidiarity]” (II.a.13).
- “There may be a distinct role for private entities ... in the provision of water services and water management. Private ownership of water infrastructure is a controversial issue that needs to be carefully explored” (II.a.18).
- “Water rights should be flexible and responsive to changing circumstances at both the national and international level” (II.a.19).

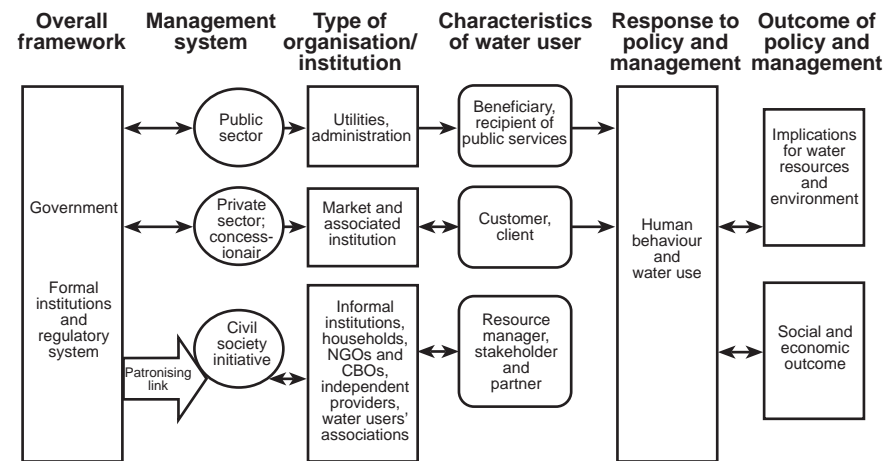
According to Mostert and others (1999), privatisation may be positively introduced in river basin management as a possible solution to the “shortcomings of large bureaucracies.” They also maintain that privatisation is only possible for specific services such as the construction and operation of water supply and wastewater treatment infrastructure – not for regulatory functions such as policy-making. This confirms the essential and proactive role to be played by public authorities in shaping guidelines to water management practices.

A midway option between the ‘fully public’ or ‘fully private’ provision of water services is the provision of publicly owned private companies.

Lundqvist and others (2001) have established a relationship between the kind of water management system (public sector, private sector/concessionaire, civil society initiative), the type of organisation/institution, the characteristics of water users, and the outcome of policy and management (see figure 3).

Apparently, these management options seem disconnected. In practice, mixed or hybrid solutions are chosen by governments and the private sector.

Figure 3
Types of management systems and the context in which they operate



Note: Arrows show hypothetical direction of relationships and response.
Source: Lundqvist et al 2001)

Water markets

Participants at the international river basin management workshop in 1999 made specific recommendations on the establishment of water markets. Tradeable water rights can therefore be an important tool for river basin management, but are only effective if a number of conditions are met:

- the basic water demands of citizens and ecosystems are safeguarded;
- the rights are defined and agreed upon by water users;
- the exercise of these rights are physically possible;
- monopolies can be prevented; and
- an international agreement on the issue is concluded, in the case of international river basins.

Several difficulties arise when establishing a water market. Stephenson (2001) lists the range of water-related services that can be bought and sold to users:

- simple source and disinfecting to protect sources against contamination, with no organised transport of water;

- pump and supply line to a reservoir or standpipe;
- individual standpipes or connections for each house or for each pair of houses; and
- individual household supplies, with multiple connections to kitchens, ablution facilities and toilets.

It should be kept in mind that water distribution and wastewater management issues need to remain integrated in both the design and implementation of water management schemes and governance patterns. Moreover, problems in the privatisation of water services are likely to vary depending on the level of socioeconomic development, as well as the level of water stress, thus calling for flexible management and governance tools that would make it possible for public and private water authorities to adapt their decision-making processes to different situations.

Along with other environmental and technical difficulties, Stephenson (2001) proposes a list of problems due to poor institutional involvement in the management of water resources in developing countries. These problems – some of which are listed below – are more directly connected to financial and accountability issues in the business management of water and the maintenance of distribution systems:

- The perception exists that alternative technologies are better, notwithstanding public preferences.
- The underrecovery of costs reduces financial sustainability.
- Subsidised costs annoy those providing subsidies.
- Cross-subsidies result in decreased usage by high payers, and overusage by low payers.
- Low contributions by poor users means suppliers do not feel obliged to extend or maintain services.
- The priorities of public officials will favour wealthier users and public salaries above poorer users.
- Cuts in services to non-payers waste the capital installation cost and result in users finding alternatives, possibly not as hygienic.

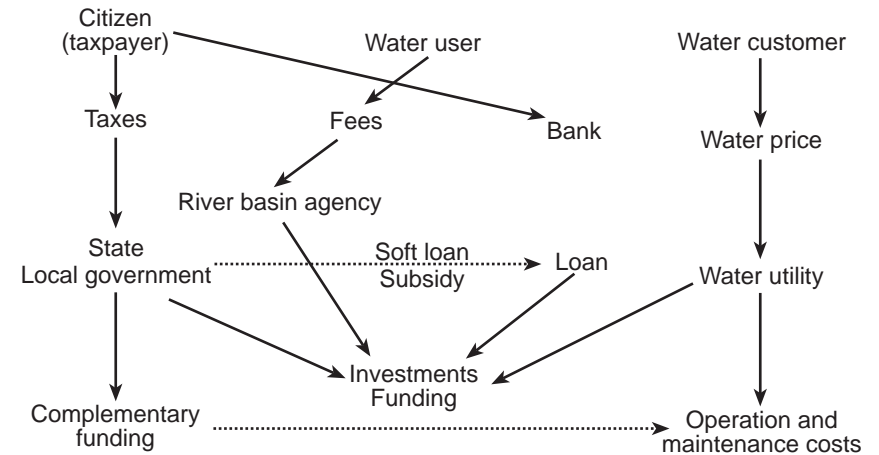
The establishment of a water distribution scheme also raises the issue of the financial sustainability of the system (for example, capital investment in the distribution infrastructure, and operation and maintenance costs). Lee and others (2001) conceptualised the financing channels of a water distribution system as shown in figure 4.

Lyonnaise des eaux, a French company involved in the water distribution sector, lists some of the major difficulties related to water services in poor neighbourhoods (in Stephenson 2001):

- Connection costs are too high.

Figure 4

Water distribution: Financing channels



Source: Lee et al 2001.

- Customer management costs are too high with a high percentage of unpaid bills, high rate of unbilled or fraudulent consumption, low consumption resulting in relatively high collection costs, and high network maintenance costs.
- Consumers may find alternative water procurement strategies – network, standpipes, wells, water deliverers, uncontrolled sources such as ponds and rivers, and more.

According to Stephenson (2001), “the focus [when developing water markets] must be on developing institutional arrangements that provide services at least cost and in a way that is responsive and accountable to beneficiaries.” In addition, several shifts in emphasis should be conducted in parallel:

- from top-down approaches to approaches that are a judicious mixture of top-down and bottom-up;
- from a focus on the construction costs of facilities to lifetime costs of facilities (including operation and maintenance); and
- the recognition of the need to ensure the financial and environmental sustainability of projects.

Establishing water markets, possibly on the basis of a public-private regulation or allocation of tasks and responsibilities, is one of the many tasks that may be performed by public-private partnerships. Other activities that can be addressed through such cooperation include:

- monitoring of water parameters (level, turbidity, dissolved oxygen, temperature, pollutants, among others) and integration of data in a publicly owned database (service contracts can be established between the state and riparian companies);
- participating in the design of water allocation patterns, and in establishing priorities for land use, infrastructure investment and other sociotechnical tradeoffs;
- shared managing of water demand and supply in extreme weather conditions, such as droughts and floods (managing water quantity and quality);
- providing information and conducting awareness campaigns for public education on water issues (consumption patterns, resource scarcity, pollution and water-borne diseases); and
- developing consensus-based rules for the operation of reservoirs and dams, with special attention to reservoir operation in extreme events (such as droughts and floods).

Participatory processes in water management: Framing partnerships

Much has been done and written about the participatory management of water resources – both in national river basins and sub-basins, and in international river basins. Participatory processes involve stakeholders from both the public and private sectors, and some lessons learned in planning for public participation are presented below, which may be useful in the design of public-private partnerships.

The basic principle of the participatory management of water resources is that stakeholders, such as water users, should have a say in the making of decisions that affect their lives. Although sometimes considered as a time-consuming process – and it sometimes is – the involvement of stakeholders in water-related decision-making is commonly viewed as a means to improve the quality of the decisions made, and the efficiency of their implementation (Mostert et al 1999). Yet, it should be kept in mind that the lack of an appropriate framework to encourage stakeholder involvement, as well as a highly sectorised development in the river basin can be limitations to efficient participatory decision-making on water issues (Gaal Vadas 1999).

Water-related issues that could be addressed through participatory processes in water management include the following (adapted from Affeltranger 2001a):

- water-related international agreements (including treaties on transboundary rivers, river basins and water resources);
- water-related bilateral and regional conflicts and tensions;
- the management of national and international river basins and groundwater;

- the conservation and rehabilitation of water capacities and quality at local level or in small catchment areas;
- catchment-based stormwater management and a catchment-level approach to integrated water management and planning, including the mitigation of water-related disasters and the reduction of vulnerability to water-related hazards;
- water-related decision support systems, including those for water allocation;
- environmental impact assessments and the management of wastewater treatment facilities; and
- decision-making processes on water resources in the public (including the design of water-related legislation) and private sectors.

Participants at the *Conference on participatory processes in water management* (June 1999, Budapest) agreed on the following advantages to collaborative water planning:

- Participatory processes contribute to consensus-building, with consensus being the strongest decision.
- Decisions based on consensus are more widely known and accepted by the community.
- Consensus may help to mobilise human and community resources for action.
- Collaborative planning helps to identify all the dimensions of a problem or decision.
- Participatory processes contribute to the socioeconomic cohesion of a community.
- Participatory decisions support integrated, preventive solutions, rather than reactive solutions.
- Collaborative planning involves solutions that cost the least or are free.

Langton (2000) identifies a series of principles for meaningful public participation in water resources management:

- Always seek the community good.
- Develop a community relations approach.
- Strengthen the civic culture.
- Involve the entire organisation.
- Assure senior management support.
- Be frequent, if not 'virtual', relying on information and communications technologies such as the internet.
- Plan/evaluate continuously with rigour and communicate the results to the public.
- Share leadership responsibility.
- Collaborate with other agencies.
- Integrate and respond to public input.

In terms of public participation methodology, a framework for the planning stages for public participation would include the following (adapted from Creighton 2000, and Welsh 1995):

- *Decision analysis*: clarifying the decision being made; specifying the planning and/or decision-making steps and schedule; and deciding whether public involvement is needed, and for what purpose.
- *Public participation planning*: specifying what is needed to involve the public during each step of the planning and/or decision-making process; identifying internal and external stakeholders; identifying techniques to be used at each step of the process, taking into account the needs of different population subgroups and stakeholders; and linking the techniques in an integrated plan.
- *Implementation planning*: designing the activities of public participation, for example, a workshop agenda, where meetings will be held, who will make the presentations, and feedback activities and communication options for presentation of the results.

It must be added that particular attention must be paid to the careful monitoring of water-related participation processes (which implies the definition of indicators), and a final evaluation of the participatory process. Both the indicators and the success assessment features should be defined on the basis of consensus among water stakeholders.

Langton (2001) suggests key features that are essential to the satisfactory involvement of stakeholders in the water decision-making process:

- *Government lead*: Government authorities should be proactive and should take the initiative to involve representatives of civil society and community leaders in water-related decision-making processes. Indeed, community participation should be pushed forward as an emergency solution in a context of social pressure. By providing good conditions (including practically) for the establishment of dialogue, the government contributes to building trust.
- *Early involvement*: Stakeholders likely to be committed to water-related activities should be involved in the early stages of the decision-making process. Communities should participate in reaching consensus on four major issues: a needs analysis, a resources assessment, an inventory of broader social expectations, and the design and implementation of water supply options (and wastewater management).
- *Keeping time*: Consensus-building takes time. Authorities should therefore plan in advance of water-related decisions to be made, so that time is available for users and communities to receive sound information on the situation, understand and process it, and finally make their contribution to the decision.
- *Informed consensus*: Community leaders and representatives of civil society or stakeholders should receive all the necessary information from the authorities so that they can contribute to the decision after having considered all aspects and dimensions of an issue. Technical services should therefore be provided by the state to ensure that technical knowledge can be 'translated' into common language.

- *Sharing the process*: Participatory processes often involve, for practical reasons, a limited number of participants and stakeholders. The essential question therefore is to assess to what extent they represent the communities and populations concerned with water issues. In this sense, the yardstick to measure the quality of participation is not so much the total number of participants, but rather the categories of the public who have been represented and who voiced their opinions and needs in the process. Participatory processes should therefore be highlighted by the mass media. This would contribute to the appropriation of the process by the community at large. This also increases the visibility of the state's initiatives.
- *Providing feedback*: Stakeholders and community members involved in water-related participatory processes should be provided with feedback on their contributions. The objective is for the authorities to recognise their commitment as a specific added value, so that these stakeholders remain motivated to participate in future schemes.

Mostert and others (1999) suggest another set of criteria to be considered if public participation is to realise its potential:

- *Timing*: Public participation should be organised early enough to influence decisions, but not before the different plans and ideas are specific enough to attract the interest of the public. Public participation could possibly be organised during different phases and could target a variety of segments of the public: in early phases (semi-)professional NGOs, and later, the local population and individuals.
- *Methods*: Different methods are appropriate to different target groups. For instance, information meetings for semi-professional NGOs should not be the same as those targeting local communities. The type of issue at stake (complex, controversial) and the specific culture are also important. For instance, in a culture where consultation with the public is seen as a sign of leadership weakness, the usual western methods of public participation could be political suicide and other methods will have to be devised. Whenever the chosen methods allow for large numbers of participants, members of the public themselves should be able to choose to participate – after receiving sufficient information in an appropriate form to make such a choice.
- *Follow-up*: If decision makers do not take the results of public participation seriously, the result could significantly damage legitimacy and acceptance. In this respect, a legal-administrative approach to public participation could be useful – for example, a legal requirement to publish and react to the comments received in combination with access to justice.
- *International basins*: In international basins, reluctance by authorities to organise effective public participation at international basin level tends to be quite high. It can be seen to complicate international negotiations. Reaching the public is also more difficult than in smaller national basins. However, a number of (international) river basin commissions have made meetings of their plenary body

and/or subsidiary bodies more open. In most cases, the general public cannot participate in the meetings, but NGOs can sometimes get observer status, and/or can be asked to answer specific questions.

Three comments must be made about the recommendations discussed above. First, the private sector is often considered as being distinct from civil society. It is clear that a distinction should be made in terms of institutions between public-private partnerships, on the one hand, and public participation, on the other. The latter refers more to water users as individuals and groups, whereas the former refers to larger water providers (urban water suppliers) and users (quantitatively and qualitatively, such as companies and major polluters). However, both cooperative undertakings can learn from each other, and should be kept interrelated by public authorities. Public participation practice may also have direct or indirect consequences in terms of human resources management *within* companies.

Second, the involvement of water users in the design and/or validation of legal and administrative documents structuring the participation process should be advocated. This means that water users and stakeholders are capable of reading, understanding and commenting on the legal and/or regulatory material provided to them – which is seldom the case in developing countries. In such contexts, the authorities should strive for a consensus-based design of water management *objectives* and monitoring *indicators* (for both patterns of water uses, and availability of water resources).

Public participation in international basins touches upon the issue of *scale* in water-related decisions (international and basin-wide, or national and sub-basin level). The idea is not for all stakeholders to participate at all levels of decision-making, nor during all stages of the decision-making process. Rather, a *link* should be maintained between the different participatory levels and schemes (through advertising and communication mechanisms, among others).

It should also be kept in mind that the different levels of water-related decisions and actions can influence one another (lobbying, scape-goating, use of the media as a means of pressure), as explained by Shamir (1999). He pointed to the importance of the viewpoints of farmers' groups and their political influence in the Israeli-Jordanian talks on the shared management of the Jordan River.

The question whether and how NGOs should be involved in decision-making processes focused on international or national river basins raises the issue of the representivity of these organisations. In short, who speaks on behalf of which water users? Some criteria are suggested to assess the relevance of NGO selection in a water-related decision-making process (adapted from Affeltranger 2001b):

- *Organisational criteria*: When was the NGO established, and what are its principles or objectives? Is it local or national, and does it belong to an international network? What is its funding source(s)? What are the relationships, if any, with political groups and/or private sector entities?

- *Sociopolitical criteria*: How many registered members does the NGO have? What is the turnover rate in membership? To what extent can the NGO be considered as being representative of a specific category of water users or stakeholders? What communication process enables the NGO to keep in touch with its members: a bottom-up needs assessment, an iterative design of the NGO's policy and strategy, or a feedback loop for top-down reporting/information/validation of statements made and actions taken by NGO delegates?
- *Participation skills criteria*: Has the NGO already been working with public authorities? On what issues has it already made stands, or taken actions? Has the NGO already been involved in sociotechnical controversies? With what success? Who/what team will speak in the name of the NGO at the negotiation table?
- *Technical skills criteria*: What is the level of water-related expertise within the NGO? Is the NGO capable of understanding the terms of the issue at stake, or will it need additional information/training? Would additional information be requested for the NGO's spokespersons only, or does the NGO need further support to explain water issues and decisions to its members?

A basin development plan for the Okavango River?

Although the signature of the SADC Protocol on Shared River Basins and the creation of the SADC Water Sector are encouraging signs, Carmo Vaz (1999) reaffirmed the importance of establishing new deals in the management of water-related issues at the level of the Southern African Development Community (SADC). The harmonious integration of the economies of SADC countries requires a new way of making water-related decisions in the region, and water remains a sensitive sociopolitical issue.

Moreover, a higher level of social and economic development can be considered an asset in the management of water resources within the context of water scarcity. According to Allan and others (1999), while particular levels of water certainly do not determine economic outcomes, the reverse is not true. High levels of development of a political economy – that is both its economic strength and diversity, and its governance capacity – enable even a seriously water-deficit economy to operate effectively. A strong and diverse political economy has numerous water management options – a weak entity does not. In other words, investing in both democratic and political stability and socioeconomic development positively contributes to the management of water scarcity.

Basin development planning: An opportunity and a method to form partnerships

Basin development planning offers both an opportunity and a methodology to gather public and private entities, together with stakeholders and civil society around

the water negotiation table. Just like political stability in Okavango riparian countries influences the potential for a peaceful, upstream-downstream management of water, socioeconomic development at basin scale cannot be separated from development in each riparian country.

Any basin development planning effort should be undertaken simultaneously on two levels – at river basin level and at sub-basin or national catchment level. Both the methodology (for example, the identification of development goals and options) and the monitoring of development results (such as macroeconomic indicators) should follow parallel tracks in Okavango riparian countries.

Elements are suggested below that advocate for an increased involvement of water actors in a development planning process at both basin and sub-basin levels. The mutual recognition of present and future water resource needs (both quantitatively and qualitatively) is a key to more peaceful water relations between Okavango riparian countries. Yet, negotiations over water do not only require the goodwill of the parties, but also documents and data to establish a dialogue, or to feed a controversy with scientifically or technically approved elements that have been agreed upon by the parties. The consequences are twofold.

First, each riparian country should be in a position technically to locate and quantify water sources they currently rely on (mapping of surface waters and aquifers, monitoring of withdrawn volumes), and to sketch the patterns of social, economic and environmental uses of water (quantitative distribution of water consumption between users of drinking water, agriculture, industry, tourism, ecosystems, and more). Whereas the former requires mainly scientific and technical expertise, the latter also demands an efficient institutional and administrative system for the collection and processing of socioeconomic data.

Second, riparian countries should also be capable of sketching water consumption patterns for the coming five, 10 or 20 years. This would require water authorities to access information on development schemes by integrating demographic and environmental projections, as well as educational, industrial and financial scenarios and data. This means that such socioeconomic planning material becomes available at national level, and that water consumption patterns can technically be derived from these broader development schemes.

Jointly sketching a concerted plan for the socioeconomic development of the basin would imply that Okavango basin countries are capable of striking a balance between the benefits of their own, nation-wide social and economic objectives, and the costs and externalities that these objectives would imply in the other riparian countries. In short, socioeconomic development patterns designed in one country should be both socially acceptable and environmentally sustainable basin-wide.

Yet, establishing a basin development plan does not mean that all basin countries should design or follow the same plan, nor that national growth rates should remain even basin-wide.

Expected advantages of an Okavango basin development plan are that:

- Countries maintain a dialogue and an institutional agreement for peaceful dispute settlement.
- Each country can communicate on the (negative) consequences of a decision made by another one.
- All countries can speak with a unified – and peaceful – voice when looking for technical or financial support from a regional institution (for example, SADC), from the international community (United Nations agencies and programmes, donor countries, the World Bank, the International Monetary Fund, the European Union, and others).
- Countries are more likely to attract private sector investors, especially for basin-wide or transboundary industrial or business activities.

The design and implementation process of a basin development plan is expected to yield lessons learned that can be provided to other countries that share rivers in the region, with the Okavango basin being a possible test case for SADC, as well as a study basin in the Green Cross International *Water for peace* initiative.

What could be the role of external support agencies?

According to Alaerts (1999), most external support agencies have articulated specific water policies and programmes over the past decade. Some of these players are large, and take a broad development view – yet, among the five international development banks, only the World Bank, the Asian Development Bank and the Inter-American Development Bank have elaborated water policies (1999).

Other players take a more sector-based perspective, or focus on specific water-related issues – including the United Nations Food and Agriculture Organisation (FAO), the UN Environmental Programme (UNEP) and the UN Development Programme (UNDP).

Basin development planning is a complex undertaking by nature. It has multiple purposes, and may make requests to various funding sources. It involves different categories of water users and other relevant stakeholders (both from inside and outside the river basin). In this sense, it is the duty of water planners at basin level (international authority in charge of river management) and sub-basin level (public authorities in countries) to perform the *integrative* governance function of basin development plans.

Some UN agencies are multidisciplinary by nature (or by mandate), and can be instrumental in helping authorities of international river basins to design, implement, evaluate and review the basin development planning process. For example, the Division of Water Sciences of the UN Educational, Scientific and Cultural Organisation (UNESCO) develops methods and tools to establish science-based basin development planning, and to bring together different categories of stakeholders so that they can make socially feasible and environmentally sustainable decisions. The division also acts as the secretariat of the International Hydrological Programme (IHP) (see box 2).

As a contribution to the UN *World water assessment programme*, UNESCO Programmes, including IHP have launched the project *From potential conflict to co-operation potential*. The initiative is an attempt to help governments and water authorities to build social peace and political stability at river basin level through improved dialogue and exchange (see table 1).

Green Cross International (GCI) currently runs a project for conflict prevention and resolution through civil society participation entitled *Water for peace*. UNESCO and GCI have combined their complementary approaches and established a joint programme on *From potential conflict to co-operation potential: Water for peace*.

With regard to cooperation in shared river basins, UNESCO provided support to the promising *Universities partnership* on water conflict analysis and dispute resolution. This partnership involves Oregon State University, United States; University of Pretoria, South Africa (African Water Issues Research Unit – AWIRU); University of Aberdeen,

Table 1

From potential conflict to cooperation potential: Project objectives and outputs

Overall objective	To enhance and capitalise on the cooperation potential of water. To mitigate the risk that potential conflicts can turn into real conflict.
Operational objectives	Defining and surveying conflicts in water resources management. Monitoring indicators of potential conflict and cooperation potential. Providing educational material and programmes. Providing decision support tools. Disseminating results and good practices.
Project outputs	Web-based information and reference system. Contribution to the World water development report. Potential conflict and cooperation indicators and their interpretation. Toolkits of techniques. Educational material. Educational modules and training course. CIRBM Network.

PC-CP Dissemination Material, available at UNESCO Division of Water Sciences, Paris

Box 2

The International Hydrological Programme

The International Hydrological Programme (IHP) is the major instrument of UNESCO to carry out its water-related activities. After the successful International Hydrological Decade (1965-1974) conducted by several UN agencies, the IHP was established in 1974 under the aegis of UNESCO, where its secretariat has been located ever since. It is an intergovernmental programme with 160 member states. Every two years, the IHP intergovernmental council meets to set policy guidelines and to make major decisions on its implementation.

The plans for the successive programme phases of six years are made in full consultation with member states and reflect the current needs of countries.

The fifth phase (1996-2001), designated *Hydrology and water resources development in a vulnerable environment*, set out to stimulate a stronger interrelation between scientific research, application and education. The emphasis was on environmentally sound integrated water resource planning and management, supported by a scientifically proven methodology.

The current sixth phase (2002-2007), designated *Water interactions: Systems at risk and social challenges*, is based on the fundamental principle that freshwater is as essential to sustainable development as it is to life and that water, beyond its geophysical, chemical and biological function in the hydrological cycle, has sociocultural, economic and environmental values that are interlinked and mutually supportive.

Some of the interactions to be further investigated include those between surface water and groundwater; atmospheric and terrestrial parts of the hydrological cycle; fresh water and salt water; global watershed and river reach scales; quantity and quality; water bodies and aquatic ecosystems; science and policy; and water and civilisation.

United Kingdom (School of Law); Asian Institute of Technology (AIT), Bangkok, Thailand; University of New Mexico, US; University of Costa Rica, San Jose; University of Zimbabwe, Harare; Linkoping University, Sweden (Department of Water and Environmental Studies); and a partner university from China.

Conclusion

Before and since the founding of the tripartite Permanent Okavango River Basin Water Commission (OKACOM) in 1994, several initiatives were taken aimed at joint

decision-making over water resources in the Okavango basin. Solving water scarcity problems in the basin indeed requires cooperative efforts, based on a shared understanding, agreement and recognition of the needs, aspirations and responsibilities of each basin state (Ashton 2000). Joint basin development planning is expected to contribute to these requirements.

Yet, prior to the design of future plans for the basin as a whole, each country should be in a position to clarify what social, economic, environmental and institutional future it wants, and what it wishes to avoid. This nation-wide planning task is the responsibility of the government – it is the duty of elected decision makers to sketch what the future should look like for the country.

Deciding on social and economic plans for a nation is not an undertaking that can be done at state level only, nor can it be kept away from civil society. In short, the participation of stakeholders is crucial to the relevant and efficient design of development schemes. There are mainly two reasons for this. The first reason is *options* – only a broad participatory process enables decision makers to get a clear picture of the nation's aspirations and capabilities, as well as of scenarios that can be seriously considered for the future. The second reason is *ownership* – only a broad participatory process is likely to help decision makers to win social support for the choices they make, and ease their implementation. Last but not least, participation constitutes one of the imperatives of democracy.

In other words, efforts by riparian countries should not be confined to international state level only, but national decision makers should also embark on a consultation process at country level, prior to taking a basin-wide stand. However, any participatory process conducted at national level should not be presented to stakeholders as a separate initiative distinct from negotiations undertaken at basin level. The major reason is that a 'basin perspective' in the public debate would help stakeholders to see that national decisions are, to a certain extent, basin-wide decisions as well. The aim would be to build 'common basin ownership' that can be peacefully shared by inhabitants of Angola, Namibia and Botswana.

It is suggested that decision makers of these three countries create a small task force, composed of delegates from the private and public sectors, and involving representatives of universities and training institutions in the countries. This task force should be established in cooperation with relevant SADC divisions and services, as well as with due attention to bilateral/multilateral agreements and partnerships already existing between Okavango riparian countries, and other countries of Southern Africa. The *Water for peace Okavango pilot project* could form an appropriate basis for the development of this initiative. The role of this task force could be to:

- obtain a clear picture of the expectations of the different categories of water stakeholders along the Okavango River;
- identify the objectives of public authorities in terms of socioeconomic development at both country and river basin scales;
- capture the water-related questions that stakeholders ask in the process;

- undertake field missions and draw lessons from basin development planning initiatives undertaken (or ongoing) in other basins worldwide;
- report to the authorities in riparian countries, inform other decision makers, and make public any conclusions relevant to water users; and
- prepare a draft basin development plan, which includes details on the participatory process to involve stakeholders and to win social support for the planning effort.

References

- Affeltranger, B. 2001a. *Public participation in the design of local strategies for flood mitigation and management*. Technical Documents in Hydrology 48. Paris: UNESCO.
- Affeltranger, B. 2001b. *La démocratie locale est-elle soluble dans les inondations?* Memoire de DEA. Nanterre: Laboratoire Géographie Tropicale, Université de Paris.
- Alaerts, G J. 1999. The role of external support agencies (international donors) in developing co-operative agreements. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Allan, J A, Motadullah, K & Hall, A. 1999. The role of river basin management in the vision process and framework for action up to now. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Ashton, P. 2000. Water security for multi-national river basin states: The special case of the Okavango River basin. Paper presented at the *Stockholm international symposium on water security for multi-national river basin states*, 18 August.
- Carmo Vaz, A. 1999. Problems in the management of international river basins: The case of the Incomati. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Creighton, J L. 1999. Tools and techniques for effective public participation in water resources decision. *International conference on participatory processes in water management, June 1999, Budapest, Hungary*. UNESCO-IHP/IA2P/IWRA. Paris: UNESCO.
- Gaal Vadas, R. 1999. The Sao Francisco river basin. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Ibraimo, L R. 1999. Mozambique – Country report. *Water law, water rights and water supply (Africa)*. DFID KaR Project R7327, Institute of Water and Environment, Cranfield University, UK. At <www.silsoe.cranfield.ac.uk/iwe/documents/waterlaw/download.htm>.
- Keijts, L H. 1999. Opening address. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Langton, S. 1999. Conditions for meaningful public participation. *International conference on participatory processes in water management, June 1999, Budapest, Hungary*. UNESCO-IHP/IA2P/IWRA. Paris: UNESCO.
- Lee, T, Oliver, J L, Teniere-Buchot, P F, Lee, T & Valiron, F. 2001. Economic and financial aspects. In Maksimovic, C & Tejada-Guibert, J A (eds). *Frontiers in urban water management: Deadlock or hope*. London: UNESCO-IWA.
- Lundqvist, J, Turton, A & Narain, S. 2001. Social, institutional and regulatory issues. In Maksimovic, C & Tejada-Guibert, J A (eds). *Frontiers in urban water management: Deadlock or hope*. London: UNESCO-IWA.

Shared freshwater resources

- Matsui, S, Henze, M, Ho, G & Otterpohl, R. 2001. Emerging paradigms in water supply and sanitation. In Maksimovic, C & Tejada-Guibert, J A (eds). *Frontiers in urban water management: Deadlock or hope*. London: UNESCO-IWA.
- Mostert, E, Van Beek, E, Bouman, N W M, Hey, E, Savenije, H H G & Thissen, W A H. 1999. River basin management and planning. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Overbeek, H J. 1999. Opening address. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Shamir, U. 1999. Presentation. *International conference on participatory processes in water management, June 1999, Budapest, Hungary*. UNESCO-IHP/IA2P/IWRA. Paris: UNESCO.
- Stephenson, D. 2001. Problems in developing countries. In Maksimovic, C & Tejada-Guibert, J A (eds). *Frontiers in urban water management: Deadlock or hope*. London: UNESCO-IWA.
- UNESCO. 1999. Introduction. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.
- Walesh, S G. 1995. Interaction with the public and government officials in urban water planning. In UNESCO/IHP (eds). *International workshop hydropolis: The role of water in urban planning*. Leiden: Backhuys.
- Zoeteman, K. 1999. Opening address. *International river basin management workshop, The Hague, 27-29 October 1999*. Technical Documents in Hydrology 31. Paris: UNESCO.