

# ***Water governance literature assessment***

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***Report contributing to the scoping exercise managed by IIED to help  
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water ecosystems and poverty reduction under climate change***



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## ***Executive Summary***

The challenge of managing water ecosystem services in areas of rapidly increasing competition for limited water resources (i.e. large parts of the world) is daunting. Maintaining the integrity of water ecosystems using approaches that also impact positively on levels of poverty and take explicit account of the risks and uncertainties of climate change is an even greater challenge. There is general agreement that improvements to water governance are a necessary part of the solution to the specific challenges that fall within this nexus of water ecosystem management and poverty reduction within the context of climate change. The aims of this paper are to: 1) Identify relevant water governance trends, challenges and knowledge gaps and 2) Identify and recommend research that has the potential bring about significant improvements in the management of water ecosystems services and poverty reduction in the context of climate change. Two thematic areas of research have been identified and are recommended for financial support by DFID. The first centres research into water governance approaches, methods and tools. The second focuses on assessment and mitigation of the negative externalities that will almost certainly result from a rapid and essentially unplanned worldwide expansion in the production of biofuels.

## ***Acronyms and Abbreviations***

DFID	Department for International Development
GWA	Gender and Water Alliance
IWRM	Integrated water resources management
MDG	Millennium Development Goal
NGO	Non-government Organisation
UNDP	United Nations Development Programme
WASH	Water, Sanitation and Hygiene

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## **1. Introduction**

Water plays a pivotal role in sustainable development, including poverty reduction. The use and abuse of increasingly precious water resources has intensified dramatically over the past decades, reaching a point where water shortages, water quality degradation and aquatic ecosystem destruction are seriously affecting prospects for economic and social development, political stability and ecosystem integrity (UNDP, 2007a). Given the importance of water to poverty alleviation, human and ecosystem health, the management of the water resources becomes of central importance (Hope, 2007). Currently, over 1 billion people lack access to water and over 2.4 billion lack access to basic sanitation. Access to clean water is lowest in Africa, while Asia has the largest number of people with no access to basic sanitation. This water crisis is largely our own making. It has resulted not from the natural limitations of the water supply or lack of financing and appropriate technologies, even though these are important factors, but rather from profound failures in water governance (UNDP, 2007b).

Climate change now poses a major threat to human development. Much of this threat will be transmitted through more frequent extreme events (e.g. floods and droughts) and temporal and spatial shifts in rainfall patterns. The overall effect will be to exacerbate risk and vulnerability, threatening the livelihoods, health and security of millions of people. Climate modelling exercises point to a complex range of possible outcomes. Beyond the complexity, there are two recurrent themes. The first is that dry areas will get drier and wet areas wetter, with important consequences for patterns and levels of agricultural production. The second is that there will be an increase in the unpredictability of water flows, linked to more frequent and extreme weather events (UNDP, 2006).

The aim of this paper is identify water governance trends, challenges and knowledge gaps that are relevant to poverty reduction and the management of water ecosystem services and within the context of climate change. This paper is not intended as a comprehensive review of water governance literature as recent reviews already exist (e.g. Green, 2007).

## **2. What is water governance?**

Water governance relates to 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 (Rogers & Hall, 2003). Or put more simply, water governance is the set of systems that control decision-making with regard to water resource development and management. Hence, water governance is much more about the way in which decisions are made (i.e. how, by whom, and under what conditions decisions are made) than the decisions themselves (Moench et al., 2003).

Water governance covers the manner in which allocative and regulatory politics are exercised in the management of water and other natural resources and broadly embraces the formal and informal institutions by which authority is exercised. The relatively new term for discussing this combination of formal and informal institutions is *distributed governance*.

There is a profoundly political element to water governance and as such systems of water governance usually reflect the political realities at international, national, provincial and local levels. As a result, the more general definition of governance (as opposed to water governance) is also contested as those who promote different visions of the future tend to define governance in terms which are consistent with their own vision and no other (Green, 2007). So, Neo-Liberals define bad governance very specifically in terms of the existence of inadequate markets and excessive government. The problems of governance are to Neo-Liberals limited to removing the constraints which prevent the operation of a market-based economy and of minimising the role of government. Conversely, others define governance from the perspective of a democratic deficit, defining governance therefore in terms of transparency, accountability and subsidiarity. Consequently, there are obvious benefits in adopting a

definition of governance which describes what it is without prescribing what it should be. One of the most frequently cited definitions of governance is thus:

*“The exercise of political, economic and administrative authority in the management of a country’s affairs at all levels. Governance comprises the complex mechanisms, processes, and institutions through which citizens and groups articulate their interests, mediate their differences, and exercise their legal rights and obligations” (UNDP 1997).*

Governance has received increasing attention from DFID in recent years as signified by the publication of the 2006 White Paper: “Eliminating World Poverty: Making Governance Work for the Poor”. This paper along with a series of speeches by the Secretary of State for International Development recognised the depth of the historical roots of governance problems in poor countries; the need to help governments to exercise real authority, as well as to become more democratic, participatory and law-regarding; the limits on the ability of aid donors to contribute to solving these problems through direct interventions; a practical grasp of the differences among a range of African countries often treated as a homogeneous mass; a genuine willingness to rethink what are known in the business as ‘aid modalities’; and an awareness that many governance problems are seriously exacerbated by international factors over which rich countries have some control (Moore and Unsworth, 2006).

### **3. Why is more effective water governance needed?**

#### **3.1 Increasing demand**

Rapid economic development and societal change are putting increasing pressure on water ecosystems and other natural resources. In a number of countries or regions, demand is outstripping supply to the extent that water resources are fully allocated in all but the highest rainfall years. Under such conditions, which are often referred to as river basin “closure”, available water resources are fully allocated and the political importance of effective water governance increases.

#### **3.2 Access to water**

Scarcity of water, whether absolute or induced, is not, however, the only fundamental reason for improving the effectiveness water governance. Pollution also contributes to scarcity and the challenge of meeting demand for good quality water. Less publicised, however, are problems of access to water that are as much a product of the social, economic and institutional context as they are of the technical factors governing water resource availability. For people who are able to pay or who belong to elite social groups, water is not scarce, even in situations where the available supply is extremely limited. Since water is a cornerstone for most economic activity, equitable distribution under changing patterns of supply and demand is often more of a challenge than absolute limitations on the available resource (Moench et al, 2003). Stakeholder involvement, political priorities and even issues such as political interference and corrupt practices all have a major bearing on design of infrastructure and the strategic and day to day allocation of water for both domestic and productive purposes. Hence, systems of effective water governance are needed that ensure that all sectors of society have equitable, reliable and sustainable access to water.

#### **3.3 Lack of accountability and transparency**

Corruption remains one of the least addressed challenges in relation to water governance and water service delivery (UNDP, 2007a). Until recently, governments, bilateral and multilateral organisations have tacitly accepted corruption in the way water is governed. Corruption has been seen as something that could ‘grease the wheels’ of development efforts. However, thinking is shifting and anti-corruption measures are now perceived as central to equitable and sustainable development water service delivery. Corruption is a symptom of governance deficiencies in both the private and public spheres. In many countries, enforcement of legislation is weak and judicial systems are

inadequate. When these are combined with, for example, low wages, huge income disparities (both within and between countries) and accountability and transparency shortcomings, personal economic gain is more attractive than concern for the well-being of citizens.

New research and case studies increasingly show how corrupt practices are detrimental to sustainable water use and service provision. Corruption ultimately limits the scope for improving poor people's livelihood opportunities. Corruption also:

- Reduces economic growth and discourages investments within the water sector;
- Undermines performance and effectiveness of both public and private sectors; leading to inefficient and unequal allocation and distribution of water resources and related services,
- Undermines and frustrates stakeholder participation in decision-making processes;
- Decreases and diverts government revenues that could be used to strengthen budgets and improve water and other services, especially for poor people,
- Makes existing legislation, rules and regulations ineffective.
- Dilutes the integrity of the public service sector, since discretionary decision making creates unpredictability and inequalities and can circumvent the rules of law and justice.

If the water-related Millennium Development goals are to be achieved, a large increase in financial support, not necessarily in the form of external aid, is required for the water, sanitation and hygiene (WASH) sector (Hope, 2007). However, in the absence of improved water governance, it is difficult to justify such large levels of investment not least because positive outcomes in terms of improved service delivery cannot be guaranteed. A positive step on behalf of the European Union Water Initiative (EU, 2007) has been to link WASH expenditure to initiatives aimed at improving water governance.

### **3.4 Sector Reform**

Decentralisation and other aspects of integrated water resource management are considered to be important components of sector reform programmes that, to be effective, require improvements in water governance systems (Moriarty et al, 2004). Through decentralisation the government relinquishes some of its decision making powers and management responsibilities, in principle at least, to lower levels of government, private sector or community and civil society organisations. It should be noted, however, that concerns have been raised that decentralised decision-making could have a negative impact on the poor (e.g. Cleaver et al, 2006)

Many countries are currently moving away from conventional forms of water governance, which usually have been dominated by a top-down supply-driven approach, towards bottom-up demand-driven approaches, which combine the experience, knowledge and understanding of various local groups and people (UNDP, 2007a). Many governments are also moving towards better policy alignment in recognition of the fact that many policies outside the water sector can have a major bearing on levels and patterns of water demand and use (e.g. agricultural, trade and energy policies). These changes require improvements to water governance systems that include: more effective stakeholder dialogue, better vertical and horizontal sharing of information amongst stakeholders, conflict resolution at a range of different scales and planning procedures that are based on a vision that is common to relevant stakeholders.

### **3.5 Water Rights**

Ownership or the right to use a water resource or water supply infrastructure means power and control (UNDP, 2007a). The various roles and responsibilities, such as those encapsulated in legislation on water rights and ownership, have a complex relationship with water governance. How property rights are defined, who benefits from these rights and how they are enforced are all central issues that often require clarification as patterns of supply and demand change. Attempts to mitigate climate change

impacts will, in many cases, require revisions to existing legislative frameworks and/or the enactment of radically new frameworks.

Insecurity of water rights, mismatches between formal legislation and informal customary water rights, and an unequal distribution of water rights are frequent sources of conflict (UNDP, 2007a; Hodgson, 2004). In contrast, the establishment of well-defined and coherent roles and responsibilities through legislation of formal and informal water rights, may lead to a number of social, economic and environmental benefits:

- Equitable water use between existing user groups.
- Access to water by groups that were previously denied formal or informal water rights.
- Improved efficiency and productivity of existing water supply allocations. In some cases, by providing legal support for reallocation of water from lower to higher value water uses.
- An increased willingness of users to take economic risks by investing in improved water management and practices in both rural and urban contexts.
- Reduce the pressure on water resources because those with water rights have incentives for managing resources sustainably

### **3.5 Gender**

Current writing on governance, and particularly water governance tends to be gender blind (Cleaver, 2007). It is clear that effective, efficient and equitable water resources management is only achieved when both women and men are involved in integrated water resource management (UNDP 2006 and 2007). Gender mainstreaming is the process of assessing the implications for women and men of any planned action, including legislation, policies and programmes in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men can benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality. The obvious benefits of gender mainstreaming include:

1. Involving both women and men in integrated water resources initiatives can increase project effectiveness.
2. Using a gender perspective and ensuring women's involvement can support environmental sustainability.
3. Social and economic analysis - as well as documenting natural resource uses - is incomplete without an understanding of gender differences and inequalities.
4. Without specific attention to gender issues, initiatives and projects can reinforce inequalities between women and men and even increase imbalances

Two dimensions of human capacities are particularly important in enabling and constraining mechanisms of access to water; these being physical embodiment (embodiment here is used as a concept which incorporates an individual's physical manifestation as a gendered person as well as the capabilities this confers) and voice (the ability of individuals to have influence at public fora). Water governance is conducted through formal and informal institutions, social relationships and more specifically through the 'rules in practice' of everyday water use (Cleaver, 2007). Physical labour is often required to access water by those who are physically present at water sources are most likely to shape the rules-in-practice – the conventions of queuing, rationing, charging based on estimations of quantities used and so on. Physical presence and the exercise of public voice are also elements of the formal institutions of water resource management, although not necessarily sufficient to secure water access (Cleaver, 2007).

Even when women participate in village-level meetings, they are often there to make up the numbers as a token gesture to gender inclusiveness. For example, in a survey of approximately 100 villages in southern Andhra Pradesh, Rama Mohan Rao et al (2003) found that women participated in community



decision making in less than 10% of the villages and, even when they participated, they were rarely able to influence decisions affecting them. The participation of poor women was even lower.

Clearly water governance systems need to take better account of the roles of women managing water service delivery and in water related decision-making.

#### **4. What are the trends in water governance?**

There is a growing perception that the governance of water resources and water services (and of many other things) functions more effectively within an open social structure which enables broader participation by civil society, private enterprises and the media, all networking to support and influence government. The ideology of a *command and control* or a *hierarchical* central State system caring for its citizens has been replaced in many countries by *market-led* water governance models. However, the honeymoon with the *laissez-faire* market-led model is over as it is now regarded as being too simplistic and not representative of wider societal values. The trend now is for distributed water governance systems to supplement formal authority by an increasing reliance on informal authority, for example, through genuine public-private coordination and co-operation. This can avoid governments being caught up in the contradictory roles of being both a provider and regulator of services.

As discussed Section 3.3., overcoming corruption is clearly an important aspect of governance. Until recently the lack of information and political will has made it difficult to openly discuss the problem, which is rife throughout the world, in both the public and private sectors and at all levels (from international to local). The law can, for example, address the problem of corruption, but it is a heavy and expensive instrument, a measure of last resort, as it is difficult and costly to bring people to court. With *distributed governance*, more open competition, more accountable public administrations and more transparent processes may help to address problems of corruption. There are many measures that can be used without recourse to law, including reduced public sector intervention in the economy, reform of public administration, liberalisation and reduced bureaucracy, and fair pay for workers. All these measures can help to reduce temptation. Regulators and watchdogs, such as some NGOs, a strong independent media and self governance (e.g. corporate social responsibility, codes of conduct) can produce social sanctions that will deter all but the most unscrupulous (Moench et al, 2003).

#### **5. How can water governance be improved?**

An assumption behind this scoping study is that it is somehow possible to improve water governance in the nexus that lies between water ecosystem management, poverty reduction and climate change. In order to do 'better', we have first to define what we mean by 'better' and consequently to establish criteria against which to test the degree of success achieved. Doing 'better' necessarily involves change so it is about learning both from the past and in the continuing present (Green, 2007). We have, therefore, to institutionalise a method of promoting continuing innovation, the discovery of new and better technical means, not least in order to adapt to a future that involves greater uncertainty and risk.

Achieving good water governance cannot be undertaken hastily using blueprints from outside any given county or region. Good governance needs to be developed to suit local conditions. Incremental improvement and flexibility are key. New reforms do not have to be implemented in a comprehensive or fully integrated way. However, they do have to be workable and doing a few things well to demonstrate that new approaches work is both pragmatic and likely to generate public and political support.

Rogers and Hall (2003) argue that there is no single model of effective water governance; indeed to be effective governance systems must fit the social, economic and cultural particularities of each country. Nevertheless, there are some basic principles or attributes that are considered essential for effective water governance (see Box 1).

### **Box 1. Principles of effective water governance (After Rogers and Hall)**

#### **Approaches**

**Open and transparent:** Water institutions should work in an open and transparent manner, using language understandable to the general public; water policy decisions should be transparent, particularly regarding financial transactions.

**Inclusive and communicative:** wide participation should be ensured throughout the water policy chain, from conception to implementation and evaluation; governance institutions must communicate among water stakeholders both horizontally at the same levels and vertically between levels.

**Coherent and integrative:** water policies and actions must be coherent, with political leadership and a strong responsibility taken by institutions at different levels; water institutions should consider all potential water users and sectors and their linkages with, and impacts on, the traditional water sector.

**Equitable and ethical:** equity between and among various water interest groups, stakeholders and consumers should be carefully monitored throughout the policy development and implementation process; penalties for corrupt behaviour or sharp practices should be applied equitably – water governance must be strongly based on the ethical principles of the society in which it functions and on the rule of law.

#### **Performance and operation**

**Accountable:** the rules of the game, as well as legislative roles and executive processes, must be clear; each water-related institution must explain and take responsibility for its actions; penalties for violating the rules and arbitration-enforcing mechanisms must exist to ensure that satisfactory solutions to water issues can be reached.

**Efficient:** concepts of political, social, and environmental efficiency related to water resources must be balanced against simple economic efficiency; governmental systems should not impede needed actions.

**Responsive and sustainable:** water demands, evaluation of future water impacts and past experiences should be the basis for water policy; policies should be implemented, and decisions made, at the most appropriate level; water policies should be incentive-based, to ensure clear social or economic gain if the policy is followed; long-term sustainability of water resources should be the guiding principle.

## **6. Water Governance Challenges**

### **6.1 Economic, political and environment change**

Water governance challenges are invariably complex. Even though desirable, they are not solely linked to, for example, the selection of water management strategies that involve greater involvement of the private sector, decentralisation, integration and increasing emphasis on managing demand. The fundamental challenge is to establish systems of water governance that take account of and adapt to societal, economic and environmental conditions that are characterised by uncertainty, variability and change. It is just not possible to develop water management strategies and plans that will solve all water management problems now and well into the future. Instead, water governance capacity must be developed (i.e. information systems, stakeholder platforms, legal and regulatory mechanisms, executive capabilities and conflict resolution systems) to enable society to respond to and adapt to uncertainty, variability and change that could be local or regional, short or long term, political, economic or environmental.

### **6.2 Stakeholder participation**

In water management, the boundaries of consent are shifting, through increased stakeholder participation in decision-making at both the water use and water resource (river basin) levels (Wester et al, 2003). It is clear, however, that the size of the population in most river basins, large villages or

municipalities is such that it precludes the direct participation of all stakeholders in basin level decision-making. The question of who will represent large groups of stakeholders is a highly political one. The relationship of the people participating in any multi-stakeholder process to their constituents is problematic, especially when third parties are involved. It is a nostrum of development work that third-party facilitators (researchers, consultants, NGOs) are needed to identify, mobilize, organize and inform stakeholder groups (Wester et al, 2003). But, as pointed out by Edmunds and Wollenberg (2001), the relationship of a representative to his/her constituency is perhaps most politically charged when representatives of a group are designated by outsiders or are accountable to them, as is often the case in multi-stakeholder negotiations.

Multi-stakeholder platforms (MSPs) have come to the fore as a logical companion to Integrated Water Resource Management (IWRM) (Warner, 2005). IWRM can be considered as a multi-layered systems approach to water management (Mitchell, 1990) that attempts to integrate relations between:

- Surface and groundwater (quantity and quality)
- Water and land use (environment)
- Water and stakeholder interests
- Water-related institutions

While combining these four seems a perfectly logical way forward, their combination results in major challenges many of which come under the water governance banner.

But what actually makes a multi-stakeholder platform? A widely accepted definition defines a platform as a 'decision-making body (voluntary or statutory) comprising different stakeholders who perceive the same resource management problem, realise their interdependence for solving it, and come together to agree on action strategies for solving the problem' (Steins and Edwards, 1998). It is like a roundtable, where people are gathered with very different perspectives. When people come together in platforms, they have multi-stakeholder dialogues. A multi-stakeholder dialogue is not just a conversation, but an interactive approach to getting things done - 'a contrived situation in which a set of more or less interdependent stakeholders in a resource are identified and invited to meet and interact in a forum for conflict resolution, negotiation, social learning and collective (Warner, 2005).

The precise role of multi-stakeholder varies but, in general, it usually involves some combination of social learning, conflict resolution and collective decision making. Clearly, MSPs are not suited to all types of problems and all kinds of policy contexts. While explicitly starting from diversity, MSPs tend to 'homogenise' the problem, looking for consensual solutions by providing a conducive space for mutual understanding. Where conflicts are totally antagonistic, there is little hope for such a collaborative process. Similarly, in a situation where diversity and debate are not part of existing societal or cultural norms, MSPs are unlikely to work. Legal, political or bureaucratic concerns can also limit the space for utilising the result from negotiation and, where applicable, lessons learned. MSPs, then, are a recommended practice where the field is not dominated by a single actor and there is a basic willingness (eagerness) to communicate. Finally, The majority of platforms do not come together spontaneously. There may be a charismatic leader with good political access setting things in motion, but more usually there is an external facilitator (or facilitating organisation) who convenes and motivates the platform (Warner, 2005).

Although the current policy discourse suggests that an approach of involving multiple stakeholder groups in resource management seems unstoppable (Warner, 2005), the challenge is to raise awareness that MSPs are not a panacea nor are they necessarily pro-poor.

### **6.3 Pro-poor governance**

Conventional wisdom is that the challenge of achieving pro-poor water governance can be met by initiatives such as:

- Ensuring that the needs of the poor and, particularly poor women and children are considered when strengthening water policies and laws;
- Ensuring that the poor have access to information and play an active role in decision-making particularly when it affects them;
- Introducing pro-poor safeguards in integrated water resources management work such as in river basin planning and management, water rights and entitlements, and allocation.
- Mainstream gender and development issues in all water sector activities.

However, Cleaver et al (2006) state that the consensus on the desirability of good governance implies that there is also a consensus that it will lead to 'good outcomes'. Despite a plethora of case study documentation of good practice, this consensus masks a lack of enquiry and understanding as to how governance works out in practice and how outcomes are achieved. What processes are involved in the relationship of the various systems of governance? How do they lead to the management of water resources and the delivery of water services? What do we mean by 'good water governance' and how can we be sure that 'good governance' leads to 'good outcomes'? There is, as yet, little understanding of the importance of localisation and contextualisation in how governance systems evolve, and how these result from precedent, the environment and local practice. There is also little understanding of how water governance systems impact on the lives of individual citizens, and little effort to differentiate the impact on the lives of poor people, yet this is of particular importance in the context of the MDGs and the emphasis on the eradication of poverty

#### **6.4 Integrated water resource management**

IWRM is being promoted by many organisations, implemented in some areas and piloted in others. A huge effort involving the reform of water laws, institutions and capacity building is underway based upon the IWRM 'recipe'. However, in much of the world, it remains business as usual (Moriarty et al, 2004). A definition of IWRM that is in common usage is as follows:

*IWRM is a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (GWP, 2000).*

Three key concepts which in one form or another are present in all definitions of IWRM are: equity, efficiency and sustainability. IWRM aims:

- to promote more equitable access to water resources and the benefits that are derived from water in order to tackle poverty.
- to ensure that scarce water is used efficiently and for the greatest benefit of the greatest number of people, and
- to achieve more sustainable utilisation of water, including for a better environment.

A fourth key concept is that of *process*. IWRM is a process of getting from some existing state to some envisaged and preferred future state, by achieving commonly agreed principles or best practice in managing water through the involvement of all relevant stakeholders.

The political naivety of IWRM has been denounced by Biswas (2004) because of discrepancy between the concept of integrated management and actual political institutions and property rights. The Global Water Partnership toolbox on IWRM (2003) also states that when social actors try to put IWRM into practice, "they are faced with the apparently insurmountable difficulty of bringing together a very intricate socioeconomic reality, the legacy of the past and its ingrained practices and beliefs, and the apparently non-reconcilable conflicting demands". Yet the vagueness of the means by which holistic management might be achieved does not remove all utility from the IWRM concept nor should it be used as an excuse to regress into out-dated technocratic governance. IWRM continues to inspire many adherents amongst international agencies and, like the equally elusive concept of

“sustainability”, it has inspirational value an ideal goal or direction for improvement of water governance.

Characteristics / Concerns	Development	Utilisation	Reallocation
Approximate fraction of already flow allocated	Low (0 – 40%)	Medium (40 – 70%)	High (70 – 100%)
Dominant activity	Construction	Managing supply	Managing demand
Value of water	Low	Increasing	High
Groundwater	Development	Conjunctive use	Regulation
Pollution	Limited pollution. Pollutants are diluted	Increasing pollution. Increasing regulations	Emphasis on control and clean up
Poverty	Some improvements in access to safe water supply, irrigation and employment opportunities	Similar to “development phase” but with O&M and rehabilitation employment opportunities	High risk of deteriorating safe water supply, irrigation access and employment opportunities
Conflicts	Few	Within sector	Cross sectoral
Typical institutional tasks	Planning & implementing construction	O & M. Rehabilitation	Inter-sectoral planning. Often large complex infrastructural projects

**Table 1. Various dominant characteristics and concerns during different phases of river basin development. (After: Molden et al. 2005).**

## 6.5 Basin Closure

In most cases, water governance challenges intensify and become more complex as river basins approach closure (see Table 1). Molden et al (2005) contend that river basins pass through three phases as available resources are developed and demand outstrips available supply. Ohlsson and Turton (2000) argue that water scarcity per se is not the key issue but rather whether a society has the adaptive capacity to cope with the challenges that water scarcity poses. What is clear in many countries is that systems of water governance have been slow to recognise and adapt to challenges related to basin closure.

## 6.6 Water governance approaches, methods and tools

There is no shortage of guidelines or toolboxes that can be helpful in improving different aspects of water governance. For example:

- Guidelines for improved local water governance: <http://www.empowers.info/page/2850>
- Sustainable livelihoods toolbox: [http://www.livelihoods.org/info/info\\_toolbox.html#1](http://www.livelihoods.org/info/info_toolbox.html#1)
- GWP IWRM toolbox: <http://www.gwpforum.org/servlet/PSP?chStartupName= water>
- Tools to support transparency in local governance: <http://ww1.transparency.org/toolkits/index.html>

The challenge, however, is to adapt, pilot and mainstream these tools such that that they are brought into every day use.

## 6.7 Role of experts

Traditionally, water experts have seen their role to determine what the public, and the environment, need; to determine the best means of satisfying those needs; and then to implement that optimum

solution. If the final decision was made by politicians, and water experts tended to define any variation on their preferred solution as the result of 'politics', as inherently bad and irrational, then experts expected that the decision would be very largely based upon their analysis. The stakeholder engagement model means that instead the role of water experts becomes a supporting role, of helping the stakeholders to discover what are the implications of the different options, and to aid them in inventing new options. In turn, this raises the questions of what tools and techniques are required by the stakeholders to help them in their task (Green, 2007).

## **6.8 Democratisation of water management**

Increasingly water is a politically contested resource and, as a result, water management institutions and policies are effects of political practices (Wester et al, 2003). Thus, institutions are not seen simply as "the rules of the game" (cf. North, 1990) but as embedded in practice where they are reproduced, transformed and subverted through interactions and negotiations between actors (Cleaver, 2000).

First, there are important contrasts among developing countries in how they go about crafting new policies and implementation arrangements. On one extreme, one finds a top down, almost entirely bureaucratic approach, driven by government agencies as the major stakeholders. In these cases, the process is essentially driven by a combination of technical and economic concerns and interagency politics. There is no room in such approaches for less organized, "informal" interests, especially poor people, to participate and gain access to water. In countries characterized by large groups of voiceless poor people, such an approach is unlikely to lead to overcoming water deprivation as a central element of poverty and will see the continued dependence of the poor on the random goodwill of the state.

From a social democratic perspective, including the poor and achieving substantive stakeholder representation in river basin management is premised on the redistribution of power and resources to enable citizens to participate in decisions that affect their lives. Although few would disagree that the institutions for managing river basins should be broadly democratic, where the boundaries of consent for river basin management are drawn is a political choice, and should be treated as such in current water reforms.

## Box 2. Water-related myths

**Water harvesting is a totally benign technology.** Although water-harvesting technologies can produce huge benefits, intensive drainage line treatment when coupled with high-levels of groundwater extraction can significantly reduce water resources availability to “downstream” communities particularly in years with low rainfall. In some cases, this negative trade-off may not matter but in others severe hardship can result.

**Planting trees increases local rainfall and runoff.** The reality is that forests exert a small, almost insignificant influence on local rainfall and, notwithstanding a small number of exceptions, catchment experiments generally indicate reduced runoff from forested areas as compared to those under shorter vegetation (Calder, 2005).

**Runoff in semi-arid areas is 30-40% of annual rainfall.** Although localised runoff and runoff from individual storms can be high, annual runoff in semi-arid areas at the micro-watershed scale (or greater) tends to be less than 10% of annual rainfall.

**Aquifer are underground lakes.** The reality is that check dams and other water-harvesting structures usually only have localised impacts on groundwater levels and aquifers rarely behave like underground lakes (i.e. localised recharge in semi-arid areas does not lead to an immediate rise in groundwater levels many kilometres away).

**Water use of crops depend mainly on crop type.** A common misconception is that the daily water use of crops is directly related to the crop type and that evaporation rates are many times higher from some crops as compared to others. The reality is that, assuming that a crop is well supplied by water and has a full canopy (i.e. the crop completely shades the ground), the daily rate of evaporation is driven primarily by the meteorological conditions (e.g. radiation, wind speed, dryness of the air).

**Aquifers once depleted stay depleted.** A pessimistic view of aquifer depletion is that it is an irreversible process. The reality is that, in most cases, aquifers can be re-established or replenished as long as the balance between recharge and extraction is swung towards recharge. This can occur as a result of increased recharge, decreased extraction or both.

After (Batchelor et al, 2003)

## 6.8 Water-related myths

Much folklore and many myths remain about the role of land use and its relation to hydrology, and these hinder rational decision-making (Calder, 2005). Unfortunately, awareness campaigns designed and implemented by reputable organisations often propagate these myths. Box 2 lists a number of myths that are common in South Asia. The challenge is therefore to shift to decision making that is based on evidence and a more sound knowledge of hydrology and water ecosystems.

## 7. Research recommendations

### 7.1 Strategic assessment of biofuel-production externalities

Whilst the benefits are clear, biofuel production has many potential externalities. Research is recommended on the potential scale of these externalities and whether or not mitigation of negative externalities is feasible. Potential externalities include:

- Increased “green water<sup>1</sup>” use by biofuel plantations as compared to existing crops and/or land uses. This could lead to less “blue water” being available for downstream users, poverty reduction and/or higher value uses.

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<sup>1</sup> **Green water** - That fraction of rainfall that is stored in the soil and available for the growth of plants. **Blue water** - Surface and groundwater that is available for irrigation, urban and industrial use and environmental flows

- Reduced production of some agricultural commodities along with increased prices and absolute shortages (either short or long term). Whilst Malthusian predictions have, to date, tended to be wrong, a combination of factors could lead to major global and regional imbalances in supply of agricultural commodities. These factors include: 1) Reduced food production in temperate areas as a result of increased biofuel production; 2) Reduced food production in semi-arid areas as a result of climate change and biofuel production; 3) Reduced land availability as a result of increasing flooding and seawater intrusion; and, 4) Increased demand.
- Reduced access of poorer social groups to land (e.g. for grazing), water (e.g. for small-scale productive uses) and fuel wood. In India, for example, biofuel production is proposed on areas classified as “wasteland” but used by the poor as a source of many ecosystem services. Depriving the poor of these services will impact on poor women in particular.

## **7.2 Improved water governance.**

Action and/or empirical research is required on:

- The adaptation and uptake of approaches, methods and tools that, in the context of climate change, have the potential to lead to more integrated and accountable management of water ecosystem services particularly in basins that are approaching closure.
- Whether or not current water governance reforms (e.g. decentralised decision making, establishment of stakeholder platforms, increased transparency etc) are leading to more democratic water management and improved and more sustainable water service delivery. In particular research is needed on where the line exists between token stakeholder participation and the real sharing of power in elaborating or implementing water policies and projects and in managing water resources and water service delivery.
- Whether or not current water governance reforms and, in particular, decentralized decision making is pro-poor or whether it just provides improved opportunities for expropriation of resources by elites and/or people in positions of responsibility.



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