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# **WATER GOVERNANCE AND POVERTY WHAT WORKS FOR THE POOR?**

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Bradford Centre for International Development

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## Foreword

This report is the output of a study funded by the Department for International Development of the United Kingdom (contract no MC7). However, the findings, interpretations and conclusions expressed in the report are entirely those of the authors and should not be attributed to the Department for International Development, which does not guarantee their accuracy and can accept no responsibility for any consequences of their use.

The report is accompanied by a collection of Reflective Case Studies and two annotated bibliographies, where the detailed references in the report can be found. These materials can be accessed at [www.bradford/acad/bcid/research/wgp](http://www.bradford/acad/bcid/research/wgp)

## SUMMARY

The purpose of this research is to outline ways of identifying which mechanisms of water governance are high benefit and low cost to the poor. 'Mechanisms' are defined as the variety of social/institutional, financial and technical arrangements which shape access to water. It suggests a conceptual framework that could be used as a tool in water research to address key questions about pro-poor impacts of interventions.

Data for this research was collected through inviting practitioners to write reflective case studies of their experience, and through reviewing literature. The data was analysed through the lens of a conceptual framework developed iteratively from empirical and theoretical insights. This report consists of an overview report which elaborates the conceptual framework and supporting data, two annotated bibliographies (generated by different methods) and a data base of Reflective Case Studies (RCS).

The analytical framework draws on perspectives from water governance, institutional theory, environmental governance and drivers of change. It attempts to present the complex interlinkages of factors in water governance; a complexity which must be addressed if interventions are to have positive impacts.

In the framework we suggest four key **resources** from which the mechanisms of water governance are drawn. These are institutional resources, social structures, rights and entitlements, and financial resources. Additionally three sets of resources critically mediate water access to water *by the poor*; these being human capabilities (particularly physical embodiment), the natural environment and technology.

In the framework, resources are drawn upon in differing ways by various actors or agents (individuals, groups, the state) to construct water governance. Resources are shaped through '**mechanisms**'; particular context-specific arrangements for organising access to water governance. **Outcomes** (positive and negative) for the poor of particular arrangements for water access can be seen at a variety of levels. These include impacts on basic access to water, on livelihoods and their sustainability, on social inclusion and on political voice. Gender differences are likely to be significant at all levels of the framework.

From our analysis we identify a major area in which our understanding of how to achieve pro-poor impacts is lacking. This relates to the broad question:

- **How does community level water governance work and how can it be supported to ensure pro-poor outcomes?**

Addressing this question involves seeing governance as a socio-political process as well as a managerial one. It would therefore involve tackling two inter-related aspects of governance:

- **How can local institutional structures and processes of public decision-making be better understood?**

- **How can we integrate insights into how social relationships, norms and daily practices shape access to water by the poor?**

These questions about community governance of water point us to another area in which knowledge is lacking. This is:

- **How do we monitor the long-term impacts on the poor of water governance arrangements?**

These suggestions for research must be considered within the context of recent studies and reports on water and the millennium development goals (MDGs). Specifically we analyse them with respect to the findings from the Millennium Task Force on Water and Sanitation<sup>1</sup>, the report to DFID on Meeting the Water and Sanitation MDGs<sup>2</sup> and DFID's Scoping Study on research into water for development<sup>3</sup>. All of these studies emphasise the importance of water governance but at different levels and with a different focus. Our report is concerned with the micro level and its interaction with the meso level of service delivery. Its focus is an agenda for research to help understand how water governance can serve the needs of poor people.

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<sup>1</sup> UN Millennium Project Task Force on Water and Sanitation, 2005 Health Dignity and Development: What will it take? Swedish Water House

<sup>2</sup> DFID, April 2005, Meeting the Water and Sanitation Millennium Development Goal

<sup>3</sup> Oasis Resource Centre, April 2005, Scoping Study for Possible DFID Funding of Research into Water Development

# WATER GOVERNANCE AND POVERTY: WHAT WORKS FOR THE POOR?

## 1. Introduction

This study is concerned with water and its impact on the poor. It links a focus on MDG1 ('Eradicate extreme poverty and hunger') with IDT 10 ('Halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation') and the commitment for all nations to produce plans for integrated water resources management by 2005. There are a number of ways in which such links can be made. In our case the unifying concept is water governance, the 'systems that are in place to develop and manage water resources, and the delivery of water sources, at different levels of society' (Rogers and Hall 2003). The particular focus of this study is how water governance can be made to work for the poor and the most disadvantaged levels of society.

The study arises from an ESRC-funded seminar series, Water Governance: Challenging the Consensus, led by the Bradford Centre for International Development in association with ODI and WWF. The seminar series aims to critically explore key themes in water governance such as access, exclusion, politics, institutions, scarcity and competition for resources through a linked series of five seminars<sup>4</sup>. The launch seminar (November 2004) focussed on identifying the gaps and contradictions in the established water consensus. One of the gaps which was highlighted during these discussions was the comparative lack of detailed knowledge of the impact on the poor of many of the policies and approaches which make up the water consensus. This short study was funded by DFID as a preliminary investigation of some of the issues arising.

The study is being carried out within the context of DFID's re-examination of its strategy for water, following the publication of its overall Water Action Plan<sup>5</sup>. In addition it complements work being carried out as part of the formulation of a new central research strategy for DFID, and the recent submission of a Scoping Study for water research<sup>6</sup> ("The Scoping Study").

The remainder of the report is made up of four sections. Section 2 provides more detail on the background to the study Water Governance and Poverty: What Works for the Poor? including objectives and methodology. Section 3, the main section, proposes an analytic framework within which the issues can be systematically addressed and identifies a number of questions arising in relation to the framework's main elements. Resources for water governance are discussed in more detail in section 4. Section 5 makes some suggestions concerning the key unanswered questions and topics for research in this important area. In section 6 we locate these suggestions among the

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<sup>4</sup> [www.bradford.ac.uk/acad/bcid/seminar/water](http://www.bradford.ac.uk/acad/bcid/seminar/water)

<sup>5</sup> DFID, March 2004, Water Action Plan

<sup>6</sup> Oasis Resource Centre, April 2005, Scoping Study for Possible DFID Funding of Research into Water Development

findings and recommendations of key recent documents, including the Scoping Study, the report of the UN Millennium Project Task Force on Water and Sanitation<sup>7</sup> (“The Millennium Project Report”) and the DFID report on Meeting the Water and Sanitation Millennium Development Goal<sup>8</sup> (“The ERM Report”).

## 2. Background

The purpose of this research is to identify ‘Which ‘mechanisms’ of water governance are high benefit and low cost to the poor?’ (‘Mechanisms’ are defined as the variety of social/institutional, financial and technical arrangements which shape access to water.) The aim is to share knowledge of lessons learnt amongst a network of water professionals, feed into international and national research and policy making processes and so shape practice to ensure pro-poor water interventions.

The study methodology has centred on two inter-locking phases:

- sharing of experience of water professionals of the poverty implications of particular water interventions
- developing an analytic framework identifying the interlocking costs and benefits to the poor of different types of interventions

The first phase was undertaken through the collection and synthesis of information based on the practical experiences of the work of the water professionals associated with the ESRC seminar series described above. Members of this network were invited to share their knowledge of the poverty implications of particular water interventions in the form of reflective case study (RCS) accounts and identification of key issues.

27 reflective case studies were received, describing field experience in about 20 countries. They covered the range of water sectors (drinking water 25%, irrigation 25%, drinking water and irrigation 25%, sewage treatment/infrastructure 8%, resource management 4%, sewage, hygiene, sanitation 4%). The data was organised into two data sets per case study: one was a summary of characteristics of the intervention (location/water basin, scope, activities, approaches adopted, lessons learned etc), and the other was a narrative by the individual sharing the experience. This approach allowed the authors to identify what they perceive as the challenges, key issues and outcomes of such projects. The case studies varied in their scope and focus but several of them were very detailed and provided a wealth of information on the issues identified. In this text, material from the RCS are referenced thus [001]: the full case studies are available on the web<sup>9</sup>.

The second phase ran concurrently with phase 1. As well as incorporating insights gained from the RCS, it built on two sets of annotated bibliographic resources. The first

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<sup>7</sup> UN Millennium Project Task Force on Water and Sanitation, 2005 Health Dignity and Development: What will it take? Swedish Water House

<sup>8</sup> DFID, April 2005, Meeting the Water and Sanitation Millennium Development Goal

<sup>9</sup> [www.bradford.ac.uk/acad/bcid/research/wgp/database](http://www.bradford.ac.uk/acad/bcid/research/wgp/database)

bibliography brought together the literature and additional sources cited by the authors of the RCS. For certain of the case studies this provided a very extensive additional resource, comprising wide-ranging and detailed field knowledge. The second bibliography was based on a review of wider academic studies and 'grey' material (evaluation reports etc) from implementing agencies. This also incorporated relevant insights from research into poverty and social exclusion, environmental dynamics and impact assessment, and tried as far as possible to access material outside of the mainstream water literature. A key word list was generated for each data set: the differences in these keyword lists is a reflection of the range of issues of importance in water development.

Sources referred to in this text can be found in the bibliographies or in the list of additional references. These additional references are mainly from literature outside the water sector but which are nevertheless relevant to the key issues being discussed.

### **3. The analytical framework**

In this section we put forward a basic analytical framework of water governance which can help us understand the key factors which enable or constrain access of the poor to water. The framework arises from reviewing the experiences described in the RCS, insights from the annotated bibliographies and previous work, such as that by Rogers and Hall (2003), defining water governance in terms of political, social, economic and administrative systems. Our framework redraws some of these categories, both to reflect current priorities and concerns of the literature and practitioners in the water sector, and also to allow for more precise and specific assessment of impacts on the poor. It proposes an approach to addressing the issues of water governance and poverty, leads to the identification of gaps in knowledge which could form the basis of future research, and provides a diagnostic tool for assessing the context of pro-poor water interventions.

In constructing the framework we have also referred to insights from emerging perspectives on institutions for environmental governance (IDS 2003) on sustainable rural livelihoods (Ellis 2000) and on work illuminating understandings of chronic poverty (CPRC 2004). In addition we have explicitly drawn on DFID's drivers of change theories, and on recent work by ODI.

The Drivers of Change approach seeks to broaden understandings of change (positive and negative) initiated through development interventions beyond the purely technical. In doing this it incorporates understandings from social theory and political science; particularly the concepts of structure, institutions and agents. The conceptual framework we use in this study is compatible with a Drivers of Change approach as we also draw on similar social theory for our concepts. Thus we have '*resources*' as the material from which human interaction (and structures) are constructed. We have '*mechanisms*' (which are often institutions) as the mediators of these interactions – mechanisms are the

arrangements and processes through which interactions are transformed into outcomes (positive and negative change). In our framework actors or *agents* are recursively involved at all levels; that is the actions of individuals and groups or organisations both influence and are shaped by social resources, mechanisms and outcomes.

An additional framework for analysing sectoral and policy arenas is set out in a report from ODI<sup>10</sup>. This draws on the concepts inherent to Drivers of Change (structural features, institutions and agents) and Moore's framework for the analysis of political systems. It expands these categories into sets of questions to be asked in analysing policy interactions in a country or sector. Many of the categories of questions identified in this framework (territoriality, resource dependence, social structure, constitutionality, institutionalism, government capacity ideologies and power relations) coincide with the categories of resources of our conceptual framework.

In addition to the similar concepts used, there are some key commonalities between the three frameworks:

- All stress the importance of deep and rich understandings of context, with the implication that 'one size does not fit all' in terms of policy prescription. As analytical tools they are therefore concerned with questions rather than findings, which may differ considerably across time and space.
- All assume that human interaction and change is dynamic over time, and may have both positive *and negative* outcomes. This assumption challenges simplistic models of development intervention which take for granted an uncomplicated relationship between problem identification, intervention and positive outcome.
- The reports all stress the importance of institutions, both formal and informal, as a focus for analysis. The Drivers of Change and ODI reports see institutions as the key to securing medium term change, whereas this report identifies 'mechanisms' (including institutions) as critical in shaping positive and negative outcomes for the poor.
- All three studies highlight the need to recognise political factors (both formal and informal relationships) in shaping processes and outcomes.

We recognise the importance of both the DfID Drivers of Change and the ODI framework, particularly in analysing policy processes at the national and sectoral levels. However, we suggest that the framework put forward in this report has some further strengths. It has a specific concern with equity and therefore it explicitly identifies categories for judging outcomes on the *poor* (relating to their access to water, the impact on their livelihoods, social inclusion or exclusion and political voice or empowerment). These could provide the basis for the development of indicators of the impact of water interventions. Additionally, the data included in our report, which explicitly focuses on micro- level processes, illustrates the variability in the working out of processes of water governance in different contexts.

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<sup>10</sup> Overseas Development Institute, 2005, An Analytical Framework for Understanding the Political Economy of Sectors and Policy Arenas

Our basic analytical framework is presented in figure 1. In it, we suggest four key resources from which the mechanisms of water governance are drawn:

- Institutional resources
- Social resources
- Rights and entitlements
- Financial resources

Here we understand ‘resources’ to be the material and non–material properties from which human governance of water is constructed (Giddens 1984)<sup>11</sup> As such the concept of ‘resources’ encompasses relationships of power, structures of inequality and systems of resource allocation. The concept is intended to imply a socially dynamic (rather than more static technical view) of water governance; the idea of power relations and processes is built into it.

It is clear that there is considerable overlap between these categories of resources, as there is between the original systems of Rogers and Hall and others. This overlap, which is a natural consequence of the complexity of the sector, must be accepted and indeed built on if progress is to be made. One of the outcomes of this work has been to demonstrate the inter-linkages between the various dimensions, the context-specific nature of many of the issues being addressed, and the dangers of looking for bullet-point responses of general applicability.

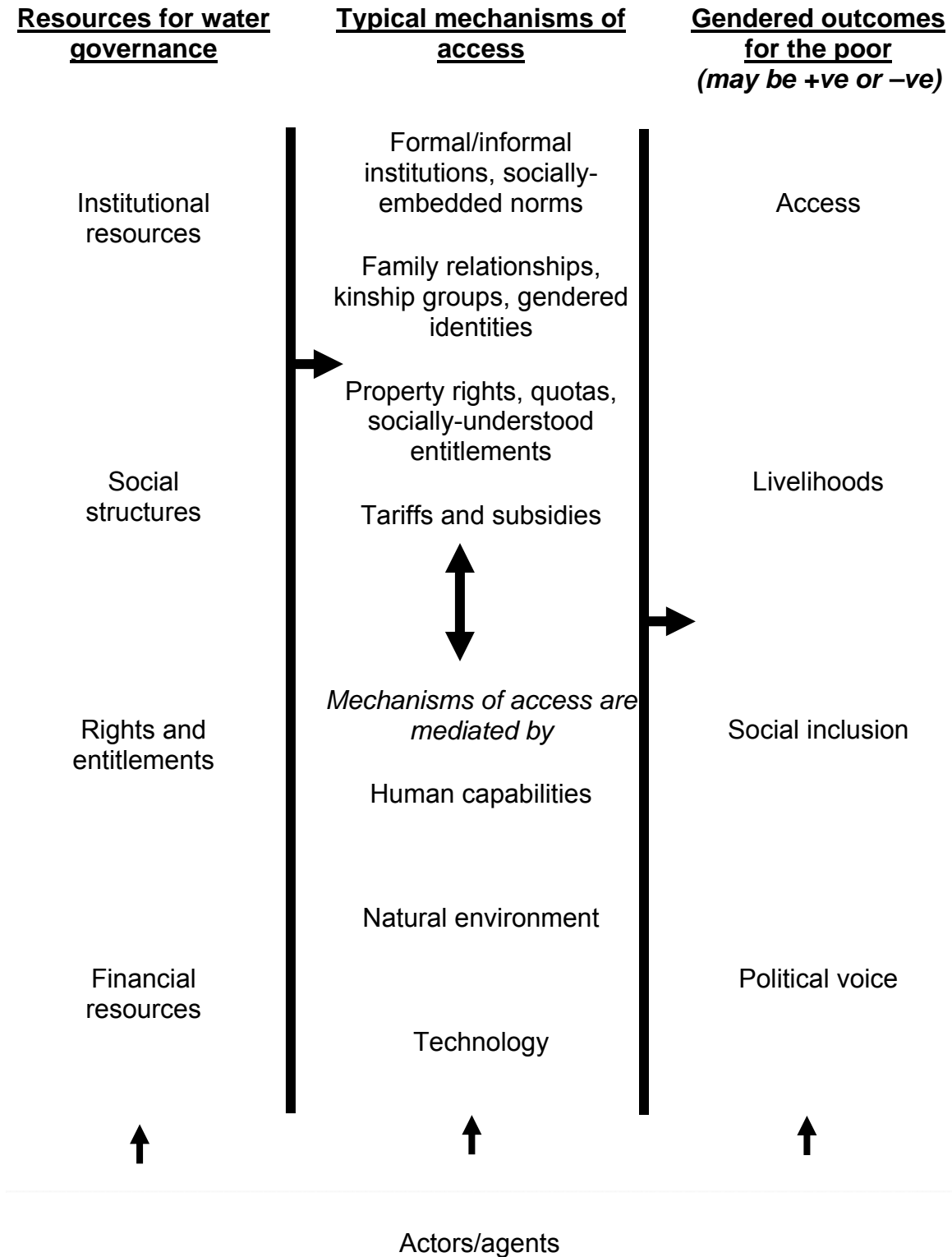
In this framework resources are drawn upon in differing ways by various actors (individuals, groups, the state) to construct water governance. Tangibly, resources are shaped and mediated through ‘mechanisms’; particular context-specific arrangements for organising access to water governance. So, for example, specific mechanisms drawing on *social resources* include arrangements to access water through family relationships, kinship groups or gendered identities. Mechanisms drawing on the *resources of rights and empowerment* include legislated minimum quantities of water, property rights, quotas for representation as well as socially understood entitlements of citizens in communities to claim access to water.

*Financial resources* are transformed into water access arrangements through mechanisms such as tariffs and subsidies, whilst *institutional resources* manifest through a variety of mechanisms varying from formalised bureaucratic Water User Associations to the more socially embedded norms and water-use practices which shape the human-water interface.

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<sup>11</sup> Giddens, in his theory of structuration, distinguishes between ‘allocative’ and ‘authoritative’ resources. Allocative resources are ‘Material resources involved in the generation of power, including the natural environment and physical artefacts; allocative resources derive from human dominion over nature’. By contrast, authoritative resources are the ‘Non-material resources involved in the generation of power, deriving from the capability of harnessing the activities of human beings; authoritative resources result from the dominion of some actors over others’.

**Figure 1. The analytical framework**



Mechanisms as understood in this framework are not fixed arrangements for water delivery but rather arrangements which can be negotiated and which are likely to change over time. (This research has highlighted how little we know of the content of these mechanisms; the processes by which water access is negotiated and shaped within various governance arrangements)

Whilst the framework provides the context for water governance in general, we have identified three additional sets of resources, command over which critically shapes water access *by the poor*. These dimensions of the interface between water and poverty permeate many of the water access mechanisms. They are:

- Human capabilities
- Natural environment
- Technology

Human capabilities relate the ability of individuals to physically access water, and to participate in water management structures. People living in persistent poverty commonly experience constraints relating to poor education, illiteracy, bad health, inadequate nutrition (CPRC 2004). Such constraints can have severe detrimental impact on their engagement with mechanisms for water access, especially those which require significant labour, or physical presence. Later in this report we will pursue two particularly relevant aspects of such deprivation; the burden of water work on the poor and the interlocking of physical disability with other aspects of deprivation.

The natural environment shapes water access of the poor in two major ways. First geo-physical features of the environment (availability of ground or surface water, rainfall, scarcity and drought) provide the context within which particular mechanisms of water access work. For example in an arid area with intense seasonal droughts, water rationing mechanisms will be of great significance to the poor securing basic supplies. Secondly spatial dimensions of poverty incorporate ecological, political and economic disadvantage (CPRC 2004) and are significant in shaping water access. People living in ecologically fragile or agriculturally marginal areas, often remote from governments and markets, are likely to access water through very different mechanisms than those living in more favoured regions.

The technology through which water is supplied also shapes the mechanisms of governance in various ways. Particular technology choices will have implications for social organisation, institutional arrangements and financial contributions. Moreover, rights and access to other resources are often negotiated around claims to 'ownership' of technology. Technology is therefore intricately linked with relations of power. The sinking of a hand dug well fitted with a rope and bucket pump in the village headman's compound will have very different ramifications for the mechanisms of water governance than the large-scale piped supply serving a number of communities and run by a semi-professional water user association.

Let us return to the proposed framework for understanding water governance and poverty. We are interested to see how the resources of governance, mediated both by mechanisms shaping access, and the three overarching dimensions of the water/poverty interface, lead to outcomes that are beneficial or detrimental to the poor. Outcomes can be seen at a variety of levels. They are seen in terms of basic access (quantity, quality and timing of water availability). They are seen in terms of livelihoods, how the poor can use water to support and improve their status (for example, through development of alternative or supplementary income streams). They are also seen in terms of social relations and processes, for example in latent or overt conflicts that arise over access and instances of inclusion and exclusion. Finally they evolve at political levels, as structures of power and influence are changed through the working out of these processes, and poor people can gain political voice. In this respect, governance of water, a basic and essential resource in which all people are stakeholders, is often seen as a key to much wider issues of governance and political development.

The final component of our framework comprises the actors and agents who interact at all points within it. They shape the resources for water governance, they mediate the mechanisms through which access is gained, and they influence and are in turn influenced by the outcomes, through a range of gender-specific processes.

#### **4. Resources for Water Governance**

The dimensions of resources, mechanisms and outcomes encompass our framework for understanding the linkages between water governance and poverty. In this section we discuss resources for water governance in more detail.

##### **Institutional resources**

We use here the concept of institutional resources to refer both to the organisational setting for the delivery of water services and to the commonly accepted rules, practices and norms which shape the ways in which poor people access water (We therefore draw on both 'mainstream' and 'emerging' perspectives on theorising institutions, IDS 2003). Much policy attention focuses on macro level aspects of the institutional framework, such as the role of central government, and the right balance to be struck in public/private partnerships (Castro 2005, PRINWASS 2004). However day-to-day access for the poor is determined at the meso (district) or micro (village) level, where the important nexus between state-led democratisation of water resources management and bottom-up grassroots movements evolves (Schreiner et al, 2004). It is at these levels, also, that the processes of decentralisation take place in practice, with their important outcomes in terms of power and access for individual citizens. Mtisi and Nicol (2003) explicitly incorporate issues of decentralisation into their analysis of the situation in Zimbabwe, asking whether local governance of water resources is necessarily 'good' governance. In terms of institutional frameworks, therefore, it is on the meso and micro levels that attention should be focussed to address the needs of the poor. This level of analysis has been dubbed the 'messy middle' (IDS 2003) where there is a complex

overlap of global and local factors, of community-led and state directed interventions, of formal and informal arrangements. Indeed the reflective case studies highlight the need to better understand the processes of negotiation within and around institutions, rather than simply their organisational form.

At the meso level, the emphasis is particularly on local government (districts and municipalities) and on large (international) NGOs. Local government, if it is functioning well, can provide or facilitate water for all, including the poor, regardless of status, class, and the other constraints related to command over resources noted above. It provides an appropriate scale at which to manage a common pool resource for which each individual has a basic need, but where it is also essential to safeguard common interests. If water as a basic human right is to be provided through the state, then the mechanism of delivering that right is likely to operate through the local government level (Mehta and Canal, 2004), involving significant issues of citizenship and clientilism (Duni et al 2005). For the poor, the problem remains as to how they exercise their rights and their citizenship, given the physical and other constraints under which they are already operating. For example, citizens' cards are being discussed as a practical method by which citizens may exercise their rights and call governments to account in the provision of services (Benn 2005). However the poor may find it difficult to engage with citizens' cards for the reasons of literacy, communication, accessibility and time which often constrain their involvement in public action. Moreover, even where the important role of the public sector at the meso level is acknowledged, in practice these levels of government often show problems of capacity and performance, (particularly against financial and technical indicators) which means that they fall short of expectation in delivering services to the poor.

NGOs are also key institutions at the meso level, particularly those with international links. In theory NGOs can support and sustain actions which increase access of the poor to water, where their focus and expertise in targeting the poor can be brought into play, and where their freedom to act outside the constraints set by government can be an asset. There are many examples of this in practice [Waman 007, Abass 011] (Tukai 2005, Colin 2004 and Anand 2004), but the practice also raises familiar developmental issues. These concern the impact of 'project approaches' which are based on the provision of earmarked resources outside the main framework of sustainable funding streams, and the trade-off faced by such organisations between service delivery to meet pre-set targets and capacity-building with uncertain outcomes. There are also difficulties created by the problems of co-ordinating the different approaches of government, donor-funded projects and NGOs (these difficulties are discussed in ODI 2004), and the difficulties noted by Ryan (2004) in scaling-up approaches which are successful at the local level in order to meet the needs of the large numbers of people without appropriate water and sanitation services.

At the local level there is considerable focus on the role of community organisations and self-help groups in making water accessible. In the absence of functioning local authorities, the poor must look to such local groups to provide services, because of their close physical and institutional 'proximity'. Howarth [005] gives examples of the way

local institutions (Water Users Associations) can be used to ensure fair distribution of irrigation water, though he also notes that it is a 'challenge to recruit and retain users from poor households in these associations'. More importantly, many authors and practitioners point out that such local arrangements often lock in mechanisms of exclusion based on existing power relations. Toner [001] describes this situation in Uchira in Tanzania while Tod [012] provides considerable detail on the mechanisms of exclusion operating in Pakistan, resulting from the actions of pre-existing institutions. This case illustrates how community organisations can be faction-ridden, gender-segregated and exclusionary. As a result, the poor take individual action based on patron-client relations rather than collective action to circumvent these mechanisms of exclusion. In the community-based micro-lift irrigation projects in Nepal described by Pani [013], the response has been to work with 'ethnically-homogeneous' groups, thus (presumably) avoiding at least one basis on which mechanisms of exclusion operate.

Community organisations can also suffer from considerable constraints on their capacity to govern water, especially when they are locked into spatial disadvantage and resource poverty. Recognition of the limits of community management is therefore essential to understanding what kind of governance arrangements are likely to succeed for the poor (Gonzalez de la Rocha 2003, Cleaver 1999)

Better insights into the norms of collective action, participation and resource distribution are also required to increase our understanding of institutional inclusion and exclusion. For example community based definitions of who is a 'rightful' user of water, who is exempt from payment, who is a 'respected' decision-maker, and gendered divisions of water work can all shape the allocation of water through local institutions (Tukai 2005, SMUWC 2001 ).

There is a growing realisation of the importance of community-based workers in mediating access of the poor to water through local-level groups. Such workers can act either to increase or reduce mechanisms of exclusion, depending on the complex mix of attitudes and processes which provide the context for their activities. Many practitioners have noted the importance of such community-based workers [Howarth 005, Pani et al 013] but without fully addressing these difficult issues. A better understanding of their roles and impacts forms the main objective of research currently being undertaken at the University of Bradford with partners from South Africa and Tanzania<sup>12</sup> .

A specific constraint to governance at the local level arises from the need to balance competing demands for water, both locally and at the larger scale (Anand 2004). Integrated water resources management is often proposed as the appropriate governance response to dealing with this problem but there is as yet little understanding of how this can be implemented at the local level and at the same time work to the benefit of the poor. Much experience of local level institutions concerned with water arises from single-purpose institutions (typically, for water supply or irrigation). What experience does exist for integrated institutions is not encouraging. For example,

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<sup>12</sup> Understanding Interlinkages in Community Driven Development: Individuals, Community Workers and Institutions.

attempts in Tanzania to create a local-level apex institution for this purpose met with only partial success [Franks 016]. The poor, in particular, were sceptical of its possible benefits and concerned that it would simply provide further opportunities for expropriation of resources by individuals in positions of responsibility.

#### *Key questions*

- *Is local water governance good governance for the poor?*
- *How are the voices of the poor heard in institutional arrangements?*
- *How can local level institutional arrangements be scaled up and still retain a focus on poverty?*
- *Which institutions and decision-making processes are low cost and high benefit for the poor*
- *How can community level water governance be supported to secure access to the poor?*
- *What is the role of conflict resolution mechanisms and negotiation support in securing access?*

#### **Social resources; structures of exclusion and power**

Many of the case studies and much of the literature reviewed here call for increased knowledge of how social structures and power relationships work to exclude the poorest from accessing water at local level. Socio-political resources are critical to the operation of local institutions. It is in the Water User Associations and Village Assemblies that rights and norms of access may be contested and upheld, conflicts and competition resolved. Maganga has demonstrated for Tanzania how dual systems of 'modern' and 'customary' institutions for resource management draw on overlapping understandings of social norms and the workings of social structure in their decision making (Maganga 2002).

A key question here is how do we understand vulnerability and marginalisation in respect to water? Does poverty determine access to water, or are other inequalities (gender, ethnicity, caste etc) more significant? How do we understand access and the uneven distribution of benefits *within* communities and households? (Aiga and Umenai 2002, Lankford 2005) And how effective are participatory demand responsive approaches in actually reflecting what the poorest (who may lack knowledge) actually want or need?

Broad social categorisation is inadequate in understanding the micro-dynamics of access to water. For example, despite numerous claims in policy for the desirability of including women in water management, Joshi illustrates how women cannot necessarily be assumed to represent the interests of other women (Joshi et al 2003). In her example, projects in India promoted the inclusion of women on water management structures, but these wealthy, higher caste women were instrumental in reinforcing the exclusion of lower caste women from access to water. Generation interacts with gender (Beall 2002) and intra-household dimensions of power and inequality also shape

impacts; older women in a household may command the labour of younger women to fetch water and yet such young women are unlikely to be fully represented (or heard) in management structures (Dikito-Wachtmeister 2000). Where dimensions of inequality overlap and interact, simple analyses are not useful.

Additionally some marginalised people remain all but invisible to those designing interventions and are rarely specifically targeted. There is little evidence that their needs and rights are being taken into account in mainstream water services and development programmes. Abass [011], for example, mentions that, despite a focus on the poor and vulnerable, people with disabilities cannot use some of the wells provided. There are also indications of the marginalisation of disabled people in the development discourse. Existing literature on disabled people in low-income communities is very limited in scope. There is a tendency to omit issues related to water and sanitation and, when practical solutions to problems of access are actually detailed, these tend to be built on an individual problem-solving approach rather than on more generalised experience about effective mechanisms of assistance from which wider lessons can be drawn, guidelines developed and good practice replicated. It is particularly telling that a call by WEDC for information about affordable aids, methodologies and structures used by organisations and individuals that assist physically disabled people produced few and discouraging results (Jones, Parker and Reed 2002).

The complexity of relationships of marginalisation raises the question of how to rank different dimensions of vulnerability when targeting interventions. There seems to be some puzzlement amongst practitioners as to how to do this. Existing criteria commonly used for identifying vulnerability include land ownership and income; but the evidence shows that neither of these are entirely satisfactory indicators of water access. For example in the Usangu basin Tanzania many poor people commanded land but were unable, due to labour and cash constraints, to access irrigation water, whilst pastoralists with significant assets were nonetheless politically excluded from decision-making about water (SMUWC 2001). One reflective practitioner documents attempts to devise ranking criteria for the urban poor [Swai 010] where different dimensions of vulnerability are allocated weights to derive a vulnerability score for each household. Local level studies of decision-making describe communities applying ranking criteria themselves by exempting certain members from payment of water fees, from labour contributions or management obligations.

The need to link the realisation of access to water to the challenging of power structures, reconfiguring social relationships and re-shaping institutions renders it a complex enterprise. For example, work on women's rights to access land and water resources suggests that they may have strong preferences for securing these through (inequitable) relationships based on patronage, kinship or marriage (Zwarteveen and Neupane 1996, Rao 2003). Additionally studies of livelihoods and village level politics show how retaining social stability and the goodwill of the powerful may be seen as a preferable strategy to the poor and marginalised than a confrontational assertion of equal rights. (Masaki 2004, Joshi 2003, Williams 2004). Understanding of how people secure their livelihoods and access resources within inequitable relationships is apparently little

incorporated into water interventions. An exception is one reflective practitioner [Tod 012] who illustrates how access to water in Pakistan was mediated through Men's Community Organisations and Women's Community Organisations. Those unable to pay for water were either excluded (by the men) or allowed to access water in return for labour for wealthier women. Additionally Tukai (2005) illustrates how, for a pastoral community in Tanzania, gender-based dimensions of inequality in accessing water were reinforced through a participatory project, despite some success in including women in decision-making. This project was moderately successful in terms of scheme management, operation, maintenance, and raising of funds, pointing to the tensions between securing sustainability of water delivery with equity.

#### *Key questions*

- *How do we understand vulnerability in respect to water (How does poverty overlap with other dimensions of disadvantage?)*
- *How do we weight different dimensions of vulnerability when targeting water interventions?*
- *How can we assess the uneven distribution of benefits within households and communities?*
- *How can we balance the need to secure operational sustainability of water supplies with equity of benefits?*

### **The Resources of Rights and Entitlements**

The broader concern with rights-based approaches in development is reflected as an emerging issue in understanding access to water. Rights-based approaches appear relevant to water in their attempts to link the micro-politics of community participation to good governance and the workings of the state (Hickey and Mohan 2004), and in moving beyond technical/managerial approaches to service delivery to understand community/participatory approaches as struggles for power and resources (Pettit and Wheeler 2005, Cornwall and Nyamu-Musemi 2005). Specifically there is a concern with how rights based approaches can help to challenge power structures, to forward emancipatory models of citizenship and with how institutions need to be reshaped to make them responsive and accountable (Blackburn, Brocklesbury, Crawford and Holland 2005) One common emerging theme is that achieving the MDG's in water cannot be achieved by regarding them as technical targets, but will require adopting a rights-based approach concerned with reducing poverty and injustice (Shetty 2005).

The work reviewed for this study raises a number of unresolved questions about the application of rights based approaches to water. What does equity in water look like? Should water rights encompass the basic minimum required for drinking and basic hygiene should they relate to sufficient water to secure sustainable livelihoods? (ODI 2005) How are water rights realised, and given the nature of water resources (fugitive, seasonal, mediated by technology), how manageable are they? How can we understand the web of rights and obligations within which the poor access water? And how can water rights be monitored and guaranteed for all?

The evidence for beneficial effects of the formalisation of rights, through national legislation which codifies the rights to minimum quantities of water, or formalised tenure and abstraction arrangements, is mixed. The example of South Africa is both hailed as a good example of legislating for minimum standards and a cautionary tale of the complexity of realising rights-based approaches in situations of gross social inequity (Mehta and Ntshona 2004). Additionally Mehta and Ntshona point to the difficulties of implementing an equity focussed rights based approach when related policies are based on contradictory market principles. Case studies from Tanzania researching the formalising of water rights and management [Lankford 014] (van Koppen, Sokile, Habitu, Lankford, Mahoo, and Yanda 2004) detail a failure to reflect the seasonal nature of demand, to monitor water abstracted and for government to guarantee the rights of the marginalised groups. Additional tensions between the workings of formal and informal institutions, and between the rights of a minority of large-scale users compared to the majority of small scale rural users are highlighted (Hendricks 2002). In these cases it is claimed that formalisation of rights can reinforce existing social inequities and exacerbate poverty. Pani [013] illustrates how local interpretations of rights can be complex to understand and how different groups of stakeholders can have differing concepts of rights. Managerial mechanisms (such as coupons) for gaining access to water may be well understood from some cultural perspectives but not by others, even in the same locality .

Access to water, and the claiming of water rights is often mediated through institutions. However, our research indicates that there is still insufficient understanding of the institutional channels through which rights are accessed, and of the outcomes resulting from different institutional forms and processes. This requires further attention as recent academic work documents the ways in which rural people secure their livelihoods through multiple institutional channels. Claims to resources are made and enforced through both 'formal' (local government, Water User Associations, tenure arrangements) and 'informal' (customary practices, social relationships, norms of use and access). Evidence suggests that the poor and oppressed are less able to utilise a variety of institutional channels and therefore suffer double marginalisation; remaining vulnerable and resource poor (Odgaard 2002, Benjaminsen and Lund 2002, Cleaver 2005). Odgaard and Cleaver particularly illustrate how such established systems serve to reproduce gendered disadvantage in asserting rights and accessing resources.

The role of the state and other external agents in intervening to secure equitable processes at local level is a significant issue. Boelens and Hoogendam (2002) looking at a number of case studies from the Andes identify support to 'legitimate' authorities as crucial to making rights real for poor people whilst Schreiner, Mhapi and van Koppen (2004) suggest that the state needs to strongly target interventions to redress inequalities in access to water. Practitioner accounts suggest the need for strong external intervention at local level to ensure equitable operation of institutions to ensure minimum standards of access to water of the poor, and to ameliorate the effects of local water governance being dominated by elites [Toner 001]. However, Masaki, writing of community based flood control in Nepal, sees the explicit promotion of the rights of the

poor to participate in village decision-making and resource management as paradoxical, in that it requires the marginalised to engage in governance structures dominated and defined by the rich and powerful (Masaki 2005).

A rights based approach suggests the need to empower citizens to become more effective at making and sustaining their claims to resources (Hickey and Mohan (2004)) So how is such 'active citizenship' to be realised? Duni et al (2005) detail the use of para-legal advocacy to assist pastoralists in Cameroon in claiming and accessing their rights. However, the programme's explicit engagement with power structures (including intra-community ethnic and gender differences ) resulted in both strengths and weaknesses; fostering the idea of inclusive citizenship but relying on confrontational approaches to secure the associated rights. Other recent work also focuses on the role of community advocates as a bridge between minority groups, the poor and service providers (Picard and Davis, 2005). Although an interesting approach, advocacy interventions appear to be a little used strategy in securing water rights. Only one of our practitioner case studies specifies the use of advocacy and empowerment techniques to secure rights [Feranandes 023] although other cases relating to extending user education and empowerment [Howarth 005] (Shrestha 2004, Jose 2003, Khosla and Pearl 2003, Ponzi 2004 and Qutoriano 2004) could be classified within a rights based approach.

Additionally, practitioner studies mention the use of local knowledge in wealth ranking exercises [Swai 010, Waman 007] and one study of urban infrastructure upgrading proposes that community groups should only be supported to develop infrastructure through loan funds if they demonstrate how they will support the most vulnerable [Mitlin 025]. However, we know very little about such locally devised perceptions of vulnerability and capability, and whether they ameliorate or reinforce exclusion.

Recent research on chronic poverty points to a number of factors which constrain the poor in securing their livelihoods. These include the high opportunity costs of participation for the poor (they cannot afford to lose income generating time to go to meetings; when they do they cannot speak or are not heard), the disproportionate physical burdens on them (they are often under-nourished and energy deficient and often travel further to access 'free' resources), and their lack of material assets (cash, labour saving technology) Additionally recent research points to the lack of social capital of the poor; their social networks are severely curtailed, relations with wealthier family members unreliable, and their engagement in public life minimal and with little positive effect on their lives (CPRC 2004, World Development June 2005, Grant et al 2004). Such constraints are immediately relevant to a consideration of how the poor may secure water, as many water interventions are based on assumptions about the 'social' nature of community and the ability of all members to be involved in water management in some way. Even where interventions are explicitly designed to target the poor, such as in the case of Water User Schools in Nepal [Howarth 006] the costs to them of participating mean that they are consistently under-represented.

If, as several of these studies suggest, we need to know more about the impact of water interventions on poor households, over the longer term, then what tools are available for monitoring this and for analysing the impact of social and political structures on water interventions? There are calls for longer, more in-depth context rich studies analysing a number of interrelated dimensions of water access (Crow and Sultana 2002) [Mitlin 025] while others ask for syntheses of a number of case studies that can be thought to have more general relevance. Frameworks for analysing power and social dimensions of exclusion already exist; gender analysis frameworks are noted as particularly useful here, with the potential for being adapted to wider uses [Salongo 008] (UN 2005)

#### *Key questions*

- *What should rights to basic water mean?*
- *How does a rights –based approach complement or contradict other water policies ( such as market based approaches)?*
- *How can water rights be monitored and guaranteed?*
- *Is there a need to challenge wider structures of discrimination in order to secure water rights for the poor?*
- *How are rights to water locally understood, and how do poor people negotiate these?*
- *Can advocacy approaches be adapted to help secure the water rights of the poor?*

#### **Financial resources**

Water is not a free good. There are therefore important financial dimensions of governance which directly affect the ability of the poor to gain access. These dimensions are worked out within the overall financial and economic framework of institutions delivering water services. A considerable amount is now written on these aspects (Smith, 2004), and there are certain key ideas which form the main framework. There is, as a starting point, a general agreement that water institutions at whatever level should at the very least be able to cover their operation and maintenance costs through some form of payment for their services. In addition it is generally recommended that institutions should aim to cover their capital investment charges. The ability to cover the 'full supply costs' of capital (connection) charges and O&M (recurrent) costs forms the basis of 'financial sustainability'. Cost recovery is necessary if water services are to be operated on a sustainable and reliable basis (Frans and Soussan, 2004).

The general principle of the need to make water delivery financially sustainable can either support or constrain the ability of the poor to gain access. For the poor, both gaining and retaining access is important. However, as the emphasis tends to be on the unserved population, and the unserved poor, the first point to be addressed is how the poor gain access (get connected). Issues of affordability are of course important here, but the main focus is on what assists or prevents the poor in meeting the capital charges of access or connection. A variety of possible mechanisms exist. Those based on financial payment for capital charges may involve either subsidies [Abass 011], payment by instalments [Swai 010] or some form of credit or loans. Kouassi-Komlan

[003] describes a successful approach in Abidjan based on a micro-credit system which resulted in a significant increase in piped connections amongst poor households which were previously mainly relying on water vendors. These approaches have also been piloted successfully in Pakistan, notably through the Orangi Scheme in Karachi and more recently in Faisalabad [Mitlin 025]. If the costs of establishing access or connection are not met through financial payment, there is the alternative approach of payment through contribution in kind, either labour or materials. This approach, too, is commonly applied, often within the general context of increasing 'participation' and 'ownership'. Whilst it has had its successes, there is also a considerable amount of criticism of such approaches. They may involve a significant amount of transaction costs (in recording, valuing and managing contributions) and are often seen as a covert way of passing costs to the poor. In addition, their success in increasing 'participation' is questionable (Escamilla 2003). Caution should also be exercised in seeing micro-credit and self-help groups as the answer to affordability of water for the poor. There is now a substantial amount of literature which details how micro-credit groups weed out the poorer members (the poor re-payers) over time. Indeed one discussion in the practitioner cases of such groups raises questions about their impact and suggests we need to know much more about who takes the decisions within them, who holds the power [Pani 013].

Once connection or access has been established, the poor need to develop ways to meet the costs of staying connected. For informal or local supplies these costs come in the form of the time and labour which is needed for water collection, and it may be difficult to develop financial mechanisms to help to meet these. For formal systems there will be O&M charges to be met (whether the supplier is public, private or a self-help group). There may be some form of 'free provision', as adopted in South Africa, in which consumers have a basic provision made free of charge to them (however, it has a cost to the providing institution and this charge must be met through some mechanism). Alternatively all consumers may be charged, and the poor are given assistance to meet the charges through coupons or subsidies. Approaches along these lines are described in Tanzania [Swai 010] and Zambia.

While the need to make water services financially sustainable is now generally accepted, there is considerable debate around the concept of water as an economic good. The economic cost of water is made up of its financial costs (the capital charges and O&M costs discussed above) together with its opportunity costs (values foregone by other users) and economic externalities. It is generally accepted that the poor should not have to pay the full economic cost of water, but the concept of water as an economic good provides further mechanisms which constrain or support access by the poor. In a variety of ways, water can provide employment opportunities which can increase income for the poor. These include schemes such as Work for Water in South Africa (in which petty contractors are paid to clear upper catchments of alien vegetation to increase flows downstream), as well as the range of opportunities for paid labour provided by irrigated agriculture (Smith, 2004). In the appropriate conditions, water additionally provides opportunities for the development of micro-level businesses and markets which the poor may be able to enter. Water vending is an obvious example. Jaglin (2002) notes that in

Sub-Saharan Africa, the poor who are receiving subsidised supplies are actively encouraged to sell-on part of their supply as a way of developing an alternative income stream. Other examples supporting income generation include micro-enterprises related to the supply chain for water delivery (Jose 2003) as well as markets for artisanal aquaculture (Ahmed and Lorica 2002).

However, poor people are often disadvantaged by market mechanisms and face high opportunity costs of securing access to water in a market economy (UN 2005). Whilst women are commonly thought to have greater willingness to pay for water (to alleviate their water fetching burden) payment systems can often disproportionately disadvantage them as they command lower wages for paid work (including casual work), have less command over productive assets and cash in the household and often suffer physical and temporal restrictions on their access to markets (Cleaver and Elson 1995). A project in India which partially paid community members for water work reproduced inequalities of wealth and gender. Richer households did not need the income from the water work and left this to poorer neighbours, so reaping the benefits of the infrastructure constructed, with little contribution to its cost. Men were reluctant to work for the half of minimum daily wage offered by the project, but were quite happy to send their womenfolk to do so (Tod et al 2003)

Discussions round the financing of water services for the poor are often characterised in terms of a trade-off between equity (making water available for all) and efficiency (minimising resource use for delivering water services) (Jaglin 2002, Mehta and Canal 2004). A further aspect of this trade-off is the debate over the relative merits of public or private provision of services, and the desirability, or otherwise, of deriving private profit from delivery of a basic service. For the poor, however, the key trade-offs are better characterised as between equity, cost and sustainability – how can water be made widely accessible, at an affordable cost, on a sustainable basis. These trade-offs require consideration of financial mechanisms for assisting the poor, either through some form of subsidies (Rouse et al 2003) or through some form of free or life-line tariff. For example, Akatch and Kasuki (2002) describe the role of the social financing of public services and infrastructure in Kibera, Kenya, suggesting that taxes on the rich should be used to subsidize infrastructure costs of the poor. In other cases, there is free supply of a lifeline tariff. While these avoid the practical and social difficulties of establishing who should be eligible for subsidies, they do not address the important issues of operational and financial sustainability. Robinson (2002) notes that in Zambia zero or low tariffs have exacerbated inequalities by embedding the principle of low tariffs, even for rich consumers. The result is that the water utility is unable to maintain supplies even to its existing consumers, let alone to provide access for new and poorer consumers.

#### *Key questions*

- *What are the long term effects of payments on the access to water and livelihoods of poor households?*
- *What is the trade-off between cost, sustainability and equity of water supplies?*

- *What are the relative merits of public and private arrangements for water services for the poor?*
- *What is the proper role of social funding in securing access for the poor?*
- *How can better assessments of vulnerability be made to inform tariff setting?*

## **Human capabilities**

Here we focus on the enabling and constraining aspects of poor people's physical embodiment, to illustrate how this shapes their engagement with water access mechanisms. We have already discussed above disability as a dimension of physical capability which constrains access to water. Here we explore another: the heavy burden of water work on the poor.

We know that poor people often suffer poor nutrition which has serious long term effects on their physical and mental health, and contributes to perpetuating their poverty. Under-nourished people are often stunted, an effect that cannot be reversed, and suffer increased morbidity (CPRC 2004). Additionally we know that poor people are highly reliant on their own labour in securing livelihoods (Narayan et al 2000) and there are a number of ways in which this makes them vulnerable to exclusion from water.

Poor people commonly access water at some distance from their households, and headload water with detrimental impacts on their health. The majority of water carriers are women and children who can suffer spinal deformities and physical ailments as a result (UN 2005). The burden of carrying water is dramatically gendered. Studies show that where men and boys collect water they rarely headload but transport it with the help of technology and draught power; wheelbarrows, carts, bicycles and donkeys. People living in situations of extreme inequality may not even command their own labour; for example women, children and those tied into relation of patronage to rich neighbours take on additional burdens of water work for others. Very little attention is currently paid in the design and implementation of water supplies to improving methods of *transporting* (rather than just supplying) water.

In demand-responsive approaches, poor communities and households are only able to access the water supplies that they are able to pay for and maintain. This can mean that wealthy consumers connect to convenient household supplies, whilst poor people have to make do with less convenient standposts and other wells, with significant implications for their burden of collection. Additionally, participatory approaches to implementation often require labour contributions (in addition or instead of cash) to constructing and maintaining new supplies. For many poor people, the opportunity costs as well as the physical costs of providing this labour are high. As the poor can be highly reliant on paid casual labour to secure their daily needs, collective work on the water supply may mean the loss of a day's livelihood. And yet non-contribution can lead to their subsequent exclusion or marginalisation from it [Mitlin 025] (Jaglin 2002).

Nutritional deprivation, high levels of morbidity and dependency and heavy burdens of everyday livelihoods tasks also constrain the ways in which people engage with institutional and decision-making structures. One study of the chronically poor in Tanzania found that the poorest people did not participate in decision making processes outside their own hamlets (a group of around ten households). Even getting to the centre of the village would involve significant extra expenditure of energy, time and possibly cash, with little prospect of the 'voices of the poor' being heard once they got there (Cleaver 2005).

#### *Key questions*

- *How does physical embodiment enable/constrain access to water?*
- *What are the implications of water work on the poor, and how is their labour commanded?*
- *How can technology ease the physical burden of water work on the poor?*
- *What is the impact of physical constraints on the public participation of the poor?*

#### **Technological resources**

There is ample evidence of the positive impacts on the poor of some technological improvements. For example Agai and Umenai (2002) compare the impacts on squatter communities in Manila of an improved water supply (private connections) and supply through public faucets. They conclude that residents with the improved supply have a lower unit price of water, and use the time previously spent on water collection increasing their sources of income with the result that the proportion of households under the poverty threshold reduced from 55% to 29%. Others have studied technological advances in irrigation and conclude that new approaches such as buried pipelines to reduce conveyance losses, the use of drip irrigation and the application of 'grey' water for irrigated agriculture in peri-urban settings can all have a significant impact in reducing poverty for water users (Baban and Ali 2001, Postel et al 2001, Faruqi and Al-Jayyousi 2002).

Seeing technology as a resource raises questions of its manageability; who controls the technology, who makes the decisions around it and what other resources does it mediate access to? In relation to water governance, therefore, the question is not whether technological dimensions are important but how to decide which technologies are most beneficial (to whom?), and what are the issues that must be addressed if technology is to help the poor. In general, technology is beneficial if it increases the quantity available in conditions of scarcity, reduces the time and labour involved in accessing water, assists the poor to manage or 'live with' floods, or improves water quality. Within these broad categories come a great range of potentially beneficial technologies but these also need to address additional issues of importance for the poor.

Firstly there is the question of affordability (Frans and Soussan 2004): can the poor actually afford to pay for the technology, or are the investment costs simply too great? Pani [013] describes how lift irrigation schemes in Nepal were significantly improved

following the installation of cheap pumps with appropriate performance characteristics. These replaced previous pumps which had been over-specified and were therefore too expensive, both to install and to run. By contrast some practitioners express concern that the poor are too often left with inconvenient, labour-intensive technology because this is 'affordable' to them [Mitlin 025] (Jaglin 2002).

In addition to affordability there is the question of 'manageability' – are the poor in a position to manage new technology, both in terms of technical knowledge and in terms of operation and maintenance requirements? The latter point is part of a broader spectrum of the financial dimensions of governance, whilst the need for approaches for assisting the poor to acquire technical knowledge and skills is highlighted by many practitioners and references (for example, Howarth [005], Faruqi and Al-Jayyousi 2002 and Jose 2003).

Finally, there is a need for flexibility in relation to the application of technology. The processes and conditions in which the poor find themselves are subject to constant change, and it is important that the poor are in a situation where they can make appropriate adaptations in response (Frans and Soussan 2004). Often this requires gradual and incremental change, building on small modifications and improvements as they occur (Boelense and Hoogendam 2002).

However, 'manageability' of technology cannot be divorced from social factors. Shrestha (2004) reports how improved irrigation technology can impact on gender equity while Farugui and Al-Jayyousi (2002) similarly suggest that technologies promoting greywater re-use had a significant effect on women's empowerment in Jordan. By contrast, a study of the installation and management of one water supply systems in Tanzania showed that the community were moderately successful at operating and maintaining the water supply but that gendered inequalities in access to water were reproduced through this management (Tukai 2005)

#### *Key questions*

- *Who controls technology and how does technology mediate access to other resources (like land?)*
- *Which technologies are affordable to the poor (in terms of monetary cost, time, labour and effort?)*
- *Can particular technologies impact on equity and empowerment?*
- *How manageable is technology and what resources are required to ensure its effective operation?*

#### **The natural environment**

Poverty is often associated with a difficult natural environment, as noted in many studies (for example, CPRC 2004). The constraints imposed by the natural environment can take a variety of aspects, comprising physical location, resource availability and

vulnerability. These aspects are in turn affected by long-term trends and changes, particularly issues such as climate change.

Physical location is an important determining factor in water access. Poor communities are often located in remote areas where they are not able to gain access to technology which could facilitate water availability in difficult conditions. They may also lack access to markets which could support a diversity of livelihoods and income-generating activities. Remoteness may also constrain access to basic services, such as health and education, which in turn will have an impact on human capabilities. Constraints of this type are noted regularly in the literature and are reflected in some of the case studies in this project. One interesting areas of emerging work is in linking disadvantaged communities in upper catchments with better-off communities downstream through some form of payment for catchment-protection services. Franz [026] describes a project in Brazil which is aiming at such an arrangement and others have been recently investigated. However the focus of these investigations tends to be on outcomes for environmental services downstream, rather than the impact on the poor upstream.

Lack of productive natural resources is another constraint on the poor. Low levels of rainfall, streamflow or groundwater are self-evidently serious factors impacting the ability of the poor to access water to survive or grow out of poverty. However, it is not only aquatic resources which are important. Lack of productive land resources may also be significant, constraining productivity and necessitating compensating actions by the poor (e.g. migration of the able-bodied members of the household in search of paid employment). For example, Sonneveld (2003) notes the difficulties caused by soil erosion in Ethiopia, and the need for soil conservation measures.

Vulnerability to natural hazards and disasters is a further significant determinant of the poor's access to water. The impacts of floods on the survival and livelihoods of the poor are well documented. Coping with the floods whilst they are taking place imposes additional burdens on the poor. Basic activities like cooking become more difficult for those who rely on fuelwood for energy, whilst those who are better off can buy in energy sources from the market. The danger of water-borne diseases in the aftermath of floods such as those in Bangladesh and Mozambique provides a further good example of impacts to which the poor are especially vulnerable, and for whom they may be especially devastating. Fernandes [023] notes similar issues arising in floods in Bihar, and she also notes that appropriate technology (in this case relatively deep wells) can play an important role in alleviating these impacts.

The constraints (and opportunities) provided by the natural environment are of immediate concern to the poor. These concerns are also mediated by significant long-term trends which have an affect on the way the processes of poverty may change over time. Kay (2005) draws attention to the need to understand the capacity and resilience of eco-systems to provide services in the long-term. The key issue of climate change is of particular importance in relation to access of the poor to water, as it is to many other aspects of development. Ribot et al (1996) review the issue of climate change and climate variability in relation to rural agricultural and pastoral populations in the semi-

arid tropics. They note that the processes of poverty and underdevelopment undermine the coping abilities and resilience of entire populations in the case of a phenomenon such as climate change.

A related issue is the continuing need for better understanding of the linkages between quality, quantity and variability (both spatial and temporal) within the water cycle. For example, there are very widespread misconceptions about the complex relationships between vegetation (particularly trees) and water, and a common belief that more trees means more water. Many of the theories and concepts involved are subtle and complex, and there is therefore a need for decision-support systems [Hope 020] which allow the poor to articulate their needs for water policies and technology within an increased understanding of the way the biophysical system works.

#### *Key questions*

- *What knowledge or technology is available to increase the productivity of resources in poor and disadvantaged areas (for example, the abstraction of water from sand rivers)?*
- *What coping strategies are most appropriate for the poor in the face of natural hazards, and what are their long-term outcomes?*
- *What are the impacts on the poor of uncertain but potentially major trends such as climate change and sea level rise?*
- *How can the poor be supported in negotiating complex issues of natural resource availability and use?*

## **5. What we don't know: directions for future research**

The development of our analytical framework confirms the need for further study and research across the spectrum of water governance. In each sub-section we have identified a range of questions which we feel could usefully form the subject of future research programmes.

However, our analysis indicates one major area in which our understanding of how to achieve pro-poor impacts is lacking. Despite a strong focus in water interventions on participatory and community-driven approaches we still do not know enough about the processes of community level water governance which lead to often inequitable outcomes. Therefore the main broad researchable question arising from this research is:

### **How does community level water governance work, and how can it be supported to ensure pro-poor outcomes?**

In this report we have emphasised the need to understand governance not just in technical or managerial terms but also as contested social and political issues. Therefore addressing this question would involve tackling two inter-related aspects of governance; understanding the processes which take place within

institutional/organisational structures, and gaining richer insights into the impacts of social relationships on engagement with water governance and actual water use.

### **How can local institutional structures and processes of public decision making be better understood?**

This would involve focussing on the *content* and *outcomes* of decision making processes, rather than just on their organisational form. For example; who contributes to public discussion about water, who gets heard and how are decisions actually taken? What are the relative costs and benefits to the poor of different institutional arrangements? What extra resources are needed to enable participation by the poor? What does pro-poor capacity building mean for local water governance institutions? And how can community-led processes be integrated within state-wide approaches (ie linking citizen groups to local government)? How can conflict and dispute resolution mechanisms be integrated into the processes of local level governance?

### **How can we integrate insights into how social relationships, norms and daily practices shape access to water by the poor?**

This would involve developing richer, more nuanced understandings of how poor people engage with institutional structures and how their water access is shaped through norms of use, collective action and social relationships. If institutions are underpinned by locally understood norms, and decision-making is shaped by complex and unequal social relationships, then we need to know how these are reproduced (or potentially transformed) in everyday interaction. Understanding how water access is negotiated at the water point on the basis of gender, kinship or caste (for example), would help us to understand the likely impact and outcomes of more formalised institutional arrangements.

These questions about community governance of water point us to another area in which knowledge is lacking. This is:

### **How do we monitor the long-term impacts on the poor of water governance arrangements?**

Suggestions for improved monitoring and more appropriate research techniques abound in practitioner studies and there is general agreement that criteria for measuring the impact of water governance on the poor are grossly neglected. Practitioners put forward ideas about developing criteria to measure the representation *and influence* of the poorest in water user associations, better indicators of vulnerability in water access, better measurements of actual access, methods for understanding the impacts of improved access on livelihoods and assessment of conflicts and their impacts on the poor.

Generally there is agreement on the need for longer-term, context-rich studies of how the poor access water.

## 6. The Context of our Analysis

As noted in the introduction, the Water Governance and Poverty Study was carried out in parallel with several other studies and reports reviewing issues of water development of relevance to the MDGs. Of particular importance in this respect are the Millennium Project Report, the ERM Report and the Scoping Study.

In this section we compare our suggestions with the findings and recommendations of these other studies. The summary of our analysis is presented in two tables. In table 1, we compare the conceptual framework, level, focus and country coverage of each report.

**Table 1 Scope and Coverage of Recent Water Reports**

	<b>Millennium Project Report</b>	<b>ERM Study Report</b>	<b>Scoping Study Report</b>	<b>Water Governance and Poverty Report</b>
<b>Conceptual Framework</b>	None	Water governance concepts + Drivers of Change	Drivers of Change	Resources of water governance mediated by mechanisms produce outputs
<b>Level</b>	International and national policy	Policy	Research and policy DfID level	Research Micro-meso level of water governance
<b>Focus</b>	Meeting MDGs on water (+ others)  Integration of water and sanitation  Analysing constraints to achieving MDGs: political, financial, institutional, technical	Identify elements of good governance and test country performance in meeting MDG targets against this)  Emphasise importance of sanitation  Capacity building	Identifying prioritised drivers of change  Identifying alternative delivery strategies for policy related research  Identifying research themes	Importance of social relations, power and inequality in access to water  Need to understand formal and informal institutional processes better  Access by poor to water
<b>Countries</b>	Global coverage, with best practice case studies from selected countries	13 country specific diagnostics on track/off track for water governance reform. Regional differences identified	Africa/Asia/Latin America Identify different regional priorities between Africa and Asia	27 Reflective Practitioner case studies from different countries (self-selected)

We note that the two DFID reports make reference to Drivers of Change as the underlying framework, reflecting DFID's current interest and focus on this type of political analysis of the development context. (However, it is also worth noting that the concept is used very loosely and indeed the drivers of change identified in the Scoping Study are better described as development goals or strategies). The Millennium Project Report (at least in the abridged version which we have been able to review) does not develop a conceptual framework, but instead goes straight to principles and actions. In our report we develop a framework based on social theory and drivers of change, but which also takes account of other approaches such as livelihoods and institutional analysis.

In terms of level, there are important differences between these reports. The Millennium Project Report and the ERM Report are clearly aimed at the policy level and are written in a way which allows policy makers to draw out key findings and bullet points for action (in the case of the ERM study, these are based on detailed country cases). For example, Action 5 of the Millennium Project Report is "Government and donor agencies must empower local authorities and communities with the authority, resources and professional capacity required to manage water supply and sanitation service delivery". The Scoping Study and our report are specifically focussed on research, but the former is concerned with the linkages between research and policy, whereas our interest is to understand the key issues of water governance at the meso/micro level.

The third dimension covered by table 1 is the focus of each report. Both the Millennium Project Report and the ERM study are located in an analysis of the MDGs, and both are concerned, in slightly different ways, with identifying policy actions to achieve the MDGs. Both of them emphasise the importance of integrating water and sanitation but the Millennium Project Report focuses on the constraints and actions, whilst the ERM report builds its argument round the necessary elements of good governance. The Scoping Study and this report are concerned with research. Although there are many similarities, the reports differ in that the Scoping Study discusses research themes and processes for linking research and policy, whilst we have identified researchable questions ("how can local institutional structures and processes of public decision-making be better understood?") and focus specifically on the meso/micro levels of water governance. Research and understanding needs to underpin policy making and implementation, and our report emphasises the importance of increased understanding in general and the need for local contextualisation of policy actions in particular. There are dangers inherent in broad-brush application of policy principles, which can be avoided or alleviated by good, well-focussed research.

The final part of this table reviews the country coverage of each of these reports. The Millennium Project Report has a global coverage, reflecting its origins in the UN system. The Scoping Study and the ERM Report focus on the countries (or regions) which are of particular interest to DFID, and the ERM study bases its analysis on 13 detailed country case studies. Our report does not have specific country focus, because the reflective case studies are self-selected. However, the coverage of the reflective case studies

does tend to overlap with the countries reviewed in the DFID reports. In Appendix 1, we include a more detailed comparison of country coverage, as a basis for a future discussion of countries in which research might most effectively be carried out.

In Table 2 we present a comparison of the findings and outputs of these reports, which vary according to their level and focus. The Millennium Project Report defines 10 actions for meeting the water and sanitation target, whilst the ERM study discusses the elements of good governance which are necessary to do this. The Scoping Study is concerned to identify research themes, of which the largest is water and governance. Under this theme, many sub-themes are identified which are similar to those identified in our report. In the Water Governance and Poverty Report we present a framework or the analysis of water governance for the poor. From this we identify a range of research questions related to each of the resources for water governance, with an emphasis on the need for understanding community level processes.

In conclusion, there appears to be a consensus between the reports on the inadequacy of existing systems and indicators for monitoring progress towards achieving water goals. In particular doubt is cast on the accuracy of existing indicators in reflecting *access* (and equity of access) rather than just coverage. Additionally there is some concern about the dearth of information relating to the functioning and sustainability of water supplies.

The reports assert the importance of a focus on institutions in ensuring good water governance. This focus relates to a number of levels of institutional functioning and covers the need for better co-ordination of international institutions, the designation of a national institutional 'home' for water policy, the strengthening of linkages with other sectors, the need to support decentralisation and improve the effectiveness and accountability of service providers and local level institutions.

Linked to the institutional focus is a common recognition of a need for capacity building, of national capacity and of local authorities, service providers and communities. There is a perception that capacity building is strongly linked to improved communication and knowledge transfer and to local level empowerment.

Engagement with popular opinion and voice is seen as essential for ensuring a 'human focus' for planned interventions, for improving understandings of vulnerability and for ensuring local support and sustainability. There is some recognition of the need to broaden the concept of stakeholders; to seek out those who may previously have been excluded from consultation or who are indirectly, rather than directly implicated in the impacts of improved water supplies.

All the reports see financial issues as important, although with considerably different emphases. Issues range from a concern with international levels investment and supporting national level capacity for planning to budgeting, to the need to reconcile cost recovery policies with the needs of the poorest.

**Table 2 Findings and Outputs of Water Reports**

Millennium Project Report	ERM Study Report	Scoping Study Report	Water Governance and Poverty Report
<p>10 Critical Actions necessary for meeting targets:</p> <ul style="list-style-type: none"> <li>● Create of a national-level “institutional home” for sanitation</li> <li>● Address gender bias in policies and institutions</li> <li>● Investment must accompany reform</li> <li>● Maintain focus on sustainability</li> <li>● Empower local authorities and communities to manage water supply and service delivery</li> <li>● Improve revenue collection while ensuring that the needs of poor households are met</li> <li>● Develop a coherent approach to deciding on the investments needed to meet the MDGs</li> <li>● Support a wide range of water and sanitation technologies</li> <li>● Promote innovation in strategic areas</li> <li>● Strong, effective support from UN and its partners</li> </ul>	<p>Elements of good water governance:</p> <ul style="list-style-type: none"> <li>● Good diagnosis of water-poverty-economics linkages</li> <li>● Development of national policy frameworks for water</li> <li>● Coordination of institutions in sector</li> <li>● Development of finance plans and budgeting</li> <li>● Decentralisation</li> <li>● Engagement with popular opinion and voice</li> <li>● Monitoring and evaluation</li> </ul>	<p>Research themes:</p> <ul style="list-style-type: none"> <li>● Water and governance (includes decentralisation, information, poverty focus financial arrangements, human and institutional focus, legal and political concerns)</li> <li>● Better utilisation of water for economic growth</li> <li>● Improved environmental management (reduce vulnerability)</li> <li>● Water and conflict</li> <li>● Public-private partnerships</li> <li>● Communication strategies for knowledge transfer</li> </ul> <p>Table of possible features of water and sanitation research programme</p>	<p>Framework for analysing water governance (institutional, social, rights and entitlements, financial, human capabilities, the natural environment and technology.)</p> <p>Major research questions:</p> <ul style="list-style-type: none"> <li>● How does community level water governance work and how can it be supported?</li> <li>● How to monitor the long-term impacts on the poor of water governance and arrangements?</li> </ul>

Finally, although there is a tendency to list general principles of good water governance there is also a recognition that 'one size doesn't fit all' and that there is a need for context specific and flexible solutions. Incorporated into this are frequent assertions of the importance of power relations in shaping the outcomes of water governance.

Despite the many commonalities, representing some sort of consensus on water governance between the reports, there are some notable omissions in analysis:

- Gender inequalities, although deeply implicated in the reproduction of poverty and in shaping access to water, do not receive strong focus. Gender is mentioned in the Millennium Task Force Report and in this report but arguably should be more directly incorporated into considerations of good water governance (can a country really be on track for achieving the Millennium Development Goals in water if it has high gender inequality?)
- Although the reports consider capacity building and the need to strengthen local water governance, there is little recognition of the need to support the interface between local government (or other service providers) and users. The role of community workers, field workers, local activists, and local leaders is likely to be influential in shaping water governance arrangements and access, and requirements more consideration.
- The reports strongly assert the benefits of good governance, but are vague on the costs. The direct and indirect costs of different arrangements for accessing water is surely of relevance to ensuring both equitable access and sustainability.
- Whilst this report focuses on pro-poor governance, in the other three a poverty focus is either sketchy or totally absent. Indeed there appears to be an implicit assumption that good water governance (as defined by these reports) is also pro-poor. This assumption needs testing.

It is the attempt to combine issues of water governance with a poverty/equity focus that is one of the main strengths of this study. We offer a conceptual framework which allows for these links to be made and which dynamically models the ways in which people (agents) both make water governance arrangements and experience their impacts. The framework also allows us to see water governance in the wider framework of societal structures and so be realistic about the possibilities for planned intervention and change. Additionally our illustration of the ways in which different arrangements for accessing water work out for the poor shows the complexity and context specific nature of water/people interactions. This supports our contention that development intervention in water should be reformed by a robust programme of research that does not necessarily seek to produce a unitary model of 'best practice' but to learn from the diversity of possible solutions to securing water access for the poor.

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## APPENDIX 1 Country Analysis

Table 3 presents a number of different data from which DfID could choose countries to target for a water research programme. The table shows the countries in which Drivers of Change analyses have taken place (DfID 2004). The nature of a Drivers of Change analysis means that DfID country offices will have more country specific contextual data about the opportunities for intervention and change available. Water activities in these countries could therefore benefit from this process.

Also shown on this table are the countries identified by the ERM study as being on or off target for achieving the MDGs in water. The seven on track countries are distinct in that they tend to have successfully undertaken water governance reforms and their water sector activities are largely deemed sustainable (ERM 2005). A decision could be made as to whether to prioritise research in on-target countries (to learn the lessons of their success), or off-target countries (to identify constraints).

The twenty governments with which DfID has entered into Public Service Agreements (PSAs) are set out in the table. This information highlights those countries whose Poverty Reduction Strategy Formulation (PRS) processes will be supported by DfID, thereby helping decision-makers to focus on the social and economic benefits of expanding water supply and sanitation coverage.

We have shown on this table indicators of water and sanitation coverage from the World Development Indicators 2004. These have been widely criticised for inaccurately reflecting access, over-counting facilities and not reflecting whether they are operational. However, they do perhaps give some sort of relative ranking of countries relating to coverage, with the lowest percentages being recorded in Afghanistan, Cambodia, Ethiopia and Rwanda; and the highest in Bolivia, Colombia, South Africa and Sri Lanka.

As this report highlights the links between inequality, poverty and lack of access to water, we have added to the table some indicators of equity. If water is critical to attaining many of the MDGs (MTF 2004) then indicators which relate to the distribution of societal resources and wellbeing (such as under-five mortality rate, gender equity and gini coefficient) are relevant in selecting target countries. Sierra Leone, for example, stands out as the country with the highest under-five mortality rate and the second highest gini index value in the table. The country with the lowest recorded gender-related development index value is Mozambique. Mozambique also has one of the highest under-five mortality rates. Interestingly, although Colombia's under-five mortality rate and gender-related development index value reflect positively on the country's progress toward meeting target 10, we find that it also has a high gini index value. The data presented in this report thus suggest the complex interlinkages between dimensions of inequality and the need to tackle these if pro-poor governance of water is to be achieved. We suggest that the choice of country for water research and intervention should be influenced by equity rankings.

**Table 3 Country Data and Statistics**

Country	Drivers of change <sup>1</sup>	ERM <sup>2</sup>	PSA <sup>3</sup>	Access to an improved water source <sup>4</sup>	Access to improved sanitation facilities <sup>5</sup>	Under-five mortality rate <sup>6</sup>	Gender-related development index value <sup>7</sup>	Gini index value <sup>8</sup>
Afghanistan	✓	..	..	13	12	257	..	..
Angola	✓	..	..	38	44	260	..	..
Asia regional (Asia RPU)	✓	..	..	..	..	..	..	..
Bangladesh	✓	✓	✓	97	48	96	0.495	31.8
Bolivia	✓	..	..	83	70	71	0.663	..
Cambodia	..	✓	..	30	17	138	0.551	40.4
Central Asia, South Caucasus and Moldova	✓	..	..	..	..	..	..	..
China	..	☑	✓	75	40	38	0.718	44.7
Colombia	✓	..	..	91	86	23	0.774	57.6
Congo, Dem Rep	..	..	✓	45	21	205	0.353	..
Ethiopia	✓	✓	✓	24	12	171	0.347	30.0
EU 'New Neighbours'	✓	..	..	..	..	..	..	..
Ghana	✓	☑	✓	73	72	97	0.564	30.0
India	✓	☑	✓	84	28	90	0.574	32.5
Kenya	✓	..	✓	57	87	122	0.488	44.5
Lesotho	..	..	✓	78	49	132	0.497	63.2
Malawi	✓	..	✓	57	76	182	0.378	50.3
Mozambique	✓	..	✓	57	43	205	0.341	39.6
Nigeria	✓	✓	✓	62	54	201	0.450	50.6
Pakistan	✓	..	✓	90	62	101	0.469	33.0
Peru	✓	..	..	80	71	39	0.734	49.8
Russia	✓	..	..	99	..	21	0.774	45.6
Rwanda	..	..	✓	41	8	203	0.416	28.9
Sierra Leone	✓	..	✓	57	66	284	..	62.9
South Africa	..	☑	✓	86	87	65	0.678	59.3
Sri Lanka	..	☑	..	77	94	19	0.726	34.4
Sudan	..	..	✓	75	62	94	0.483	..
Tanzania	✓	☑	✓	68	90	165	0.396	38.2
Uganda	✓	☑	✓	52	79	141	0.483	43.0
Vietnam	..	✓	..	77	47	26	0.687	36.1
Zambia	✓	✓	✓	64	78	182	0.376	52.6
Zimbabwe	..	..	✓	83	62	123	0.489	56.8

1 Countries analysed in DfID's Drivers of Change study.

2 Countries analysed in ERM study on progress made so far towards achieving MDG Target 10. Boxed ticks denote 'on track' countries making medium to high levels of progress in their water sectors.

3 Governments with which DfID has Public Service Agreements.

4 % of population with reasonable access to an adequate amount of water from an improved source. 2000 data. Source: WDIs 2004.

5 % of population with access to at least adequate excreta disposal facilities. 2000 data. Source: WDIs 2004.

6 Probability, expressed as a rate per 1000, that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates. 2002 data. Source: WDIs 2004.

7 Composite index measuring average achievement of a long and healthy life, knowledge and a decent standard of living; adjusted to account for inequalities between men and women. The larger values reflect lower inequality between men and women. Source: HDR 2003

8 Extent to which the distribution of income among individuals or households deviates from a perfectly equal distribution. The larger the value, the greater the inequality. 1993-2000 data. Source: WDIs 2004.