



# Water governance and poverty: a framework for analysis

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**Abstract:** This paper engages with policy on meeting development goals for water through interventions, which promote good governance. Addressing an under-researched area, we propose a new analytical framework for understanding water governance, not as a set of abstract principles, but as interlinked processes with variable practical outcomes for poor people. The framework is informed by theories of governance, institutions and structuration, empirical research and field insights. We apply the framework to a case in south-western Tanzania, and we identify a range of issues for further research, particularly relating to water access for the poor.

**Key words:** water, governance, resources, poverty, Tanzania, impacts

## I Water governance – an evolving concept

Governance is an increasingly important element of debates about the state, society, and development. Much of this has come about as a result of a recognition of the changing nature and role of the state in a globalized and interconnected world. At the global level the power and influence of the nation-state is decreasing, under pressure from flows of capital, labour and services across international boundaries. At the local level citizens no longer rely exclusively on the state to provide

for them, but in addition look to a network of alliances and partnerships for the services they expect. Governance provides a way of conceptualizing this emerging network of relationships between different sectors and interests in society, enabling us to analyze how governments, the public and private sectors, civil society, citizens groups and individual citizens forge networks and linkages to provide new ways for society to order itself and manage its affairs.

In parallel with its increasing use more generally, the concept of governance is being

widely applied in the water sector (Cosgrove and Rijsberman, 2000; WWAP, 2003). Development efforts in the sector focus on the Millennium Development Goals (MDGs) and the achievement of the water and sanitation international development targets as a contribution both to poverty eradication and environmental sustainability. Water governance is regularly noted as an essential element of these efforts and there is a general consensus amongst those working in the sector on the need for 'good water governance', as noted most recently by the Ministerial Declaration of the Fourth World Water Forum in Mexico (WWC, 2006) and by other international agencies (DFID, 2005; UN, 2005a). This consensus rests on the realization that the provision of water services for all is beyond the reach of governments and the public sector on their own, and that the contribution of the private and voluntary sectors is essential if the water and sanitation targets are to be met. The concept of governance provides a way of conceptualizing and understanding how the different sectors in society can work together to achieve these outcomes.

In spite of the increasing emphasis on its importance, there is a surprising lack of theoretical analysis and debate of the core concepts of water governance. This may partly result from the focus on good governance as a normative set of principles such as accountability, transparency and probity (ADB, 1999; McGranahan and Satterthwaite, 2006). It may also partly result from the fact that elements of water governance are taken up under other concepts such as rights, integrated water resources management, participation and partnerships (Ryan, 2004). There is, nevertheless, a small body of literature focussing on water governance as a unifying concept (Rogers and Hall, 2003; Allen *et al.*, 2004). Rogers and Hall in their work (2003: 7) for the Global Water Partnership define water governance as:

the range of political, social, economic and administrative systems that are in place to

develop and manage water resources, and the delivery of water services, at different levels of society.

This definition builds on general ideas of governance as comprising a range of systems including those of government and the public services but also extending to services provided by other sections of society. It recognizes that these systems relate and link to each other through political processes, which are inevitable in the management of any resource such as water (Franks, 2004). It suggests a range of outcomes ('water resources' as well as 'water services'), which go far beyond the management functions of individual organizations or groups. Its reference to different levels of society implies recognition that outcomes may be different at different levels and that, for example, the poor may need special treatment in the working out of governance systems.

The widespread acceptance of this definition and the general consensus on the desirability of good governance imply also a consensus that it will lead to 'good outcomes'. Despite a plethora of case study documentation of good practice, this consensus masks a lack of enquiry and understanding as to how governance works out in practice and how outcomes are achieved. What processes are involved in the relationship of the various systems of governance (Mtisi and Nicol, 2003; Mollinga, 2005)? How do they lead to the management of water resources and the delivery of water services (Smith, 2004; Lankford and Cour, 2005)? What do we mean by 'good water governance' and how can we be sure that 'good governance' leads to 'good outcomes'? There is, as yet, little understanding of the importance of localization and contextualization in how governance systems evolve, and how these result from precedent, the environment and local practice (Boelens and Zwartveen, 2005). There is also little understanding of how water governance systems impact on the lives of individual citizens, and little effort to differentiate the impact on the lives of poor

people, yet this is of particular importance in the context of the MDGs and the emphasis on the eradication of poverty (Tukai, 2005). Our intention in this paper is to move beyond abstract principles of 'good governance' to enhance our understanding of the working out of governance systems in practice.

## II The analytical framework

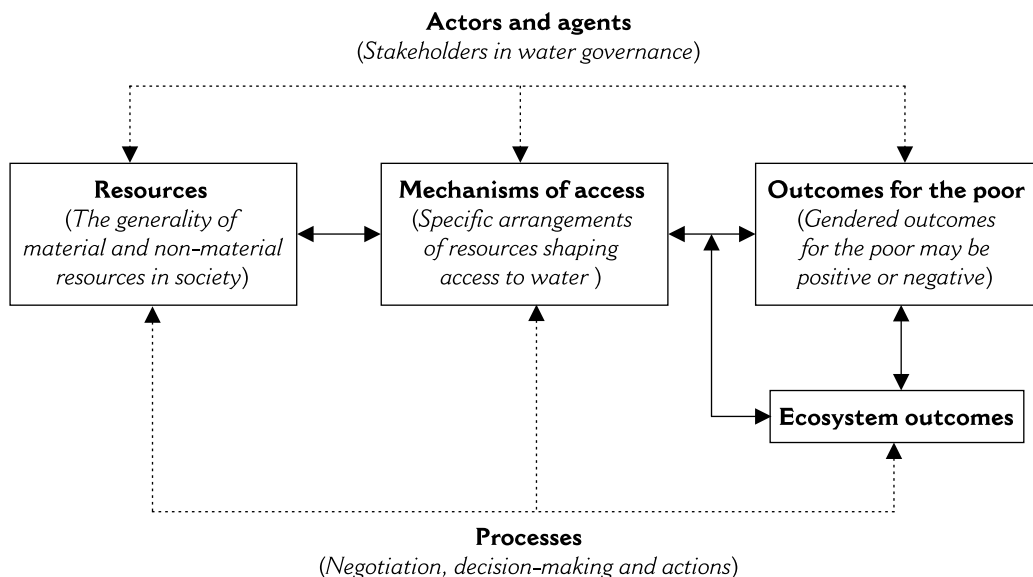
Here we propose an analytical framework, which can help us to understand how arrangements for water governance are shaped and how they impact, both positively and negatively, on the poor. The framework is generated by insights from empirical data and by reflection on current thinking about water governance. In particular, we draw extensively on insights generated from reflective case studies prepared for the research study *Water Governance and Poverty – 'What Works for the Poor?'* (Cleaver *et al.*, 2005). In constructing the framework we have adapted concepts derived from a variety of other sources. From social theory (Giddens, 1984; Long, 1992) we utilize the idea of allocative and authoritative resources and reflect on the 'room for manoeuvre' which individuals (actors or agents) have in negotiating social structures. Such concepts also inform much 'post-institutionalist thinking', from which we draw insights about the 'messiness' of local institutional arrangements and the construction of institutions through processes of *bricolage* (Mehta *et al.*, 2001; Benjaminsen and Lund, 2002). We incorporate some of the thinking underpinning sustainable livelihoods approaches, particularly in relation to the variety of resources (or capitals) which people draw on to construct their livelihoods and the variable effects of context in shaping the vulnerability or sustainability of such livelihoods (Ellis, 2000). Recent works on chronic poverty (CPRC, 2004; Bevan, 2004; Hickey and Bracking, 2005) lead us to think about the multi-dimensional ways in which access to water by the 'always poor' is constrained, including factors such as their physical impoverishment and lack of voice.

Our framework depends on a number of key concepts. 'Resources' are the range of materials from which human interaction and social structures are constructed. Resources are drawn upon in differing ways by *actors* (individuals, groups, the state) to construct particular context-specific arrangements for organizing access to water which are the '*mechanisms*' of water governance. The mechanisms of access to water shape '*outcomes*' for the poor and for ecosystems, the long-term changes and trends in their condition and context. At each interface in the framework, *actors* are recursively implicated (being shaped by and shaping resources, mechanisms and outcomes). Mechanisms are fashioned from resources by actors 'managing' and 'practising' *processes* of water governance. The outcomes of such mechanisms are likewise shaped by context-specific processes of management and practice.

The relationship between these concepts is represented in the framework (Figure 1). We elaborate here the theoretical basis of the concepts, whilst in a subsequent section we apply the ideas to a specific case (with particular attention to the impacts on the poor), to see how the theoretical framework might work out in practice.

### 1 Resources

Here we understand 'resources' to be the material and non-material properties of social systems from which human governance of water is constructed. Giddens, in his theory of structuration (1984), distinguishes between *allocative* (raw materials, means of production, produced goods) and *authoritative* resources (organization of social time/space, chances for self-development, relationships between people). For him 'resources are the media through which power is exercised' and 'resources are structured properties of social systems, drawn upon and reproduced by knowledgeable agents in the course of interaction' (Giddens, 1984: 15). Specifically, allocative resources are 'material resources involved in



**Figure 1** A framework for water governance

the generation of power, including the natural environment and physical artifacts; 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; allocative resources result from the dominion of some actors over others' (Giddens, 1984: 373). Human agents make rules, which structure the deployment of resources; the patterning of command over resources in turn shapes the actions of agents. The concept of 'resources' as we adapt it to water governance encompasses general relationships of power, structures of inequality and 'rules' of social life and resource allocation. To be an agent (to exercise agency) depends on the ability to act, to choose a course of action (or inaction), the capability to make a difference — in sum to exercise some sort of power. Individuals may do this by accessing and deploying various sorts of allocative or authoritative resources. However, such power to act is constrained by social structures; the inequitable patterning

of relations that ensures some individuals, (by virtue of their class, gender, ethnicity and so on), are better placed to deploy resources, to shape rules, to exercise power, than others. The concept of resources then is intended to imply a socially dynamic (rather than a more static technical view) of governance; the idea of power relations and processes is built into it. Drawing on Foucauldian ideas, we conceptualize power as multi-locational, 'normalized' in the networks of everyday life, regulating social practices and relationships (Walsh, 2004; Agrawal, 2005).

We have chosen to focus on the concept of 'resources' in order to widen the analytical gaze beyond the physical and organizational manifestations of water governance (in our framework these appear as 'mechanisms'). These physical and organizational manifestations are a reflection of the 'political, social, economic and administrative systems' contained within the Rogers and Hall definition of governance discussed above. However, if we are to understand how pro-poor change may be effected through water governance

mechanisms, then it seems imperative to understand some of the structuring of relations and resources which underpin them.

In the framework we adapt Giddens to suggest a number of key resources (both authoritative and allocative) from which the mechanisms of water governance are drawn. These are: institutional resources, social resources, resources of rights and entitlements (entitlements here are understood as the relationships through which an individual or household gains access to their livelihood rights), human capacities, the natural environment and technology. Such resources are conceptualized at the level of general societal organization. So, for example, the resources of rights and entitlements might include the wider legislative frameworks (within which specific rights to water are enacted), and the constitutional definitions of citizenship. The category of social resources might encompass the patternings of gender, class, ethnicity and the history of social association.

## 2 Mechanisms

In this framework, general societal resources are drawn upon in differing ways by various actors (individuals, groups, the state) to construct arrangements for water governance. Tangibly, resources are shaped and mediated through 'mechanisms'; particular context-specific arrangements for organizing access to water. We have avoided defining mechanisms purely as 'institutions' because access to water may be defined also by physical structures and technology. Whilst we do not discuss definitions of institutions in detail here, we draw on emerging views which go beyond the distinctions between local/global, formal/informal, modern/traditional categorizations. Rather, we see institutions as arrangements between people, which are *reproduced and regularized across time and space*, and which are subject to constant processes of evolution and change. Such institutions differ in the extent to which they take organizational form, and in

how far they are robust and enduring (Mehta *et al.*, 2001; Benjaminsen and Lund, 2002; Giddens, 1984).

So the term 'mechanisms' covers a variety of mediators of access ranging from formalized institutions (such as water user associations) through socially embedded norms of 'proper' use, to particular technologies (handpumps, pipes, and so on). A range of degrees of organization is implied. Of course, different types of mechanism may overlap and inter-relate; it is quite likely for example that a particular technology will be associated with specific institutional arrangements. Such arrangements may be a complex and dynamic mix of formal (village councils, legislated rights to minimum water) and socially embedded (rules-in-use).

Mechanisms, as understood in this framework, are not necessarily fixed arrangements for water delivery but rather arrangements which can be negotiated and which are likely to change over time. Our 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 (Cleaver *et al.*, 2005). So, for example, specific mechanisms drawing on *social resources* include arrangements to access water through particular families, kinship groups or located gendered relations. Mechanisms drawing on the *resources of rights and empowerment* include legislated minimum quantities of water, local property rights, quotas for representation in governance bodies as well as socially understood entitlements of citizens in communities to claim access to water. Whilst many of the mechanisms (such as rights and quotas) may appear to be fixed and defined, in practice most of them are malleable and negotiable, changing over time in response to changing conditions.

## 3 Outcomes

Processes of deliberative management and routine practice shape the impacts and outcomes of water governance mechanisms

for the poor. These outcomes can be identified in several different domains. These cover *basic access* (quantity, quality and timing of water availability) and *livelihoods*, how the poor can use water to support and improve their status (for example, through development of alternative or supplementary income streams). Outcomes of water governance arrangements can be 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. Outcomes also evolve in the political domain, 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.)

We have particularly specified the need to consider gendered outcomes in this framework for a number of reasons. Firstly, the Millennium Development Goals specify key gender goals, and securing improved access to water is seen as interlinked with achievement of these (WELL, 2004). Secondly, there is considerable evidence to suggest a gendered patterning of access to water, participation in governance institutions and of poverty (Coles and Wallace, 2005; UN, 2005b). Finally, much current writing on governance, and particularly water governance, is gender blind. Although most visible at the point of outcomes, gender dimensions are in fact important to the analysis of each aspect of the framework. As pointed out by Kabeer (2000), the resources of society and the ways in which individuals and groups mobilize these are patterned by gendered social norms and expectations. Specific mechanisms of access are rarely gender neutral. They do not exist in a social vacuum but are shaped by and often reproduce the socially accepted way of doing things. Variable gendered capacity to exercise agency in accessing these mechanisms leads to gender differentiated outcomes.

For example, women's lack of ability to pay for domestic water may mean that they have to defer to cash-paying cattle-watering men in both accessing water and decision-making about water (Tukai, 2005). We hope that the framework can help to illuminate the ways in which gendered inequalities can be reproduced through water governance arrangements.

Our framework defines outcomes for the ecosystem as an integral and essential element of it. Ecosystem outcomes are important because poor people rely on aquatic ecosystems in multiple and diverse ways. For example water used in crop and vegetation growth may provide a range of services essential for well-being, such as food, shelter and fuel. These ecosystem outcomes may become apparent in a number of ways, from dramatic and immediate impacts on levels, flows and volumes, to subtle and long-term changes which are hardly detectable on a day-to-day basis but which may nevertheless have profound effects on the way poor people live their lives. As with other elements of the framework, it is important to bear in mind that outcomes for the ecosystem and for poor people are recursively linked in many ways. As environmental changes take place, these have an influence on outcomes for the poor. The outcomes for the poor may in turn result in changes which further affect the direction and pace of environmental change.

#### *4 Processes*

In our framework, resources for water governance become transformed through specific mechanisms of access into outcomes through a series of processes of management and practice. By processes we mean the conscious or unconscious activities of negotiation, decision-making and action, which produce changes in the pattern or configuration of resources, mechanisms and outcomes of water governance.

The explanation of the construction of mechanisms from resources in turn leading to outcomes suggests a purposive and functional enterprise akin to the design of institutions

(Ostrom, 1992). However, we suggest that actors construct mechanisms of water governance both consciously and non-consciously; through the processes of management *and* through the practices of their daily lives. This implies that the conscious design of such water governance mechanisms may lead to unintended outcomes as the daily practices of agents' lives may shape water access around different principles and priorities (Cleaver, 2002; Cleaver and Franks, 2005). In addition we suggest that there is a recursive relationship between these three main components of the framework. While in general we see a trajectory from resources to mechanisms to outcomes, the working through of outcomes may in turn affect resources and the way they are shaped and patterned through mechanisms. Changes in livelihood outcomes resulting from specific mechanisms of access may result in increased access to existing resources, access to new resources and the establishment of new mechanisms, for example through the application of new technologies.

### 5 Agents

The final component of our framework comprises the agents who interact at all points within it. They shape and are shaped by the resources, mechanisms and outcomes, through a range of gender-specific processes. (We use the terms 'actors' and 'agents' interchangeably: 'actors' being the more common term in development literature, 'agents' the preferred usage in social theory.)

Here it is useful again to borrow from Giddens in seeing agents as motivated by three levels of consciousness; the 'unconscious' (the underlying psychological/emotional motivators) 'practical' consciousness (habit, routine and the right way of doing things) and 'discursive consciousness' (where individuals reflect upon and explain their actions.) Additionally Giddens conceives agency not solely as comprised of particular individualized acts, but as a flow of action constituting the *durée*

of daily life, producing both intended and unintended consequences (Giddens, 1984: 27).

This helps us to recognize that participation in water governance may be both deliberate and non-conscious, and that the shaping of water governance and its outcomes occurs through the interaction of purposive action and everyday practice. Purposive action results from the collective endeavour of individuals in groups and networks, articulated through processes of water management. The non-conscious actions of everyday practice are less easily defined but may have equally important impacts on outcomes for the poor and for the ecosystem. By drawing on Giddens' (1984) concepts of structure and agency, we see both the opportunities *and* constraints which social arrangements offer to individuals. The *degree* to which individuals are able to exercise choice and autonomy is open to interpretation in our framework. Whereas Long's actors are able to resist domination and create 'room for manoeuvre' in their lives, Agrawal highlights Foucauldian ideas about the self-disciplining of subjects, who, shaped by prevailing discourses (the exercise of power), may enrol themselves in the projects of others, even when these perpetuate their subordination (Long, 1992; Agrawal, 2005).

### III The Kimani catchment – a complex web of water governance

We investigate how our framework might work out in practice by using it to diagnose a specific situation, the case of water governance in the Kimani catchment in south-western Tanzania. This catchment forms an upstream part of the much larger Usangu basin of the Great Ruaha river. The basin, which covers the important Usangu wetland, has been the subject of intensive study and development initiatives over the last decade, since the flows in the Great Ruaha started to dry up during the dry season in the mid 1990s. The case study data is based on our experiences of working on the project Sustainable Management of the Usangu Wetland and its Catchment

(SMUWC) 1998–2001. It draws on a series of reports including the findings of a research project into rural livelihoods in the area, and other academic works associated with the project or the area (Maganga, 2002; Odgaard, 2002; Walsh, 1984; Cleaver, 2005). Discussion of research methodology can be found in the rural livelihoods report (SMUWC, 2001).

The Kimani catchment comprises the land drained by the Kimani river which flows into the Usangu wetland. It covers a total area of about 60,000 ha, extending from well-wooded uplands in the south to flat grassland in the north. The majority of the population live in nine villages, in two administrative districts. The river provides water for a piped supply to several of these villages, and for about 2,500 ha of irrigation, as well as livestock watering and fishing. Downstream the water has important environmental functions, for maintenance of the wetland and, further downstream still, for the flows of the Ruaha river in the Ruaha National Park and in the hydroelectric dam at Mtera.

Issues facing the people living in Kimani centre on the allocation of, and access to, the key natural resources of land and water in the catchment. There is competition for land resources between dryland farmers, irrigated farmers and pastoralists. This competition is reflected in competition for water between some of these groups, and with other water uses, for domestic supply and for fishing (Franks *et al.*, 2004). Balancing access and supplies for the inhabitants of Kimani with those of downstream users is also an issue.

The way in which the communities of the Kimani address these issues, and the outcomes that this has for their access to water, lies within the domain of water governance. We therefore use the framework to analyze the situation, and to examine the implications for poor people of each component of the framework. The framework developed for the Kimani catchment is presented in Figure 2.

### *1 Resources*

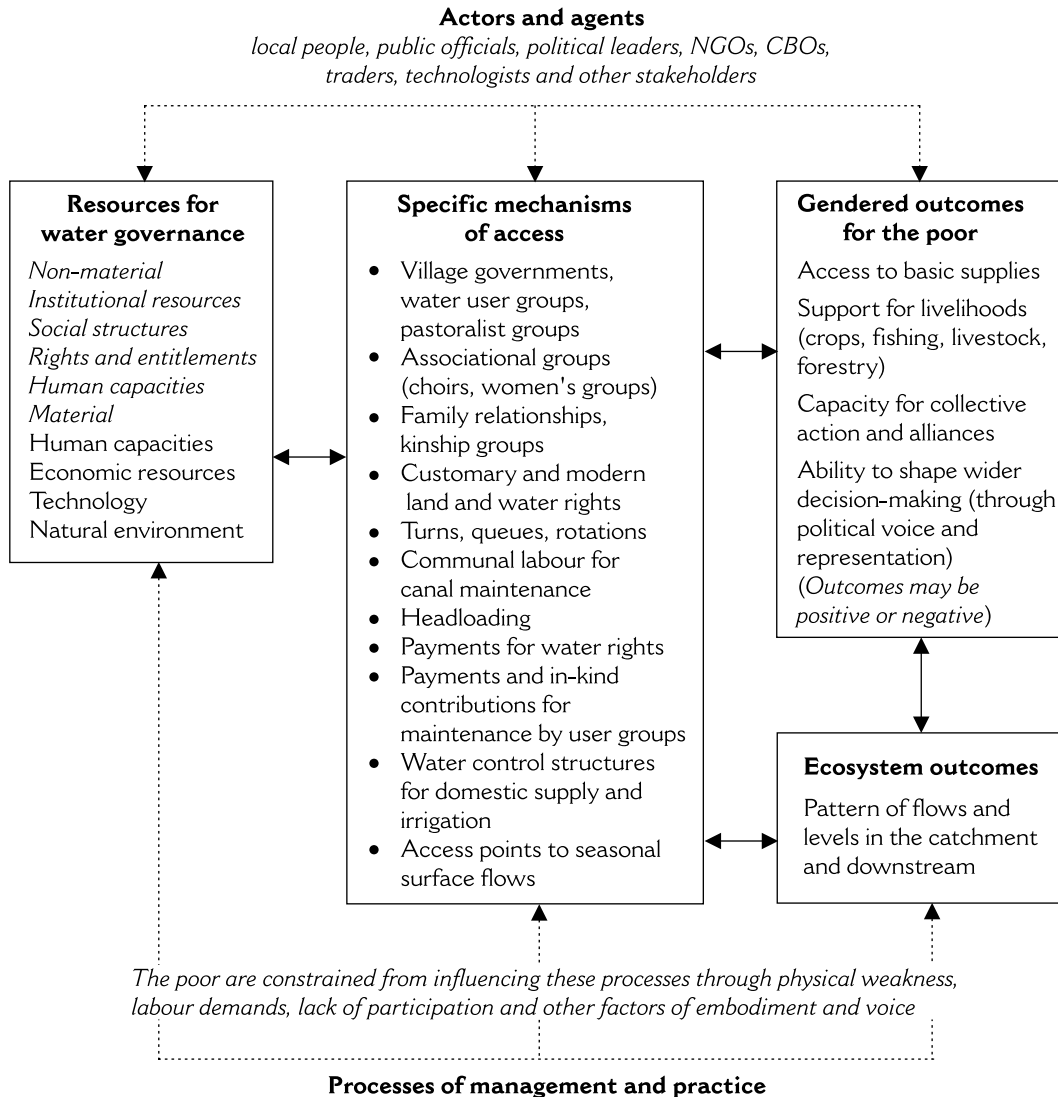
In principle the people in Kimani have the full range of resources for water governance on which to draw. However, endowments are allocated patchily in the catchment and some resources are relatively scarce. For example, economic resources vary considerably between commercialized roadside villages and those more remote from markets. Limited access to economic resources may be linked to limited access to technology in the form of pumps and engines, and to entitlements to irrigated land.

Regarding human capacities, educational and health levels are low, with only primary facilities available in the catchment. Human capacities are further constrained by the AIDS epidemic, which is resulting in a shortage of labour for both productive and reproductive work and a restructuring of patterns of social dependency. Lack of labour constrains livelihoods, public participation and access to resources like water.

Land resources for productive agriculture are limited, though there are extensive woodlands and also some scattered deposits of gold which support artisanal mining. Water is reasonably abundant through the flows in the Kimani, and it is of excellent quality.

The social and institutional resources, and rights and entitlements, within the catchment are complex. These resources are both formal and socially-embedded and form the material from which a rich fabric of overlapping water governance arrangements is woven. A long history of in-migration of different ethnic and livelihood groups into the area as well as experience of state-directed re-location of populations has resulted in a mix of customary norms and understandings of inter-linkages between people, ancestors and natural resources. People claim allegiance to a number of 'ethnic groups' in the catchment, each with their own sets of continuously reinvented norm sets and cultural 'rules'. There is a widely perceived division between people whose main livelihood is pastoralism and those whose main livelihood





**Figure 2** Water governance in the Kimani Catchment

is agriculture, although in reality the divisions between these may be often blurred. These 'customary' understandings are inter-woven with modern manifestations of rights of citizens (to access resources and services) in varying degrees of formalization, such as legislation, the Primary Courts system and so on. The dual legal and institutional systems of 'customary' and 'modern' government result in a variety of channels through which people

can make claims and gain access to resources (Odgaard, 2002).

Notably the ways in which resources are drawn upon may inter-relate to reproduce social inequalities. For example the educated officials of the modern Tanzanian state perceive pastoralism to be an inferior way of life and pastoralists to be intransigently itinerant, backward and not fully incorporated as citizens. This shapes the ways in which pastoralists

access resources and, as we will see below, the workings of water governance mechanisms. Additionally, whilst resources are interlinked, they are not necessarily substitutable. The chronically poor households studied in the catchment suffer from an inability to access material and non-material resources, which interact to reinforce their marginalization. The structuring of economic resources constrains their ability to mobilize finances, which in turn limits their access to technology. They lack education and good health and so feel constrained from institutional participation even at the most local level, a factor which significantly limits their claims to rights and entitlements. Their shortage of labour further prevents them from accessing natural resources. Such social dimensions of inequality pattern both the underlying configuration of resources and also shape the specific mechanisms of access to resources.

## 2 *Mechanisms*

These resources are mediated through processes of management and practice to produce a range of mechanisms of access to water by the different groups within Kimani. There are a large number of 'formal' institutions, comprising the local government structures (village and hamlet) as well as formally constituted resource user groups for the domestic supply, the irrigation systems (three groups) and the pastoralists. For example one village in the catchment has, in addition to the village council and village assembly (which have the broad remit of resource allocation), specific sub committees dealing with irrigation or natural resources, an irrigators association, a water users association, and access to the ward level primary court for resolution of disputes. The pastoralists of the village are part of a wider pastoralist association actively lobbying for rights at national as well as local level.

These formal institutional mechanisms are complemented by a complex pattern of socially-embedded institutions, comprising family, kinship and resource groups which

interact with one another in a variety of ways and may often cross the boundaries of the formal arrangements. An example is the practice of households of cultivating fields or grazing animals in places distant from their residence, in order to access better resources and spread the risks of local micro-climate variability. People often use kinship relations to access land and water resources in other villages, where they might have varying degrees of engagement with other water governance mechanisms.

A feature of socially-embedded mechanisms of water access and governance is that they often appear at first sight to have little to do with water. For example, much associational life in villages is conducted through groups such as choirs, women's groups and youth groups. In addition to their social /cultural function these groups engage in collective labour (often on irrigated land), income-generating activities and in the case of youth groups the vigilante exercise of law and order in loose association with the village council. People in these groups are better able to articulate in public meetings about water allocation, can save money to pay joining fees of water related associations and can shape the allocation and use of water in practice. Such examples illustrate the importance of widening the analytical gaze beyond the more formalized and visible manifestations of water management, to incorporate the decision-making and allocation arrangements of everyday life.

The mechanisms of rights of access to resources may also come in a combination of formal and socially-understood entitlements. The mechanisms that mediate access to land are particularly complicated and opaque, comprising a combination of land allocation through the village committee (which in theory has a formal system of assembly and public decision-making) together with customary rights of access. Customary rights to land (and associated water resources) are themselves complex; often drawing on perceived differences in rights between 'indigenous' people

and 'strangers' (in-migrants). They are interpreted and contested through lived practice, traditional authorities, and primary courts of law (Maganga, 2002; Odgaard, 2002).

Water access likewise is subject to a range of formal and socially-embedded rights, ranging from water rights issued by the Rufiji Basin Water Officer, to the systems of turns for livestock watering and locations for fishing which are determined through negotiation amongst the users. Although many of the people of the catchment are quite poor in financial terms, financial mechanisms play a significant part in water governance. These mechanisms include the payment of the fee for the (bulk) water rights for the domestic and irrigation systems, as well as the contributions that must be made by the users for costs of the user groups such as officers' salaries and basic equipment. Payments in kind are also made by users, for example in contributions of labour for the physical maintenance of systems and infrastructure.

Our framework identifies technology as one of the component resources for water governance. Technology may be a key resource in situations where it is complex and capital-intensive, or where its control is contested. In the case of Kimani the technology is relatively simple. It comprises an upstream offtake for the domestic water supply and a downstream weir, controlling flows to the irrigation systems. These in turn include a number of gates, which divert flows within the systems. There is no natural water storage in the catchment, and no significant supply of groundwater.

Two dimensions of human capacities are particularly important in enabling and constraining mechanisms of access to water; these being physical embodiment (embodiment here is used as a concept which incorporates an individual's physical manifestation as a gendered person as well as the capabilities this confers) and voice (the ability of individuals to have influence at public fora). We have seen how water governance is conducted through formal and informal institutions, social relationships

and through the 'rules in practice' of everyday water use. Physical labour is required to access water – to collect it in buckets, open the gate or to drive the cattle to water. Those who are physically present at water sources are most likely to shape the rules-in-practice – the conventions of queuing, rationing, charging based on estimations of quantities used and so on. Physical presence and the exercise of public voice are also elements of the formal institutions of water resource management, although not necessarily sufficient to secure water access. Despite the physical presence and nominal voice of the pastoralists at village council meetings, they were still allocated unsuitable scrub land for cattle grazing at the otherwise unwanted margins of the village. This example reminds us that there is no simple relationship between poverty and power; the pastoralists of Kimani are on the whole relatively wealthy, with large herds, high capacity for agriculture and significant cash resources. Nonetheless they are persistently marginalized in decision-making and allocation arrangements because of the inequitable structuring of power and resources more generally between agriculturalists and pastoralists in Tanzanian society.

### 3 Outcomes

Outcomes of the system of water governance occur at different domains (access, livelihoods, social cohesion and political voice) and are also differentiated within each domain according to status, gender, location and many other factors. The most basic domain is that of access to supplies for domestic uses. Here outcomes are differentiated according to whether consumers are close to the piped system (and can pay the costs and charges associated with the system), whether they are close to the river and can access supplies directly, or alternatively whether they are disadvantaged and therefore expend considerably more time and effort than others in collecting supplies through carriage and head-loading. It is notable how many of the people upon whom the impacts of water

access fall are the women and children who mainly collect water for domestic purposes. In the catchment these are the people least likely to shape formal water governance mechanisms through presence or voice, yet they play significant roles in shaping rules-in-practice and the social arrangements of water use and allocation.

There is differentiation in relation to livelihood outcomes for different water users, with those on the irrigation schemes being in a favourable position relative to the rain-fed farmers through the benefits of irrigated rice cropping. Amongst the irrigated farmers, there is also a strong degree of relative differentiation, with those near the head of the system better endowed in terms of resources (because of their better access to water) than those at the tail end. Other water users also build livelihoods round their access to the supplies of the Kimani, for example, the fishers and pastoralists, both in the catchment and downstream. Those with greater social and financial resources are better placed to use water for productive purposes. So the well-connected families able to host collective labour days, or to hire labour, are able to expand their irrigated land, whilst the poor are unable to utilize irrigation water because they lack the ability to make contributions to the upkeep of the system, or the labour to intensively cultivate the fields.

Outcomes from access to water are also experienced through their impact on social cohesion in the population within the catchment. The mechanisms which are put in place to mediate this access have a strong influence on social structures and institutions, as groups form and negotiate to protect or increase their access. In Kimani, this is most clearly seen in relation to the pastoralists, who are generally excluded from the formal institutions of village government for a variety of reasons, but they also occur in relation to communities and the settled groups of water users. In particular the better-endowed irrigated farmers are in

a position to protect their interests through alliances and linkages with key officials in the catchment.

In the long-term, outcomes of water access can also be seen in terms of the political voice of the water users. For example, the networks established by irrigated farmers support a range of political representation, through the structures of government at village and district level, and through linkages to the organs of central government such as the Rufiji Basin Water Office. It is interesting to note that the pastoralists compensate for their lack of representation in local institutional structures by establishing political links at higher levels of regional and central government. In both cases, these political links build on sources of power and influence, which are supported, at least indirectly, by access to water. We have explored above how a lack of material and social resources severely impedes the ability of poor people, not just to speak, but to be heard in public fora. The poor, who have more difficult access to water, are generally not in a position to develop the same level of political voice. The same is true for women, despite quotas on village councils and a nominal recognition of them as important water users and farmers. However, women may have more voice in negotiating processes of resource access and allocation at family level and in very localized settings (Odgaard, 2002).

Outcomes of the system of water governance lead to outcomes for the people who live in the catchment, differentiated according to group, status, location and so on. They also lead to outcomes for the catchment's ecosystem. Specifically, the practices result in changes in flows, which may be very significant for downstream users. In Kimani, water management practices are directed towards water use or abstraction, and the cumulative effect is to reduce downstream flows. This is experienced both at the local level, between the upstream and downstream users on the irrigation schemes, and on the basin scale, with significant reductions in the flows to the

wetlands. In turn this affects water users on the wetland like fishers and pastoralists. In general, environmental change resulting from the outputs of mechanisms for water governance is an important outcome, closely linked to the opportunity for people to access water. Since the poor often rely very directly on access to water to support their basic needs and livelihoods, ecosystem outcomes may be of particular significance to them. Outcomes of this water governance system are an uneven compromise between social acceptability and resource management effectiveness, with the balance neither stable nor entirely predictable.

#### *4 The framework as analytical tool*

Our intention in this paper is to draw on theory and empirical evidence to develop a framework for understanding water governance, both in concept and practice. We have used Kimani as an example of the range of resources and mechanisms of access, which may exist in even a relatively simple situation, and our analysis also suggests ways in which our understanding, knowledge and approaches may be constrained.

We believe that the benefit of value of analyzing water governance through the framework we are proposing is the understanding that it provides of the way different material and non-material resources are drawn on to produce a variety of mechanisms of access. These mechanisms shape a diverse range of outcomes, which are experienced differently by people of various social identities (men, women, rich, poor, farmers, pastoralists), which change over time, and which in turn impact upon the resources available for water governance. By studying a particular case we can see how resources are combined in diverse ways to produce specific outcomes. For example the establishment of water user groups along with the construction of a simple distribution system not only results in improved access to basic supplies for some sections of the community but also results in their greater

influence and voice in the further working through of governance systems. Similarly, access to irrigation water increases the livelihood opportunities for a privileged group of farmers who can then use their relative wealth to further increase their influence and consolidate their position.

The framework provides a means by which we can understand how these changes take place and how the various components of water governance link together to produce outcomes both positive and negative. Our intention in future work is to build on this understanding to apply the framework as an aid to diagnosis for better water governance. In the final section, therefore, we highlight some of the key questions that arise from viewing water governance through this framework and suggest future directions for its development as a diagnostic tool.

#### **IV Conclusions and questions arising**

Our objective in this paper is to critique current understandings of water governance, to propose a theoretical framework for interrogating the concept of water governance and to apply the framework to a specific context to investigate how it aids our understanding of the links between water governance and poverty. Building on the definition of Rogers and Hall (2003) but modifying it through concepts of social theory, we see water governance as the system of actors, resources, mechanisms and processes which mediate society's access to water.

For us, governance is a rich concept describing how society orders its affairs, encompassing the range of relationships between the different stakeholders (government, the public and private sectors, NGOs and community groups, and individual citizens). Our specific concern is water governance but we note that the framework could be applied to many other types of governance. An understanding of water governance in society may lead to a deeper understanding of how society orders its affairs in relation to other key resources and between its citizens in general.

We believe that our framework for understanding water governance is theoretically sound, drawing as it does on a range of social theories and constructs such as livelihoods and understandings of poverty. In addition we have shown that it can be used in practice through its application to the typical case of the Kimani catchment. Nevertheless, the framework is still in its early stages. Many questions must be addressed for its further development as a basis for understanding water governance in specific situations and as a diagnostic tool for interventions and support for better outcomes of water access.

Detailed analysis of the resources for water governance (Cleaver *et al.*, 2005) reveals a range of issues still to be investigated or resolved, particularly in relation to access by the poor. These questions relate to all types of resources for water governance, ranging from our understanding of the way institutional resources and social structures support or constrain poor people in their access, through to questions relating to the human capacities and technology which are deployed in accessing water and the mediating influence of the natural environment. Our earlier work specifically focussed on the need to increase our understanding of how community-level water governance works, and how it can be supported to ensure pro-poor outcomes.

This in turn requires better understanding of the mechanisms of water governance, of local structures and processes of decision-making, and how social relationships, norms and daily practices interact with management systems and shape access to water by the poor. For example we need to research the actual processes of decision-making and allocation of water so that we can understand better the range of resources and mechanisms that bear on those practical decisions, and how these understandings can be incorporated in 'better' water management practices. We need to investigate how new approaches and processes such as multi-stakeholder platforms and alternative dispute resolution

mechanisms may be better suited to water governance in a complex, multi-dimensional setting than traditional formal systems of water management based on notions of order and structure which rarely operate at the local level. We need also to understand how these processes fit with concepts of integrated water resources management, and indeed how such concepts relate and interact with the day-to-day concerns of the poor in accessing water.

A key aspect of our framework is the emphasis on outcomes, particularly for the poor, in terms of access, livelihoods, social structures and political voice. These outcomes are complex, differentiated, gender-related and dynamic. They may be positive or negative and change over time. We need to increase our understanding of these outcomes, and how they link with each other and with other aspects of poverty. Specifically we need more and better long-term studies of how these outcomes impact on poor peoples' lives over time, and how poor people cope with, and are affected by, changes in access to water on a daily, seasonal or long-term basis.

Our specific concern in developing this framework is to understand the impact of water governance on outcomes for the poor. We have therefore focussed our attention at the local level, and worked through our ideas in relation to a small rural catchment. A further important area for development is to see how the concepts might operate at the larger scale. The need for 'good' water governance is often emphasized for urban supplies and for river basins at the national and indeed trans-national level. We believe that the concept of water governance as a system of actors, resources, mechanisms, processes and outcomes could be a productive basis for analysis at these larger scales, but a series of questions arise as to how the individual components of the framework operate in aggregation. How, for example, do mechanisms of access operate across regional or national boundaries? How do outcomes for a society as a whole in turn influence processes of management and practice?

Research across these questions will improve our understanding of the framework for water governance. This will allow us to develop diagnostic tools to analyze specific situations more effectively and support processes for better water governance in those situations. This may in turn lead to improved water management practices, and to better outcomes for the poor in terms of access, livelihoods, social structures and political voice.

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