

## Institutions and governance of small reservoir water resources

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### Synopsis

This tool is based on research conducted by the CPWF project, “African Models of Transboundary Water Governance” This project, which was led by IWMI and was active between 2004 and 2007, studied customary and traditional water governance strategies in the Limpopo and Volta river basins. It covered 20 sites in six countries across the two basins.<sup>1</sup> Sources of information included local officials, community members, and other resource users. In the following sections, key findings are presented and research methods are summarized.

### Scope: questions/ challenges the tool addresses

Methods described in this tool emerged from the need to answer a specific question: “Which indigenous practices, legal frameworks and institutions are most conducive to equitable, win-win, and pro-poor investments within Sub-Saharan African transboundary basins”? Before indigenous practices and institutions could be evaluated, they first had to be identified, described and characterized.

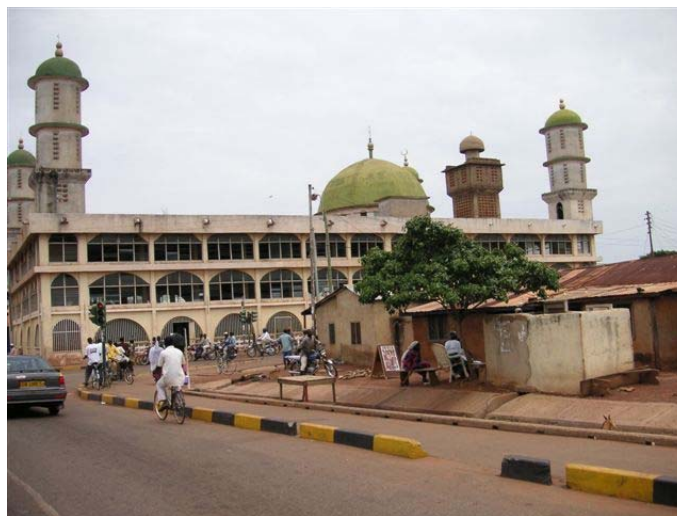
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<sup>1</sup> Field research was conducted in Burkina Faso and Ghana in the Volta Basin, and Botswana, Mozambique, South Africa and Zimbabwe in the Limpopo Basin.

Water governance rules, regulations and institutions evolve over time. Moreover, the extent to which rules and regulations are followed varies spatially and across scales: local, catchment, basin, transboundary. The use of a specific water governance system or institution may be limited to a particular ethnic or language group, associated with certain political regimes, or used only for certain kinds of water resources. Some systems emerge from local experience and then spread to other areas; other systems may be imposed by state edict and enforced at local levels. This study focuses on water governance practices, rules, regulations and institutions present in study sites as identified by water users in those sites.

### Target group of the tool

This tool is targeted at three levels of users: (1) community members and decision makers who are influential in local water management institutions; (2) authorities who plan, manage, monitor or conduct research on the functioning of small reservoirs, including basin or watershed authorities; national, regional, or local agencies or officials; implementing agencies; and funding agencies, researchers or NGOs; (3) institutions that influence transboundary water management.



**Picture:** Mosque in Tamale, Ghana (Source: Schuetz, 2005)

### Requirements for tool application

Application of the tool requires the participation of researchers with skills and resources adequate for field research with communities dependent on small reservoirs. An understanding of the multiple legislative frameworks that govern water resources in a particular country, region, or community is also important: these rules may be in concert with (or contradict) rules articulated at a local level. Researchers must be aware that formal government-initiated rules may not be locally recognized, respected or enforced. In such cases, activities that contradict written laws will not be considered illegal from the local standpoint.

### Description of application

This tool builds on CPWF research on community-level customary water governance institutions (some of them for small reservoirs) in the Volta and Limpopo River basins. It describes key findings from the two study basins, and presents a research methodology for identifying community-level customary arrangements.

The CPWF study collected and analyzed data on topics deemed important for understanding the form, function and evolution of local level water governance institutions. Topics included: 1) major historical events and their local impact 2) physical/ecological and climatic aspects of local water sources 3) water uses/livelihoods by user group 4) cultural dimensions of water use

in the community and 5) institutional mechanisms or mediating institutions affecting access to and control of water resources. Data were collected using secondary sources, surveys, informant interviews, focus group meetings and direct observation. Table 1 gives a brief summary of topics, methods and expected outputs.

Major historical events were identified and discussed from the community viewpoint to highlight changes (stochastic, incremental, physical or social) that affected local water resource management, and to explain how and why these changes occurred. This information helped describe the evolving relationships amongst local populations, the natural resource base, and rules governing resource management. When available, secondary data was used to provide further context and background. Community-level information was elicited from focus group meetings with older residents.



**Picture 1:** Small Reservoirs Farmers Association  
Upper East Region in Ghana (Source: Schuetz, 2005)

Key informants such as headmen, elders or local officials offered insights into historical events and their local consequences. For example, a timeline and description of events associated with the construction of Ghana's Akosombo Dam highlighted the relocation of over 60,000 people from their villages and homes. Their forced relocation put them in proximity to, and often in conflict with, new neighbors. Remnants of these conflicts can still be found. This example offered insights into how neighboring groups adapted to sharing water resources, while often preferring to retain their autonomous systems of governance.

*Physical aspects of water sources* were assessed in terms of type, size, location, availability, quality, and means of extraction, to help determine if local rules or institutions vary by type of water source. This information, collected by direct observation, surveys and key informant interviews, is a necessary starting point when exploring local water governance: the type of water source is an indicator for the general level of development of local water users, and the livelihood systems they use.



**Picture 2:** Small Reservoir and dam Upper East Region in Ghana (Source: Schuetz, 2005)

The most typical sources of water were boreholes, hand-dug shallow wells, small reservoirs, rivers, streams, irrigation canals, and pipe born water. Few if any respondents relied on a single source of water for all their domestic and commercial needs. Accessing multiple water sources allowed local users to manage risk, for example, when one particular source dries up, becomes contaminated, or is labeled off-limits. The use of multiple sources was also found to spread water demand across sources, theoretically allowing each source to supply water for a longer period of time. Generally speaking, boreholes, irrigation canals and piped water were associated with payment for water.

**Table 1 -** Summary of research topics, methods and findings

Theme	Data Collection via	Expected Findings
Major historical events and their impact at the local level	<ul style="list-style-type: none"> <li>• Secondary data sources</li> <li>• Timelines with disaggregated focus groups</li> <li>• Informant interviews</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in the natural resource base, resource use, users and mediating institutions over time.</li> <li>• Local strategies for coping with change.</li> </ul>
Physical/ecological and climatic aspects of local water source	<ul style="list-style-type: none"> <li>• Direct observation</li> <li>• Survey</li> <li>• Informant interviews</li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics of water sources including aspects of seasonality, quality, quantity, extraction, etc.</li> <li>• Local institutional reaction to changes in water resources.</li> </ul>
Water uses/livelihoods by user groups	<ul style="list-style-type: none"> <li>• Direct observation</li> <li>• Survey</li> <li>• Focus group meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Which water users used water from which sources, for which activities and when.</li> <li>• Range of rural livelihoods depending upon which water sources and when.</li> </ul>
Cultural aspects around water uses	<ul style="list-style-type: none"> <li>• Informant interviews</li> <li>• Focus group meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Perpetuation and enforcement of local rules via mythology, folklore, etc.</li> <li>• How customary institutions/rules are perpetuated, sanctions for breaking rules.</li> </ul>
Mediating institutions	<ul style="list-style-type: none"> <li>• Survey</li> <li>• Informant interviews</li> <li>• Focus group meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Existence/persistence of customary or local water governance institutions.</li> <li>• The nature of rules and regulations by which these institutions govern local water resources and users.</li> <li>• Enforcement mechanisms</li> </ul>

While certain water sources typically had their own governance structure, such as a Water User's Association for an irrigation off-take, it was not uncommon for multiple sources of water within a defined area to come under the jurisdiction of an umbrella institution, for



example, a chiefdom, municipality, irrigation district or some other combination of traditional and modern institutions. Sometimes the “mediating institution” for one water source was nested within a larger group of institutions such as a River Basin Authority, Catchment Management Agency, or Irrigation District. Such multiplicity or plurality of legislative frameworks links resource users to various levels of authority that claim oversight, stewardship or monitoring responsibility over the resource.

*Water use and livelihood activities by user group (gender, age, ethnicity)* were examined to ascertain who uses what kind of water for which activities – and to find out how well local rules work. Water use patterns were analyzed to determine the level of cooperation or conflict when different groups access available water for different purposes. Water governance systems (traditional and modern) were found to influence factors such as where water can be collected (access points), when (duration and frequency), how (type or size of container), and for what purposes. Data were collected through surveys, direct observation and focus group discussion.

Small reservoirs provide water for multiple users and uses including direct domestic consumption, irrigation, livestock, fishing, and other commercial enterprises such as brick making. Common rules pertaining to these systems include: specified access points for fetching water and watering livestock; limits on activities along the shoreline and inflowing stream; use of approved collection devices—usually by size; prohibition on certain types of fishing equipment; and irrigation scheduling by length of time or amount of water.

*Cultural aspects of water use* and regulation were explored to identify the extent to which social factors, folklore or mythology strengthened enforcement and sanctions in water resources management. This information was gathered from informant interviews and during focus group meetings. Researchers recorded numerous cases in both study basins of water related taboos, spirits and mythology. Findings ranged from how and why local populations protect the watery habitat of their totem (crocodiles) in the Volta Basin to honoring the power of the Rain Queen in the Limpopo. While respondents frequently provided the ‘story line’ of local myths and taboos, there was little supporting evidence of punishment for noncompliance. Other findings suggest that the young are less inclined to respect local taboos and myths than their elders, a point frequently mentioned during meetings and interviews with older informants.

Finally, information was gathered about the *nature, structure, function and participation in local water governance institutions* that mediated access to and control of the resource. Questions were asked about the existence of institutions, local peoples’ participation in them, and their perceptions of fairness of and compliance with the rules. These questions covered all local level institutions pertaining to water, whether traditional or modern. Findings suggest a wide range of institutions regulating local water use; few trends were evident in the data.

While customary water governance arrangements were the focus of field research, the overall project goal was to determine which, if any, characteristics of customary arrangements could help strengthen transboundary institutions. Therefore research sites were selected at the intersection of water uses, users, and sources, where boundaries between local institutions are most likely to be found. While these boundaries were not a flawless proxy for transnational

boundaries, they did offer examples of how different institutions governed various aspects of access to and control of water resources under these circumstances.

Field research was organized under a country team leader and conducted by teams of university (mainly graduate) students from the study country. Following a project specific, one-week social science research methods training course, country teams began planning where, when and how they would implement the methodology. Team preparation for field work included studying secondary data sources and background information on customary water laws within local basins. Data collection instruments, except surveys, were customized by each country team to allow them to collect the necessary information in a culturally sensitive manner<sup>2</sup>. Final site selection, including requisite permissions, was followed by field pre-tests of all instruments by each country team. Research schedules were created and the teams undertook field work<sup>3</sup>.

## Lessons learned

Given the intangible nature of institutions, identifying the principles and strategies of those institutions considered “customary” is facilitated by a multi-disciplinary approach. Resource users readily identify WUA’s or irrigation groups as “water governance institutions” but often fail to recognize the water governance roles played by more traditional power structures. Interaction, discussion and observation helps researchers discern the more deeply ingrained customary rules.

The methodology used in this study is interactive rather than participatory. It was designed by researchers outside the communities and intended to provide them with certain information of interest. The data provided by community members was analyzed and synthesized to draw conclusions about which aspects of customary institutions might be of interest or use to decision makers in transboundary (transnational) institutions. Nonetheless, throughout the data collection process, researchers facilitated social learning as community members discussed, debated and diagnosed the nature of the institutions that governed their access to and control of water resources.

## Findings

Research findings show that local water governance institutions can generally be classified as either modern or traditional. Although any one particular local institution tends to fall into one category or the other, it was common to find both categories of institutions co-existing within communities.

Modern institutions *tended* to be more recently developed, based upon statutes and written rules, designed to govern one particular type of water source, led by elected representatives, and based upon a sort of institutional template introduced to the community from outside. Examples of these types of institutions include Water User Associations, Canal User

<sup>2</sup> Although translated into local and/or national languages where necessary, each country used the same survey to facilitate comparative analysis.

<sup>3</sup> Country teams had flexibility in how they scheduled research. Once data targets were set during the training workshop, team members either all worked together on one site at a time before proceeding to the next, or dedicated one student to one site for a prolonged period of time.

Associations, Water and Sanitation Committees, Water Boards, borehole committees and many others. Modern institutions were present in nearly all sites in each of the six study countries and their presence and influence seem to be expanding. These types of institutions are often associated with decentralization and often represent national institutions at the local level.

Traditional institutions have endured and evolved; and are typically based upon the inherited (as opposed to appointed or elected) authority of a chief, elders, headman or other leader. These institutions tend to consider all available natural resources as a system and therefore govern more than one source or type of water at one time. These institutions tend to have strategies for balancing exploitation and protection of existing resources with an eye toward stewardship for future generations—and leaving some for all. Conflicts are usually dealt with within the community rather than seeking outside intervention or redress. Examples of traditional institutions were found in all countries, across both study basins. However, their robustness and effectiveness varied a great deal. Generally speaking, their authority has been decreasing—to the concern of traditional leaders.

Participation in institutions varied by type of institution, gender and age of respondent, community and country. Generally speaking, community members claimed a greater level of participation in modern compared to traditional institutions. This suggests increased local participation in formal water resource management and decision making. While more individuals may be serving on committees and boards, their effective input into resource use and management decisions may not exceed that from consultation by traditional institutions. Conflict was mentioned more often in relation to modern institutions but this may reflect a more democratic and participatory nature that may challenge traditional power structures.

It is difficult to compare modern and traditional water governance institutions from a performance perspective. Results from Burkina Faso and Ghana suggest that institutions which mix elements of both modern and traditional were more respected by community members and more sustainable. For example, modern institutions are increasingly responsible for charging and collecting fees for water use with levies and fee structures determined outside the community whereas traditional institutions are able to consider ability to pay, the seasonal nature of income in rural areas, or extenuating circumstances. Traditional institutions were frequently associated with indigenous knowledge and local strategies for risk aversion and disaster mitigation, where modern institutions often have means to record and perpetuate these practices. Therefore a combination of the two approaches could better serve water users.

## Key principles

A number of lessons were common to a majority of cases and sites in the study.

1. Most conflict over water resources in study areas arose from disagreements about water access, control, and use, and frequently involved the marginalization of certain groups. In cases where all user groups felt they had similar or equal access to resources, even if restricted during drought, incidence of conflict was reduced. Where there was perceived competition or unequal access to water resources, conflict was more evident.

2. Communities depend upon multiple water sources to meet their water needs throughout the year. Different water sources play different roles and each source may have a specific use. These strategies help insulate communities from risk and give them options to deal with changing ecological conditions. Traditional institutions that simultaneously regulate multiple sources (for multiple purposes) may be more appropriate for local conditions than modern institutions that govern a single source.
3. Water use, management and governance remain highly gendered. Women bear primary responsibility for supplying household water and are often primary producers as well, yet remain under-represented as participants and decision makers. Women are informed decision makers about the priority uses, quantities, and quality of local water resources. Yet generally speaking, neither traditional nor modern institutions prioritize women's voice in regulating water: at best they are put on par with men in emerging, democratic institutions. While claiming to promote women's participation in decision making, modern institutions do not necessarily recognize their unique knowledge and experience.
4. Increasing modernization of local water governance institutions should increase community members' participation in decisions about how available water is managed. This approach helps give voice to those who may have been previously marginalized. However, modernizing institutions can also focus on making more water available to more people by engaging in dialogue about water rights, service delivery and accountability.
5. Customary institutions still play varying roles in water resources governance and management across the study sites. Evidence of customs, traditions and taboos were easily articulated by respondents in most cases, even when there were no immediate or visible consequences. While this may seem to imply to outsiders that these rules were no longer respected or enforced, local respondents still subscribed to the fear of eventual punishment.

## Recommendations

Small reservoir management is a determining factor in system function. Enforcement of agreed upon rules of access and use is a necessary condition for successful exploitation of small reservoir water resources. While often a dominant feature, small reservoirs are usually one of a number of water sources exploited by a community and must therefore be recognized as part of a system. In those cases where a small reservoir is the only available water source, it is still exploited by multiple users to meet a variety of needs.

The shifting mosaic of water availability, demand, users, and uses requires a locally respected institution flexible enough to meet everyone's basic needs all of the time and other needs, most of the time. Whether modern or traditional, statutory or customary, or a combination thereof, institutions governing small reservoirs should be tailored to fit local conditions while complying with state requirements for resource use. Communities of users must therefore agree on priority uses of water, access rules and mechanisms for enforcement and sanctions while respecting national aims and goals.

Where small reservoirs already exist, governance structures can be strengthened to better meet the needs of the users and conserve the resource for future use. This usually implies a close



examination of issues of equity and access for marginalized groups. Where new reservoirs are being created, decision makers must consider a governance institution that takes into account existing systems and norms before imposing a ‘one size fits all’ system of rules.

### Limitations of the tool

This study was qualitative in nature. It sought to get an understanding of the types of institutions governing rural water resources in the Limpopo and Volta Basins. The focus of the study and data collection was on the form and function of existing institutions, not necessarily on the function of the water source itself. Small reservoirs were studied as part of a local suite of water sources.

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