The water governance challenge: the discrepancy between what is and what should be
H. M. Ravnborg and K. M. Jensen

ABSTRACT
In 2010, the UN General Assembly declared the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights. Yet, findings from the Competing for Water research programme suggest that all too often, people in need of water for domestic purposes lose out to people and companies who claim access to water for productive purposes. Likewise, in many countries, specific water authorities at national as well as basin and watershed level have been formed and assigned the responsibility to allocate water according to the water policy and the associated legal framework. Yet, findings from the Competing for Water research programme show that real-world water allocation takes place through a wide array of institutions, ranging from the rural community, over agreements mediated by local lawyers, district officials and non-governmental organisations, to decisions made in the president’s office. The Competing for Water programme entails empirical research conducted in Bolivia, Mali, Nicaragua, Vietnam and Zambia. Based on findings from this research, this paper identifies the discrepancies between statutory and actual water governance, analyses the underlying causes and explores the implications for ongoing water governance reform.

Key words | competition, conflict, governance, inequality, integrated water resources management, poverty

INTRODUCTION
Many countries, including many developing countries, are currently in a process of water reform. Typically, this process entails both a policy reform and a reform of the legal and administrative framework within which development, allocation and use of water is governed.

A common feature in most countries’ water policy is the principle that priority is assigned to domestic uses over productive uses in the allocation of water at any given scale. In this way, the water policies of many countries have anticipated the 2010 UN General Assembly declaration of the right to safe and clean drinking water and sanitation as a human right, essential for the full enjoyment of life and all human rights. (United Nations General Assembly, Res. A/64/L.63/Rev.1, July 26, 2010)

Although progress has been made towards improving sustainable access to safe drinking water and sanitation during the past decades, significant challenges remain towards accomplishing the intentions of assigning priority to human drinking water over other uses of water and ultimately guaranteeing safe and clean water as a human right.

Likewise, in compliance with Agenda 21 (Article 18.8 (here quoted from Molle et al. 2007)) and the subsequent recommendation made at the World Summit in Johannesburg in 2002, many countries are adopting integrated water resources management (IWRM) as a basic principle for their water governance. In many countries, this has been interpreted as requiring that water is managed on the basis of river basins (Molle et al. 2007) and the principal focus of attention in this respect has been to put in place ‘the ideal organizational model for river basin management’ (ibid.: 609). Thus, various types of organizations have been created at river basin and sub-basin level (watershed, catchment,
etc.) to develop, allocate and manage the use of water. Yet, even in places where such organizations have been created, decisions with respect to the development, allocation and use of water are taken in a wide array of institutional settings, ranging all the way from individuals and small groups of individuals, sometimes involving agreements mediated by local lawyers, district officials, etc., over communities, local governments and non-governmental organisations (NGOs), to decisions made in the president’s office.

The identification of such discrepancies between ‘what is’ and ‘what should be’ is one of the findings from research conducted as part of the Competing for Water programme in Bolivia, Mali, Nicaragua, Vietnam and Zambia. (For information about the programme, its partners and publications, see www.diis.dk/water). Following a brief description of the methods employed and the data upon which this paper is based, the subsequent two sections present and discuss empirical evidence of ‘what is’ with respect to competition for water for domestic and productive uses and with respect to the institutions called upon and involved in water governance in five rural districts – one district in each of the countries mentioned above. The fifth and final section summarizes the conclusions and suggests possible implications for efforts to improve pro-poor water governance in developing countries.

METHODS AND DATA

The paper draws on three sets of empirical data produced with reference to five rural districts. Apart from being located in three different continents, the five districts – Tiraque district in Bolivia, Douentza district in Mali, Condega district in Nicaragua, Con Cuong district in Vietnam and Namwala district in Zambia – were selected through a maximum variation sampling strategy (Patton 2002) to represent a high level of mutual heterogeneity in terms of rainfall pattern, population density, and the importance of irrigation, livestock keeping and fishing, hydro-power and other water infrastructure development, and formal water allocation mechanisms.

The first data set is an inventory of water-related conflictive and cooperative events (Ravnborg et al. 2012). (For more details on the methodology for developing the inventories of water-related events, see Ravnborg et al. (2012).) A water-related event is defined as ‘an action (or a set of actions) that seeks to secure one or more parties’ access to or use of water by (i) challenging other parties’ access or use; (ii) confirming own or other parties’ access or use; or (iii) collaborating with other parties to secure access or use’. Several events may relate to a single water-related situation, defined as ‘a social situation where two or more parties have actual or potentially competing interests in the same water resource’. Water-related events may be either conflictive or cooperative.

Based on interviews with community members as well as a wide range of community-external actors undertaken in or with reference to a geographically stratified sample of 10 rural communities in each district, a total of 714 public, water-related events were identified to have occurred between 1997 and 2007. Using the district-specific proportions that the population of the sample communities constitutes of the total rural population of five districts as the extrapolation factor, a total of 6,089 water-related events is estimated to have occurred in the five districts between 1997 and 2007. These events are associated with a total of 1,954 water-related situations (Table 1).

Inspired by the event intensity scale developed by Wolf and colleagues to characterize the intensity of water events

<table>
<thead>
<tr>
<th></th>
<th>Tiraque district</th>
<th>Douentza district</th>
<th>Condega district</th>
<th>Con Cuong district</th>
<th>Namwala district</th>
<th>All districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of events identified in sample communities</td>
<td>132</td>
<td>143</td>
<td>198</td>
<td>122</td>
<td>119</td>
<td>714</td>
</tr>
<tr>
<td>Estimated number of events having occurred in district</td>
<td>1,605</td>
<td>1,017</td>
<td>860</td>
<td>1,283</td>
<td>1,324</td>
<td>6,089</td>
</tr>
<tr>
<td>Estimated number of situations having occurred in district</td>
<td>456</td>
<td>195</td>
<td>351</td>
<td>521</td>
<td>431</td>
<td>1,954</td>
</tr>
</tbody>
</table>
in transboundary water basins (Yoffe et al. 2003; Wolf et al. 2003) and by Thomasson (2005), a scale was developed according to which to assess the intensity of local-level water events. The intensity of conflictive events ranges from the least conflictive (−1) involving informal expressions of discontent or verbal disputes among conflicting parties to the most conflictive (−7) which entail organised collective violence or warfare. For the cooperative events, the water event intensity scale ranges from the least cooperative (+1) where parties express casual verbal recognition of each others’ access rights to the most cooperative (+7) where parties decide to merge formally individual access rights. (For more details on the water event intensity scale, see Ravnborg et al. (2012).)

The second data set is provided through a questionnaire-based survey on household poverty, access to water for domestic and productive purposes and access to water governance institutions. The survey was conducted in 2008 and was administered to a random sample of 400 rural households in each of the five districts (Ravnborg 2010). Inspired by the reservations expressed by Sen (1981, 1985) towards understanding and measuring poverty and well-being solely on the basis of income or expenditure data, the poverty profile was developed on the basis of people’s own perceptions of poverty, identified through well-being rankings. The rankings were conducted in three communities, selected through a maximum variation sampling strategy with respect to factors which could potentially lead to the existence of different perceptions of well-being. The descriptions of different poverty levels resulting from the rankings were ‘translated’ into indicators. These indicators formed the basis for constructing a household poverty index. A set of three poverty categories was defined, namely the ‘poorest’, the ‘less poor’ and the ‘non-poor’ households. (For more details on the methodology, see Ravnborg et al. (1999) and Ravnborg (2010).) Table 2 shows the distribution of households among poverty categories for the five districts.

The third and last set of empirical data is based on qualitative inquiries conducted in a total of 13 communities in the five districts during 2009. The qualitative inquiries were conducted in order to provide more detailed understanding of the processes and relationships through which access to water is obtained, secured and lost in rural communities. A range of techniques were employed as part of these inquiries, including mapping of social, economic and political relationships, livelihood mapping, and focus group interviews with different types of community members such as community leaders, de-facto single female household heads, new-comers, etc. (The case studies are documented in reports available at http://www.diis.dk/sw33068.asp.)

**COMPETITION FOR WATER IN FIVE RURAL DISTRICTS**

Competition for water – i.e. the situation that different actors seek access to the same water resource for similar or different purposes which potentially or actually, fully or partly exclude each other – primarily spells out into action during the dry season. Of the 6,089 water-related events that are estimated to have occurred between 1997 and 2007 in the five districts, 80 percent began during the dry season. Shortage of water both accentuates the need for people to develop mechanisms and agreements on how to share and manage the use of the water available, and give rise to contestations and confrontations over access to and use of water among competing parties.

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**Table 2 | Distribution of households according to household poverty category by district, percent households per poverty category by district**

<table>
<thead>
<tr>
<th>Poverty category</th>
<th>Tirague district (N = 400)</th>
<th>Douentza district (N = 400)</th>
<th>Condega district (N = 395)</th>
<th>Con Cuong district (N = 400)</th>
<th>Namwala district (N = 400)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-poor</td>
<td>31</td>
<td>14</td>
<td>23</td>
<td>36</td>
<td>27</td>
</tr>
<tr>
<td>Less poor</td>
<td>50</td>
<td>50</td>
<td>32</td>
<td>43</td>
<td>31</td>
</tr>
<tr>
<td>Poorest</td>
<td>19</td>
<td>37</td>
<td>45</td>
<td>21</td>
<td>43</td>
</tr>
<tr>
<td>All poverty</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Both from a concern with conflict prevention in a broad sense and from a more specific concern with securing access to drinking water for all even in critical periods of the years, events where different actors compete for access to water for different purposes, i.e. multiple-use events, merit further scrutiny.

Conflict and cooperation related to competing claims from actors who (wish to) use water for different purposes are most common in Douentza and Namwala districts. Here multiple-use situation accounted for 64 and 78 percent, respectively, of the water-related situations within which events had taken place between 1997 and 2007. At the other end of the spectrum, in Tiraque and Con Cuong districts, multiple-use situations constituted 6 and 15 percent, respectively. In between, in Condega district, multiple-use situations constituted 44 percent of the water-related situations. In three of the five districts – Condega, Con Cuong and Namwala – multiple-use events are more likely to be conflictive than single-use events. In Condega district, 68 percent of the multiple-use events are conflictive as compared to 32 percent of the single-use events; in Con Cuong district, 71 percent of the multiple-use events are conflictive as compared to 35 percent of the single-use events and in Namwala district, 74 percent of the multiple-use events are conflictive as compared to 58 percent of the single-use events (significance of Pearson’s chi-square < 0.001). In Douentza district, the opposite is the case. Here, 32 percent of the multiple-use events are conflictive compared to 48 percent of the single-use events (significance of Pearson’s chi-square < 0.001). Moreover, the conflict intensity tends to be higher for the conflictive multiple-use events than for the conflictive single-use events. Based on the water event intensity scale, the average intensity of the conflictive multiple-use events (n = 1,255) is –2.41 compared to an average intensity of –1.89 for the conflictive single-use events (n = 1,800) (significance of F < 0.001; analysis of variance). Likewise, the intensity of the cooperative single-use events tends to be higher than that of the cooperative multiple-use events. The average event intensity for the cooperative single-use events (n = 1,971) is +2.86 compared to an average intensity of +2.56 for the cooperative multiple-use events (n = 984) (significance of F < 0.001; analysis of variance).

Overall, the majority of these multiple-use events take place between people who wish to use water for domestic purposes and people who wish to use water for productive purposes such as watering livestock and crops and, particularly in Con Cuong district, also for small-scale mining activities (Ravnborg et al. 2012). Three video reports (available at www.diis.dk/water/videoreports) produced as part of the Competing for Water programme provide examples of such multiple-use events from Namwala, Condega and Con Cuong districts.

Over the past decades, significant progress has been made towards establishing infrastructure to provide rural people with access to safe drinking water. An average of 72 percent of the households in the five districts indicated to have a public water tap, a deep well or a drilled borehole as their most important source of drinking water during the dry season. In Tiraque, Condega and Con Cuong districts, two-thirds or more of all rural households walk less than 5 minutes to fetch water from their most important drinking water source, while water infrastructure coverage is lagging behind Douentza and Namwala districts. Here, only 36 and 46 percent, respectively, have less than 5 minutes walk to their most important drinking water source and more than a quarter of the households in the two districts have to walk more than 20 minutes to fetch drinking water.

Despite progress made, our data reveal a worrying tendency of a social skewedness with respect to access to safe drinking water made available through public investments during past decades (Figures 1(a) and 2(a)). This is particularly pronounced in Tiraque and Con Cuong districts which in general enjoy the best water infrastructure coverage for domestic as well as for productive (irrigation) purposes. In Tiraque district, most people depend on public, gravity-fed schemes for drinking water. However, while 86 percent of the non-poor households indicated public water supply scheme as their most important dry season drinking water source, this was only the case for 64 percent of the poorest households. In the absence of access to public drinking water supply, more than a third of the poorest households in Tiraque use less safe water sources, e.g. shallow wells (21 percent of the poorest households) and surface water from streams and irrigation canals (14 percent of the poorest households) as drinking water during the dry season. In Con Cuong district, deep wells, often publicly funded, constitute the most common source of drinking water during the dry season, but again access is socially skewed. Three quarters (78 percent)
of the non-poor households have deep wells as their most important drinking water source during the dry season compared with only a third (34 percent) of the poorest households. Instead the poorest households use surface water from the streams and canals for drinking during the dry season (being the case for 48 percent of the poorest households compared to 8 percent of the non-poor households). Similar patterns exist for public water supply schemes in Condega and Douentza districts (Figures 1(a) and 2(a)).

Moreover, there is a social skewedness with respect to who loses and who gains when competition for access to these water sources intensifies during the dry season. In most places, publicly funded deep wells, boreholes and gravity-fed water taps are primarily intended to supply rural people with safe drinking water while water for other purposes, such as watering of animals and crops, is intended to be drawn from other sources. Yet, as other nearby sources are drying out as the dry season progresses, the temptation grows to use water from the drinking water taps and deep wells for livestock and crops. Because livestock and particularly cattle ownership is socially skewed in favour of the non-poor, this adds to the disadvantaged position that the poorest households face in obtaining secure access to drinking water. However, in Douentza district where cattle ownership is most widespread with 73 percent of the households owning cattle, it is primarily the poorest livestock-owning households that are tempted to use deep wells, boreholes and public water supply schemes to water their livestock, whereas the non-poor households to a larger extent have access to privately owned shallow wells for watering their livestock. As illustrated in Figures 1(b), 1(c), 2(b) and 2(c), the proportion of households using public

![Figure 1](https://iwaponline.com/ws/article-pdf/12/6/799/416990/799.pdf)
water taps, deep wells and boreholes to supply water for their livestock increases in the dry season as compared to the rainy season in all districts with the exception of Con Cuong. Among the five districts, Con Cuong is where cattle ownership is least common with only 29 percent of the households owning cattle.

Our inventory data indicate that it is often people who use water for drinking and other domestic purposes who have to give in when faced with competing claims for the same water, e.g. from livestock keepers or farmers who use water for irrigation (Figure 3). Only in 11 percent (83 events) of the 728 multiple-use, conflictive events involving rural domestic consumers as one of the parties, rural domestic consumers were assessed to ‘win’ while they were assessed to lose in 39 percent (282 events) of these multiple-use, conflictive events. Of the 346 multiple-use, conflictive events involving competing claims between users of water for livestock and domestic water users, livestock keepers were assessed to ‘win’ in 23 percent (81 events) of the events while domestic water users were assessed to ‘win’ only in 14 percent (49 events) of the events. Finally, of the 247 multiple-use, conflictive events involving competing claims between users of water for irrigation and domestic water users, irrigation farmers were assessed to ‘win’ in 40 percent (100 events) of the events while domestic water users were assessed to ‘win’ only in 7 percent (17 events) of the events.

The finding that multiple-use events are most common where water infrastructure coverage is poorest (Douentza, Namwala and to a lesser extent Condega district) is hardly
surprising. However, combined with the insight that poor domestic water consumers are more likely to lose out in such conflictive water events than non-poor households who often also use the water for productive purposes, the results become more alarming, particularly when water has been made available through publicly funded water infrastructure. They suggest that when rural drinking water infrastructure is spread thinly both population-wise and geographically without infrastructural and institutional provisions for meeting demands for water for productive purposes, public water infrastructure investments are likely to exacerbate economic inequality through providing subsidized access to productive water for the non-poor, without providing sustainable access to safe drinking water for the poorest part of the population.

WATER GOVERNANCE IN AN INSTITUTIONAL PERSPECTIVE IN FIVE RURAL DISTRICTS (THIS SECTION DRAWS EXTENSIVELY UPON RAVNborg ET AL. (2012))

Conflict and cooperation about water largely takes place without coming to the knowledge of authorities outside the location of the water-related events, including authorities which hold statutory water governance mandates. Just over a quarter of the 1,954 water-related situations which had given rise to water-related events in the five districts between 1997 and 2007 were recorded by outside authorities (not including community-based authorities such as community leaders, village government, water committee, etc.), the media, NGOs, etc., either in writing (administrative files, internal memos, local newspaper articles, etc.) or in the memory of actual or previous staff members.

Yet, in 42 percent of the water-related situations, one or more of the direct parties to the situation had called upon a third party to mediate in the conflict, to solicit support for improving water-related infrastructure, etc. In six out of 10 of these situations where a third party had been called upon, authorities and other social actors from outside the location of the situation had been called upon as the third party, whereas in the remaining four out of 10, only community-based authorities had been called upon as the third party. However, significant differences exist between the five districts in this respect, reflecting their mutually diverging institutional contexts. As shown in Table 3, third parties, particularly community-external third parties are
most likely to be called upon in Condega district. Apart from the proximity of the district headquarters to most rural communities, Condega’s district administration has had an explicit policy of public attention and has been favoured by a number of donor-funded interventions related to water supply and watershed management implemented through ministries, water supply agencies, NGOs, sometimes in coordination with the district authorities. Moreover, the district environmental commission in Condega has assumed an active role in water governance issues, particularly since 2005 (Gómez & Ravnborg 2012).

At the other extreme, third parties are least likely to be called upon in Tiraque and Con Cuong districts. Both districts have a long history of irrigation farming and are widely served by irrigation canals. Over time developed mechanisms, including community-based committees, for allocating irrigation water among the plots served by the canals. In addition, both districts have separate infrastructure for domestic water. Thus in Tiraque, community-based irrigation committees were themselves a direct party to close to one third of the water-related situations that had taken place in the district. In Con Cuong district which like the rest of Vietnam has a hierarchical political and administrative system, attempts to call upon community-external authorities as third parties have to take place through the community organisation. Thus, almost exclusively community-based authorities were called upon as third parties in Con Cuong.

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**Table 3** | Third party called upon in water-related situations by research location, percent situations per research location

<table>
<thead>
<tr>
<th>Location of third party called upon:</th>
<th>Tiraque district (N = 456)</th>
<th>Douentza district (N = 195)</th>
<th>Condega district (N = 351)</th>
<th>Con Cuong district (N = 521)</th>
<th>Namwala district (N = 431)</th>
<th>All districts (N = 1,954)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third party called upon (any)</td>
<td>21.1</td>
<td>60.0</td>
<td>65.0</td>
<td>30.3</td>
<td>50.8</td>
<td>41.9</td>
</tr>
<tr>
<td>Location of third party called upon:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- community-level authority, only</td>
<td>6.1</td>
<td>11.8</td>
<td>2.8</td>
<td>29.6</td>
<td>28.1</td>
<td>17.2</td>
</tr>
<tr>
<td>- community external authority called upon (also)</td>
<td>14.9</td>
<td>48.2</td>
<td>62.4</td>
<td>0.6</td>
<td>22.7</td>
<td>24.7</td>
</tr>
<tr>
<td>Type of third party called uponb:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- community-level authority</td>
<td>9.2</td>
<td>28.2</td>
<td>16.0</td>
<td>29.8</td>
<td>28.5</td>
<td>22.1</td>
</tr>
<tr>
<td>- district authority</td>
<td>7.9</td>
<td>22.1</td>
<td>31.1</td>
<td>18.8</td>
<td>15.8</td>
<td>18.1</td>
</tr>
<tr>
<td>- ministry</td>
<td>3.9</td>
<td>2.1</td>
<td>20.5</td>
<td>-</td>
<td>11.6</td>
<td>7.4</td>
</tr>
<tr>
<td>- local lawyer</td>
<td>12.9</td>
<td>13.8</td>
<td>14.8</td>
<td>-</td>
<td>-</td>
<td>7.1</td>
</tr>
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<td>- police</td>
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<td>14.0</td>
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<td>-</td>
<td>3.2</td>
</tr>
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<td>-</td>
<td>20.0</td>
<td>13.4</td>
<td>-</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>- water authority</td>
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<td>4.1</td>
<td>20.5</td>
<td>-</td>
<td>6.0</td>
<td>5.4</td>
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<td>- legal authority</td>
<td>6.4</td>
<td>13.8</td>
<td>3.4</td>
<td>-</td>
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<td>3.5</td>
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<td>- provincial or departmental authority</td>
<td>3.3</td>
<td>9.7</td>
<td>1.4</td>
<td>-</td>
<td>5.6</td>
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</tr>
<tr>
<td>- media</td>
<td>-</td>
<td>-</td>
<td>1.7</td>
<td>-</td>
<td>0.5</td>
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<td>- civil society organisation</td>
<td>-</td>
<td>2.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.2</td>
</tr>
<tr>
<td>- church</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>- other</td>
<td>-</td>
<td>-</td>
<td>1.4</td>
<td>-</td>
<td>-</td>
<td>0.3</td>
</tr>
</tbody>
</table>

*aCorrelation between type of third party called upon (community-level authority only, community-external authority also, and third party) and research location significant at 0.001 level (Pearson’s chi-square test).

*bIn some water-related situations, more than one third party was called upon. Therefore, the institution-specific percentages do not add up to the total percentage of situations in which third parties have been called upon.

Despite these differences, the institutions called upon as third parties tend to have mandates that reach beyond water-related issues, whereas institutions which have a specific water-related mandate are much less called upon (Table 3). Only in Condega district, the water supply agency (ENACAL) had been called upon to any notable degree due to executing a donor-funded rural drinking water project during the study period.

The data presented suggest that despite efforts to create institutions with designated water mandates, transcending administrative divides between communities, districts, etc. to enable integrated water governance, people tend to call upon institutions they know and that are within reach when in need of a third party in a water-related situation. This is partly out of convenience. When asked who they would call upon first, second and later in cases of water sources running dry due to excessive withdrawals by others, respondents in all five districts (N = 1,995 households) indicated that they would first go to community institutions and neighbours and only later to institutions outside the community such as district authorities. That catchment and river-basin organisations are not called upon may partly be out of ignorance of their existence, partly due to their sporadic existence. As IWRM primarily has been promoted by international donor agencies, the functioning of catchment organisations has tended to fluctuate with the availability of external funding.

Moreover, judging from the insights from the five districts, little practical consideration has been given to what IWRM implies at the local level. The role that district authorities play in water governance has been left largely unfunded, if at all recognized. Community-based water committees have received more attention. However, particularly when associated with donor-funded drinking water infrastructure, as in Douentza, Condega and Namwala districts, the focus has been on infrastructure maintenance rather than on allocation issues.

Several of our case studies (Gómez & Ravnborg 2011; Funder et al. 2012) found that it is the community-level power imbalances which make the poor refrain from claiming their right to access to drinking water. As a woman explained in a focus group meeting with poor women in a Nicaraguan community:

‘If they [the non-poor cattle owners] are fetching water, filling their tanks [for watering cattle], I prefer to wait and fetch the little water which is left’ (Woman A/B, personal communication held in San Isidro, 2009).

Referring to the fact the non-poor households hold significant statutory as well as economic and physical power, another woman expanded:

‘Those who are in the water committee are the same people who have constructed tanks; it is better not to say anything in order not to get into trouble’ (Woman A/B, personal communication held in San Isidro, 2009).

Although widely recognized, such power imbalances and their implications for poor people’s access to safe drinking water have only rarely been addressed in efforts to improve access to drinking water. This neglect contributes to explain the discrepancy between water governance as envisaged in national water policies and regulatory frameworks and water governance as it is practiced at the local level.

CONCLUSIONS – THE IMPLICATIONS OF DISCREPANCIES FOR WATER GOVERNANCE

Despite decades of policy commitment from national governments and the international community to secure sustainable access to safe drinking water for all and to establish the organizational infrastructure for planning and managing water use and development (Molle et al. 2007; Lenton & Muller 2009; Peña 2011), our results suggest that the reality in rural areas continues to fall short of these expectations in many developing countries.

When competition for water intensifies in the dry season, poor households are likely to lose their access to safe drinking water to non-poor households who often also use the water for productive purposes. Several factors collude to cause this unfortunate but well-known situation. Water supply infrastructure is often scaled and implemented to satisfy the needs for drinking water only. Rules are established which assign priority to drinking water and often prohibit the use of water for productive purposes. While this approach obviously makes it possible to obtain larger geographical coverage of drinking water supply, empirical evidence from the five districts presented above indicates
that larger geographical coverage comes at the cost of smaller socio-economic coverage. The economic gains associated with circumventing the rules that assign priority to domestic over productive use in the allocation of water simply exceed the capacity – and will – of local enforcement of existing rules. When the water supply infrastructure put in place is insufficient to satisfy both domestic and productive demands for water, and when community-level power imbalances are not specifically addressed in efforts to improve water governance, risks are high that water supply infrastructure is appropriated by the local elite and that improvements in poor people’s access to safe drinking water fall short of expectations and come at the price of increasing social and economic inequality.

Two options exist to remedy this situation. First, more attention should be placed at developing water infrastructure that provides sufficient water to cover both domestic and productive demands for water. In order not to exacerbate inequality by providing a subsidy in favour of the non-poor who are in a better position to exploit water for productive purposes, ways should be identified to ensure that those who benefit from such public water infrastructure investments for productive purposes beyond a certain minimum level, contribute – proportionally more – to the financing and running of the infrastructure, e.g. as part of general taxation schemes, water use permit systems, etc. The second option is to maintain the exclusive focus on domestic water supply in water infrastructure development, but combined with increased investments in the capacity to provide external support for enforcement of water allocation rules and for conflict mediation and resolution. Both of these options call for skills beyond the scope of hydrology and for political deliberations and democratic representation that lie outside that of designated and often technically oriented basin- and watershed management organizations (Barham 2001; Ravnborg 2004; Molle 2009).

This call is corroborated by the efforts that rural people make to deal with competition for water. The institutions called upon to help provide solutions to water needs or to mediate in water-related conflicts tend to be institutions that are within immediate reach, are known to people due to their permanency over time, or that enjoy a certain democratic legitimacy. Institutions with designated water mandates such as water authorities, basin or watershed committees that have a more sporadic presence depending on donor funding, etc., were much less called upon as third parties to situations of water-related conflict and cooperation.

During the past decade, resentments towards IWRM as a feasible approach to water governance have emerged (e.g. Biswas 2004, 2008; Molle et al. 2007; Molle 2008; Lenton & Muller 2009; Butterworth et al. 2010). Some authors call for the need to draw upon adaptive management approaches to make IWRM more flexible and sensitive to context by learning from progress and drawbacks as they unfold (Pahl-Wostl & Sendzimir 2005). In places where IWRM approaches are well underway as an organizational approach for water governance, the way forward may be to sustain these efforts in order not to lose gained momentum. However, in places where limited progress has been made towards the practical implementation of IWRM, the findings presented in this paper suggest that recognizing and supporting the role of a wide array of institutions which actually – as we have seen – take part in water governance, may be the way forward. This is in line with current thinking on polycentric governance. According to Ostrom:

‘Polycentric’ connotes many centers of decision making that are formally independent of each other…. To the extent that they take each other into account in competitive relationships, enter into various contractual and cooperative undertakings or have recourse to central mechanisms to resolve conflicts, the various political jurisdictions […] may function in a coherent manner with consistent and predictable patterns in interacting behaviour. To the extent that this is so, they may be said to function as a ‘system’ (Ostrom et al. 1999; here quoted from Ostrom 2010: 411).

Seen from this perspective, the water governance challenge is to close the gap between ‘what is’ and ‘what should be’ by recognizing the diverse array of statutory, customary and private institutions that take part in water governance, and make sure that ‘central mechanisms’ to resolve actual as well as potential conflicts such as the political, legal and administrative framework are in place so that water governance institutions as well as citizens have common points of reference.
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