Community management and sustainability of rural water facilities in Tanzania

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Abstract

This paper addresses the question of whether community management in water service delivery affects the sustainability of rural water facilities (RWFs) at village level, in terms of their technical and managerial aspects, and what role capacity building of users and providers plays in this process. Empirical research was conducted in nine villages in the districts of Kondoa and Mpwapwa, in the Dodoma region of Tanzania. The results reveal that sustainability of RWFs is in jeopardy and that villages far from the District Council headquarters experience numerous technical and management problems. The national water framework does not clearly define the roles of the key actors at the district, village and household levels. District Water Departments do not have enough resources to render the services needed adequately and in a timely manner. In all the villages studied there were no local technicians trained for basic operation and maintenance. This implies that the concept of community management cannot be taken at face value; its actual meaning needs to be specified in order to offer a realistic and feasible option in the decentralization of rural water provision. With regard to capacity development, we recommend establishing workshops for clusters of villages to repair breakdowns and coordinate spare parts.

Keywords: Community management; Rural water facilities; Sustainability; Tanzania

Abbreviations

COWSO Community Owned Water Supply Organization
DC District Council
DPs Distribution Points
DWD District Water Department
DWE District Water Engineer
FGDs Focus Group Discussions
LGAs Local Government Authorities
MKUKUTA Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania

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1. Introduction

‘Water provision is indisputably the most politicized public service, and developing countries have been greatly affected by the consequences of the ideological and political tendencies surrounding it’ (Jiménez & Pérez-Foguet, 2010a: 1). The sector has experienced major internal and external changes. Tanzania has an extensive experience of the political processes and developments that govern rural water service delivery (Jiménez & Pérez-Foguet, 2010b). Since 1945, the governance of the rural water supply in Tanzania has passed through different stages, from the colonial era to the liberalization and privatization period (Boesen, 1986; Therkildsen, 1988; Maganga et al., 2002; Cleaver & Toner, 2006; URT, 2002, 2008; Jiménez & Pérez-Foguet, 2010a, b). These changes reflect modifications in international water policies, such as the 1981–1990 International Drinking Water Decade, the 1992 Dublin Principles, and Agenda 21 (WHO, 1982; ICWE, 1992; URT, 2008; Jiménez & Pérez-Foguet, 2010a, b). Cleaver & Toner (2006: 3) note that ‘the Tanzanian approaches in water service delivery reflect international priorities in water governance and are characterized by a shift from interventionist ‘high modernist’ to ‘polycentric governance’’. In Tanzania, the sector has experienced pendulum swings over time in terms of policies and achievements (see Table 1 for an overview).

Tanzania’s decentralization policies have affected all public sectors, including the rural water supply. Decentralization is a complex process and a multidimensional concept (Rondinelli & Nellis, 1986; Olowu, 2001). It refers to ‘the transfer of authority and responsibility for public functions from the central government to subordinate or quasi-independent government organizations or the private sector’ (Litvack & Seddon, 1999: 2). One aspect of decentralization is that rural water services have entailed a shift from water being a social good to becoming an economic good, and water users being made responsible to pay for the full cost of operation and maintenance (O&M) through user fees (Maganga et al., 2002; Cleaver & Toner, 2006; Jiménez & Pérez-Foguet, 2010a, b). Additionally, local communities became responsible for the management of efficient and equitable service delivery. Policy implementation, however, is affected by intergovernmental structures and the division of power and responsibilities between the different levels of government. This also raises issues of institutional capacity and governance (Litvack & Seddon, 1999; Andrews & Schroeder, 2003). Within the current local government structures, the District Water Department (DWD) is responsible for technical coordination and administration of rural water supply to all villages in the district. Decentralized rural water supply requires well-defined roles, skills, strategies and structural arrangements from the national level, down to village and household level, where the service is managed and utilized. This mode of rural
Table 1. Evolution of water policy and provision of improved rural water services.

| Period | Roles of different actors and major occasions in the rural water supplies | Coverage achieved |
|--------|-------------------------------------------------|-------------------|
| Colonial period (1945–1960) | • Construction through cost sharing between central government and the native authority*.  
• Capital investment: 25% by local authorities and 75% from central government.  
• Full operation and maintenance (O&M) by the native authority.  
• In the 1950s, the water department** took over O&M. | • No clear and consistent figures indicated.  
• Prime areas: townships, mission stations, large estates, trading centres, expatriates and government settlements.  
• Public connections in few native authorities.  
• Charcoal dams for livestock in the mainly cattle-keeping areas. |
| Post independence: Socialism and self-reliance period (1961–1980s) – the ‘free water to all’ era | • 100% capital investment by the central government.  
• Early 1961–1965, O&M by the native authorities; central government took over again later.  
• In 1970, the ruling party abolished the users’ cash contribution to construction and O&M.  
• Multiple donor-funded projects in about 12 regions by different donors and using contrasting approaches to those of the 1970s and 1980s.  
• Community participation based on self-reliance ideology, and community members participated in activities such as digging trenches for water networks. | • Improved access from 12 to 46% in 1985 (URT, 2008).  
• Mainly public standpoints and cattle troughs.  
• Mainly domestic uses and few points for livestock watering. |
| Transition: Economic restructuring, public sector reforms and liberalization period (1990s–2001) | • 100% capital investment by the central government.  
• O&M partially financed by users.  
• Village managed small schemes, regional and national authorities managed large schemes.  
• Limited private-sector involvement, only in areas where government could not intervene. | • Improved access from 44 to 48.5% in 2000 (URT, 2008; Jiménez and Pérez-Foguet, 2010a).  
• Mainly public standpoints and cattle troughs.  
• Domestic and livestock watering. |
| Liberalization and privatization period (2002–to date) | • About 90% of capital investment by the central government, 5% by local government & 5% by users.  
• Full O&M by users through user fee.  
• Donor and international influence.  
• Demand-driven approach, community participation in all stages of the project.  
• Services managed by users through village water committee and/or private operator. | • Improved access reached about 57% in 2010 (URT, 2010, 2011).  
• Mainly domestic distribution points and cattle troughs.  
• Domestic and livestock watering. |

Sources: Boesen (1986); Therkildsen (1988); Maganga et al. (2002); URT (2008, 2010, 2011); Cleaver & Toner (2006); Giné & Pérez-Foguet (2008); Jiménez & Pérez-Foguet (2010a); PMO-RALG, undated.

*During the colonial era, ‘native authority’ referred to local council, which is equivalent to district level in the current local government structure.

**Under colonial administration, the water department functioned like the Ministry of Water in the current system.
water service delivery produces an interaction between a community management approach and a transfer of responsibilities to the lowest levels of government and service users (households). The implication is that institutions and actors at all levels need to have the essential capabilities to fulfil their respective roles towards sustainability of the rural water facilities (RWFs) (Litvack et al., 1998; Smoke, 2003, 2010; Harvey & Reed, 2004; IOB, 2011).

Tanzanian villages are diverse in terms of managerial and technical capacity related to water service delivery (Cleaver & Toner, 2006; Jiménez & Pérez-Foguet, 2010a, b). Some are well organized and located close to the administrative centres, others are less organized and are in remote areas. Weak administrative or technical capacity at local levels contributes to inefficient and ineffective service delivery in some parts of the country (Litvack & Seddon, 1999). Yet, continuous capacity building of the management entities at the village level and users at the household level is hardly considered in the implementation of decentralized rural water supply in Tanzania, which threatens the sustainability of the whole system.

The roles of actors at various levels have been changing along with the changes in political ideologies and service delivery models. The extent of community participation, for example, has shifted from users being passive service recipients to becoming active service managers. This is reflected in the naming of water service users through time. From the 1970s to the early 1990s, they were called beneficiaries, whilst from the early 2000s to date, they have been referred to as users, owners and managers of the rural water schemes (Therkildsen, 1988; Maganga et al., 2002; URT, 2002, 2008). As part of the decentralization process, the current National Water Policy (NAWAPO) requires villagers to contribute money or physical labour to the capital investment, to manage the water schemes, and to take responsibility for O&M (URT, 2002, 2008). However, studies on rural water in Africa have observed that achieving the required level of RWF sustainability necessitates a clear definition of the roles of each actor and at all levels, as well as the capabilities to perform them (Harvey & Reed, 2004; IOB, 2011). Already in 1988, an evaluation of the Tanzania rural water supply considered capacity building and clearly defined roles of the different actors as essential to improving the sector’s policies from the village to the national level (Therkildsen, 1988). Local communities require appropriate knowledge and skills to perform their roles and responsibilities, including O&M. However, the 2002 NAWAPO and 2008 National Water Sector Development Strategy (NWSDS) do not explicitly describe the roles and responsibilities of the actors at the lowest levels and do not clearly indicate who will train the communities (URT, 2002, 2008). Failure to address these critical issues debilitates the efforts invested in the sector (Harvey & Reed, 2004; de Palencia & Pérez-Foguet, 2011). This is a concern, because in Tanzania more than 40% of rural water schemes experience persistent non-functionality due to hardware problems, sources being dry and poor management, which ultimately threatens their sustainability (Giné & Pérez-Foguet, 2008; Taylor, 2009a, b; Jiménez & Pérez-Foguet, 2011). Besides, micro-level analyses reveal that the relationship between decentralization and RWF sustainability is not well documented (Litvack et al., 1998; Cleaver & Toner, 2006; Robinson, 2007a, b).

At the same time, since services depend on existing institutional arrangements, power relations, policy coherence and on technical and managerial capacity at local levels, the outcomes of the decentralized water services vary (Rondinelli, 1991; Conyers, 2003; Smoke, 2003, 2010; Harvey & Reed, 2004; Robinson, 2007a, b; de Palencia & Pérez-Foguet, 2011; IOB, 2011). Hence, there is a need for more precise contextualization in the assessment of the functioning of decentralized rural water services. Furthermore, the meaning of community management as it works out in practice is often taken as self-evident and is neither defined nor discussed. Drawing on existing debates about the sustainability of rural water supply and decentralization, this paper addresses the following questions: (1) how do the current community management arrangements at the district and village levels in fact work, and how
do they affect the sustainability of RWFs at the village level in terms of technical and managerial aspects? and (2) how can capacity building of providers and users be integrated into current community management arrangements and contribute to the sustainability of RWFs?

2. Decentralization, community management and sustainability of the RWFs: a complex nexus

Decentralization has multiple features; scholars have defined it in different ways and its scope has changed over time. According to Rondinelli & Nellis (1986: 5), decentralization is the ‘transfer of responsibility for planning, management, and the raising and allocation of resources from central government ministries and agencies to field units of central government ministries or agencies (de-concentration), to subordinate units or levels of government (devolution), to semi-autonomous public authorities (delegation), and to non-governmental private or voluntary organizations (privatization)’. Decentralization as the assignment of fiscal, political and administrative responsibilities to lower levels of government is occurring worldwide for different reasons, at a different pace and through different means (Litvack et al., 1998). Governments in many developing countries have decentralized their development planning and management functions since the 1970s and early 1980s (Rondinelli & Nellis, 1986). For some countries, decentralization emerged as a way to address political and economic reforms (Litvack et al., 1998) or to meet the increased demand of public services, primarily due to internal demographic factors (Rondinelli & Nellis, 1986).

The degree of responsibility transferred, the discretion in decision-making and level to which it is transferred, connote different forms and types of decentralization (Rondinelli & Nellis, 1986). These constitute the basis upon which Litvack & Seddon (1999) identify three main types of decentralization: (i) political decentralization, which basically aims at pluralistic politics and representative government, whereby citizens or their elected representatives have more power in public decision-making, that is, the formulation and implementation of policies; (ii) administrative and fiscal decentralization, which seeks to redistribute authority, responsibility and financial resources for providing public services among different levels of government by the transfer of responsibility for the planning, financing and management of certain public functions; and (iii) economic or market decentralization, where there is a shift in responsibility for functions from the public to the private sector.

In this paper, we link decentralized rural water services to political, administrative and financial forms of decentralization because the village water committees (VWCs) are elected through political procedures, and the shift of the management and technical roles and responsibilities to the community entails administrative and financial activities. The 2002 NAWAPO and the ‘subsidiarity principle’ in Agenda 21 of 1992 emphasize the involvement of the lowest-level beneficiaries to manage and ensure full cost-recovery for O&M (URT, 2002, 2008). The subsidiarity principle has resulted in a paradigm shift from community participation to community management of rural water schemes. Subsequently, these changes form a nexus between community management, sustainability and transfer of decision-making, management authority and payment responsibility to the communities at the village level and service users at the household level. This nexus underlies our theoretical framework that links community management and the sustainability of rural water schemes (Rondinelli, 1991; Harvey & Reed, 2004, 2007), and highlights capacity constraints as one of the neglected challenges in implementing decentralization (Smoke, 2003, 2010). This study investigates the interconnections between the roles and responsibilities assigned to the community to manage water schemes and pay for the cost of O&M, and the technical and management capabilities they need for that. ‘Capacity building and
sustainability are closely related; without adequate, appropriate capacity at different levels of government and at local level, services will not be sustainable’ (Abrams (1996), as cited in Harvey & Reed (2004: 53)).

We acknowledge the complexity of the decentralization process and the challenges facing its integration in rural water services and other public services (Rondinelli, 1991; Litvack et al., 1998; Bardhan, 2002; Andrews & Schroeder, 2003; Conyers, 2003; Harvey & Reed, 2004, 2007; Smoke, 2003, 2010). Because communities are heterogeneous, decentralization processes should be put in context by considering sectoral, temporal, structural and locational specificities (Litvack et al., 1998; Cleaver & Toner, 2006; Harvey & Reed, 2007). In addition, there is a need to reconceptualize ‘community management’, in theoretical and operational terms, because the phrase has become a buzzword and is used as a blanket statement in the development literature, interventions and policies (Cleaver, 1999; Cleaver & Toner, 2006; Cornwall, 2008). Thus, it is important to deconstruct and unpack the meaning of community management and define its dimensions and constituting elements, such as structures, actors, obligations, implications and mechanisms of accountability (cf. Larson & Ribot, 2004; Ribot et al., 2006). Figure 1 shows community management as pictured by Harvey & Reed (2004: 16, 41).

However, the Harvey and Reed model gives rise to questions. The box ‘community’ comprises ‘O&M managers’ but does not place these managers and their responsibilities within village structures. In this paper, we intend to open the ‘community’ box, which requires an addition to Harvey and Reed’s framework. The issues of contextualization and capacity development are other points that are not depicted clearly by Harvey and Reed. Appropriate capacity development is required for all actors at all levels, with special emphasis on maintenance, record-keeping and financial management for the villages. Finally, the Harvey and Reed model is a top-down model with the arrows pointing in one direction, hence feedback mechanisms are not visible. In these respects, we have added theoretical dimensions. The results can be seen in Figure 2, which presents the theoretical framework used for this study. Based on this framework, the following questions can be raised:

- What does community management entail in terms of skills and knowledge?
- Who is responsible for appropriate water services capacity development?

![Community Management Model](https://iwaponline.com/wp/article-pdf/15/S2/79/405660/79.pdf)
Do communities in the villages have the required skills and knowledge to perform the technical and the management roles?

If not, from whom, how and where do they get the necessary assistance?

If they do not, what are the implications for the sustainability of the water infrastructures?

Does capacity building pertaining to rural water supply at the community level get the same attention as capacity building at other levels of government?

Should the one precede the other or should they be implemented simultaneously?

Fig. 2. Expanded community management framework.
3. Study area and methodology

The fieldwork for this study was conducted between October 2011 and September 2012 in the districts of Kondoa and Mpwapwa in the Dodoma region in central Tanzania. The region is in a semi-arid area that relies on groundwater. The two districts are among the pilot districts to implement the Rural Water Supply and Sanitation Program (RWSSP)-Phase I, which aimed at ensuring access to improved and sustained water and sanitation services in rural communities. The main water sources for domestic use in these districts are deep boreholes with mechanized pumps, shallow wells, gravity schemes and a few rainwater-harvesting schemes. During the rainy season, traditional hand-dug wells, river-bed wells and springs are among the dependable sources of water in areas without the improved sources, or where improved sources are inoperative. Data collection was undertaken in nine villages: five in Kondoa district and four in Mpwapwa district. The villages were purposely selected based on types of water source, management approach, and location and distance from the District Council (DC) headquarters. Five villages had boreholes, two had gravity schemes, one had a shallow well and one of the villages had a broken-down borehole. Two of the study villages had a private operator (PO) supervised by the VWC, five villages had a VWC only. The remaining two villages used to have a VWC and had just begun to work with a PO.

This study combined quantitative and qualitative methods to optimize their complementary advantages (Scrimshaw, 1990; Rao & Woolcock, 2003). Quantitative data on household characteristics and domestic water service were collected by a household survey among 221 randomly selected households, whilst qualitative data were collected through focus group discussions (FGDs), in-depth interviews with village leaders and a few villagers, and field observation. The FGDs were held in two villages with six groups of men, women and VWC representatives, in which 21 men and 18 women participated. Semi-structured interviews with village leaders and DC officials were conducted to collect information on domestic water services. Detailed case studies of two villages were undertaken to get context-specific and detailed qualitative information, because, as explained earlier, the outcomes of the decentralized public services vary and are influenced by specific local features. The description of the case-study villages is presented in Sections 4.1 and 4.2. Secondary data from the district water and planning departments and from Village Executive Officers (VEOs) supported the village selection and supplemented the primary data. To understand the roles assigned to the actors at different levels, a detailed review of the rural water supply section in the 2002 NAWAPO and water supply section in the 2008 NWSDS was carried out. This yielded comprehensive information on the way the national water frameworks define and assign roles and responsibilities to different actors.

To address the concepts of community management and sustainability in this study we highlight and analyse the actors’ roles, responsibilities and capacity to manage and maintain rural water schemes at different levels. At the national level, our analysis focuses on the actors, levels, roles and responsibilities as identified and defined in the (rural) water supply sections in the NAWAPO and NWSDS. At the district level, we focus on the DWD’s capacity and resources to provide and coordinate technical support to the villages so that the villages can manage and maintain their water facilities. At the village level, we concentrate on the training of VWCs, pump attendants and local technicians. At the household level, the study sought the service users’ views on the challenges posed by the breakdowns of public water facilities and on alternative sources of domestic water. We chose multiple units of analysis to be able to systematically elicit empirical evidence on macro–micro policy interactions and their bearing on the management and maintenance of sustainable RWFs.
4. Results

4.1. The case of Chase-Chinyika

Chase-Chinyika village is located about 120 km to the south of Kondo district headquarters. The village has a public transport connection in the form of a bus that makes only one trip in a day to Kondo town, which is occasionally interrupted in the rainy season. In 2011, the village had a population of about 4,846 (1,219 households), comprising a mix of tribes, mainly the Sandawe, Gogo and Maasai. There are eight sub-villages: Chase Shuleni, Naante, Zezengwalo, Chinyika, Hubu, Gwandi, Dalayi and Ziawa. The main sources of income are farming, animal husbandry and small-scale business. The current water project was established in 2008 through the Water Sector Development Programme. Representatives of the VWC confirmed that the borehole has improved the quality of water services in the village. Previously, villagers depended mainly on (unclean) hand-dug wells in the neighbouring villages of Lukuri, Bubu, Mpendo and Maziwa. In the dry season, people had to walk up to 16 km to get a bucket of water. Villagers’ contribution to the capital investment was organized per household and collected in three phases: first, TSH 1,000 (about US$ 0.64), second, TSH 2,000 (about US$ 1.28) and third, TSH 8,000 (about US$ 5.12). Households that could not contribute in cash provided physical labour by digging trenches and collecting sand and stones. Water infrastructures in the village consist of a diesel-pump borehole, two functional and one non-functional domestic distribution points (DPs), one cattle trough, one water tank without stairs and one half-finished pump house. The half-finished pump house endangers the security of the pump. Villagers and village leaders wondered why the contractor did not complete the water tank and pump house, but they could not intervene because the contractor was hired by the DC. The village leaders have repeatedly reported the matter to the DWD but no definite measures have been taken, despite numerous promises from the DC and local politicians to settle the issue. Water users pay TSH 30 (about US$ 0.02) per 20-litre bucket of water. A cow is charged the same price, while sheep and goats are charged TSH 10 (about US$ 0.006) per head. Daily collections from the user fees range from TSH 2,000 to 2,500 (about US$ 1.28–1.60) at the DPs and TSH 24,000 to 30,000 (about US$ 15.35–19.20) at the cattle trough. On average, the highest monthly user fees collection is TSH 900,000 (about US$ 575.82) and the lowest TSH 144,000 (about US$ 92.14), during the dry and rainy seasons, respectively.

The VWC counts six men and six women, in accordance with the national guidelines that require an equal representation of men and women (URT, 2002, 2008). They manage the water project and supervise the PO. Except for two sub-villages, each sub-village has two representatives in the VWC, a man and a woman. After their election in 2008, the VWC members were trained for one day by facilitators from the DWD on management of the borehole, carrying out minor repairs, and safeguarding cleanliness around the borehole and water tank. From the interviews with the representatives of the village council and the VWC, it transpired that, to become a VWC member, one should have the following qualifications: be aged 18 and above, be able to read and write, be accepted by the community, be trustworthy, patient and ready to volunteer. Patience is required because whenever the water service is not up to the villagers’ expectations, the VWC members are among the first to be blamed, even when the problem is not their fault. Willingness to volunteer is important since members of the VWC are not compensated for their time. The VWC meets once a month and convenes extra meetings in cases of emergency. The VWC has to: supervise the PO; ensure that there is enough water at the DPs and in the cattle trough; and make sure that the PO pays the village TSH 100,000 (about US$ 64) every month. The ward councillor
helps the village to deposit the revenues at the water fund bank account at the district headquarters. There were no water meters at the DPs and at the cattle trough to regulate the quantity of water sold, so that the VWC cannot check whether the revenues reflect the amount of water pumped and sold.

In September 2010, the PO was contracted for 1 year through a tender. The village opted for the PO because, when the project was operated by the VWC, it did not get regular revenues. The amount payable to the village does not change with the season, although water use increases in the dry season and decreases in the rainy season. The tender was handled by the village council without help from the DWD and the district legal unit. Further details on how the tender was processed and administered could not be obtained. The contract of the PO expires annually, after which the village office calls for new applications. The operator is allowed to hire water sellers for all the DPs and the cattle trough. The water sellers are responsible for collecting user fees and have to submit the money to the PO. The latter is responsible for minor operation costs, such as those needed to change oil, paying monthly allowances to the pump attendant and the security guard, and paying the water sellers. The pump attendant and the security guard are paid TSH 15,000 (about US$ 9.60) each per month. The amount paid daily to the water sellers was not revealed.

The brand of the water pump engine is a Lister Petter, fixed on a metal frame. During the fieldwork, it was reported that the pump and the metal frame often break down, especially in the dry season (July–October), yet the village has no local technician for repairs. Whenever a breakdown occurs, the VWC and members of the village council have to look for a private technician from Kondoa town. Through the water project, the village pays TSH 70,000 (about US$ 44.80) for the expertise and transport costs each time the village hires the technician. Moreover, the pump attendant reported that the metal frame holding the pump had broken down three times between July and October 2011, costing the village a total of TSH 100,000 (about US$ 64) on welding services. On average in the dry season, apart from expenses for other maintenance and buying spare parts, the village spends between TSH100,000 and TSH170,000 (about US$ 64–109) each month on repairs. Most of the spare parts (such as replacements for water taps, gate valve, exhaust pipe, air cleaner and engine filter) are procured in Dodoma, and rarely in Kondoa town. The VWC and the operator commented on the good quality of the spare parts and said that it takes one to two days to get the spare parts required.

The discussions with village leaders, VWC and villagers revealed that the lack of stairs on the water tank is a major challenge, because cleaning inside the tank becomes difficult and this ultimately results in the pollution of the water at the DPs. During observation at the water infrastructures, two women at one of the DPs, while showing the water in their bowls, said: ‘The water is not as bright as it used to be when the project just began; now there are particles which can be seen at the bottom of the container after the water has settled. The particles seem to increase because our tank has no stairway to get in and clean it.’ A second challenge is the poorly finished pump house without windows and a door, which threatens the security of the pump’s engine. A third is the lack of a local technician to fix the engine and repair the exhaust system. Further challenges are the frequent breakdown of the engine and its metal frame, the lack of water meters at the tank, at the DPs and the cattle trough, insufficient DPs, the destruction of the wooden, padlocked boxes that are used to lock up water taps at the DPs, the inadequate managerial and technical training of the pump attendant and VWC members, and, finally, the controversy about the PO’s intention to increase the user fee (the users’ view is that the current fee should be enough for the PO to provide the water service with a profit). The photographs in Figure 3 portray the situation of the water infrastructures in Chase-Chinyika village.
4.2. The case of Seluka

Seluka village is located about 90 km from the DC headquarters, in the south of Mpwapwa district. There is no direct public transport connection to the district headquarters. In 2011, the village had a population of about 2,894 (771 households). There are five sub-villages: Miengweni, Nyabu, Mbuyuni, Shuleni and Ofisini. The main ethnic groups are the Gogo and Hehe, while recently the Sukuma and Barbaig have been migrating into the village to farm and keep livestock. The village had a water project that was established in 2005/2006. The villagers contributed to the capital investment by paying TSH 1,000 (about US$ 0.64) and TSH 2,000 (about US$ 1.28) in the first and second phase, respectively, or by providing physical labour (digging trenches and laying the distribution pipes). The water infrastructures in the village include a pump house, a diesel-pump borehole, six domestic DPs, one cattle trough, one water tank, water meters and their boxes. During the fieldwork, only the pump house and water tank were operational. At the beginning of 2007, the water project started to collapse, initially with numerous bursts of the distribution pipes followed by non-functionality of the DPs, particularly in the sub-villages.
of Nyabu and Miengweni. As a result, the villagers depend on traditional hand-dug wells and riverbed-sand wells for domestic water.

The village has a VWC with five men and five women, two members from each sub-village. Qualifications for VWC membership are similar to those in Chase-Chinyika. From 2006 to September 2012, the composition of the VWC changed several times. It was not clear when VWC members were last trained. VWC members are responsible to ensure an adequate water flow to all DPs and smooth delivery of services, to prepare the water-selling roster and take turns to sell water at the DPs, along with submitting user fee collections to the VWC treasurer and mobilizing fellow villagers to restore the water project. The FGD participants indicated that frequent changes in the composition of the VWC disrupted its efficiency in managing the water project. Loss and inappropriate handover of the project’s records were attributed to these changes too. In 2011 alone, the VWC membership changed three times. The changes occurred because some of the VWC members were dissatisfied with the lack of transparency on the expenditure of the water revenues and resented political interference. Others wanted to retire because they were tired of the complaints of fellow villagers about the poor performance of the project.

Water users were paying a user fee for water services when the project was functional. The user fee changed three times: from TSH 20 for a 20-litre bucket (about US$ 0.01) in 2006, to TSH 30 (about US$ 0.02) in 2007, and TSH 50 (about US$ 0.03) in 2010. The increase of the user fee started when daily running costs exceeded the amount of user fees collected. The latter happened due to the decrease in the number of functional DPs, frequent breakdowns of the pump and distribution pipes, and an increase in the transport costs to Mtera, the nearby town where diesel was bought. The villagers were dissatisfied with the rise of the fee because they expected to have savings in the water fund account from the fees they had been paying since the project started. When asked for details about the villagers’ dissatisfaction during the FGDs, FGD participants reported: (a) poor quality of the distribution pipes causing frequent bursts; (b) lack of transparency and accountability on water revenues’ expenditure; (c) lack of appropriate feedback from the village office; (d) lack of communication between the villagers and the DC; (e) lack of accountability and questionable ethics among some of the water technicians from the district; (f) non-receipt of financial reports; (g) village leaders not taking the matter seriously; (h) conflicting interests and political interference; and (i) overall poor management of the water project.

It also became clear that burst pipes disturbed the flow of water to the DPs, which made some of the villagers sceptical about restoring the water project. As the problem escalated and all DPs became non-functional, the village leaders attempted to organize contributions from the villagers for repairs. However, the response was negative because the villagers were not getting answers to their queries on the overall management of the water services. This did not cause a lack of water because there were about 65 traditional hand-dug wells and several riverbed-sand wells that were dependable sources of water for domestic and livestock uses. One major point of dissatisfaction among the villagers was the unclear status of the water fund account, as they had not received any financial report since 2008 when they were notified by the village chairperson that the project was operating at a loss. More queries on the water fund account could be observed in the FGDs with ordinary villagers than in the FGD with the VWC representatives, who said there was TSH 1,000,000 (about US$ 640) in the account. However, the VWC representatives could not recall the last time when they checked the balance. They reported that the account became inactive in 2008 when user fee collections were very little and not enough even to buy diesel and cover other running costs.

The FGDs revealed that the traditional hand-dug wells in Nyabu and Miengweni sub-villages had been there for more than 15 years while the shallow river-bed sand wells were dug during the rainy season. The
traditional hand-dug wells belong to rich livestock keepers, who had dug them to have a reliable water source for their large herds of cattle. Since these wells were primarily meant for livestock, there are scheduling and allocation arrangements to access the water for domestic use. In the FGDs with women and in-depth interviews with the representatives of the village council, no conflicts between livestock keepers and the domestic water drawers, mainly women, were reported. The women normally fetch water from about 6 to 10 a.m. and after that, the water is for the livestock. Additionally, the wells have been categorized into wells for both domestic and livestock use, and wells for livestock use only. The owners of the wells do not charge any user fee to water drawers. Some of the youths in the village were also fetching water from the wells, transporting it by bicycle and selling it to fellow villagers at TSH 300 (about US$ 0.19) for a 20-litre container. Some villagers who own a bicycle lend the youths a bicycle to transport water and, in return, get a reduced price (TSH 200 for a 20-litre container).

4.3. Roles and responsibilities of different actors and levels

4.3.1. The 2002 National Water Policy and the 2008 National Water Sector Development Strategy. The 2002 NAWAPO and the 2008 NWSDS reflect international and national debates and features of the rural water supply. The 2002 NAWAPO was introduced by the government after numerous technical studies and sectoral reviews that identified areas in need of attention in order to be compatible with global and national reforms. It encompasses three major sections: (i) water resources’ management; (ii) rural water supply; and (iii) urban water supply and sewerage. In 2008, the government published the NWSDS (covering the period 2006–2015) to foster the implementation of the 2002 NAWAPO and to describe the institutional and legislative changes. The 2008 NWSDS was developed to support the NAWAPO’s realignment with the major national frameworks, for example, the National Development Vision 2025, and the National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA), and to ensure that the new institutional frameworks reflect devolution and decentralization principles in water supply services. With regard to the roles of different actors and levels in rural water supply, the NWSDS states that ‘the NWSDS focuses on specific roles of the various actors, through clearly defining roles and responsibilities and hence the removal of duplications and omissions’ (URT, 2008: i). The Ministry of Water coordinates, formulates and regulates policy and guidelines pertaining to rural water supply to facilitate the implementation of rural water supply initiatives.

However, when reviewing the 2002 NAWAPO and the 2008 NWSDS, we found a number of weaknesses. First, the roles of the VWCs and households, which are the primary actors, are not explicitly described. Second, from the empirical evidence, the actual roles, especially those from local government level down to the household level, divert from the documented ones. A third weakness is the vague descriptions of roles. For example, it is not clearly indicated who will train the communities (cf. URT, 2002: 33–34, 36, 38; 2008: 44, 52). Fourth, there is an urban bias in the roles assigned to the DCs, with only four out of the nine roles applicable to rural areas (see Appendix 1, available online at http://www.iwaponline.com/wp/015/014.pdf). These weaknesses contradict the sustainability principle, which acknowledges that ‘sustainable development and delivery of rural water supply services relies on clear definition of the roles and responsibilities of the various actors as well as those of the stakeholder groups’ (URT, 2002: 31). Appendix I provides an outline of the actors at different levels and their specific roles in the rural water supply.

4.3.2. The District Water Department and its support of village public water services. The DWD is based at the DC headquarters and has to coordinate all villages’ water projects in the district by providing ongoing technical assistance (and performing other roles as mentioned in Appendix 1). The villages
differ with regard to location, water sources, technical challenges, and capacities and resources to manage and maintain the public water facilities. Kondoa district has an area of 13,210 km$^2$ with 193 villages, whilst Mpwapwa district has an area of 7,379 km$^2$ with 93 villages. The DWD is required to serve all villages in all districts. To carry out its responsibilities, the DWD needs financial, human and technical resources and capacities. Table 2 shows the required and actually available categories of employees and transport facilities for the two districts.

Table 2 shows that both districts had at least half of the number of employees required, but there is a pronounced deficit of plumbers and masons. Neither district had a laboratory (to check water quality) or electricians (for repairs to the electrical pumps). In both districts, the DWD faces more challenges in the dry season, when pumps break down because of over-utilization. During the rainy season, villages with gravity schemes, such as Sambwa, experience delays in getting technical assistance from the DWD because the road to the village is not passable. The fact that transport facilities are needed to reach remote villages adds to the challenge.

Table 2. Employees and transport facilities in the water department in Kondoa and Mpwapwa districts.

| Employees | Kondoa district | Mpwapwa district |
|-----------|-----------------|------------------|
|           | Highest level of education attained | Required | Available | Deficit | Highest level of education attained | Required | Available | Deficit |
| Water engineer | BSc | 2 | 1 | 1 | MSc | 3 | 1 | 2 |
|                   | FTC*/Diploma | 7 | 7 | – | FTC/Diploma | 2 | 1 | 1 |
| Water civil technician | FTC*/Diploma | 7 | 7 | – | FTC/Diploma | 2 | 1 | 1 |
| Pump & engine technician | Basic certificate | 3 | 3 | – | FTC/equivalent to basic certificate | 2 | 1 | 1 |
| Electrical technician | Basic certificate | 1 | – | 1 | – | 1 |
| Laboratory technician | FTC/Diploma | 2 | 1 | 1 | FTC/Diploma | 2 | 1 | 1 |
| Surveyor | FTC/Diploma | 2 | 1 | 1 | FTC/Diploma | 2 | 1 | 1 |
| Plumber | Basic certificate | 5 | 1 | 4 | FTC/equivalent to basic certificate | 4 | 2 | 2 |
| Mason | Basic certificate | 5 | 3 | 2 | FTC/equivalent to basic certificate | 6 | 4 | 2 |
| Total** | 27 | 16 (59) | 11 (41) | 22 | 11 (50) | 11 (50) |

| Transport facilities |
|----------------------|
| Vehicle | Required | Available | Deficit | Required | Available | Deficit |
| Toyota Land Cruiser Series 70 (Hardtop) | 2 | 1 | 1 | 3 | 1 | 2 |
| Truck | 1 | 1 | – | n/a | n/a | n/a |
| Motorcycle | 8 | 4 | 4 | 6 | 3 | 3 |

*Source: based on information from the water department in Kondoa and Mpwapwa districts.

*A Full Technician Certificate is an award in a technical field, equivalent to an Ordinary Diploma or Basic Certificate, depending on the duration and the level of study.

**Numbers in brackets are percentages.
The Kondoa and Mpwapwa DWDs had some transport facilities for monitoring, evaluation, training and major repairs in the villages. The DWD has a budget for fuel and service of the vehicles. Kondoa had one Toyota Land Cruiser, a truck and four motorcycles, but they require two Land Cruisers and eight motorcycles. The truck is old and frequently breaks down. Mpwapwa district had one Toyota Land Cruiser and three motorcycles instead of the needed three cars and six motorcycles. The shortage of vehicles and motorcycles in both districts interferes with timely field trips by the DWD’s technicians to the villages that need repairs or other technical and administrative assistance from the DWD.

The District Water Engineer (DWE) and the District Planning Officer in the two districts reported that the DWD has a shortage of technicians, money and motorcycles. Kondoa district experienced untimely and inadequate disbursement of funds. In 2011/2012, the district requested about TSH 2.4 billion (about US $ 1,535,509) for new water schemes, but only TSH 1.4 billion (about US$ 895,713) was approved. This required budget reallocation, which was a demanding and time-consuming process that caused delay in the implementation of activities. In addition, the officials revealed that the national authorities consider population size to be a major criterion in allocating funds. The DWEs in both districts questioned the relevance of this criterion and, instead, pointed to factors like size of district, type of water source, technology and infrastructures, geographical location and condition of the terrain. Other challenges faced by the DWD include lack of funds for follow-up training of the VWC members and village councils, and the absence of a budget for maintenance of old water schemes. The DWEs reported interference in their daily work, especially changes in the fieldwork schedules in terms of timing, frequency and area coverage due to insufficient funds, vehicles, motorcycles, technicians, as well as other logistical challenges.

4.3.3. Village-based institutions in management and maintenance of the water facilities. In each of the study villages, the VWC was responsible for the management of the village water project. Nevertheless, Seluka village in Mpwapwa district had an unstable VWC due to frequent membership change. In Sambwa, problems with the VWC due to tensions between the VWC, village leadership and villagers were in the process of being resolved. Information from the VEOs in the case-study villages indicated that only the first cohort of VWCs received one day of training from the DC staff, except in Mbori village where the training was facilitated by a WAMMA team. The VWC members are elected every 3 years but often do not serve their term because of poor performance or another reason specific to the village. The training of the VWC members covered topics related to: (a) general management of the water services; (b) cleanliness around the borehole and water tank; and (c) carrying out minor repairs.

The WAMMA team had staff from WaterAid and the DC to train and build local capacity to enhance the villagers’ ability to manage their water schemes (for further details on WAMMA, see Mathew (2004)). No village had a trained local technician, although pump attendants perform some of the technical work. There were trained pump attendants in five villages and a tank attendant in Lupeta village (which has a gravity scheme). The villages described had a one-day training at the start of the project in their village. Training was mainly facilitated by the DWD staff and covered topics related to: (a) operating the engine to pump water; (b) changing engine oil and fixing the belt; (c) cleaning the pump house; and (d) checking the DPs. Kidoka village was exceptional because two villagers were trained as pump attendants, although we met only one. There was also training by the contractor who installed the water infrastructures in the villages.

1 WAMMA stands for ‘WaterAid, Maji, Maendeleo ya Jamii and Afya’. The italicized Swahili words represent the three departments: Water, Community Development, and Health at the District Councils.
Appendix 2 (available online at http://www.iwaponline.com/wp/015/014.pdf) details village institutions involved in management and O&M.

All the villages bought spare parts for minor replacements in the district’s town or in Dodoma. Villages incur costs for fares and food for whoever is sent to buy the spare parts. Return bus fares to the district’s town range from TSH 2,000 to 22,000 (about US$ 1.28–14.00), depending on the location of the village and type of transport. Lupeta village (located about 12 km from Mpwapwa town) paid the lowest fare, and Chase-Chinyika (about 120 km from Kondoa town) and Seluka (about 90 km from Mpwapwa town) the highest.

4.3.4. Household experiences with the breakdowns of water infrastructures. The household survey \( (n = 221) \) revealed that all villages have experienced non-functionality of the water infrastructure, with a mean duration of 4.3 months in a year. The non-functionality differs per season and type of source. Engine breakdown is common during the dry season in villages with a borehole, while villages with gravity schemes have problems with pipes being washed out by rainstorms. Twenty per cent of the respondents mentioned August–December as the period of high non-functionality. The minimum time to repair breakdowns was half a day and the maximum three weeks. Infrastructure breakdown caused several problems to households (see Figure 4). While waiting for a technical problem to be fixed, households deployed alternatives to get domestic water, the most common of which included fetching water from the neighbouring village (104 responses), using unimproved sources in and out of their villages (66 responses), and buying water at extra cost (18 responses).

4.4. Adjustments to current arrangements and sustainability of the RWFs: policy implications

The DWD staff, village leaders and households were asked about how (in their opinion) the major technical and management challenges in rural water services could be met. Their answers are summarized below.

Fig. 4. Problems experienced by households when water infrastructures broke down. (‘Multiple problems’ implies responses that include walking a very long distance, getting stomach-related diseases and buying water at an expensive price.)
4.4.1. At the district level. The DWE in the two districts proposed that the Ministry of Water and the Treasury reconsider the criteria for allocating water funds to the regions and districts. Instead of allocating equal amounts to all the regions and districts, they recommended adding practical criteria relating to the size of the region and district, geographical location and terrain, type of potential water sources and technology, population, and existing needs for water service. For example, the gravity scheme and terrain of Sambwa village in Kondoa cause the distribution pipes to be washed away by rain. The district staff also emphasized the importance of timely and adequate funding along with enough transport facilities and human resources. The staff of the water and planning departments indicated the importance of specific funding for follow-up management training at village level and for maintenance of the older schemes.

4.4.2. At the village level. All VEOs and VWC members suggested the training of technicians to ensure that each village had its own local technician. Moreover, they requested follow-up training of VWCs, local technicians, pump and tank attendants, and the harmonization of the training of VWC members with their election. In Seluka village, the recommendations were specifically about measures to restore water service and appropriate ways to get good village leadership and feedback from the DC, especially the DWD.

4.4.3. At the household level. From the household level, in all villages the common points made concerned increasing the number of DPs and the cleanliness of the water tank. The households of Kidoka village specifically raised the issue of replacing the engine with a bigger one to pump more water, and the possibility of in-house connections. In Kelema Maziwani village, the households commented on the need to install the DPs in Chokobai, Amiti and Darajani – sub-villages that had no DPs at the time of data collection.

4.4.4. Researchers’ proposals. Based on information about existing practices in rural water services derived from the review of the 2002 NAWAPO and the 2008 NWSDS, as well as on the empirical evidence from the study area, the following proposals for improvement are noted:

(i) Within the NAWAPO and the NWSDS, the roles, responsibilities and accountability of each actor from the national to the household level, as well as the practical meaning of community management, need to be clarified. Inadequate descriptions make these frameworks susceptible to avoidable failures. It is important to note that the village council or any other village structure does not automatically represent the VWCs and households.

(ii) The DC employees in the DWD and in other departments working on rural water supply need in-service training on ways to contextualize the implementation of decentralization in the rural water sector, in relation to the specific features of the villages. Sharing information on rural water services between staff from the DWD and other relevant departments, in and outside their own district, is essential and requires incentives.

(iii) Training of local technicians and VWC members is key to the performance of the water structures. Contextualization of (some parts of) the training can ensure that the knowledge is applicable in different types of villages. Because of the complexity of rural water governance, the contents of the training manual need input from different disciplines, such as water engineering, management, sociology, anthropology, policy analysis, law and vocational education. The facilitation team could
include professionals, practitioners and policy makers, as well as academics with varied disciplinary backgrounds, and representatives of the public and private sectors. In addition, facilitation could include inputs from villages with successful and unsuccessful water services.

(iv) A water-point register could help villages to record time and type of breakdowns and maintenance of all water infrastructures in the village. It could be kept by the local technicians after their training and/or by the tank and pump attendants. During fieldwork we found that there was no standard practice for keeping such records. The occurrence of breakdowns was usually only stored in the memory of the villagers involved.

(v) Existing local expertise in tinsmithing, welding, carpentry, motor repair and masonry needs to be identified. Then, through collaboration with the DWD, vocational education practitioners and other relevant actors, selection criteria can be developed to select male villagers who have the ability and commitment to become local technicians (we suggest men to comply with the gender division of labour in the villages). Persons selected can be given tailor-made training. This is expected to build local capacity, create an enabling environment for apprenticeship for new technicians and enhance rural employment creation (cf. Ishumi, 1988; Bennell & Nyakonda, 1992; King, 1996; Okojie, 2003; Palmer, 2007, 2009; Coenjaerts et al., 2009; Oketch, 2007).

(vi) To coordinate maintenance, quality, availability and affordability of the spare parts, we propose establishing workshops at zonal level for clusters of villages that are located within neighbouring wards. Based on a feasibility study, such zonal workshop centres could be established through public and private partnership.

(vii) Integrating the service provider’s perspectives, in this case the DWD, as well as the perspectives of water users and managers, and implementing the improvements suggested above will enhance capacity development at all levels.

5. Discussion and conclusion

Villages and households have been assigned managerial and technical roles without being given the required capacities and resources. Studies in the 1980s already indicated failures in community management systems because of the lack of training of community members who did not have the basic capacity to repair and maintain their water schemes (Mujwahuzi, 1985; Therkildsen, 1988). This raises questions about the one-day training provided for VWC members. How was the training organized to enable the VWC members to execute their roles? The situation calls for a reassessment of the appropriateness of the training in terms of purpose, content, duration, frequency and setting. The training should be organized in a way that will enhance mutual accountability between the villagers and the district officials responsible for the water projects.

The fact that Chase-Chinhyika village leaders and villagers could not hold the contractor accountable for the uncompleted pump house and water tank, and that Seluka villagers could not formally communicate their doubts about the ethics of some water technicians reminds us that ‘being involved in a process is not equivalent to having a voice’ (Cornwall, 2008: 278). This calls for modifications in the procedures for engaging contractors in rural water programmes. It is important to have transparency within the flows of information and communication systems between the DWD, the DC and village structures. ‘Poor information and weak capacity make hierarchical accountability particularly difficult in developing countries’ (Litvack et al., 1998: 22). The village case studies signify that the involvement
of the community at the lowest appropriate level is predominantly a passive participation, and participation by consultation, which does not sufficiently allow community members to exercise their voice and influence (Cornwall, 2008). This jeopardizes achieving the aim of sustainable water services through community management and maintenance (cf. Harvey & Reed, 2007; Cornwall, 2008). The situation demoralizes the villagers, as they are entrusted with roles and responsibilities without having the corresponding authority to control financial flows or the technical ability to maintain the quality of the water infrastructures.

Furthermore, there is a need to examine how legal powers can be appropriately adjoined to the package of the roles and responsibilities assigned to each actor, to create a more conducive and realistic operating environment to accomplish their job. Hence, the NAWAPO and the NWSDS need to be very clear on who does what, when and how, and to be realistic about the resources and capacities needed at each level and by each actor to pursue their roles. When the two major frameworks do not explicitly define the roles of VWCs and households, the guidelines ignore micro-level processes. Cleaver’s (2004) assertion that little attention is given to define the responsibilities of sector-related institutions at the micro level, which shape accessibility to and sustainability of the RWFs, is corroborated by this study. Ministries involved in rural water supply also need to take intra- and inter-community variation into account (cf. Cleaver & Elson, 1995; Cleaver, 1999; Cleaver & Toner, 2006). To enhance sustainability it is important to relate the wider picture of policy, strategy, governance, institutions and finance to local conditions and communities (Harvey & Reed, 2004). We acknowledge that it is challenging and nearly impossible to develop a single policy that fits all. Alternatively, we call for appropriate policies that recognize variability at local levels, and for responsible authorities to create an enabling environment for their employees and other actors involved, to contextualize the implementation of the decentralization of the rural water sector.

Shortage of money, technical staff and transport facilities inhibits the DWD from carrying out its work promptly and adequately. As de Palencia & Pérez-Foguet (2011) argue, inadequate finances and top-down water funding allocation procedures are among the major challenges in the rural water sector. Their study revealed that top-down funding allocation does not reflect the needs of villages and conflicts with bottom-up planning processes. They conclude: ‘Main financing, allocation of funds and responsibility for overall results of the RWSSP are at ministry level, while implementation relies on district authorities’ (de Palencia & Pérez-Foguet, 2011: 47). Other studies conducted in Tanzania since the 1980s (Mujwahuzi, 1985; Therkildsen, 1988; Jiménez & Pérez-Foguet, 2010a, b; de Palencia & Pérez-Foguet, 2011) have pointed to the inadequacy of the DWD staff. Therefore, it is high time to find appropriate solutions regarding shortage of staff and transport facilities, as that problem has been documented and has persisted for an extended period. The responsible authorities could attach equal importance to, and ensure coherency of, district and village capacity building, using resources such as Local Government Capital Development Grants (LGCDGs) and locally available scholarships (Pallangyo & Rees, 2010).

Training and capacity building programmes for key actors at village level are of crucial importance (Rondinelli, 1991; Harvey & Reed, 2007; Smoke, 2010). The programmes are supposed to aim at skills and knowledge corresponding to the roles assigned to the community to manage and maintain their water schemes. Capacity constraints interfere with targeted implementation. Pallangyo & Rees (2010: 733) noted that ‘most village and hamlet (subvillage) chairpersons had not received training relating to their responsibilities despite playing a vital role in decision-making at the lower levels of LGAs’. Another study found that the lack of local qualified technical personnel is one of the most common
problems that cause villages to continuously depend on the technicians at the DWD (Nkongo & WaterAid Tanzania, 2009).

Reconceptualizing community management, continuous capacity development, follow-up training and institutional support at all levels are among the key factors needed to achieve sustainable decentralized water services. We propose that the meaning of ‘community management’ should include actors, structures, obligations, implications and the mechanisms of accountability. The comprehensive conceptualization of community management across all actors should reflect the demand for resources and capabilities and include integrated institutional capacity development. Community management requires ongoing institutional support because policies and technologies change, people move, and knowledge becomes obsolete. We need to get rid of the assumption that community management entails a sense of ownership by all community members that automatically translates into a sense of responsibility and willingness to finance and manage. Besides, the government and donors have vital roles to ensure the presence of a well-knitted coherence between policies, approaches and development interventions to reduce or remove contradictions and obstacles during their implementation. Because of varying local contexts, there is a need to create room for flexibility when designing and implementing development interventions such as decentralized rural water supply.

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References

Abrams, L. (1996). Capacity Building for water supply and sanitation development at local level: The Threshold Concept. A paper delivered at the 2nd UNDP Symposium on Water Sector Capacity Building, Delft, Netherlands, 4–6 December, 1996.

Andrews, M. & Schroeder, L. (2003). Sectoral decentralisation and intergovernmental arrangements in Africa. Public Administration and Development 23(1), 29–40.

Bardhan, P. (2002). Decentralization of governance and development. The Journal of Economic Perspectives 16(4), 185–205.

Bennell, P. & Nyakonda, D. (1992). Training for self-employment? The performance of rural training centres in Zimbabwe. International Journal of Educational Development 12(1), 13–25.

Boesen, J. (1986). Aiming too High, Planning too Much and Achieving too Little: Some Lessons from Rural Water Supply Development in Tanzania before the International Drinking Water and Sanitation Decade. Centre for Development Research, Copenhagen.

Cleaver, F. (1999). Paradoxes of participation: questioning participatory approaches to development. Journal of International Development 11(4), 597–612.

Cleaver, F. (2004). From the local to the global: does the micro-level matter in policy making for the Millennium Development Goals. In Paper presented at the Water consensus identifying the gaps, ESRC Seminar Series, 18–19 November, ESRC, Swindon, UK.

Cleaver, F. & Elson, D. (1995). Women and water resources: Continued marginalisation and new policies. Gatekeeper series 49. International Institute for Environment and Development, London.

Cleaver, F. & Toner, A. (2006). The evolution of community water governance in Uchira, Tanzania: The implications for equality of access, sustainability and effectiveness. Natural Resources Forum 30(3), 207–218.
Coenjaerts, C., Ernst, C., Fortuny, M., Rei, D. & Pilgrim, I. M. (2009). *Youth Employment. Promoting Pro-poor Growth*. OECD, Paris.

Conyers, D. (2003). *Decentralisation in Zimbabwe: a local perspective*. *Public Administration and Development* 23(1), 115–124.

Cornwall, A. (2008). *Unpacking ‘Participation’: models, meanings and practices*. *Community Development Journal* 43(3), 269–283.

de Palencia, A. & Pérez-Foguet, A. (2011). Implementing pro-poor policies in a decentralized context: the case of the Rural Water Supply and Sanitation Program in Tanzania. *Sustainability Science* 6(1), 37–49.

Giné, R. & Pérez-Foguet, A. (2008). Sustainability assessment of national rural water supply program in Tanzania. *Natural Resources Forum* 32(4), 327–342.

Harvey, P. A. & Reed, R. A. (2004). *Rural Water Supply in Africa: Building Blocks for Handpump Sustainability*. WEDC, Loughborough University, UK.

Harvey, P. A. & Reed, R. A. (2007). Community-managed water supplies in Africa: sustainable or dispensable? *Community Development Journal* 42(3), 365–378.

International Conference on Water and the Environment (1992). *The Dublin Statement on Water and Sustainable Development*. See: [http://www.wmo.int/pages/prog/hwrp/documents/english/icwedece.html#introduction](http://www.wmo.int/pages/prog/hwrp/documents/english/icwedece.html#introduction) (accessed 25 February 2013).

Ishumi, A. G. M. (1988). *Vocational training as an educational and development strategy: conceptual and practical issues*. *International Journal of Educational Development* 8(3), 163–174.

Jiménez, A. & Pérez-Foguet, A. (2010a). Building the role of local government authorities towards the achievement of the human right to water in rural Tanzania. *Natural Resources Forum* 34(2), 93–105.

Jiménez, A. & Pérez-Foguet, A. (2010b). Challenges for water governance in rural water supply: Lessons learned from Tanzania. *International Journal of Water Resources Development* 26(2), 235–248.

Jiménez, A. & Pérez-Foguet, A. (2011). The relationship between technology and functionality of rural water points: Evidence from Tanzania. *Water Science and Technology* 63(5), 948–955.

King, K. (1996). *Jua Kali Kenya: Change and Development in an Informal Economy*. 1970–1995: Ohio State University Press, Ohio.

Larson, A. & Ribot, J. (2004). Democratic decentralisation through a natural resource lens: an introduction. *The European Journal of Development Research* 16(1), 1–25.

Litvack, J., Ahmad, J. & Bird, R. (1998). *Rethinking Decentralization in Developing Countries*. The World Bank, Washington, DC.

Litvack, J. & Seddon, J. (eds.). (1999). *Decentralization Briefing Notes*. The World Bank Institute Working paper No. 37142. The World Bank, Washington, DC.

Maganga, F. P., Butterworth, J. A. & Moriarty, P. (2002). Domestic water supply, competition for water resources and IWRM in Tanzania: a review and discussion paper. *Physics and Chemistry of the Earth Parts A/B/C* 27(11–22), 919–926.

Mathew, B. (2004). *WAMMA Scaling up water and sanitation in rural Tanzania*. *Waterlines* 23(2), 22–23.

Mujwahuzi, M. R. (1985). Constraints to effective community participation in rural water supply schemes. Paper presented at the WEDC 11 Conference: Water and Sanitation in Africa, Dar Es Salaam. See: [http://wced.lboro.ac.uk/resources/conference/11/mujwahuzi.pdf](http://wced.lboro.ac.uk/resources/conference/11/mujwahuzi.pdf) (accessed 21 March 2013).

Nkongo, D. & WaterAid Tanzania (2009). *Management and Regulation for Sustainable Water Supply Schemes in Rural Communities*. WaterAid Tanzania, Dar Es Salaam. See: [http://www.wateraid.org/~media/publications/sustainable-water-supply-schemes-rural-communities.pdf](http://www.wateraid.org/~media/publications/sustainable-water-supply-schemes-rural-communities.pdf) (accessed 27 March 2013).

Oketch, M. O. (2007). *To vocationalise or not to vocationalise? Perspectives on current trends and issues in technical and vocational education and training (TVET) in Africa*. *International Journal of Educational Development* 27(2), 220–234.

Okojie, C. E. (2003). Employment creation for youth in Africa: the gender dimension. In Paper presented at the Jobs for Youth: National Strategies for Employment Promotion, 15–16 January 2003, Geneva, Switzerland. See: [http://yes-web.org/2006/Publications_Papers%20august%2006/Agenda%20Links/Fourth%20Session/Employment%20Creation%20for%20Youth%20in%20Africa%20The%20Gender%20Dimension.pdf](http://yes-web.org/2006/Publications_Papers%20august%2006/Agenda%20Links/Fourth%20Session/Employment%20Creation%20for%20Youth%20in%20Africa%20The%20Gender%20Dimension.pdf) (accessed 20 March 2013).

Olowu, D. (2001). *African decentralisation policies and practices from 1980s and beyond*. *ISS Working Paper Series/General Series* 334, 1–44.

Pallangyo, W. & Rees, C. J. (2010). Local government reform programs and human resource capacity building in Africa: evidence from local government authorities (LGAs) in Tanzania. *International Journal of Public Administration* 33(12–13), 728–739.

Palmer, R. (2007). *Skills for work? From skills development to decent livelihoods in Ghana’s rural informal economy*. *International Journal of Educational Development* 27(4), 397–420.
Palmer, R. (2009). Skills development, employment and sustained growth in Ghana: Sustainability challenges. *International Journal of Educational Development* 29(2), 133–139.

Policy and Operations Evaluation Department (IOB) (2011). *Impact Evaluation of Drinking Water Supply and Sanitation Interventions in Rural Mozambique: More than Water*. Ministry of Foreign Affairs, Government of The Netherlands, The Hague.

Prime Minister’s Office – Regional Administration and Local Government (PMO-RALG) (nd). Historical perspective on Participatory Planning in Tanzania. See: http://www.pmoralg.go.tz/documents_storage/2007-4-21-3-2-22_historical.pdf (accessed 21 February 2013).

Rao, V. & Woolcock, M. (2003). Integrating qualitative and quantitative approaches in program evaluation. In *The Impact of Economic Policies on Poverty and Income Distribution*. Bourguignon, F. & Pereira da Silva, L. (eds). Oxford University Press, New York.

Ribot, J. C., Agrawal, A. & Larson, A. M. (2006). Recentralizing while decentralizing: How national governments re-appropriate forest resources. *World Development* 34(11), 1864–1886.

Robinson, M. (2007a). Introduction: decentralising service delivery? Evidence and policy implications. *IDS Bulletin* 38(1), 1–6.

Robinson, M. (2007b). Does decentralisation improve equity and efficiency in public service delivery provision? *IDS Bulletin* 38(1), 7–17.

Rondinelli, D. A. (1991). Decentralizing water supply services in developing countries: factors affecting the success of community management. *Public Administration and Development* 11(5), 415–430.

Rondinelli, D. A. & Nellis, J. R. (1986). Assessing decentralization policies in developing countries: The case for cautious optimism. *Development Policy Review* 4(1), 3–23.

Scrimshaw, S. C. M. (1990). Combining quantitative and qualitative methods in the study of intra-household resource allocation. In *Intra-household Resource Allocation: Issues and Methods for Development Policy and Planning*. Rogers, B. L. & Schlossman, N. P. (ed.). United Nations University Press, Tokyo. pp. 86–98.

Smoke, P. (2003). *Decentralisation in Africa: goals, dimensions, myths and challenges*. Public Administration and Development 23(1), 7–16.

Smoke, P. (2010). Implementing decentralization: Meeting neglected challenges. In *Making decentralization work: democracy, development, and security*. Connerley, E., Eaton, K. & Smoke, P. J. (eds). Lynne Rienner Publishers, USA.

Taylor, B. (2009a). Addressing the Sustainability Crisis: Lessons from Research on Managing Rural Water Projects WaterAid Tanzania. See: http://www.wateraid.org/documents/plugin_documents/sustainability_crisis.pdf (accessed 18 February 2013).

Taylor, B. (2009b). *Management for Sustainability: Practical Lessons from Three Studies on the Management of Rural Water Supply Schemes*. WaterAid Tanzania. See: http://www.wateraid.org/documents/plugin_documents/management_for_sustainability.pdf (accessed 18 February 2013).

Therkildsen, O. (1988). *Watering White Elephants?: Lessons from Donor Funded Planning and Implementation of Rural Water Supplies in Tanzania*. Scandinavian Institute of African Studies, Uppsala.

United Republic of Tanzania (URT) (2002). *National Water Policy*. Ministry of Water and Livestock Development, Dar Es Salaam.

United Republic of Tanzania (URT) (2008). *National Water Sector Development Strategy 2006–2015*. Ministry of Water and Irrigation, Dar Es Salaam.

United Republic of Tanzania (URT) (2010). *National Strategy for Growth and Reduction of Poverty II (NSGRP II)*. Ministry of Finance and Economic Affairs, Dar Es Salaam.

United Republic of Tanzania (URT) (2011). MKUKUTA (Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania) – Annual Implementation Report 2010/II: ‘Delivering on Commitments’. Ministry of Finance, Dar Es Salaam.

World Health Organization (WHO) (1982). *International Drinking Water and Sanitation: National Decade Plans and Eight Questions they Answer*. WHO, Geneva.