

# A study into rural water supply sustainability in Niassa province, Mozambique



**A WaterAid report**

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## Acronyms

<b>CBOs</b>	Community Based organisations
<b>DSDPI</b>	District Director of Planning services and Infrastructure services
<b>DNA</b>	National Directorate of Water
<b>DPOPH</b>	Provincial Directorate of Public Works and Housing
<b>GAS</b>	Water and sanitation working group
<b>INGOs</b>	International Non Governmental Organisations
<b>MDGs</b>	Millennium Development Goals
<b>MIPAR</b>	Rural water supply project implementation manual (Mozambique)
<b>MOUs</b>	Memorandums of Understanding
<b>MPWH</b>	Ministry of Public Works and Housing
<b>NGOs</b>	Non Governmental Organisations
<b>PA</b>	Water Policy ( Mozambique, 2007)
<b>PEC</b>	Community education work
<b>PME</b>	Planning, Monitoring and Evaluation
<b>PNA</b>	National Water Policy (Mozambique, 1995)
<b>PRONASAR</b>	National rural water supply and sanitation programme (Mozambique)
<b>RWSN</b>	Rural Water Supply Network
<b>SDPI</b>	District Planning and Infrastructure Services
<b>UNDP</b>	United Nations Development Programme
<b>VL0M</b>	Village Level Operation and Maintenance



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# Executive summary

WaterAid's vision is of a world where everyone has access to safe water and sanitation. This resonates with Millennium Development Goal 7 (MDG 7) which has the target '*to reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015*'. The achievement of this goal is on track, but rural areas in developing countries across the world remain severely disadvantaged, with eight out of ten people not having access to an improved water supply. The challenge of rural water supply sustainability is widely recognised but is jeopardising the achievement of this MDG goal and WaterAid's mission. For example, only two out of three handpumps installed in developing countries are working at any given time (RWSN, 2010). In recognition of these challenges and a desire to ensure services continue to last over time, WaterAid in Mozambique undertook a study into rural water supply sustainability in Niassa Province, Mozambique in August 2010.

Niassa province was chosen as a focus because of WaterAid in Mozambique's 15 years of experience in rural water supply service provision in the area. Sustainability of rural water supply relates to whether or not these services last over time (Carter, 2010) and is affected by numerous factors ranging from spare parts availability to effective community management models to finance for operation and maintenance and external support. These factors were compared with the National Water Policy of Mozambique (2007) to understand how the policy framework of rural water in the country deals with the issue of sustainability. Strong overlaps and correspondence between the policy and key sustainability factors suggested in the literature review highlighted the theoretical effectiveness of the policy, yet questioned how far it was being put into practice.

A qualitative methodology involving semi-structured interviews with key stakeholders was chosen for this study. Two types of information were gathered to gain a full picture of sustaining services over time: interviews were held with communities and their water committees to understand the realities of maintaining services on the ground and interviews were held with government representatives in the District Departments of Planning and Infrastructure Services, coordinators of local NGO partners and WaterAid staff working in the province, to explore which factors they felt were important for achieving sustainability based on their experiences in the field. Bringing these two streams of information together exposed the key factors that influence rural water supply sustainability in the area.

Key factors from the findings came under four main areas: policy, capacity, community management models and external support. The case for improved implementation of the national Water Policy was an important issue as, despite its strong and effective nature, it was clear that it had been inconsistently applied. Other important factors included dissemination of the policy, implementation of a Demand Responsive Approach, effective planning, sector coordination, spare parts availability and clarity on the definition of capital costs. However, for all of these factors to be effectively implemented it was argued that they need to be combined with strong and effective capacity of all stakeholders involved in rural water supply service provision. Partner (local NGOs

and local government) capacity, defined as knowledge, skills, practices, physical resources and improved community education work (PEC), needed to improve. Effective policy implementation and strong capacity will impact on community management models, including improved water committee capacity and profile. The findings also emphasised that these developments must be accompanied by constant external hardware and software support if services are to last over time.

This research study argues that all of the factors outlined above must be viewed together as the sum parts of one solution to rural water supply sustainability. The need to improve one factor against another will vary depending on context yet, for the challenges to be overcome, there is no one factor that should be addressed alone – all need to be considered collectively to ensure services last over time. These findings are presented in a conceptual framework that can be used by others in the WASH sector as an entry point to investigate how to overcome the challenges of rural water supply sustainability in their respective programmes and projects. If services are to continue to serve the world's poorest over time, it is fundamental that the approaches taken and measures put into place for rural water supply service provision are sustainable.

## Acknowledgements

This research would not have been possible without the prioritisation and demand of WaterAid in Mozambique to understand why water points are failing in their country. The subsequent decision by Rosaria Mabica, Country Representative, and Artur Matavele to second Shamila Jansz from WaterAid's Programme Effectiveness Unit in London and the support and encouragement by Jerry Adams (Head of Programme Effectiveness Unit) and John Kandulu (Head of Southern Africa Region), is one to which the researcher is truly thankful and will always be indebted. This research would not have been possible without the hard work and support of Sandia Abuxahama, WaterAid in Mozambique Project Officer, PME, through her strong insights and understanding which contributed greatly to shaping this research project. In addition, the support and inputs from WaterAid staff in Niassa (Xavier Siteo, Lazaro Cumbe, Samuel Sengou and Benicio Baulo) is very much appreciated, and it is hoped that this research will support them to improve the situation of rural water supply sustainability in their projects. Many thanks to WaterAid's partner organisations and district and provincial government representatives, and of course to the communities for sharing their experiences and invaluable ideas. Thanks also go to all staff in WaterAid in Mozambique for their unique inputs, contributions and support throughout this research project. Finally, a huge thanks to all of those in London, particularly Richard Carter (Head of Technical Support Unit), who provided invaluable comments and support from day one to the end of the research project.

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## Section 1

# Introduction

### 1.1 Background and aim of the study

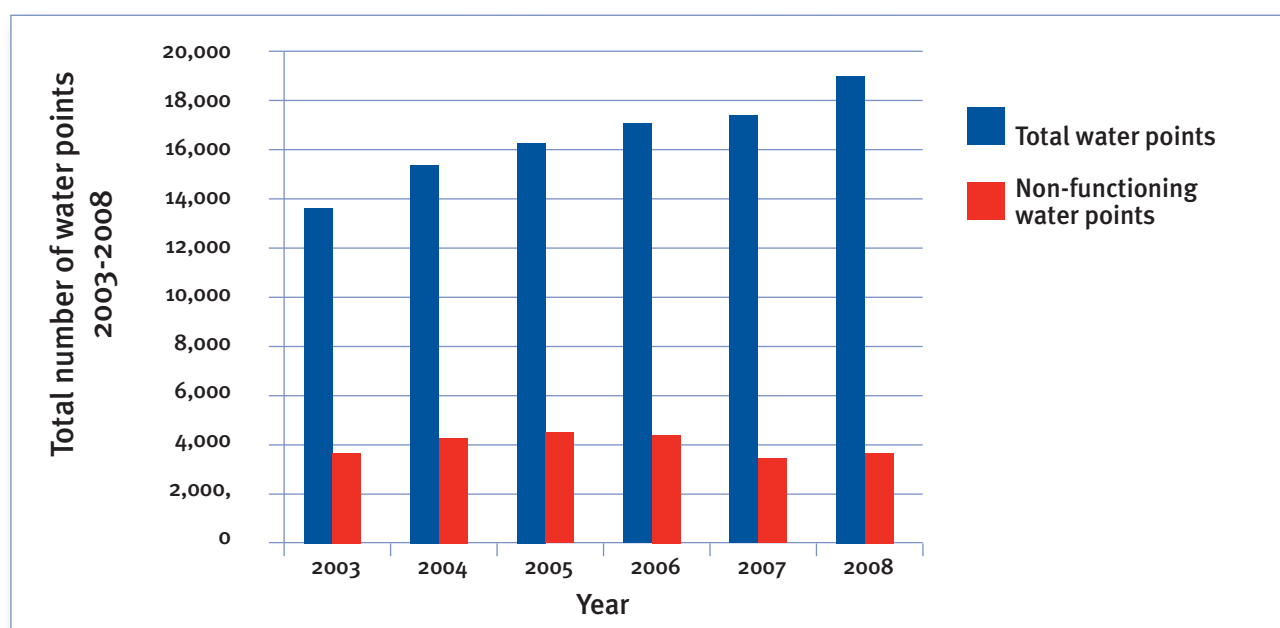
According to the Millennium Development Goal (MDG) Summit Report (2010), progress on the MDG 7 target ‘to reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015’ is currently on track. Yet rural areas in developing countries across the world remain severely disadvantaged, with eight out of ten people not having access to an improved water supply. Only 47% of the rural population of sub-Saharan Africa have access to an improved water source (UN, 2010). WaterAid’s mission is to overcome this gap to achieve its vision of a world where everyone has access to safe water and sanitation. However, the challenge of rural water supply sustainability is jeopardising progress. It is estimated that only two out of three handpumps installed in developing countries are working at any given time (Rural Water Supply Network, RWSN, 2010). Without services providing a sustainable water supply, the number of people with access to an improved water supply will fall, and the achievement of MDG 7 will be compromised.

Sustainability of rural water supply relates to whether or not these services last over time (Carter, 2010) and is dependent upon numerous factors ranging from spare parts availability to effective community management models to finance for operation and maintenance and external support. Sustainability is compromised when the effectiveness of one or several of these factors fails, or they cease to even exist. Recognition of these challenges and the need to overcome them to achieve WaterAid’s mission prompted WaterAid in Mozambique to carry out this study.

Over half of the rural population of Mozambique still do not have access to safe water according to official data from 2008 (WaterAid in Mozambique, 2010). WaterAid has over 15 years of experience in rural water supply provision in Mozambique. Given this wealth of knowledge, it has prioritised sustainability in its new Country Strategy to ensure the services it provides continue to last over time. It remains a challenge however, with the number of non-functioning water points in the country hovering around 20%. This undermines government and support agency efforts to increase coverage by increasing investments in the sector, as is illustrated in the following graph.



Figure 1: Rural water point functionality, 2003-2008



The aim of this study is to overcome these challenges by investigating the key factors that affect rural water supply sustainability in Mozambique. Using a qualitative methodology to explore the situation on the ground in terms of community experience in sustaining services, and also talking to stakeholders involved in service provision (including government, partners and WaterAid staff), it will investigate the components necessary to solving the challenges of rural water supply sustainability. Although the study focuses solely on WaterAid's rural water supply projects in Niassa province, Mozambique, it is hoped that the findings will contribute to debates and discussions throughout WaterAid in Mozambique, WaterAid in general and more widely in the global water sector.

## 1.2 Literature review

Sustainability is a concept that is 'complex and contested' (Pretty, 1995). It is far from having a single accepted definition in development. However, discussions within WaterAid adopt the following definition from Richard Carter (2011, p6) that builds on that of Len Abrams (2000):

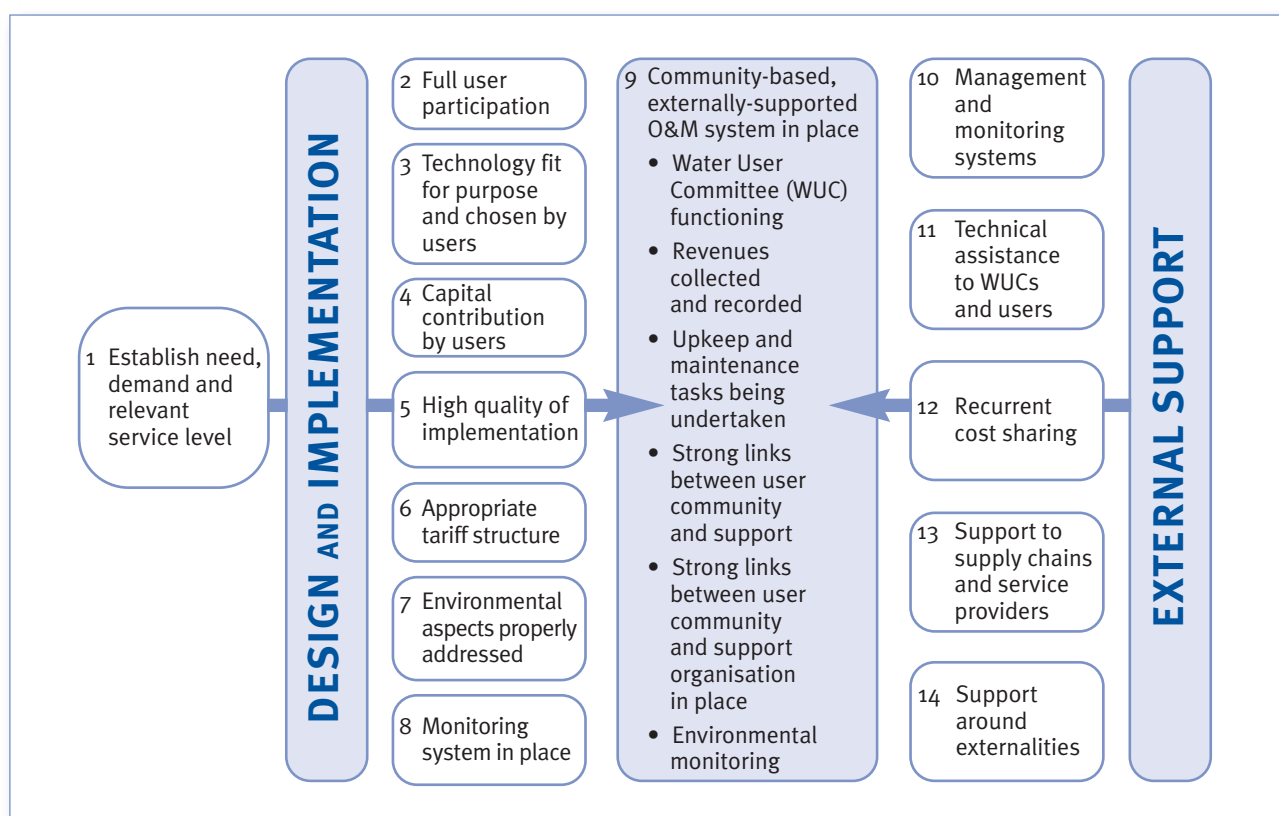
*'Sustainability is about whether or not water and sanitation services and good hygiene practices continue to work over time. No time limit is set on those continued services and accompanying behaviour changes. In other words, sustainability is about lasting beneficial change in WASH services and hygiene practices.'*

This is the definition used in the present study. Sustainability success involves the achievement of lasting beneficial changes in rural water services. It takes the issue of sustainability beyond the limitations of a debate on technical functionality; the term 'beneficial' emphasises the impact on the lives of people and it refers to services rather than technology. This definition stresses the importance of the roles and responsibilities of all stakeholders involved in service provision.

Numerous conceptual frameworks have been developed to understand sustainability. One important conceptualisation divided it into five key dimensions (Parry Jones et al, 2001 citing Well, 1998; Abrams, 1998; Mukherjee, 1998): institutional (organisational), social, environmental, technical, financial/economic. These dimensions are interdependent and context specific – sustainability will take a different shape in different contexts. This is why it is difficult to conceptualise it, and perhaps why there are too few good examples of sustainability in practice (Carter et al, 2006).

It is increasingly recognised that the achievement of lasting sustainable water services is dependent on the interplay of a number of factors focusing on a community based, externally supported operation and maintenance system. This is represented in the diagram below.

**Figure 2 A conceptual framework for sustainable water services (Carter, 2010)**



The 14 factors listed above are vital for achieving sustainable, externally supported community based management of water services (Carter, 2011). Without real expression of demand, sustainability of services may be compromised (Carter, 2011). According to Parry-Jones et al (2001), if a community is satisfied with its current source of water then it may not understand the need for another water point and, as a result, not contribute sufficiently to maintaining the service. Users will not prioritise and value a service that does not meet their needs. This pre-construction community mobilisation and training (RWSN, 2009) is not always carried out or is often of poor quality. The involvement, or not, of users in projects and programmes will affect sustainability of water services.

Finance is another key factor affecting sustainable water services, capital costs and appropriate tariff levels. Capital costs are vital to community participation because they act as an indicator of community commitment to the project (Breslin, 2003). Alongside this, water tariffs must be set at an appropriate level based on community ability to finance operation and maintenance. Too often, inadequate levels of finance are collected which reduce the life expectancy of handpumps (Bauman, 2006). All of these aspects use participation to install a sense of ownership in the community (Parry-Jones et al, 2001) and maintain a water service over time.

These ‘software’ aspects, provided through community education work (PEC), are imperative to ensuring communities understand their roles and responsibilities. However, they must be carried out in conjunction with ‘hardware’ aspects as closely as possible (Parry-Jones et al, 2001) and both must be of high quality. In addition, issues of design and implementation, such as water quality, must be considered to ensure services are environmentally sustainable. Underlying all of these factors, monitoring and evaluation of the service itself must be carried out to provide users and supporting stakeholders with the necessary information for ensuring sustainability of services (Parry-Jones et al, 2001).

The water sector has and continues to use community management models as its approach to rural water supply projects. The original model – Village Level Operation and Maintenance (VLOM) – was at the heart of development interventions in the 1980s (Parry-Jones et al, 2001). In this approach, communities may contribute to technology installation, collect tariffs to finance operation and maintenance, and manage repair activities (Harvey, 2004). WaterAid still uses VLOM in many of its rural water programmes and it is also reflected in Mozambique’s *Rural water supply project implementation manual* (MIPAR, 2001). The manual states that water committees must be elected by communities and, for example, collect contributions for the creation of a fund for operation, maintenance, repair and replacement, as well as organising its management. This community management model makes the community solely responsible for operation and maintenance. However, it has not achieved the expected rates of sustainability (Harvey, 2005).

Nowadays, the need for external support to communities to operate, maintain and sustain lasting services permanently is becoming increasingly accepted. The Rural Water Supply Network (RWSN, 2010) declares the belief that ‘communities are always capable of managing their facilities on their own’ to be a myth. Sustainability must move people from ‘independence’ using contaminated water sources to ‘interdependence’ where they have improved sources, but need to interact with a form of external support (Carter, 2006).

A crucial condition for effective operation and maintenance of water services is a proactive and responsive support organisation that can provide technical and software support (Carter, 2009). Similarly, RWSN (2009) says evidence verifies that water committees need external support once established in order to keep them motivated, retrain them and provide technical support for repairs etc. This support can be provided by a delicate balance of implementing agencies, such as local NGOs, to local government. Mozambique’s Water Policy (2007) recognises the need for this external support in, for example, how it states that operation, maintenance and management systems for rural water supply can be provided by separate agencies or private entities under contract.

Accompanying this hardware support must be a well functioning spare parts chain, so that communities can carry out repairs (RWSN, 2009). The issue of spare parts availability and their respective supply chains is known too well across sustainability literature and is one of the main challenges faced (Harvey and Reed, 2004).

All of these factors are vital to achieving sustainable rural water supply services, but it is the inter-linkages between them that will ensure services continue to operate over time. There are three core linkage areas that are fundamental (Parry-Jones et al, 2001):

- Training and capacity building of all stakeholders to carry out their roles as effectively as possible.
- PEC: flow of information across and between all stakeholders in order to make informed decisions and take appropriate action to ensure sustainability.
- Supply chains: the flow of physical resources needs to be free and flexible to meet the needs of all stakeholders at any time.

This delicate balance of interacting factors requires the involvement of a number of stakeholders working together. From communities to International Non Governmental Organisations (INGOs), local Non Governmental Organisations (NGOs), government at different levels and the private sector, sustainability will only be achieved if all stakeholders have sufficient capacity and incentive to do their role (Harvey and Reed, 2004). Harvey and Reed (2004) also suggest that if services are to be sustainable, national and local government institutions are the most important stakeholders, with a principal role in coordination, and need to have sufficient capacity at all levels to deliver services.

There is limited literature about rural water supply sustainability in Mozambique. However, one important piece, written by a previous WaterAid Country Representative in 2003, debated the Demand Responsive Approach of the National Water Policy (1995). It concludes that WaterAid needs to invest in the State to apply the policy in practice, as the policy offers considerable advantages over the previous supply-driven approaches. Although it states that this can lead to more sustainable services, it is far from perfect at both the theoretical and practical level (Breslin, 2003). External support was also stressed as essential, saying that government should recognise that communities cannot manage alone (Breslin, 2003). This was also evident in a piece from a programme in Sofala Province, Mozambique (Fodge, 2001) where a successful model of external technical support was documented. Handpump management was delegated to district mechanics who were formally regulated by local government, stressing the need for government to manage such support.

This need for post construction support and maintenance was further reinforced and a successful model developed by Unicef in Guro District, Manica Province, in Mozambique (Godfrey, 2010). However, the issue of spare parts availability was also referred to by UNICEF in a separate attempt to develop a tool for monitoring the sustainability of services (Godfrey et al, 2009).

The question for the present study is which of the above factors and linkages are crucial for solving the challenges of rural water supply sustainability on the ground in Mozambique.

### 1.3 Mozambique and its water sector in context

Mozambique is currently ranked 172 out of 182 countries in the United Nations Development Programme (UNDP) Human Development Index. The current population, according to the Census of Population and Housing (2007), is just over 22 million and almost half live below the poverty line. The country is divided into ten provinces, which are further sub-divided into districts. The fieldwork for the study was carried out in Niassa province which is located in the north west of the country and is the most sparsely populated province. Its population in 2007 was 1,213,398 according to the National Institute of Statistics and is characterised by poor infrastructure, a weak cash-based agricultural economy and political and social isolation (Breslin, 2003).

In Mozambique, the Ministry of Public Works and Housing (MOPH) is the government body responsible for the management of water resources. Policy development sits within the National Directorate of Water (DNA) in the MOPH. At the provincial level, the Provincial Directorates of Public Works and Housing (DPOPH) implement water, sanitation and hygiene sector duties. Below this, at district level within the District Administration, it is represented by the District Planning and Infrastructure Services (SDPI) and the Director of District Planning and Infrastructure Services (DSDPI).

The Mozambican Water Policy was reviewed in 2007 based on a need to comply with the MDGs and in recognition of the inadequacies of the previous National Water Policy (nb it is called the ‘Water Policy’ to differentiate it from the original ‘National Water Policy’ written in 1995, yet still maintains the same political status as a national policy). Within it, there exists the National Rural Water Supply and Sanitation Programme (PRONASAR, 2009) which reflects the need to improve rural water service provision:

*‘Mozambique is lagging behind in achieving the MDGs in terms of rural water supply and sanitation and needs a rapid coordinated effort of the Government, development partners, NGOs and private sector to overcome this delay.’*

The Water Policy also incorporates the *Rural water supply project implementation manual* (MIPAR, 2001). This provides guidance on the roles and responsibilities of all stakeholders involved in rural water project implementation, from communities to central bodies. The policy and its accompanying documents aim to increase access to sustainable water supply for at least 70% of the rural population by 2015, in line with MDG targets. Sustainability is clearly a high priority in all of these documents as seen in their vision (Water Policy, 2007):

*‘The desired future in relation to water is one where water is available in adequate quantity and quality for present and future generations, serving to achieve sustainable development.’*

In addition, the aim of the PRONASAR is to increase the sustainability of water supply and sanitation coverage and increase the quality of services. In all of these documents it is clear that national policy prioritises and recognises the challenges of sustaining rural water supply services, noting factors from lack of post construction support to caretakers, to absence of an effective spare parts supply chain (PRONASAR, 2009).



The current minimum level of service is a well or borehole equipped with a manual ‘Afridev’ pump in rural water supply (NPRWSSP, 2009). Other service types include rain water collection systems, protection of spring water sources, rope pumps and small piped water supply systems.

In principle, the Water Policy and its accompanying documents appear to be highly effective towards achieving rural water supply sustainability. This is because the key components described as fundamental in the conceptual framework presented earlier (Figure 2, Carter 2011) are all evident within it. In the table below, each component from Carter’s framework (2011) is set out alongside their corresponding reference in the Water Policy and its accompanying documents.

**Table 1 Evidence of key factors identified from Carter’s conceptual framework (2011) in the contents of the Mozambique Water Policy and its accompanying documents**

<b>Key components identified from conceptual framework (Carter, 2011)</b>	<b>Evidence of component in national policy</b>	<b>Reference</b>
Demand	<ul style="list-style-type: none"> <li>• Government continues to develop systems for rural water supply under the principle of demand.</li> <li>• Implementation of a Demand Response Approach through participation of end users in decision-making process.</li> </ul>	Water Policy, 2007
Full user participation	<ul style="list-style-type: none"> <li>• Beneficiaries must participate in all water supply project phases as a way of ensuring sustainability of infrastructures.</li> <li>• Government recognises the important role of women in the provision of water supply by encouraging their active participation in all phases of the project cycle.</li> </ul>	MIPAR, 2001  Water Policy, 2007
Technology fit for purpose and chosen by users	<ul style="list-style-type: none"> <li>• The type and level of service will be selected according to the natural conditions of the area and according to the beneficiaries’ capacity to pay, manage and maintain the service.</li> </ul>	MIPAR, 2001
Contribution by users	<ul style="list-style-type: none"> <li>• Users properly organised, contribute to the construction and rehabilitation of water sources and ensure the collection of fees that are sufficient to at least covering operating costs and maintenance.</li> <li>• Communities have the competence to decide on the contribution modalities and ways of collecting such contributions.</li> </ul>	Water Policy, 2007  MIPAR, 2001

<b>Key components identified from conceptual framework (Carter, 2011)</b>	<b>Evidence of component in national policy</b>	<b>Reference</b>
High quality of implementation	<ul style="list-style-type: none"> <li>Once constructed works are completed and the water source is tested by the supervisor, the work will be handed over to the community in the presence of representatives from the district and from the provincial DDPWH.</li> </ul>	MIPAR, 2001
Appropriate tariff structure	<ul style="list-style-type: none"> <li>The community has the right to determine the mechanisms of charging the tariff and deciding on those who are exempted for payment for being unable to contribute (orphans, older people and the handicapped, etc).</li> <li>The water tariff policy will be guided by the principles of user pays, polluter pays, sustainability, equity, efficiency of water use, environmental conservation, decentralisation and participatory management. The rates in rural areas and how they are recovered will be appropriate and adapted to local conditions.</li> </ul>	MIPAR, 2001  Water Policy, 2007
Environmental aspects properly addressed	<ul style="list-style-type: none"> <li>The main objective is to ensure that the development and management of water resources fully take into account the need for environmental conservation with an adequate water supply, both in quantity and quality, to environmental sustainability.</li> </ul>	Water Policy, 2007
Monitoring system in place	<ul style="list-style-type: none"> <li>The register of infrastructure systems for rural water supply is an essential tool for planning and management and should be appropriately organised and updated regularly.</li> <li>The management tools for rural water supply management will include the activity plans, progress reports, evaluations and management information systems.</li> </ul>	Water Policy, 2007  MIPAR, 2001

<b>Key components identified from conceptual framework (Carter, 2011)</b>	<b>Evidence of component in national policy</b>	<b>Reference</b>
Community based externally supported operation and maintenance system in place: water committee functioning, revenues collected and recorded, upkeep and maintenance tasks being undertaken, strong links between user community and support organisation in place, environmental monitoring	<ul style="list-style-type: none"> <li>• The management body at the community level is the water committee, with the following duties: Organise the community. Collect and manage funds to be used on operation and maintenance, repair and replacement. Promoting the cleaning of the water source. Undertake routine maintenance of the water source. Repair the handpump. Ensure the correct use of the water source. Keep the district authorities regularly informed of the water supply situation.</li> </ul>	MIPAR, 2001
External support: management and monitoring systems	<ul style="list-style-type: none"> <li>• The participation of the community can be encouraged through technical advice provided by companies working in the social area which, using participatory methodologies, will help the community in the identification of problems related to its water supply, with the aim of requesting funds for its improvement.</li> </ul>	MIPAR, 2001
External support: technical assistance to water committees	<ul style="list-style-type: none"> <li>• The operation, maintenance and management systems for rural water supply can be provided by separate agencies or private entities under contract, leaving communities to ensure the monitoring of it.</li> <li>• If maintenance groups for any reason are unable to do repairs, the community may resort to manual pump mechanics to do the work against payment of services. When breakdowns are complex and the solution cannot be found within the community resources, the water committee will inform the district administration about the situation.</li> </ul>	Water Policy, 2007  MIPAR, 2001

<b>Key components identified from conceptual framework (Carter, 2011)</b>	<b>Evidence of component in national policy</b>	<b>Reference</b>
External support: cost sharing	<ul style="list-style-type: none"> <li>The costs of operation, maintenance, repair and replacement of infrastructures of rural water supply will be borne fully by the community through tariffs.</li> </ul>	MIPAR, 2001
Support to supply chains and service providers	<ul style="list-style-type: none"> <li>The DPOPH has the following duties: Promote and guarantee availability of handpumps and spare parts through local traders, mechanics of pumps etc. Encourage private sector involvement in the preparation and support of communities, design, construction, inspection, maintenance support, provision of spare parts, research and production equipment. Where the private sector is not able or interested in getting involved, other flexible solutions will be found tailored to each region.</li> <li>The provision of handpumps and spare parts in rural areas should be carried out with the involvement of local initiatives, including private sector traders and community organisations. Government encourages network marketing of pumps and their spare parts at provincial, district and local levels.</li> </ul>	Water Policy, 2007
In relation to externalities	<ul style="list-style-type: none"> <li>Despite the uncertainty surrounding the issue of climate change, the picture that emerges from the scientific analysis is that climate change will result in increased frequency and severity of floods and drought, demanding that Mozambique make a comprehensive plan to be properly prepared to deal with these extreme events.</li> </ul>	Water Policy, 2007

The references from the Water Policy and its accompanying documents featured above are not exhaustive of the similarities with the conceptual framework given in Figure 2. However, they were selected to show the strong parallels between the two. From this, it is evident that the policy is theoretically effective at achieving rural water supply sustainability but the extent to which it is being put into practice must be scrutinised.

## 1.4 WaterAid in Mozambique

WaterAid started work in Mozambique in 1995/6 in Niassa province, in response to a request by the National Department of Rural Water to support government efforts there. It initially began working on wells with the provincial Department of Water and Sanitation (DAS) and private sector contractors, and later with civil society as it developed. At present, WaterAid has an office in the capital of Lichinga, Niassa province, from where it manages rural water supply projects in seven districts with a small team, including two Project Officers who are based in the field.

WaterAid operates through a tripartite relationship with local government at district level, ie district administrations, who work through their respective SDPI to implement hardware aspects of services through contracting the private sector, and local NGO partners who are responsible for software aspects such as PEC in most districts in Niassa province. Only in Sanga district, where there are no local NGOs to work on software, does the local government take on the role through locally recruited 'Activistas' or community education volunteers.

Different methods are used for PEC including lectures, community meetings, debates, tools and participatory techniques, but there is no general guidance manual for all. WaterAid in Mozambique has separate Memorandums of Understanding (MOUs) for local government and partners, but there are no MOUs between them. This can complicate roles and responsibilities as government has the mandate to monitor the work of local NGOs based on the Water Policy. These MOUs aim to set out the differing roles and responsibilities of WaterAid partners, including local government and local partners, in their programmes of work.

During 15 years of experience in rural water supply service, WaterAid in Mozambique's success in the provision of rural water supplies has been down to a number of factors. For example, highly effective close working relationships with local government at district, provincial and national levels has led, over time, to supporting partner NGOs to develop into strong, capable partner organisations. WaterAid in Mozambique has realised the importance of not only ensuring these key factors continue to exist, but is now placing more emphasis on ensuring these services are sustainable over time.



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## Section 2

# Methodology

### 2.1 Methodology of the study

An investigative and qualitative approach was chosen for this study due to the complex nature of sustainability and the desire to explore the experience and opinions of key stakeholders involved in rural water service provision. It was decided that two forms of data would be needed. The first would be the reality on the ground: community experience of sustaining rural water services over time. The second would involve ideas from stakeholders about the key factors for solving the challenges. Stakeholders were chosen that included local government, partner (local) NGOs and WaterAid staff because of their important roles in rural water supply service provision in the country.

The value of this study to WaterAid in Mozambique, given its years of experience in the field, along with WaterAid's principle of 'always learning', prompted significant preparatory work. This included a preliminary field visit to projects in Niassa, review of planning, monitoring and evaluation reports, and workshops with staff to ensure the study was building on existing knowledge and experience and not duplicating efforts. From this, a semi-structured interview methodology was chosen to give sufficient space to investigate the complexities of rural water sustainability by digging deeply into the key affecting factors. Due to the broad subject nature, building on WaterAid in Madagascar's methodology (2010), six themes and sub-themes were developed to use as prompts during interviews. Different sub-themes were created for each stakeholder, based on their different roles and responsibilities (see Annex one).

A purposive sampling strategy was chosen to accompany the qualitative methodology. Samples were chosen from the districts where WaterAid works in Niassa province as they contain the oldest WaterAid interventions. It was assumed that these older rural water supply projects would have been more likely to have experienced breakdown and would be more useful to the research project as they would reflect the reality of managing a water point over time. It was decided to visit two communities per district – one with a functioning water point and one without – to obtain a clear understanding of the reality on the ground and an opportunity to learn from different experiences.

## 2.2 Data collection

Data collection was carried out between 20 October and 2 November 2010 in Niassa province. In each district, semi-structured interviews were conducted with:

- Two communities (including community members; men and women and water committee representatives).
- The Director of Planning and Infrastructure Services at district level (DSDPI).
- The Coordinator of the partner organisation (local NGO).
- WaterAid staff working in the province.

The full itinerary can be found in Annex two along with names of the interviewees. The main technologies found in communities were the Afridev handpump with a borehole or well (based on Water Policy national standards) and several rope pumps. The communities visited, along with details of their respective technologies, are given below in Table 2.

**Table 2 Communities visited and information about their water points.**

District	Community	Year of construction	Technology type	Functional or non- functional
Maua	Mora Paulo	2001	Rope pump	Functional
Maua	Bairro 2	2001	Afridev	Functional
Nipepe	Tamica	2007	Afridev	Functional
Nipepe	Muichi	2007	Afridev	Non-functional
Metarica	Mahassa	2008	Afridev	Functional
Metarica	Cuvir	2008	Afridev	Non-functional
Mecanhelas	Nampamtamanja	2008	Afridev	Functional
Mecanhelas	Maunda	2009	Afridev	Functional
Mandimba	Mepapa	2006	Afridev	Functional
Mandimba	Mpuina	2004	Rope pump	Non-functional
Sanga	Nangenhege	2007	Afridev and rope pump	Non-functional (both)
Sanga	Impresa Agricola	2007	Afridev	Functional
Lichinga	Mapaco	2009	Afridev	Functional
Lichinga	Kulongo	2005	Afridev	Non-functional

## 2.3 Problems with the report findings

Every effort was made to ensure that the research was carried out as effectively as possible. However, the following challenges were faced:

- Interventions were not as old as expected due to government rehabilitations. However, as this reflects the reality on the ground, results are still valid in that they are reflective of the truth of sustaining rural services.
- Limited time available for the research meant that interviews with communities took place with community members and water committees simultaneously. A clear challenge noted in Niassa was the difficulty of getting women to voice their thoughts and opinions in the presence of men due to cultural issues. If more time had been available, men and women could have been interviewed separately to overcome this issue.
- For practical reasons we were unable to interview the DPOPH in Mecanhelas district and the Coordinator of Estamos in Lichinga. However, as all other interviews were carried out successfully, it was felt that the results would not be biased by the omission of these two respondents.
- Political allegiances and the donor relationship between WaterAid and partners, including local government, may have impacted on what was said during interviews. The qualitative approach and semi-structured interview methodology aimed to overcome this challenge by providing sufficient space for respondents to feel comfortable and respond freely.

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## Section 3

# Findings

From the evidence given in the narratives collected from communities, along with discussions with government, partners and WaterAid staff (respondents), the following factors were identified as key to overcoming the challenges of rural water supply sustainability under the areas of community management, finance, external support and policy implementation.

### 3.1 Community management

All of the visited communities had water committees. However, despite having knowledge of their responsibilities, there were variations in how far these were being put into practice as a result of inconsistencies in capacity and capability. Several committees were working well due to high motivation to ensure the service was constantly functional. This was based on recognition and prioritisation of the important health benefits of an improved water source. For example, one committee had successfully raised funds and repaired the water point themselves, due to sufficient technical capacity.

However, in several other committees, the only member who had been technically trained had left and others had no monthly savings for operation and maintenance. These inconsistencies were further exacerbated by the lack of trust and communication between water committees and communities, especially on the issue of finance. When asked about the existence of savings or how often they contributed, the majority of the communities interviewed entered long agitated debates with their respective water committees. In other cases, communities complained of water committees collecting money to buy spare parts, yet not informing them how much had actually been spent. In addition, several water points had pools of stagnant water in their drainage channels, which indicated that water committees were not carrying out their role of cleaning them. From all of this, it was clear that water committees' skills and practices to maintain a service over time were inconsistent across the communities visited.

This evidence questions how far water committees have the right skills to effectively carry out their roles and responsibilities. Respondents suggested one way to help would be to improve water committee capacity. Other ideas included making sure the concept and principles of sustainability were thoroughly explained to water committees, as well as their roles and responsibilities in maintaining a service over time, eg through PEC.

As the evidence implies that water committees are not necessarily applying the lessons taught by partner organisations through their PEC, it questions partner capacity and approaches to effectively educating communities.

Respondents also emphasised the need to improve partner capacity – referring to local NGOs. Issues raised were, firstly, about the physical capacity of partner organisations, eg do they have the necessary number of Activistas (voluntary community education promoters) to support ongoing PEC in all of their communities? Secondly, respondents questioned the actual knowledge, understanding and skills of partner organisations – do they have sufficient, effective capacity to carry out their roles and responsibilities to ensure communities are educated to maintain their services over time? Thirdly, partners need to take a more flexible approach to working with communities. This is important given the differences in community management models found across communities. Finally, respondents questioned the future of partner organisations. If WaterAid leaves, how do we know they will continue to exist?

Addressing these aspects for improving partners' capacity would support the need to improve their PEC. Respondents stated that the vision of community education itself needs to be adapted and developed to incorporate the principles and messages of sustainability. This is to ensure communities and their respective water committees fully understand and implement their roles and responsibilities with a long-term vision, ie to maintain their water points over time. Linked to this, to ensure the sustainability of community knowledge, skills and practices, community education should have a minimum standard of community supervision. It was suggested a similar approach to water quality testing be taken, eg this is done twice a year, so communities' experiences and capacity should be monitored through quasi-permanent community education.

Bringing all of this together would improve water committee capacity. Through a thorough understanding of their role in relation to sustainability, they would perceive their roles as imperative to maintaining the service over time. In addition, water committees could be educated about the advantages and disadvantages of working in certain ways to achieve sustainability. Respondents also felt their technical capacities needed to be reinforced along with an understanding of why they need to collect funds for operation and maintenance.

### **On motivation to maintain the water point**

- *“If there is a problem with the water point, we resolve it. If there is a problem, we know we need money to fix it as we don't want to be in a position where we can't repair it.”* (Community member, Bairro 2, Maua District)
- *“I am very concerned about the level of community understanding of what they need to do to maintain their water point. Communities do not understand the concept of sustainability.”* (Government representative)



### On issues of trust and communication between communities and water committees

- *“We chose the water committee with Adecco (partner organisation) at the start, so we chose six people. But now we don’t trust the water committee have the hearts of the people.”* (Community member from Mahassa, Metarica)
- *“We do not accept the message of the water committee to contribute because we think that the money contributed for capital costs was used by one woman on the water committee to buy capulanas (traditional cloths).”* (Community member, Mahassa, Metarica)
- *“It is difficult to contribute when the water point is broken, due to mistrust between communities, and it will be easier to contribute when it is broken.”* (Community member, Mepapa, Mandimba)
- *“We would contribute if the water committee asked but the water committee have never come to our house to ask for money. But if they did, we would contribute.”* (Community Member, Mpuina, Mandimba)

### On approaches of working with water committees

- *“We need to rethink the messages of water committees, not just for cleaning as many communities said. They are there to mobilise the people, they are not maids of the community.”* (WaterAid staff)
- *“Water committees have to exist but the problem is how they are formed, ie how are they created? They need to understand their role very clearly. The way the water committee is chosen before training is very important. We must explain the role of the committee to the community, ie no salary, so the community can volunteer themselves, and not be chosen by other community members or chiefs for example. Then the committee is driven by its own desire to work. We need to help them understand sustainability and their role in it.”* (Partner staff)
- *“Maybe we need to change our approach to water committees, not just let communities choose – help them to put their ideas in and help them to choose the most effective people; show them experiences from successes and failures.”* (Partner staff)
- *“Women have a bigger role in terms of water. Women are the ones who use the water point but there is a contradiction, men control the money and women are left behind. Women have a greater understanding of the water point but at the moment, men have more control. Women would be more transparent and work better.”* (Partner staff)

### On the need to improve community education work

- *“It is an error to think we can just put in a water point and a community will look after it.”* (Partner staff)
- *“WaterAid and its partners must continuously examine the context in which they work.”* (WaterAid staff)

### On ideas to improve community education work

- *“We need to have a minimum level of supervision of communities. Two times a year WaterAid carries out water quality testing – monitoring water quality – so partners should do this. Partners need to provide assistance to water committees and communities for at least two years.”* (WaterAid staff)
- *“Community education needs to be not an activity or emergency response but it needs to change the behaviour of people. We need to invest our money in community education continuously.”* (WaterAid staff)
- *“We need to involve communities in the whole project process. They should choose technologies for example. Community education should be quasi-permanent. The problem is that when a project stops or an NGO leaves, everything stops. We should not assume if we put water points in and work with communities it is enough.”* (Partner staff)
- *“We need to improve community education to have a bigger vision that includes sustainability.”* (Government representative)

### On the work of partner organisations

- *“Activistas need to be very clear on their role in communities – support and show communities what they should do and check with the water committee and communities that everything is fine and functioning.”* (WaterAid staff)
- *“WaterAid is not an implementer, so we must define a clear strategy for capacity building of partners to ensure sustainability of sources.”* (WaterAid staff)
- *“We need to find solutions and mechanisms to make these organisations independent and sustainable when WaterAid leaves.”* (Government representative)

## 3.2 Finance

Across communities visited it was evident that the issue of finance was compromising rural water supply sustainability. The majority of communities did not have any savings, nor carried out monthly contributions for operation and maintenance. Almost all engaged in reactive financing (Harvey and Reed, 2004), where they only contributed when the water point was broken. All communities that had experienced breakdown in service had managed to raise necessary funds to repair the water point. However, respondents questioned whether this method of financing would sustain a water point over time. The lack of monthly savings was often related to mistrust between communities and the water committees and also a lack of prioritisation in having an improved water supply versus other household needs. A very small number of communities had collected contributions on a regular basis, yet this was annually, not monthly, and because they were notably more motivated to ensure the service was constantly functioning.

This lack of finance for operation and maintenance was further complicated by confusion over definition and purpose of capital costs. Some communities felt that because they had paid these costs, they should not have to pay more for operation and maintenance, as they did not understand the difference. In other situations, partners had taken funds away with no explanation, or local government had used them to pay the private sector for their construction services. In several communities the unusual situation of one individual paying off all of the capital costs occurred, with communities having to pay them back without knowing exactly how much was owed. All of these experiences confused community willingness to contribute payment regularly.

To overcome this issue, clarity and transparency of capital costs definition and purpose was proposed. The issue of finance itself was not raised by respondents as a key factor affecting rural water supply sustainability, but is mentioned here as it was clearly important. Even though communities had managed to pay for repairs when needed, several respondents questioned whether this would sustain a water point over time. In addition, respondents stated that communities do have money; the challenge is that they do not always prioritise having an improved water supply. This issue could be addressed through improving PEC and partners' capacity to increase community understanding of their roles and responsibilities to maintain services over time, as well as the importance of an improved water supply.

### On challenges in communities regarding financing

- *“We do not want to save money on a monthly basis because if we gave it to one person he might spend it on drink.”* (Community member, Tamica, Nipepe)
- *“We do not understand to contribute monthly, but if the water point is broken, we will be able to contribute. We have money available.”* (Community member, Tamica, Nipepe)
- *“The water committee never told us how much money we have, they just keep the money.”* (Community Member Bairro 2, Maua)
- *“I have a list of people who have contributed and I write people’s names down when they contribute. There is no regular collection, people just give when they can.”* (Water committee member, Mapaco, Lichinga)

### On the confusion of the use and purpose of capital costs

- *“We paid 1000 meticaís for capital costs, so this should cover the costs of fixing the water point.”* (Community member Cuvir, Metarica)
- *“The capital costs are with the chief of the community and this money is for maintenance.”* (Community member Maunda, Mecanhelas)
- *“Capital costs are to ensure the sustainability of a water point but we need to clarify the definition and ensure all are adhering to it.”* (Government representative)
- *“Partners or governments should take this money (capital costs) from communities as it gives them value and ownership and then an association could use this money to buy spare parts and sell them back.”* (WaterAid staff)

### 3.3 External support

The need for external technical support, including spare parts, to communities was proposed in discussions and evident from communities' experiences. The technical capacity of communities varied significantly. In certain communities they had been unable to repair their water points because, for example, individuals with technical capacity had left the community or they were waiting for technical support from government or partner local NGOs to do more complex repairs. In other communities, certain water committees had successfully repaired water points using their own technical capacity.

In several cases this challenge was aggravated by the lack of spare parts to carry out repairs. One community very close to the district headquarters had successfully obtained spares from the SDPI. Others had used spare parts from the initial kit received following construction of a water point. Although the majority of communities knew where to purchase them, eg in major towns in Niassa province such as Lichinga and Cuamba, they were not readily available at each district level. Even those that had successfully obtained spare parts highlighted the challenge of the huge distances in Niassa affecting spare parts procurement. For example, it is 548 kilometres from Nipepe district to Lichinga, the capital of Niassa and the nearest place to get spare parts (Breslin, 2003). Due to these distances they would require additional money for food and lodging for one night. Only one community knew the cost of spare parts, because they had a list of prices.

To overcome these issues, two key factors were highlighted. The first was the need for external technical (hardware) support through a district or local mechanic. However, there were questions as to which level this mechanic should be, ie district level to work alongside district government or based in existing local political structures. These mechanics would be responsible for supporting communities with repairs they cannot do and communities in turn would pay them. They would work closely with water committees to ensure community ownership of the water point and, through the water committees, communities could generate sufficient funds to pay for repairs as necessary. Depending on their level of responsibility, the mechanic could work closely with local government and be monitored by them.

The second key factor was the need for accessibility to spare parts. An external supply chain has to exist to ensure spare parts availability across the country and ultimately to achieve a lasting service. A few respondents proposed the idea of a Community Based Organisation (CBO) or an individual under contract by the government to sell spare parts, and one partner organisation even stated that they could sell spares. Yet almost all complained that so many different approaches have been tried and failed, eg with the private sector, and that government must therefore step up and take responsibility.

Related to this, questions were raised as to who would distribute and who have responsibility to distribute spares? Almost all government representatives said they do not have funding for spare parts but that they could trial an approach if WaterAid were to provide funding. The need to learn from the distribution methods of other sectors was suggested, eg the health sector and its distribution of medicines.

### On ideas for external technical support

- *“It is not possible or realistic to expect the community to maintain the water point alone. We need to think of new models.”* (WaterAid staff)
- *“We could give them (representatives in community level localities) responsibility to monitor the situation of water as well as their monthly monitoring. They would not need to be paid as they already receive a salary. Perhaps they could be given a motorbike and fuel to support them. They could give the communities technical support and direct communities on where to find spare parts.”* (Local government representative)

#### Box 1 District level mechanics

In Sanga district a district mechanic who works closely with local government at district level, ie the Director of District Planning and Infrastructure Services (DSDPI). The Director of the SDPI technically trained him and they have worked together for over five years, providing technical support to communities through carrying out repairs, and he also trains and supports water committees. As a result of his work they have very few problems with rural water supply in terms of technical challenges. Communities know him well and they contact him directly for help, or through the SDPI, and they know they have to pay his transport and the cost of spare parts. He has a very good presence in communities and is well respected. He has a very good working relationship with the government and through this, government monitors his work. The challenge he himself stated was that his work is voluntary and he does not receive a salary, so he was unsure for how long he would continue to do this work. To ensure sustainability of his own work he would like to get registered as an association to be able to receive a salary to continue to work in the future.

### On challenge of spare parts availability and government responsibility

- *“We have a list of the cost of spare parts and so when it is broken, we, the committee, look at the list and ask the community for money and then get the part and show the community the receipt.”* (Mepapa, Mandimba)
- *“Spare parts are not available and there is nowhere to buy them. It is very expensive for communities to go from here (Sanga district) to Lichinga to buy spares, as it is far and transport is expensive. There is no solution. We have asked government (National Directorate of Water) many times about spare parts and they do not want to give us any budget as they say they have no money.”* (Government representative)
- *“Responsibility of spare parts is with government. Government should save money wasted on repairing water points by improving the spare parts situation. If the private sector will not sell spare parts, WaterAid must put pressure on government. WaterAid’s role: advocate the situation on the ground, find solutions to spare parts and pressure government to find solutions.”* (Government representative)
- *“WaterAid could work with government in one district to fund a pilot project on spare parts instead of one borehole next year. The money allocated could be used to fund an individual working closely with district government to obtain an amount of spares to start off and sell them to communities and use the profit to buy more. The person would have to accept that he is not working for a profit and would have to be monitored by government.”* (WaterAid staff)



- *“We have tried so many different approaches – key question is whose responsibility is it? Pills and medicine are so easy to get. The sector needs to move forward and think more seriously about spare parts, and be more like other sectors eg health and distribution of pills etc. What can we learn from other sectors?”*  
(Government representative)

### 3.4 Policy implementation

The crucial factor for improving sustainability raised by all respondents (government, partners and WaterAid staff) was the need for WaterAid, through advocacy and capacity building, to improve the operational capacity and implementation of the Water Policy and its accompanying documents. Respondents stated that, in theory, it is a very good policy that incorporates the key principles necessary for achieving effective rural water supply sustainability.

However, it is not being adhered to and implemented in all government practices. Several government respondents admitted to not knowing current levels of functionality in their districts, let alone the total number of water points. This suggests that the necessary monitoring of rural water supply is not happening in order to ensure sustainability through repair and rehabilitation. Further, many questioned whether government at all levels has the necessary skills, knowledge and understanding to put the policy into practice.

The issues of sector coordination and lack of joined up planning were also raised. WaterAid already has a very good close working relationship with government at district level and provincial level in Niassa, as well as at national level. It was suggested that WaterAid needs to take advantage of this and reflect on its own successful experience of working with government over the last 15 years to encourage them to adhere to the Water Policy and its accompanying documents. For example, to ensure they plan based on need, ie demand driven planning, and also to improve government understanding of the issues around rural water supply sustainability. All of this could be pulled together it was suggested, by WaterAid developing a clear, simple strategy for working with government at different levels and localities in Mozambique.

#### **On knowledge, understanding, practice and capacity of government**

- *“We have a great national policy, the problem is it has not been disseminated properly, so at each level people do not know their roles and responsibilities.”*  
(Government representative)
- *“The challenge is that when SDPI start a new project, they do not consider water as an infrastructure different to others, they treat water the same as constructing a road. They do not understand water with the same depth they understand constructing roads. The challenge of working on water projects is that they take a long time, and government does not have time so how will sustainability of projects be ensured?”*  
(Partner staff)



- *“The SDPI sometimes does not know the exact number of water points working, not working, that exist, are broken. This is a problem that affects planning. Government needs to take responsibility to know how many water points are in their districts, which are working, which need rehabilitation and through this they could actually save money. They need to do this and incorporate it into their planning and WaterAid could support it at the start. To ensure sustainability however, they need to take this on themselves.”* (WaterAid staff)
- *“We need to think about the capacity and who is on the SDPI? WaterAid should be concerned with Human Resources and capacity in districts, see what the problems are at district level and work on them.”* (Government representative)

### On sector coordination

- *“There are many different ways a water point can appear in a community: government, WaterAid, other programme etc. Thus in some cases no one has responsibility to look after the water point and challenge, once it is broken, lack of ownership and demand.”* (Partner staff)
- *“Sometimes when there is a political campaign, there can be a challenge where government will put in a water point and community say how much and politicians say its free or you have to pay a small amount. So in some cases communities do not contribute, which can result in lack of ownership and motivation to look after the water point.”* (Partner staff)
- *“There is a challenge of different people working on projects in a district that use different principles, and do not know that others are already working there. Government has a responsibility to coordinate the sector to avoid these problems. But the challenge is they are not doing their role and there is a lack of coordination.”* (Partner staff)
- *“We need to clearly define the roles of each stakeholder (government, WaterAid, CBOs, communities) because often government only looks at water projects in terms of NGOs.”* (WaterAid staff)

## 3.5 Conclusion to findings

All respondents stated that for rural water supply sustainability to be improved, all of the factors given above need to be addressed with equal importance and they must be addressed simultaneously. Working on one factor alone will not result in sustainable services. Inconsistencies and variations noted from evidence within communities, issues raised in discussions and questions on stakeholder capacity, prove the need to work on all components. Combined with the complexity of sustainability, as evident in the literature review, only through linking all of these factors and putting them into practice together will the challenges of rural water supply sustainability be overcome. The following discussion sets out how and why these factors should be implemented in a combined effort to achieve lasting services.

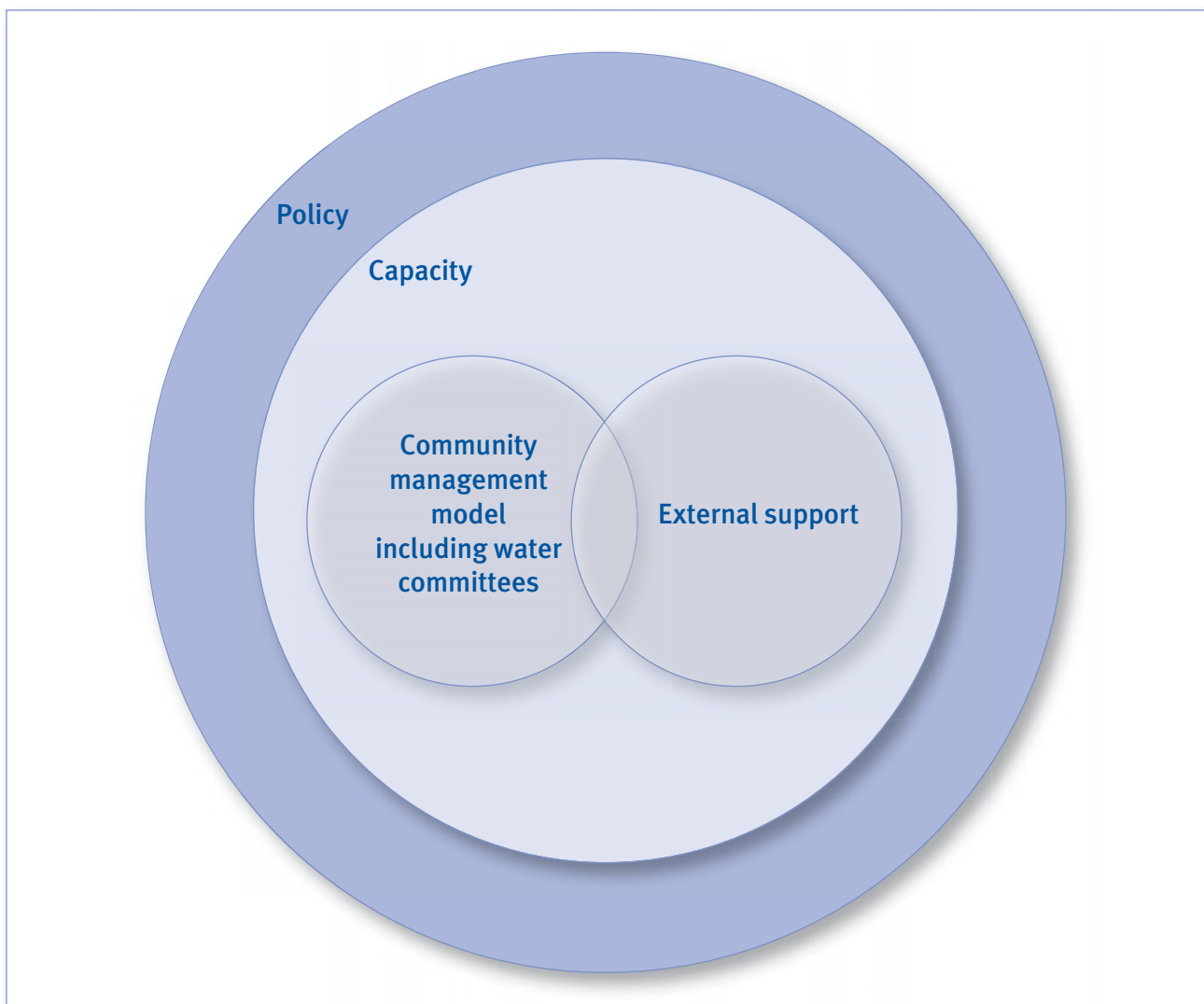
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## Section 4

# Discussion

From discussions with stakeholders it was very clear that sustainability of rural water services will only be achieved through the implementation and inter-linking of all of the factors outlined in this report. There is no one factor in particular that will overcome the challenges, it requires working on all areas identified in the findings. The question is how and why must these components fit together to improve rural water supply sustainability? This is represented in the diagram below and explored in the following discussion.

**Figure 3 Conceptual framework to show how various key factors identified in the study fit together to overcome the challenges of rural water supply sustainability**



Following analysis, the key factors presented in the findings above can be divided into four main areas:

- Policy
- Capacity
- Community management models including water committees
- External support

The conceptual framework above represents how these four areas fit together to achieve rural water supply sustainability. Policy implementation and operational capacity sits in the outermost circle of the framework as it creates the operating basis for rural water supply sustainability in a country. This is achieved through institutional frameworks, laws, budgets and regulatory frameworks. Its key importance was stressed by respondents in this study (local government, partners – local NGOs, WaterAid staff). Within this area of policy, other key factors, including the dissemination of the policy and all of its accompanying documents, implementation of a Demand Response Approach, sector coordination, effective planning, spare parts and definition of capital costs, are addressed.

Capacity forms the first inner circle on the framework because to achieve rural water supply sustainability, all stakeholders involved in service provision require effective capacity. Policy defines the required roles and responsibilities of all stakeholders involved in rural water supply sustainability. Effective policy implementation and operational capacity in turn shape and inform the necessary capacity of stakeholders including government, partners and NGOs across the sector in implementing improved rural water supply sustainability. Capacity addresses knowledge, understanding and skills of government, partner capacity and the effectiveness of PEC.

These areas of effective policy and capacity combined will structure, shape and enable strong community management models such as water committees which are located in the centre of the framework and cover water committee capacity. However, from the findings and evidence in the literature review, these community management models need constant external support. This is represented in the centre of the framework as well because, over time, it will be driven by the effectiveness of the community management model and is enabled by the obligations laid out in the policy and the capacity of stakeholders. These inter-linkages explain how and why these key components must work together to achieve sustainable rural water supply, and are discussed in more detail below.

## 4.1 Policy

From the findings it is clear that central to solving the issues of rural water supply sustainability is the improved implementation of the Water Policy and its accompanying documents. As the fundamental policy that shapes and enables the lasting provision of rural water in Mozambique based on its laws and obligations, it is located in the outer circle of the concept framework on the previous page (Figure 3). Only when it is effectively and clearly in operation and embedded into the practice of all stakeholders will sustainable rural water services be achieved. Respondents in this study questioned how far it has been put into practice up to now.

As indicated by respondents, the Water Policy has not been effectively operating up until now because of variations in approaches and capacity of government. Government in certain instances lacks a thorough understanding of the intricacies of sustaining a rural water supply, as seen in their comparison of rural water to roads for example (see section 3.4). Breslin (2003) implied that Mozambique's earlier National Water Policy was far from perfect at a practical and theoretical level. This inadequacy was addressed by national government and resulted in the new Water Policy in 2007. However, the new policy continues to emphasise issues such as the capacity of the sector needing to be expanded to improve the services it provides. WaterAid in Mozambique's new Country Strategy (2010) also stipulates the need for continued enhancement of the overall capacity of district administration in planning, implementing and monitoring water and sanitation activities. These criticisms reinforce the question of institutional capacity and the approaches affecting effective policy implementation and therefore rural water supply sustainability.

#### **4.1.1 Dissemination of the Water Policy**

Based on discussions, a proposed first step would be for WaterAid to support the wider dissemination of the Water Policy and its accompanying documents by government to all stakeholders involved in rural water supply projects. This would involve government at all levels from district administrators to community localities and to all other stakeholders involved. Making the Water Policy operational would facilitate this as the MIPAR (2001) states district administration has the responsibility to disseminate the policy in the district and in communities. Without knowledge of national guidelines and rules, stakeholders working on rural water supply have no knowledge of their obligations and this could result in actors working in a way that does not ensure sustainability of services. WaterAid must advocate for government to disseminate the policy widely to stakeholders and, given the current ways of working in Mozambique, with an emphasis on district level.

#### **4.1.2 Implementing the principles of a Demand Response Approach**

The principal of demand is a key approach in the Water Policy. This means that communities must demand their desire for water services and the government should respond. However, respondents stated this was a key area in which the Water Policy has not always been put into practice. For example, respondents said that during political campaigns, politicians may construct services for free, without the necessary community and education work, so that communities are ill-equipped to maintain services, let alone sustain them. In the communities visited there were clear variations in terms of true demand for services. Several stated that the water point belonged to the government so they should fix it. In others they were highly motivated to sustain their water points and had actually demanded the service from government themselves.

Another important factor is the way in which a water point arrives in a community. Beneficiary participation is imperative in getting the water point because a real demand for an improved service is necessary to overcome future management challenges (Carter, 2011). As seen in Table 1 (page 12), the Water Policy strongly emphasises this and states, for example, that the involvement of communities in the entire process, provision and supply of rural water determines the sustainability of the infrastructures (MIPAR, 2001). An additional challenge raised by a respondent was that communities may not know their rights, in which case government has a responsibility to ensure, create and strengthen demand. Linked to this, it is

important to note that in certain instances government will not wait for demand to implement services, eg where communities have a high prevalence of diarrhoea and cholera. However, the importance of demand in rural water supply sustainability reinforces the need to improve the implementation of a Demand Response Approach.

WaterAid needs to work closely with government so they understand the importance of demand to sustain projects as specified in the Water Policy. WaterAid could use examples of successful community management based on community demand to show and work with government to ensure they are creating and strengthening user demand for close, reliable and high quality water supplies (Carter, 2009).

#### **4.1.3 Sector coordination**

Sector coordination was also given as a key component for making the Water Policy operational. Evidence was cited in which different NGOs had worked with the same communities using different project principles. In one case an NGO required contribution for service, yet others did not. As a result, the sustainability of the original project suffered because communities no longer wished to contribute, despite doing so previously for years. Even within government at district levels, an example was given where administrators had agreed to a project to provide water services without informing the SDPI. As a result, the project suffered without the necessary PEC. Government have a responsibility to facilitate and coordinate activities across stakeholders within their respective areas, as well as communicate between themselves and their own departments. Parry-Jones et al (2001) suggest that limited cooperation and trust between different layers of government affects the delivery of services by different stakeholders and maintenance support and therefore the sustainability of services over time.

WaterAid, through advocacy activities, can support government to achieve a coordinated sector. There are several forums aiming to improve water sector coordination in Mozambique. For example, the Water and Sanitation Working Group (GAS) set up by government and donors to harmonise implementation and improve coordination on initiatives. A useful method in practice in parts of Mozambique and other WaterAid country programmes is the Sector Wide Approach to improve coordination between actors on water projects. Using existing forums such as these and others at district and other relevant government levels that WaterAid already participates in, WaterAid could encourage more emphasis on strengthening sector coordination on the theme of rural water supply sustainability.

#### **4.1.4 Effective planning**

As mentioned above, respondents stressed that government did not always plan based on community demand. Rather they are driven by a need to spend budgets, and so implement without a sense of actual demand.

In addition, several government representatives (DSDPI) admitted that they did not know how many water points existed in total in their districts and which were functioning. This impacts on the provision of a lasting rural water service; water points cannot be installed and repaired if government do not know the total number of water points, their location and which are broken. The Water Policy states that the register of infrastructure systems for rural water supply is an essential tool for planning and management and should be appropriately organised and updated regularly.



Monitoring of water points and necessary follow up through such systems is vital to ensure water point sustainability, as only through tracking services will those with responsibility to fix water points know they need to take action to repair services.

The work of WaterAid in Mozambique on mapping is relevant here. WaterAid was requested by the provincial government in Niassa (DPOPH) to support a mapping pilot exercise in Sanga district in 2004. This aimed to survey existing infrastructures to improve coverage rates and planning by creating a database model to plan, monitor and evaluate services at a district and subsequently provincial level. Following this pilot, the other six districts where WaterAid works were mapped, along with two in Zambezia province. The success of this activity contributed to the creation of the National Water Sector Information Management System (SINAS) in 2006, with the aim of national data harmonisation. However, the evidence found here in terms of lack of government knowledge on the number of water points in total, questions whether these maps or monitoring tools are being used and regularly updated. Failure to do so could be attributed to a lack of capacity across government personnel or complexity of technology. WaterAid must work more closely with government to address these issues and use both their existing experience in mapping and advocacy to support the use of such systems to improve planning and monitoring. This will improve sustainability through joined up planning and data harmonisation.

#### 4.1.5 Definition of capital costs

Lack of clarity and transparency on capital costs is another reason why the Water Policy must be effectively implemented. From the findings in this report, communities did not clearly know the purpose of capital costs. Government and partners were also using capital costs in different ways. This confusion means that certain communities were unwilling to contribute funds to repair water points, in certain cases leaving them in a state of disrepair and thereby affecting their sustainability.

Capital costs are defined in the MIPAR (2001) and similarly in the Water Policy as:

*‘Users properly organised, contribute to the construction and rehabilitation of water sources and ensure the collection of fees that are sufficient to at least cover operating costs and maintenance. The value of initial contribution by the community in financing the construction of new wells and boreholes will be fixed at the minimum of 2% and maximum of 5% of the water point average cost. In the case of rehabilitation, the amounts will be of 2% and 10% respectively.’*

This definition must be adhered to and clearly explained to communities by stakeholders, so they understand why they are contributing. Government has a responsibility to ensure that all stakeholders are adhering to the national standard. The purpose of capital costs according to Deverill et al (2002, in Harvey and Reed, 2004) is to give a sense of ownership, show demand and demonstrate communities’ ability to organise and collect payments, without which sustainability of rural services will be affected. This is why WaterAid must support the Water Policy to be effectively implemented in order to avoid confusion within communities, and conflicting messages.



#### 4.1.6 Spare parts availability

The challenge of spare parts availability was mentioned by all respondents. It is another good example of where the Water Policy has not been put into operation effectively. Evidence from the communities proved that spare parts were not easily available at district level, despite communities knowing where to purchase them. Few communities had successfully obtained them and complained about the challenges of travelling long distances for them (eg 500 kilometres) and the expenses incurred through overnight lodging and food, as well as the cost of the spares if they were available.

The issue of spare parts is well known across sustainability literature. As explored in the literature review, the quality, availability and distribution of spare parts is not adequately addressed within project frameworks (Parry-Jones et al, 2001). The Water Policy also recognises this challenge and states that government encourages the establishment of network marketing of pumps and their spare parts at provincial, district and local levels. At the district level for example, the district administration must take census of the stock and use of spare parts to ensure operation and maintenance of existing water points (MIPAR, 2001). Through the effective implementation and operation of the Water Policy, the challenge of spare parts availability should therefore be addressed. However, evidence, as shown above, questions how far this is actually happening.

WaterAid should use its current way of working in Niassa through district administrations to work with government, including the SDPI, on the issue of spare parts. It needs to lead by example through pilot projects and build on its close working relationship with district government and their experience to develop innovative and appropriate pilot models to make spares available at district level. However, all government representatives interviewed said they did not have sufficient funding to find new approaches to solve the spare parts dilemma. A quick way to convince government of the need would be a model to show them that spares could save them money on expensive rehabilitations. Implementation of the Water Policy could be used as the entry point to work with and encourage government to find cost-effective models and therefore reduce the number of non-functioning water points as spares become easily and readily available across districts.

To address this complex issue, many respondents emphasised the need to learn from other sector success at distribution. The health sector was highlighted because medicines are so readily available across the country. What can the rural water sector learn from their distribution methods to apply them to spare parts? The proven health benefits of an improved water supply (Carter et al, 2010) make it even more logical to work more closely with the health sector. WaterAid could explore this through its existing close links with government departments such as the National Directorate of Water (DNA) to put this into practice. Developing this idea, WaterAid could explore working closely with relevant government departments and pilot linking spare parts availability to the distribution of medicines by, for example, sharing supply chains.

## 4.2 Capacity

To make the Water Policy operational it is imperative that all stakeholders working on rural water supply programmes have sufficient capacity to act to the best of their ability. Based on the discussions in this research study and from WaterAid's Sustainability framework (2011), capacity refers to physical capacity, material resources, along with knowledge, understanding and skills. This capacity should enable stakeholders to put into practice their varying roles and responsibilities, as specified in the Water Policy (2007), to enable community management models to effectively function. Only then, when all services are adhering to the same principles and obligations, accompanied by an effective capacity to put them into practice, will sustainability be achieved.

This is why in the conceptual framework presented on page 29 (Figure 3) capacity is presented within policy. Policy dictates what stakeholders need to do and therefore shapes the necessary capacity of stakeholders such as government and partners. Based on their different experiences, their respective roles, responsibilities and existing capacity will vary and require different support from WaterAid.

### 4.2.1 Improved capacity of government at appropriate levels

In the report findings, knowledge, understanding and practice of government were all stated as critical issues for improving government capacity to achieve sustainability. The need to challenge governments' perception and understanding of rural water and sustainability was also evident. Respondents explained that there were common misunderstandings in terms of the intricacies of maintaining rural water supply at government level. For example, rural water supply was often equated with road construction; installation without community consultation, and maintenance as necessary. Further complicating this was the lack of time the SDPI have to do their work on all public infrastructures, including water. However, certain government representatives, such as those with considerable amounts of experience working on rural water projects, demonstrated highly effective knowledge and understanding of sustainability. The Water Policy itself recognises these inconsistencies and states that the capacity of the sector needs to be expanded to improve and broaden the scope of the services it provides. Parry-Jones et al (2001) state that in most African countries, those responsible for service delivery and maintenance support are under-resourced and demonstrate a lack of capacity.

When building capacity in any of these areas, it is integral that WaterAid takes a flexible approach and takes into account the range of understanding and practices found among government representatives. Given that WaterAid currently works with local government as a partner at district level, emphasis should also be placed here. WaterAid has a role to educate government representatives at all levels from local administration to national ministers in order to understand the concept of sustainability of rural water supply. WaterAid can use existing close working relationships with government to look at a range of areas including:

- Improving general understanding of the principles of sustainability of rural water supply.
- Human resources: supporting government to employ people with sufficient knowledge and experience of working on rural water, eg in respective positions. Even second experienced WaterAid staff?

- Capacity building efforts for government on specific areas such as planning, including, for example, mapping technology and financial management.
- Capacity building efforts on how to strengthen the Demand Response Approach and adhere to its principles, ie the importance of involving users in decision-making about issues such as technology.
- Implementing the Sector Wide Approach advocated in the Water Policy to work across a whole district, coordinating all stakeholders and ensuring all are adhering to the principles and obligations of the policy and giving the same messages to their respective communities.
- Facilitating experience sharing across stakeholders in the WASH sector including INGOs, local NGOs, civil society and communities to learn from each other and share skills to develop capacity through existing forums, and where relevant, developing new opportunities.

#### 4.2.2 Improved partners' (local NGOs) capacity

Beyond government, a key factor emphasised by respondents was the need to build the capacity of partner organisations, ie local NGOs. Evidence from communities and their respective water committees showed that they did not all have the sufficient skills, knowledge and capacity to maintain services over time. Not all water committees were necessarily carrying out their roles and responsibilities and this questions the effectiveness of the work of partners, as they are responsible, through PEC work, to build community capacity to maintain services.

Respondents felt that WaterAid needs to develop partner capacity in two ways – their physical capacity and their knowledge, skills and practices – to ensure they can function effectively. The physical capacity of partners – human and financial – was questioned. For example, one partner had only four Activistas to work with 22 communities. The time consuming nature of effective PEC work questions to what extent they would realistically be able to build the capacity of all communities in a sufficient time period. Added to this is the difficulty of geography in Niassa. The sparse locations of communities could mean travelling at least 30 kilometres from district headquarters along poor roads to visit them.

In terms of knowledge, skills and practices of partners, fundamental for carrying out effective PEC, clear guidance on partners' roles and responsibilities is in the MIPAR (2001). This states that local NGOs should use participatory methodologies to prepare and organise communities to ensure their participation in all phases of the project cycle. WaterAid should support partners and, where relevant, work with government (the SDPI and district administration) to do this in order to put their existing experience, knowledge and skills into practice and comply with the Water Policy. WaterAid's effort in supporting the dissemination of the Water Policy to all stakeholders would help this process.

Respondents stated that partners need to thoroughly understand the concept of sustainability. Flows of information are crucial to achieving sustainability (Parry-Jones et al, 2001). Only when partners sufficiently grasp the concept and understand the roles and responsibilities of communities to maintain a service over time, can they pass it on to communities themselves to learn. This links to the need to improve PEC work as discussed in section 4.2.4.

As well as building the capacity of government, WaterAid must also take a flexible approach to working with local partner NGOs. They will all have different levels of capacity based on different experiences and it is important to recognise these and draw on the lessons learnt from their experiences when considering how to improve their capacity. This links to the issue of the future of partner organisations – because the longevity of these organisations cannot necessarily be guaranteed, would efforts be better placed elsewhere? (see section 4.2.3).

WaterAid needs to support capacity building efforts of partners in the following areas to ensure lasting services over time:

- Use the new WaterAid Sustainability framework (2011) to develop partners' understanding of sustainability, and how to apply the principles in their PEC work.
- Ensure partners have sufficient skills, such as financial management, to deal with budgets and plans accurately.
- Review the physical capacity of partners in terms of human, material and financial resources, and support them accordingly to improve and be able to carry out their roles more effectively.
- Monitor the work of all partners to ensure they constantly operate as effectively as possible.
- Review existing MOUs with partners with reference to achieving sustainability of services.
- Consider developing or reviewing partnership strategies to enable these organisations to operate independently in the future.
- Critically analyse all of WaterAid's partnerships in Mozambique to assess which partnership models and approaches are more or less effective towards achieving sustainable rural water supply services.

### 4.2.3 Improved sector capacity

As discussed previously, for rural water programmes to be sustainable, it is imperative that both software and hardware aspects are implemented simultaneously (Parry-Jones et al, 2001) and are of high quality (Carter, 2011). Projects will fail if one occurs in the absence of the other or if over time, the quality of one of these factors falters. WaterAid must place efforts on both hardware and software, ie through building the capacity of local government and local NGOs simultaneously, based on WaterAid's current tripartite partnership way of working in Niassa. Sector coordination and effective planning are vital. However, WaterAid needs to think carefully about what is the most effective use of its resources.

Many respondents questioned the future longevity of partner organisations (local NGOs). They felt capacity building efforts would be best placed in working with government as they are the most permanent institutions in the country. This invites the question of whether bilateral partnerships, ie government and WaterAid, or tripartite, as mainly practised in Niassa, are more effective in achieving rural water supply sustainability. In Sanga district, where WaterAid has its only bilateral partnership in Niassa, a successful example of external hardware (technical) support existed which meant that water points were repaired quickly through external support (See Box 1 on page 26). WaterAid in Mozambique should use its strong existing links with local government at the district level in Niassa to strengthen these partnerships and further explore which types of partnership are most effective.

How WaterAid should build capacity will vary not only between government and partner organisations, but also from each individual stakeholder to the next. To understand where efforts need to be placed in order to improve the situation of rural water supply sustainability, WaterAid could work with all stakeholders in one district to critically review the partnerships and capacity. This could be used to determine what specific actions and capacity building of each stakeholder need to be put into practice in future plans.

#### 4.2.4 Improved PEC work

Improved PEC is dependent on effective partner capacity. Evidence from communities suggests that partners are not always applying what they have learnt, and do not necessarily have the sufficient skills to maintain their water points.

The lack of monthly contributions and savings of communities was key in highlighting this ineffective PEC. Within literature on rural water supply sustainability (see Carter et al, 2011 and Jones, 2010), lack of finance for regular contribution to operation and maintenance, as evident in communities, is attributed to either inability to pay or unwillingness to pay. In the findings here, alternative models of funding for repairs were successfully operating; all communities that had to pay to repair a water point had done so successfully. This is ‘reactive financing’ (Harvey and Reed, 2004) but cannot sustain a water point over time as, without covering recurrent costs, systems will quickly deteriorate (Carter, 2011).

The evidence therefore suggests an unwillingness to contribute monthly, as communities had and could pay for repairs once water points were broken. This is further reinforced by the fact that no respondents stated finance as a key issue. The majority stated that communities do have money, they just do not prioritise having an improved water supply. One respondent suggested this was due to a cultural understanding that water is free, so why should communities pay. Therefore PEC needs to work much harder in rural areas to overcome this attitude. The lack of trust between water committees and communities also plays an important role, particularly in terms of finance for operation and maintenance. If PEC work were improved by clearly explaining to communities the importance of financial contribution to sustaining a service over time, these challenges could be overcome.

It was proposed that the vision of PEC needs to be adapted and developed to incorporate principles of sustainability. This is in order for communities to understand that their role in operation and maintenance is one that continues over time if they want to have a lasting service. This also links to the point that partners themselves need this understanding in order to pass it on to communities. The need to adapt approaches to PEC has already been recognised by WaterAid in Mozambique. It is prioritised in the new Country Strategy (2010) and a workshop with all partners and local government in Niassa was held in February 2010 to address the challenge. Noted key areas of weakness included poor monitoring and a lack of involvement by women. Despite this, from the findings of this report, limited change seems evident; PEC work remains an area for improvement.

WaterAid must work harder to ensure agreed commitments are put into practice and monitored. Respondents stated that our approach also needs to change from PEC as an activity to something that is quasi-permanent; aiming for long-term behaviour change. To include principles of sustainability in PEC, Unicef used ‘sustainability



workshops' with community leaders to influence them on its importance. This was firstly to create awareness and secondly, to brainstorm ideas about how to effectively implement a locally sustainable supply structure for the maintenance and repair of water points (Godfrey, 2010). WaterAid could support partners and other organisations to learn from this approach and thereby develop an improved approach to PEC.

Responsibility for who creates and designs PEC manuals and minimum standards, and what is actually put into practice, appears to be uncoordinated and unclear in Mozambique. The Ministry of Health created a manual with assistance from INGOs such as Unicef covering topics including hygiene education, water conservation etc. Yet this was first adapted and developed by different government departments such as the Department of Rural Water, based on their needs and requirements, and then it is likely to be further adapted by local NGOs, again according to their needs. The challenge of not having one standard guidance manual on PEC is an issue that could be impacting on PEC effectiveness.

WaterAid should make use of its existing links with bodies such as the National Directorate of Water (DNA) to ensure key principles of sustaining a rural water supply, eg the roles and responsibilities of water committees and the need for finance for operation and maintenance, are clearly included as minimum standards of PEC work and explained in the PEC manuals. It should also work closely with partner organisations to draw on their experiences of PEC work, to investigate the most appropriate methods for incorporating principles of sustainability. Given the recent completion of WaterAid's Sustainability framework (2011), WaterAid should consider how it could draw on this to influence government on what needs to be included.

As with the issue of partner and government capacity, partners need to take a flexible approach to PEC work with communities. They need to recognise that no two communities are the same; some may need technical support, others may need to develop their understanding of the need to contribute for operation and maintenance. This flexibility will help to meet the specific needs of communities and support them in maintaining services over time.

Taking all of the above factors into account, WaterAid therefore needs to place efforts on:

- Working with relevant government departments such as the DNA and the Department of Rural Water to ensure key principles of sustainability are incorporated into PEC guidance manuals as essential minimum standards.
- Develop the approach to PEC with partner organisations to ensure it is regular or quasi-permanent and monitors community capacities and addresses any issues.
- Using the Sustainability framework (2011) to incorporate principles of sustainability into PEC work.
- Improving the vision of PEC to incorporate messages of sustainability that enable communities to understand their role in maintaining a service over time.
- Supporting partners to ensure their PEC work takes a flexible approach to each community, ie recognising that local contexts are different and require different support.



### 4.3 Community management model including water committees

The combination of a strong and clear policy that is effectively implemented alongside high quality partner and government capacity will assist the development of successful community management models. This is why community management models are located at the centre of the conceptual framework (Figure 3); their shape and success is driven by and depends on the key factors involved in policy and capacity. However, as noted from the findings and the literature review, they must be accompanied by external support if rural water services are to last over time.

#### 4.3.1 Capacity of water committees

There is a need to improve and strengthen the capacity of water committees and develop their knowledge and understanding. Evidence from the communities visited showed clear inconsistencies about water committees' capacity, capability and practice.

PEC work needs to embed the principles of sustainability in communities and their respective water committees' knowledge and understanding. Water committees can then grasp the long-term nature of their roles and responsibilities to maintain services over time, not as a finite activity. PEC work must be ongoing to ensure that water committees constantly exist with the right skills and resources to function effectively and permanently.

#### 4.3.2 The formation and profile of water committees

Motivation to be part of a water committee ranged significantly across communities visited due to the challenges of nomination. One water committee member asked to leave while we were there; trust between water committees and communities was clearly an issue.

Water committees carry out a voluntary role with no obligations. This means that people may become disinterested; just as technologies fail in terms of hardware, so too do software aspects (Carter, 2009). This is why ongoing PEC was identified as a key factor in keeping committees revitalised, motivated and with sufficient capacity to function effectively. This motivation was also strongly related to the profile of water committee members. For example, in one committee a young man who had been technically trained, left the committee and another lady who was elderly had died – neither had been replaced. Roles and responsibilities need to be carefully explained to those who show interest in being part of water committees and other integral community members, eg young people, should be encouraged to join. Gender imbalance in water committees was also raised as a key issue by respondents. Women's participation has been found to be integral to project effectiveness (Narayan, 1995). Even the Water Policy emphasises the need for increased involvement of women in the provision of rural water supply. However, most committees visited comprised of many more men than women.

WaterAid needs to place efforts on helping partners develop their existing approach to water committee development through the following:

- Supporting partners to clearly explain the roles and responsibilities of water committees to communities.
- Supporting partners to work with communities to choose the most effective and appropriate people for their committees.
- Supporting partners to address the gender imbalance in water committees.
- Supporting partners to ensure ongoing monitoring and support to communities.

## 4.4 External support

Evidence from discussions, the literature review and the national policy itself highlights the need for constant external support to communities in terms of both the hardware and software aspects of maintaining rural water services over time. These aspects need to be simultaneous and constant because, as respondents and the literature review stated, it is unrealistic to expect a community to simply maintain a water point over time. This is why external support appears in the centre of the conceptual framework next to community management models. The two must operate simultaneously and the nature and form of this support is shaped by the capacity of stakeholders and policy obligations.

### 4.4.1 Constant external software support

The inconsistency in terms of water committee capacity and skills implies a delicate and finite nature and emphasises the need for constant external software support. At the start of a project, following technology installation and initial PEC work, water committees are likely to be highly motivated. However, it seems that over time this motivation falls. To overcome the myth that ‘communities are always capable of managing their facilities on their own’ it is essential that communities receive meaningful participation, education and training before and after construction and in line with their specific needs (RWSN, 2009).

Partners must continue to monitor the situation of water committees in communities after construction, and engage in constant PEC work. WaterAid must work more closely with partner organisations to close the gap between initial PEC work and ensuring water committees have the right skills to maintain services over time. This should be done by developing strategies for the new approach to PEC, as described above, and ensuring partners have sufficient resources and constant effective capacity to provide ongoing support to communities and their respective water committees. Other models of software support provision could be explored through working with other stakeholders such as District Administrations and the SDPI.

### 4.4.2 Constant external technical support

Evidence from certain communities showed that committees were able to carry out repairs but in some communities, repairs were delayed due to waiting for external support from partners or government. Challenges like this could be avoided if a constant form of external support existed. The majority of respondents stated that external support should come from district level mechanics who could repair water points if communities were unable and could help build the capacity of water

committees. The communities would have to pay this mechanic and the concept would be explained to them within PEC work. All respondents suggested that they would work alongside water committees because of the importance of community ownership. These district mechanics would improve the sustainability of water points as they could be repaired promptly and services continue to function over time. However, there were debates over which level the mechanic should be located on – local or district. The success of the district mechanic in Sanga and WaterAid’s current way of working through district government, suggest that district level mechanics would be appropriate (see Box 1 on page 26).

The Water Policy also supports this idea as it refers to the use of manual pump mechanics if maintenance groups cannot carry out repairs (see Table 1 on page 12). This is very important given the strong emphasis placed on implementation of the policy to improve rural water supply sustainability. Yet the sustainability of this external support needs to be carefully considered. The district mechanic in Sanga himself questioned his future because his work was without a salary. He wanted to get registered as an association so he could charge for the service and make a profit. WaterAid needs to work with government to develop models of external technical support that are themselves sustainable. These models need to have appropriate and affordable cost levels that can be monitored and regulated by government and operate in close conjunction with rural water supply projects. WaterAid needs to work with partners and local government to pilot such models to communities to ensure their water points continue to be functional over time. The existing successful model in Sanga should be monitored and, where relevant, WaterAid could work with government in other districts to replicate this model.

The need for technical support has been recognised by WaterAid in Mozambique and a pilot project with district mechanics is planned for the next financial year in Maua and Nipepe. The exact details of this project are yet to be finalised but it is an important step in investigating the most effective model and structure for external technical support. It is important that the model builds on the lessons learnt from the successful experience in Sanga district.

Further to this, as referred to in the literature review, Unicef developed a model of locally sustainable support structures through local artisans (mechanics). Communities could call on these individuals for support in the maintenance and repair of water points in Guro district, central Mozambique (Godfrey, 2010). The importance of learning from, sharing experience and working with others to explore external hardware support models is a key method that WaterAid can put into practice to address the challenge of rural water supply sustainability.

#### **4.4.3 The importance of both software and hardware external support**

Just as software and hardware components of any rural water supply project must function simultaneously and are equally imperative to ensure its sustainability, software and hardware external support must operate simultaneously alongside each other. The concept of ‘community-management plus’ which emphasises the ongoing support needed from external organisations (Carter, 2011) is widely accepted to ensure services last over time, and has proved necessary by the findings in this report.

Rural water supply services can only be maintained and sustained over time with sufficient external support to ensure water committees or community management models constantly operate as effectively as possible. Combined with this, external technical support must always be available when communities cannot repair water points and need someone to promptly assist them. From the Unicef example mentioned earlier (Godfrey, 2010), the crucial factor for success of external ongoing support was the interaction and agreement of all stakeholders involved in the project working together. Through bringing together community leaders, local artisans (mechanics), officers from district government and District Administration, a local sustainability plan for each rural water supply infrastructure was developed. WaterAid could use lessons from experiences like this to explore ways of facilitating the provision of both these forms of external support. This must be done by working closely with partner organisations and local government to reflect on their previous experience, developing, monitoring and regulating appropriate models that will last over time. It is imperative that these models of external support are flexible to adapt to the constant changing needs of communities and their respective water committees.

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## Section 5

# Conclusion

This study has shown that the key factors involved in solving the challenges of rural water supply sustainability in Mozambique can be divided into four main areas: policy, capacity, community management models and external support. The findings are outlined below:

### **Policy**

- Improved implementation of the Water Policy:
  - Dissemination of the Water Policy.
  - Implementation of the principles of a Demand Response Approach.
  - Sector coordination.
  - Effective planning.
  - Definition of capital costs.
  - Spare parts availability.

### **Capacity**

- Improved capacity of government at appropriate levels.
- Improved capacity of partner organisations (local NGOs).
- Improved sector capacity.
- Improved PEC work.

### **Community management models**

- Improved capacity of water committees.
- Improved formation and profile of water committees.

### **External support**

- Constant external software support.
- Constant external hardware support.
- Importance of both software and hardware external support.

The key factor stressed by all respondents was the need for WaterAid to support the improved implementation of the Water Policy. This is considered vital to achieving rural water supply sustainability. However, it is imperative that this implementation is accompanied by effective capacity across all stakeholders. Combining these areas will lead to strong community management models that must be accompanied by strong ongoing external support to ensure services last over time. Interestingly,

respondents did not emphasise finance as a key issue. The evidence suggested that communities had sufficient funds to pay for the repair of water points, but did not always wish to contribute regularly for operation and maintenance. Through improving PEC work and partner capacity, it is hoped that this challenge can be overcome. Further research into the question of financing rural water supply projects is recommended to understand the exact costs of maintaining a service over time in relation to community ability.

As evidenced from the research and discussed in the literature review, rural water supply sustainability is dependent on the interaction of a number of different factors. It can only be improved if these factors are considered holistically, as the sum of parts of one solution to solve the issues encountered.

The need to improve one factor compared to another in each rural water supply project will vary depending on context, yet it is imperative to consider all of these factors together and the linkages between them. Although this research project focused on Niassa province in Mozambique, it is hoped that the conclusions will be useful to others working on rural water supply sustainability. The conceptual framework (Figure 3 on page 29) discussed in this report can be used by staff in WaterAid in Mozambique, WaterAid globally and the rural water sector more widely as an entry point to assess and improve the situation of rural water supply sustainability in their respective programmes and projects. Through using the four areas outlined and combining this with the key factors identified in this research, stakeholders can assess the status of each in their respective situations. From this, they can identify which areas need work, and which do not, to improve rural water supply sustainability.

WaterAid's efforts in Mozambique need to be focused on policy by supporting improved implementation of the national Water Policy, developing the capacity of key stakeholders, improving both of these areas to enable community management models to function effectively, and finally, to ensure these models are supported by effective ongoing external support. It is also imperative to recognise the vast experience of key stakeholders involved in WaterAid supported rural water supply programmes and projects, including government and partners. This should be reflected on and lessons learnt applied to the challenges. By working on all of these factors and the linkages between them with relevant stakeholders, the situation of rural water supply sustainability will be improved and a lasting service achieved.

## 5.1 Recommendations

Several recommendations for action are given below. It is important that WaterAid in Mozambique also reflects on its experiences over the last 15 years, its successes *and* failures, to inform the decisions made and ways forward. It must also strive to view sustainability holistically, considering all factors together as one solution to overcome the challenges faced. Then it can decide how its practices and those of stakeholders need to change and adapt to improve rural water supply sustainability.

### 5.2.1 Policy

WaterAid must build on its existing close working relationship with government at district levels (District Administrations and the SDPI) in Niassa province to work with



them to implement the national Water Policy. Recognising government’s existing experience in rural water service implementation, it could use Table 1 (on page 12) to work with them to establish any gaps in policy implementation.

An initial step would be for WaterAid to encourage and work with government to disseminate the Water Policy. This could be done through district water forums and discussions, and where possible, at provincial level where they have not already done so. These forums should be used to advocate and lobby others to recognise the importance of sustainability in the Water Policy. At national levels WaterAid should also make use of its strong relationship with government, to advocate for the importance of improving sustainability of rural water supply, using the national Water Policy as the foundation for this argument.

Alongside this, the use of mapping must be further encouraged to improve effective planning and sector coordination. WaterAid should continue to build on their previous work with government to further embed mapping technology in their planning processes. For example, if there is a district that is successfully using mapping to improve planning and sector coordination, it could be shared as an example with others to encourage them to adopt a similar practice.

On capital costs, if stakeholders within a district are not adhering to national policy specifications, government must take responsibility to monitor their practices and enforce stricter regulations on their use and purpose. WaterAid must work with local NGO partners to ensure they themselves are following these guidelines, and support government to develop mechanisms to monitor capital cost use.

### **5.2.2 Spare parts availability**

WaterAid must reiterate to government that private sector and CBO approaches to spare parts provision have not worked. It must work with and lobby government to take on responsibility for spare parts provision if services are to be sustained, especially using the emphasis on government responsibilities laid out in the Water Policy. WaterAid should fund pilot approaches initially at district level, eg funding an individual working closely with the SDPI and District Administrations to stock and sell spare parts over a period of a year, and closely monitor the impacts of this arrangement on the sustainability of water points. Given the existing success of the district mechanic in Sanga and the successful close working relationship between him and local government (SDPI), WaterAid should consider if this individual could be funded to stock and sell spare parts as an additional responsibility.

To explore other potential spare parts arrangements, WaterAid should take advantage of its close relationship with the Ministry of Health at the national level and, where relevant, at district level. They could investigate how spare parts distribution can be linked to and learn from the distribution of medicines and healthcare products. WaterAid should stress the health benefits of an improved water supply to further encourage this linkage in its policy and advocacy work at all levels in Mozambique and even in WaterAid’s policy work globally. Through this it can lobby government ministries to work more closely together to find solutions to the spare parts challenge, based on the common interest of a sustainable improved water supply.

### 5.2.3 External hardware (technical) support

Models for external hardware support should be developed by WaterAid, initially working with the district of Sanga (see Box 1 on page 26) to support the existing effective model of technical support. Lack of funds questioned the sustainability of this district mechanic's work. WaterAid could support government (District Administrations and the SDPI) to fund him to register as an association for one year and draw up a MOU between him and government. If WaterAid decided to pilot spare parts distribution through this mechanic, as suggested above, this should be included in the MOU. Government could continue to manage and monitor his work. If this model is successful, WaterAid working closely with the SDPI in other districts, could replicate this model elsewhere.

A pilot project of district mechanics has been planned in Maua and Nipepe. Although exact details have not been finalised, it is important that this pilot builds on the experience in Sanga district. If possible, this pilot should consider whether it is best to replicate and test the existing model from Sanga district, or investigate an alternative arrangement with local government and local NGOs to provide options on models for external hardware support to communities. WaterAid could then work with the SDPI and other relevant stakeholders to analyse which models of external hardware support are more effective at sustaining services. WaterAid must also explore and encourage government to learn from the experiences of other NGOs working on rural water supply sustainability in Mozambique such as Unicef and their aforementioned model of local artisans in Guro district, Manica province (Godfrey, 2010).

### 5.2.4 Partnerships

WaterAid should critically assess their partnerships, including those with local government and local NGOs, to examine which partnership models are most appropriate to improve rural water supply sustainability. This assessment must include strong reflection on the work of the last 15 years, given the knowledge and wealth of experience of WaterAid's partners. For example, is the bilateral relationship between WaterAid and the SDPI in Sanga district more effective than the more common tripartite relationships in other districts where, in certain instances, lack of communication between local NGOs and government has led to delays in repairs? Assessment should involve aspects such as examining MOUs, considering whether it would be appropriate to have a MOU between local NGOs and government, regularity of communication between all stakeholders, joined up planning and transparency.

One possibility is for WaterAid to work with all partners (local government and local NGOs) in one district to critically assess their partnerships and ways of working together in relation to sustainability. From this, stakeholders could develop an action plan to improve the situation of rural water supply sustainability in the district. A specific methodology could be developed in the initial assessment and then used to carry out the same exercise in other districts. This would clarify which partnership issues are affecting sustainability of rural water supply services and how they can be addressed and improved.

### 5.2.5 Capacity

Capacity, in terms of knowledge and understanding of principles of sustainability, must be improved where possible across local NGOs and government at appropriate levels. Through using existing tools such as WaterAid’s Sustainability framework (Carter, 2011) linked with the effective depiction of rural water sustainability in the Water Policy, WaterAid in Mozambique should consider developing guidelines or a toolkit for principles of sustainability to share with all stakeholders where needed. This could incorporate and develop Table 1 (on page 12) and the conceptual framework from the Sustainability framework (Figure 1, page 12) (Carter, 2011) to reinforce the importance of rural water supply sustainability. In addition, the conceptual framework (Figure 3, page 29) could be included as an entry point to assess sustainability of rural water supply projects. All would highlight the key factors that affect rural water supply sustainability and help improve capacity of government and partners. A flexible approach to this capacity building must be taken as all stakeholders have an existing knowledge and vast experience around sustainability issues that must be considered and built on.

Physical assessment of WaterAid’s partnerships with emphasis on local NGO partners should be carried out. For example, the number of Activistas could be mapped against the number of communities each partner works with. From this, WaterAid could work with partners to investigate ways of operating more efficiently and effectively, eg looking at whether they require additional funding for transport and fuel for Activistas to be able to reach more communities more regularly.

### 5.2.6 PEC

Building on the last point, WaterAid could also work with their partner organisations – local NGOs and relevant government – to extract the minimum standards or principles of sustainability from the existing resources that communities need to understand to ensure sustainable services. Working with these stakeholders, WaterAid should support the development of tools that contain these principles. These tools could capture the principles in a similar format to existing PEC materials such as drawings and cartoons.

Following this, it is imperative that these tools are incorporated into existing PEC guidance and training manuals, and not developed as a separate manual. WaterAid could work closely with the DNA and other relevant government departments, such as the Ministry of Health, to lobby them to incorporate these tools into the PEC guidance manuals and training. Partner organisations would then have the responsibility to work with communities to ensure they effectively understand the principles of sustainability. WaterAid must also encourage and support learning from other NGOs’ experiences, such as Unicef, and their ideas on PEC such as the use of sustainability workshops at community levels (Godfrey, 2010). Linked to this, it is integral that WaterAid works with partners to change their approaches to PEC work and adapt their strategies to find the most effective way of providing ongoing support to communities and to ensure this is flexible and adapted to their needs.

One key aspect affecting community management of water points that requires urgent action is the issue of financing for operation and maintenance. Reactive financing was prevalent in all communities visited. WaterAid should work with partner organisations and local government to study the actual costs and funds needed to maintain a service over time in a community, eg over the period of a year,

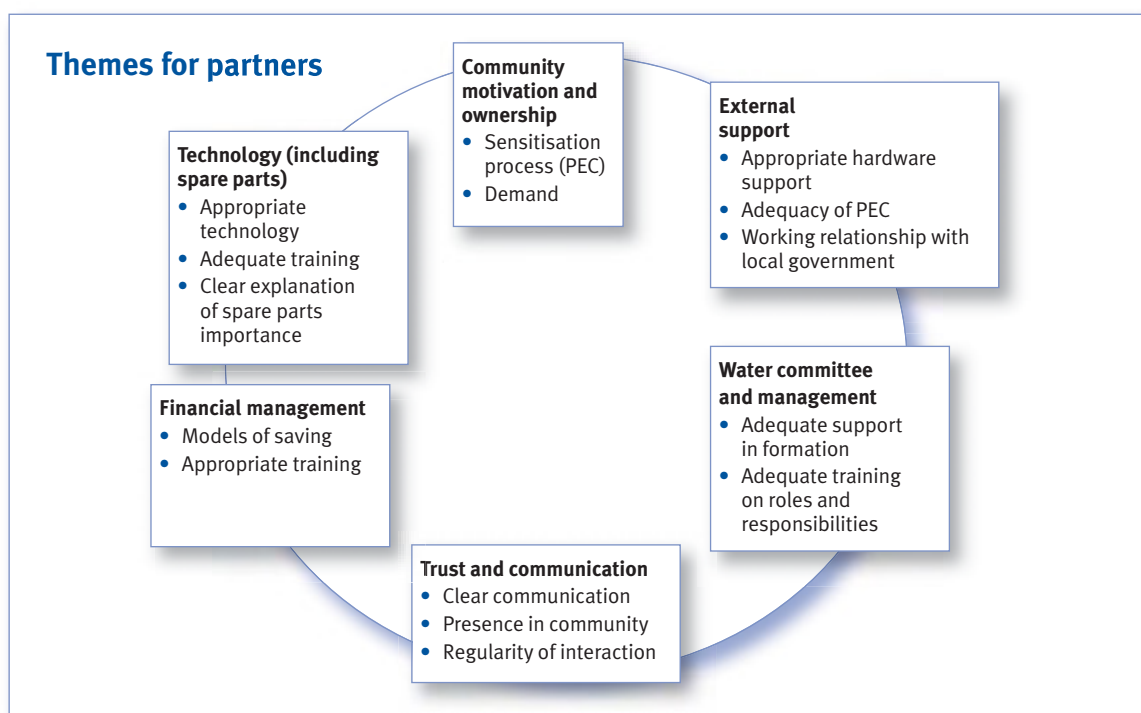
to understand whether this reactive financing could realistically sustain a water point over time or not. If it cannot, increased emphasis on the importance of finance for operation and maintenance in PEC work should be put into practice. Alternatively, other methods to address this issue, such as cost sharing etc (Carter et al, 2010) should be explored, piloted and tested in existing rural water supply programmes.

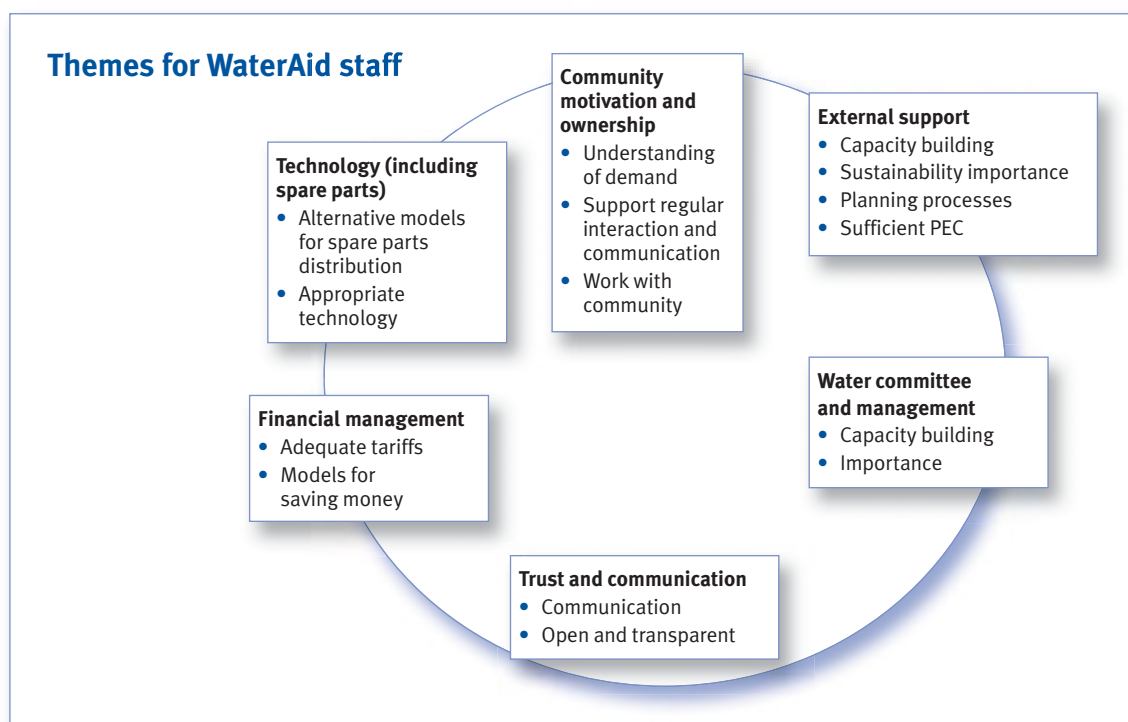
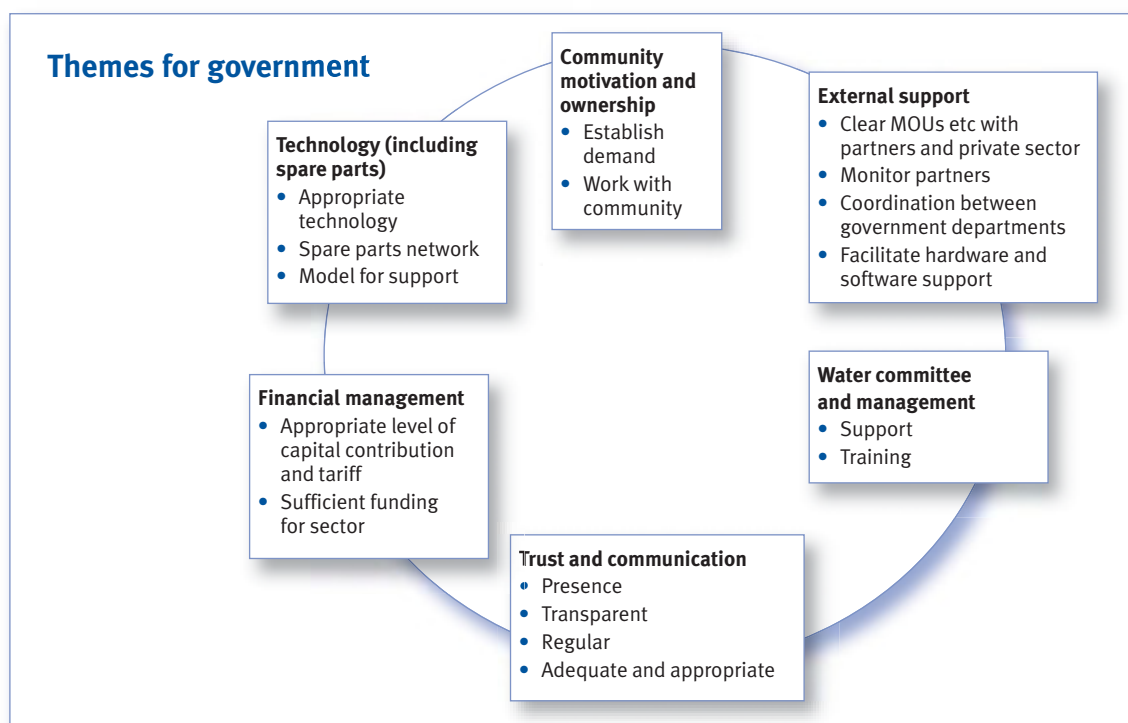
### **5.2.7 Reflect and evaluate WaterAid in Mozambique’s work on rural water supply sustainability**

WaterAid should evaluate its 15 years of rural water project experience to identify ways of working that have led to rural water supply sustainability success. The key factors identified here and in the conceptual framework could be used to evaluate the whole country programme experience in terms of rural water supply sustainability. From this, lessons could be extracted, shared more widely in the sector and applied in WaterAid’s work. Linked to this, it is important that WaterAid in Mozambique strives to learn from and share the experiences of other stakeholders across the WASH sector on sustainability of rural water supply provision. WaterAid in Mozambique must make use of opportunities such as the GAS and links with other NGOs such as Unicef to share lessons learnt, and models developed to ensure services last over time. They could review these approaches and the experiences of others to explore which aspects could be adapted and applied in their own projects and programmes to improve rural water supply sustainability.

## Annex 1

# Themes and sub-themes used as prompts during semi-structured interviews







## Annex 2

# Schedule of fieldwork and list of respondents

Date	Activity
19.10.2010	Semi-structured interview with WaterAid Programme Officer
20.10.2010	Semi-structured interview with WaterAid Project Officer (Maua and Nipepe District)
21.10.2010	<b>Maua district:</b> Semi-structured interview with two communities (one functional, one non-functional)
22.10.2010	Semi-structured interview with local government (SDPI)
23.10.2010	<b>Nipepe district:</b> Semi-structured interview with two communities (one functional, one non-functional)
23.10.2010	Semi-structured interview with local government (SDPI)
23.10.2010	Semi-structured interview with partner staff for Maua and Nipepe districts
24.10.2010	<b>Metarica district:</b> Semi-structured interview with two communities (one functional, one non-functional)
24.10.2010	Semi-structured interview with local government (SDPI)
	Semi-structured interview with partner staff
25.10.2010	Write up data collected so far and travel
26.10.2010	<b>Mecanhelas district:</b> Semi-structured interview with two communities (one functional, one non-functional)
26.10.2010	Semi-structured interview with local government (SDPI)
	Semi-structured interview with partner staff
27.10.2010	<b>Mandimba district:</b> Semi-structured interview with WaterAid Programme Officer (Metarica, Mecanhelas, Mandima districts)
28.10.2010	Semi-structured interview with local government (SDPI)
	Semi-structured interview with partner staff
	Semi-structured interview with two communities (one functional, one non-functional)
29.10.2010	<b>Sanga district:</b> Semi-structured interview with local government (SDPI)
30.10.2010	Semi-structured interview with two communities (one functional, one non-functional)
01.11.2010	<b>Lichinga district:</b> Semi-structured interview with two communities (one functional, one non-functional)
02.11.2010	Semi-structured interview with PDPWH

<b>Respondent</b>	<b>Job title</b>
Leovigildo Custodio	WaterAid Project Officer
Benicio Baulo	WaterAid Programme Officer
Lazaro Cumbe	WaterAid Project Officer
Samuel Sengou	WaterAid Programme Officer
Armindo dos Santos Almeida	Coordinator of Adecco
Antonio Cuvir	Coordinator of Cahova
Francisco Ali Culabo	Coordinator of Amiremo
Alexandre Camillo Calistro	Coordinator of Estamos, Mandimba
Joao Mazive	Maua district – DSDPI
Carlos Domingo Zombe	Nipepe district – DSDPI
Sergio Rui Meza	Metarica district – DSDPI
Alima Mandra	Sanga – DSDPI
Graciano Artur	PDPWH

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## Annex 3

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