WASHCost

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Arrangements and cost of providing support to rural water service providers

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triple-S WATER SERVICES THAT LAST

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Front page photo
District officers planning for support to rural water and sanitation services in Hwange district, Zimbabwe (Photo: Stef Smits).

WASHCost is a five-year action research project investigating the costs of providing water, sanitation and hygiene services to rural and peri-urban communities in Ghana, Burkina-Faso, Mozambique and India (Andhra Pradesh). The objectives of collecting and disaggregating cost data over the full life-cycle of WASH services are to be able to analyse costs per infrastructure and by service level, and to better understand the cost drivers and through this understanding to enable more cost effective and equitable service delivery. WASHCost is focused on exploring and sharing an understanding of the costs of sustainable services (see http://www.washcost.info).

Triple-S (Sustainable Services at Scale) is an initiative to promote 'water services that last' by encouraging a shift in approach to rural water supply—from one that focuses on implementing infrastructure projects to one that aims at delivering a reliable and lasting service. The initiative is managed by IRC International Water and Sanitation Centre in the Netherlands in collaboration with agencies in different countries and with funding from the Bill & Melinda Gates Foundation. For more information about Triple-S and access to resources to support sustainable service delivery, go to http://www.waterservicesthatlast.org

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Acronyms and terms

AJAM	*Asociación de Juntas de Agua Municipal* (Municipal Association of Water Committees, Honduras)
ASSA	*Asociación Salvadoreña de Servicios de Agua* (Salvadorean Water Services Association, El Salvador)
CAGECE	*Companhia de Agua e Esgoto do Ceará* (Water and Sewerage Company of Ceará, Brazil)
CapEx	Capital expenditure
CapManEx	Capital maintenance expenditure
CBO	Community-based organisation
CWSA	*Community Water and Sanitation Agency (Ghana)*
Commune	Local government unit in Benin and Burkina Faso
DWSSC	Directorate of Water Supply and Sanitation Coordination (Namibia)
DA	District Assembly (Ghana)
DAF	*Departamento de Administração e Finanças* (Administration and Finance Department, Mozambique)
DAR	*Departamento da Agua Rural* (Rural Water Department, Mozambique)
DES	*Departamento de Saneamento* (Sanitation Department, Mozambique)
DNH	*Direction Nationale de l'Hydraulique* (National Hydraulic Directorate, Mali)
DRH	*Departamento Recursos Humanos* (Human Resources Department, Mozambique)
DWST	*District Water and Sanitation Team* (Ghana)
ExpDS	Expenditure on Direct Support
ExpIDS	Indirect Support
GDP	Gross Domestic Product
Gram Panchayat	Local government unit in India
GPC	*Gabinete de Planificação e Controlo* (Planning and Control Cabinet, Mozambique)
IEC	Information, Education and Communication
IRWA	International Rural Water Association (USA)
Mancomunidad	Association of municipalities (Honduras)
MEME	*Ministère de l'Energie, des Mines et de l'Eau* (Ministry of Energy, Mines and Water, Mali)
NGO	Non-governmental organisations
OpEx	Operational and Minor Maintenance Expenditure
SANAA	*Servicio Autónomo Nacional de Acueductos y Alcantarillados* (National Autonomous Water and Sewerage Service, Honduras)
SISAR	*Sistema Integrado de Saneamento Rural* (Integrated Rural Sanitation System, Brazil)
STEFI	*Suivi Technique et Financier* (Technical and Financial Follow-up, Mali)
TOM	*Técnico de Operación y Mantenimiento* (Operation and Maintenance Technician, Honduras)
WATSAN	Water and Sanitation Team (Ghana)
WASH	Water, Sanitation and Hygiene
Woreda	Local government unit in Ethiopia
WPA	Water Point Association (Namibia)
WPC	Water Point Committee (Namibia)

Abstract

This paper is about the costs of providing direct and indirect support to rural water service provision. It provides an overview of the features such support entails, how those features can be organised, what they cost and how they can be financed. It also provides recommendations to countries for strengthening support. The paper is based on a desk review of existing literature from seven countries and an analysis of primary cost data collected by the WASHCost project in Andhra Pradesh (India), Mozambique and Ghana in 2010 and 2011.

Support to service providers in the form of monitoring, technical assistance and (re)training of service providers is called direct support. Indirect support refers to aspects such as macro-level planning and policy making. Direct support can be provided in different forms: by specialised agencies, by local government or even by an association of service providers. However, the nature, scope and frequency of such support are often not sufficiently defined. There is, therefore, still little quantitative evidence that supports the premise that direct support has a positive impact on the quality and sustainability of services.

Successful cases of organising direct support are found in (lower) middle income countries in Latin America and Southern Africa. Though data needs to be interpreted with caution, an expenditure of some US$ 3 per person per year seems to be effective in those countries. Other countries, particularly those in Africa, were found to have levels of expenditure of less than US$ 1 per person per year, and this is considered too low to be effective. No conclusions can be drawn on the most effective direct support mechanism, though the most successful support so far seems to come from dedicated agencies rather than local government. Since the costs of direct support are significant, it is likely that it cannot be financed through user tariffs alone, though users may provide co-financing.

1 Introduction

The focus in the rural water supply sector has been on increasing access by developing new water supply infrastructure and establishing service providers. In rural areas, these are mostly community-based organisations (CBOs), although they may sometimes include private operators, local government or mixed arrangements. As access to rural water supply increases, there is a need to put more focus on ensuring these service providers fulfil their role and provide adequate water services.

Since the early 2000s, it has been recognised that the majority of service providers are unable to manage their own water supply systems without some form of support (Lockwood 2002; Lockwood et al. 2003; Schouten and Moriarty 2003; Harvey and Reed 2006), an assertion repeated in various recent rural water supply sector overviews (RWSN 2010; Lockwood and Smits 2011). Even though different terms have been used for such support - institutional support mechanisms, post-construction support and follow-up support[1] – they all point to the same thing: *the structured direct support to service providers in the operation, maintenance and administration of a rural water service* (Lockwood and Smits 2011; Fonseca et al. 2011). In addition, service providers need *indirect* support: there is a need for policies and legislation which allow service providers to formally establish themselves; there is a need for standard contracts and templates for the internal regulations of service providers; and a need for national handbooks and guidelines on operation and maintenance.

The studies mentioned above point to the need for such support, as a way to deal with issues that rural service providers can often not identify or address on their own. Problems that may seem small initially, like excessive wear on a hand pump handle, storm damage to a pipeline stream crossing, or the less than anticipated collection of tariffs, can be flagged early through support before they turn into bigger problems. The provision of support can also help identify the need for capital maintenance and help plan more systematically for it, which is still one of the most critical gaps in the life cycle of many services (Franceys and Pezon 2010). In spite of the benefits direct and indirect support could bring, it is not applied in a systematic manner in most countries. As a result, little data is available on the costs of direct and indirect support or the actual impact it has on service provision.

The objective of this paper is to provide an overview on the features that direct and indirect support for rural water supply service entails, how these features might be organised, the impact they have on service provision and what they could cost.

This paper is based on a desk review of the literature on this topic. As there are no comprehensive global or regional datasets on expenditure on direct and indirect support, we decided to take a case study approach for the literature review. Therefore, we focused on those cases which contained some data on Expenditure on Direct Support costs (ExpDS) and which enabled us to present data in a comparable format. This yielded cases and data from seven countries: Brazil, Chile, El Salvador, Honduras, Mali, Namibia and South Africa. In addition, the study draws on an analysis of primary cost data collected by the WASHCost project in Andhra Pradesh (India), Mozambique and Ghana during 2010 and 2011[2].

Most of the cases found refer to support for community-based management, which is the most common service delivery model in rural areas. The case from Mali contains support for private operators and the one from South Africa

1 In much of the literature, costs associated with maintaining an existing service at its indented level are referred to as 'post-construction' costs. This usage reflects the historic tendency of the sector to focus on providing hardware where none had previously existed (hence 'construction costs'. Although we continue to use the term 'post-construction costs' at times, we are aware that once a service has been provided, all subsequent costs become, in a sense, 'post-construction'. In this document we use the term 'recurrent support' to refer to all support provided over the life-time of services, but we also try to be specific in differentiating between direct and indirect support costs.

2 Data collected in Burkina Faso as part of the WASHCost Project has not been included in this paper as it was still being analysed at the time of writing.

represents a joint management model. Though the analysis will focus on support for community-based management, the lessons learnt may also be relevant to the support of other service delivery models. This will be indicated where relevant. It must be noted that this paper focuses solely on support for rural water service delivery. As sanitation is most often considered a responsibility of the household, with little to no direct support provided, very little data could be found on expenditure for support to sanitation in rural areas.

The first part of this paper explains what we mean by direct and indirect support for rural water service delivery and it defines Expenditure on Direct Support (ExpDS) and Indirect Support (ExpIDS). This is followed by a description of the main arrangements to deliver support, and concludes with a summary of the benefits of providing support. The second part of this paper identifies expenditure on direct and indirect support in the form of country case studies. The final part of the paper provides general conclusions and identifies a number of suggestions for the provision of support to rural water service providers.

2 Definitions

2.1 Service providers and service authorities

The central actors in rural water are service providers and service authorities. **Service authorities** are institutions that are ultimately and legally responsible for ensuring that service delivery takes place. Under decentralisation, this responsibility typically lies with local government. The service authority is accountable, in relation to water supply, for functions such as planning, coordination, regulation and oversight, and technical assistance but not actual service provision (Lockwood and Smits 2011).

The institution responsible for the actual service provision is called the **service provider**. It is the organisation or individual that is responsible for the day-to-day provision of water and for carrying out tasks such as the operation, maintenance and administration of the water system (Lockwood and Smits 2011).

For the service provision function, a range of options is available in most countries. The service authority can opt to provide services itself (through a municipal department or municipal company) or choose to delegate this responsibility by contracting an outside agency such as a community-based organisation (CBO), private operator, public sector utility or company, or non-governmental organisation (NGO), who in turn may hire a private person (plumber or mechanic) to carry out parts of the work.

This paper discusses rural water services where, in the majority of cases, service provision is done under the community-based management model, in which communities control the management of their water supplies. For practical purposes, day-to-day responsibility lies with a representative group of community people, often a water committee elected to take up this CBO task. Although this group may involve local caretakers or small entrepreneurs, the committee remains responsible for ensuring a sustainable service and is accountable to the community at large (Lockwood and Smits 2011). The CBO option is not always an active choice by the service authority. In many countries, it is simply the default option for rural water supply, and many service authorities may not be aware of all the rural service providers in their area of jurisdiction.

2.2 Direct and indirect support

The provision of **direct support** refers to the structured support activities directed to service providers as well as to users or user groups (Fonseca et al. 2011). In a study in Bolivia, Ghana and Peru, Whittington et al. (2009) show how most communities do access such support, though often in an ad hoc way, i.e. when the need arises. We define direct support as referring only to those cases where the support is provided in a structured and systematic way because only then can problems be anticipated. Therefore, the following types of activities are considered part of direct support (based on Whittington et al. 2009; Lockwood and Smits 2010; and Fonseca et al 2011):

- **Monitoring**: An external agency may carry out activities, such as water quality testing, checking of accounts and general inspection of the water supply status.
- **Technical advice** on operation and maintenance: For example: support in setting chlorination levels or pump operation. Such advice may be based on the results of monitoring visits. Contract or ad hoc maintenance by an outside agency is not considered part of direct support. For example, district hand pump mechanics may carry out certain repairs that a CBO cannot. This is seen as part of operation and maintenance and not part of the direct support function.
- **Administrative support**: This may include help in tariff setting or the external auditing of accounts.
- **Organisational support**: For example: supporting community-based service providers in establishing themselves legally and obtaining a status as a legal entity.

- **Conflict resolution**: Moderating between different groups in the community.
- **Support in capital maintenance**: Supporting the community in identifying capital maintenance needs and in helping identifying sources of funding for such works.
- **Training and refresher courses**: Provided to water committees and their staff (plumber, operator and administrator).
- **Provision of information**: This may go alongside training and refresher courses and may include the provision of manuals, guidelines and other information material.
- **Resource mobilisation**: Monetary or material support is normally not considered part of direct support. However, agencies providing such support may point communities to possible sources of funds for repairs or materials or help in accessing materials and spare parts directly. In reality, the boundaries are blurred and providers may offer communities more than support by also sourcing spare parts or chemicals for water treatment, or even undertaking major repairs, as Whittington et al. (2009) found, for example, in Ghana.

The life cycle of a rural water supply service consists of capital intensive phases, when new infrastructure is developed or assets are replaced, and of ongoing service delivery phases, when the service provider operates, maintains, administers and provides the service. Direct support is understood to be limited to these recurrent service delivery phases. Support is also provided during capital intensive phases, but often through one-off activities, such as the initial training of a water committee or support in the (re)calculation of the tariff. This is not considered part of direct support but of capital investment.

Indirect support is about creating and regulating the enabling environment for rural water supply services provision. It includes macro-level policy formulation, planning, regulation, sector-level monitoring, developing IT systems, maintaining frameworks and institutional arrangements, etc. that contribute to the sector capacity but are not particular to any programme or project (Fonseca et al. 2011).

Indirect support also includes capacity building for professionals and technicians and support to local government as service authorities, or what Lockwood and Smits (2011) term capacity support. This entails activities such as back-stopping and assistance, capacity building and training of service authorities, quality control and adherence to national norms, standards and guidelines and information collection and collation for a national database. As a rough rule of thumb, direct support refers to support given to service providers and indirect support includes capacity support given to service authorities.

2.3 Expenditure on direct support and indirect support

The costs of providing support are included in the life cycle cost approach in what is termed **Expenditure on Direct Support** (ExpDS) and **Indirect Support** (ExpIDS). Life cycle costs refer to the costs of ensuring adequate water, sanitation and hygiene services to a specific population in a determined geographical area - not just for a few years but indefinitely (Fonseca et al 2011). Table 1 gives an overview of the life cycle cost components.

Table 1: Life-cycle cost components

Cost components		Brief description
Capital expenditure (CapEx) The costs of providing a service where there was none before; or of substantially increasing the level of services.	Capital Expenditure Hardware (CapExHrd)	Capital investment in fixed assets, such as concrete structures, pumps, pipes and latrines either to develop or to extend a service.
	Capital Expenditure Software (CapExSft)	Expenditure on one-off work with stakeholders prior to construction or implementation, extension, enhancement and augmentation (including one-off capacity building).
Recurrent expenditure Expenditure associated with maintaining an existing service at its intended level.	Operational Expenditure (OpEx)	Recurrent (regular, ongoing) expenditure on labour, fuel, chemicals, materials and purchases of any bulk water and cleaning products for sanitary facilities, energy costs, etc.
	Capital Maintenance Expenditure (CapManEx)	Asset renewal and replacement cost; occasional and lumpy costs that seek to restore the functionality of a system, such as replacing pipes and pumps.
	Cost of Capital (CoC)	Cost of interest payments on micro-finance and any other loans.
	Expenditure on Direct Support (ExpDS)	**Expenditure on support activities for service providers, users or user groups.**
	Expenditure on Indirect Support (ExpIDS)	**Expenditure on macro-level support, including planning and policy making, and support to decentralised service authorities or local government.**

Source: Fonseca et al. 2011.

3 Institutional arrangements for direct and indirect support

3.1 Arrangements for direct support

The institutional arrangements for support depend, in the first place, on the relationship between the service authority and service provider, as summarised in Table 2.

Table 2: Relationship between service provision arrangement and direct support

		Arrangements for direct support (support agent)	Implications for direct support costs
Fully internal	Service provision function fulfilled by service authority.	Does not apply.	Costs of 'support' are internalised into the operational expenditure. Hence, usually no clearly identifiable ExpDS.
Mixed	Service provision function spread between service authority, CBO and even third parties, such as a dedicated line agency or private mechanics.	Support activities entail both operation and (capital) maintenance work and direct support. Both of which can be internal or external, as in Table 3.	Blurred boundaries between ExpDS, OpEx and CapManEx, and activities may not be attributable to a given cost categories.
Fully external	Service provision function fulfilled fully by CBO.	Range of support options as in Table 3.	Relatively clearly identifiable support costs.
	Service provision function fulfilled by private utility.	Probably no or very little support needed. Only the monitoring and control function lies with the service authority.	Costs of 'support' are internalised into the operational expenditure of the private utility. Hence, no clearly identifiable ExpDS.

If the service provision arrangement is fully internal, i.e. the service is provided by a municipal department or municipal utility company, there is no clear direct support mechanism and, probably, no need for it. However, in such cases, only indirect support may be needed, for example when a utility hires an external consultant. These costs are normally included in the operational expenditure of the utility and may be passed on to the client.

The other extreme is when the service provision is fully externalised, i.e. the authority has fully delegated the service provision to an independent service provider, which can be a private utility or operator, a mixed company or a CBO. Whether support is needed depends on whether the service authority considers that the service provider has all the capacity and expertise to fulfil its duties. In a case where a service authority contracts a private operator, it can be assumed that the private operator does have such capacities and, as in the case of a public utility, includes the costs of this capacity in its operational expenditure. At most, some direct support functions may be needed in relation to monitoring and regulation. When the service provision is fully delegated to a CBO, such capacity cannot be assumed to be with the service authority, and that is when direct support is most needed. Therefore, most cases where direct support is provided relate to support for CBOs, with a few examples of support for local private operators. Various institutional arrangements may be put in place for the role of what we call the **support agen**t, i.e. the entity providing direct support. These are presented in Table 3. Again, these can be divided into internal arrangements, where the service authority provides the support, or into external ones, where the support agent is delegated to another entity or where another agency manages the support. In these cases, support activities, and their costs, might be most clearly identifiable.

In some cases, there is a grey area in the roles of the service authority and service provider functions, particularly with respect to maintenance tasks. This is the case, for example, with two- or three-tiered maintenance systems around hand pumps, as practiced, for example, in Zimbabwe. A CBO is responsible for the minor maintenance of hand pumps, while mechanics that form the second tier undertake more complex repairs and maintenance. The districts, through the deconcentrated offices of DDF (District Development Fund), are responsible for the third tier carrying out major maintenance tasks. In addition, the district may support the CBO in other tasks such as retraining its members. The district then fulfils both the functions of a service provider (for its maintenance tasks) and support agent (for its retraining tasks), as well as being the service authority. These cases represent a mix of both internal and external arrangements for both the maintenance and support functions, and the boundaries between these activities (and their costs) are blurred.

Various ways of classifying support arrangements can be found in literature (Edwards et al. 1993 and Lockwood 2002). This current paper presents the various arrangements based upon the specific agency responsible for providing support (see Table 3). Note that this is a list based on a wide review of literature but does not aim to be exhaustive. For each of the modalities, there may be more examples from other countries.

Table 3: Types of providers of direct support

Institutional arrangement for support agent		Definition	Examples
Internal arrangement	Direct support by local government.	Applies where local government is formally mandated to support external service providers and fulfils the support agent function internally. This is usually done through local government technicians, such as hand pump mechanics or promoters.	- Amongst others: Burkina Faso, Ghana, Mozambique and Uganda (Lockwood and Smits 2011).
External arrangement	Central government or parastatal agencies.	National government provides direct support from a national level, or via deconcentrated offices, or sub-contracts a specialised agency to do so.	- In Honduras, the national utility SANAA runs a programme of support whereby circuit riders, called Operation and Maintenance Technicians (TOMs), make monthly visits to rural communities to address operation and maintenance problems, and train CBOs and their operators in areas such as water quality and disinfection, water source protection, and accounting and budgeting. This model also exists in El Salvador and Guatemala (Lockwood 2002). - The entrepreneurial culture programme in Colombia is an example where a central government ministry provides direct support to service providers (Tamayo and García 2006). - In Chile, regional private utilities are contracted by the Central Ministry to provide direct support to rural service providers (Naveas 2012, forthcoming).

External arrangement	Association of community-based service providers.	Community-based service providers establish an association and then provide support to each other or hire a technician to support members of the association.	- Glas and Lambrecht (2010) provide a detailed overview of different types of associations and further sub-divisions in that classification. Apart from some of the other associations mentioned here, they provide cases from Indonesia and Senegal. - The *Sistema Integrado de Saneamento Rural* (SISAR) in north-eastern Brazil is a combination of an association of community-based service providers with support from a state-level utility (Meleg 2011). - In Honduras, water committees are encouraged to organise themselves into an association at municipal level, called an AJAM (*Asociación de Juntas de Agua Municipal*). The AJAM is supposed to monitor the performance of its members, coordinate between committees and municipality and help in purchasing materials (e.g. chlorine) in bulk. - The Coffee Growers' Association in Colombia provides direct support to communities where coffee growing is predominant and where the Coffee Growers' Association has invested in water systems. It supports its members with administration tasks and retraining (Rojas et al., 2011). - The National Rural Water Association in the USA (Gasteyer 2011).
	Local government subcontracting a specialised agency or individuals.	Local governments contract an urban utility, a private company or an NGO to provide support. They may also contract individual entrepreneurs, such as hand pump mechanics, who provide a mix of direct support and operation and maintenance activities.	- Various examples of municipalities contracting urban utilities to provide support to rural service providers in Colombia and Senegal. - In South Africa, municipalities can contract a Support Services Agency (SSA), which can be a private company or a NGO (Gibson 2010). - *Suivi Technique et Financiere* (STEFI) provides advice and assistance to service providers in Mali (MEME/DNH 2009). - In Uganda, individual entrepreneurs, particularly hand pump mechanics or area-based mechanics, provide support.
	NGOs.	In many cases, support provided by NGOs is ad hoc. Still, there are a few examples where NGOs have specific direct support programmes.	- The *Asociación Salvadoreña de Servicios de Agua* (ASSA) offers direct support to 170 communities in rural El Salvador (Kayser et al. 2010).

The overview above identifies the following variables in describing institutional arrangements for direct support:

- **Policy and institutional mandate**. The main variable is the policy and institutional mandate for direct support. Some countries have defined clearly the need to support service providers in their policies, and may even assign clear institutional mandates. For example, the South African policy framework clearly identifies the figure of the Support Services Agency (SSA). In other countries, support to community-based management is defined in broad terms as the mandate of local government, without providing detailed specifications or the institutional modalities through which this can be done.
- **Clarity on responsibilities**. In some cases, support agent responsibilities are clearly defined and captured in contractual arrangements. This is the case where local or national government contracts out these support services to a specialised agency, such as in South Africa or Chile. In other cases, the support tasks are more broadly defined and open to interpretation. This may be the case when local government provides support – the extent and quality with which this is done depends on the capacity and willingness of local government, the resources available and the support that local government itself may or may not be able to access from higher levels.
- **Supply- or demand-driven support.** Demand-driven support refers to cases where the support is provided only as and when the service provider requests it. The disadvantage of a demand-driven approach is that it limits the possibility of anticipating problems at an early stage, when they may be easier or cheaper to resolve. Within the demand-driven support, a further differentiation can be made. First, there are the cases where there is some kind of relation between the service provider and the support agent, which would have permanence in the area. This would be, for example, where local government fulfils the support agent role but only operates on the basis of requests. Second, there are the cases where the service provider requests support from whichever agency is there, with whom it only establishes a relation on an ad hoc basis. Such ad hoc support is not included in our definition of direct support. Supply-driven approaches consist of regular monitoring of service performance by the external agency, irrespective of whether the CBO requests support. They operate on a standard routine or programming of regular support activities. Examples include models based on circuit riders or area-based technicians, such as the TOMs in Honduras, the ASSA in El Salvador or the SSA in South Africa.
- **Presence of various modalities alongside each other.** Various countries have a number of modalities for direct support running in parallel (for example Colombia and Honduras). This probably reflects the fact that the policy framework allows for and encourages direct support, but leaves open the mechanism for arranging this. The advantage of that approach is that it allows for variations in a country's culture, needs and possibilities (see Rojas et al. 2011). The flip-side is that there may be a duplication of efforts and potential economies of scale may not be achieved. Moreover, when there are a number of options, it may be that many community-based service providers are not supported by anyone; they fall between the cracks. A more centralised approach can help to avoid that.

3.2 Arrangements for indirect support

Because of the nature of indirect support, the institutional arrangements for indirect support are assigned to national level entities. If there is no independent regulator, government ministries and agencies are tasked with responsibilities such as planning and policy formulation or even regulation. Donors, NGOs, research institutes and other entities at a national level may also contribute. Specific arrangements will differ from country to country and are not considered relevant for this study. However, there is one component of indirect support that, in our opinion, merits more attention and that is the capacity support to service authorities. As discussed in Lockwood and Smits (2011), the capacity of local government to fulfil its service authority role is a main factor affecting the sustainability of rural water services. Where mechanisms have been put in place to support local government, its performance tends to be better. Table 4 provides an overview of the institutional arrangements for capacity support in a number of countries, based on Lockwood and Smits (2011).

Table 4: Arrangements for capacity support to service authorities by country

Country	Capacity support arrangements to service authorities
Benin	Deconcentrated offices of the Water Ministry at departmental level are responsible for capacity support in areas such as tendering, contracting, management and improved monitoring.
Burkina Faso	Regional level deconcentrated offices of the Water Department are supposed to support communes, but until very recently there has been no representation of the Water Department at this level. In addition, there is an institute dedicated to the training of water technicians and professionals.
Colombia	There is no clearly articulated national strategy for capacity support. Ad hoc and de facto support is provided at departmental level through some large departmental water supply programmes.
Ethiopia	Zonal and regional offices of the Ministry of Water are supposed to provide support to woreda staff, but in practice, this is also very ad hoc.
Ghana	The deconcentrated offices of the line agency, CWSA (Community Water and Sanitation Agency), is mandated to support District Water and Sanitation Teams with capacity building and training. In practice, while well-resourced in terms of human capacity, the regional CWSA offices only operate effectively when there are projects ongoing in their region to which they provide operational and logistical support. In addition, universities and NGOs support districts on a project basis.
Honduras	Capacity support to municipalities is largely done on an ad hoc or project basis and not as part of a sector-wide, systematic programme. In addition, municipalities support each other and seek capacity through association in *mancomunidades*, associations of municipalities in a specific geographical area.
India	There are block-level 'mother *Gram Panchayats*' (local government unit) that are used to support *Gram Panchayats* in need. This is also done via capacity building and exposure visits. Strong *Gram Panchayat* in each district act as key resource centres for other *Gram Panchayats* in the district.
Mozambique	At a provincial level, the Department of Public Works and Housing is responsible for the capacity support role as well as coordination and supply chains, but it has limited capacity.
South Africa	Provincial (deconcentrated) offices of the Department of Water Affairs play a technical capacity support role to water service authorities through a 'One-stop Shop' covering a range of technical, managerial and administrative issues. It is well structured and systematic, with dedicated funding to support local government.
Thailand	Capacity support is given to the service authority by different government agencies at a national and regional level.
Uganda	Ministry of Water and the Environment has deconcentrated representation at a regional level through Technical Support Units which provide support to district staff. These units have a regular programme of support, but with so many districts, this supply-driven approach mainly addresses the most underperforming districts.

Because of the nature of indirect support, the institutional arrangements for indirect support are assigned to national level entities. If there is no independent regulator, government ministries and agencies are tasked with responsibilities such as planning and policy formulation or even regulation. Donors, NGOs, research institutes and other entities at a national level may also contribute. Specific arrangements will differ from country to country and are not considered relevant for this study. However, there is one component of indirect support that, in our opinion, merits more attention and that is the capacity support to service authorities. As discussed in Lockwood and Smits (2011), the capacity of local government to fulfil its service authority role is a main factor affecting the sustainability of rural water services. Where mechanisms have been put in place to support local government, its performance tends to be better.

As can be seen in Table 4, capacity support is organised in most cases through deconcentrated offices of line ministries, often at a provincial or departmental level (depending on the exact name in the administrative set-up of the country). In exceptional cases, national agencies provide this type of support directly to service authorities. The extent to which this is a structural activity varies from case to case. In some cases, such capacity support depends on funding being available and is tied to specific investment projects, as in Ghana. In other countries (South Africa and Uganda), there are units with dedicated resources. As with direct support, associations are also employed for indirect support. In Honduras, and elsewhere in Latin America, it is common for rural municipalities to join forces in a *mancomunidad*, or association of municipalities. In this way, a small group of municipalities in a specific geographical area can support each other and achieve economies of scale in contracting dedicated capacity, such as an engineer or special equipment.

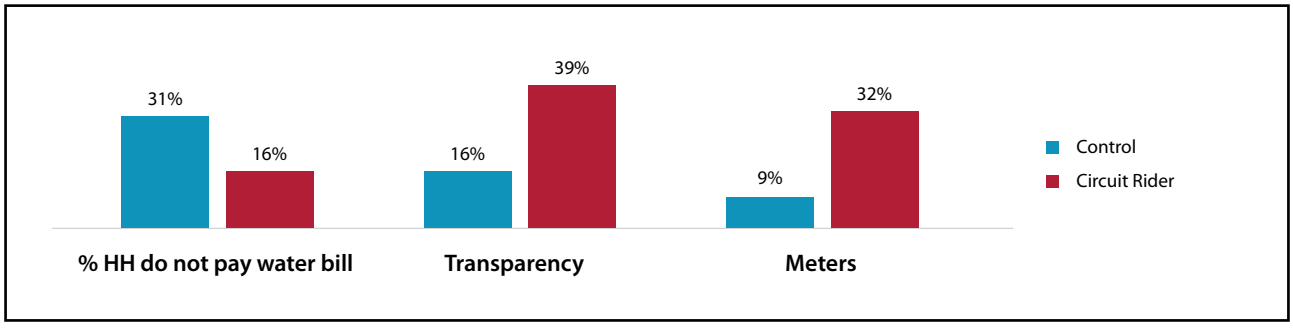
4 Benefits of direct support

Direct support can be expected to improve the quality and sustainability of rural water services in a number of ways. Most fundamentally these are:

- Ensuring the maintenance of service levels. Problems that may seem small initially, like a small leakage, or errors in bookkeeping, may turn into bigger problems if not addressed. Often, a CBO doesn't easily detect these. Regular support from an outside agency can help to identify them and to support service providers in taking corrective actions, so helping to maintain a level of service at an adequate level.
- Improving the performance of service providers. In some cases, support can go beyond merely maintaining a certain level of service; it can improve it. It may help service providers to gradually make its activities more professional, e.g. by formally establishing itself as a legal entity, by switching to computerised bookkeeping or billing, or by contracting a dedicated operator. Direct support can be an important trigger for such steps towards professionalisation.
- Of the many areas where direct and indirect support is essential, capital maintenance (or asset management) is one of the most important. The provision of support is one of the main tools for executing asset management planning. These are normally major works, well beyond the capacity of the community. Support is thus needed to make sure the right types of capital maintenance works are identified, prepared for and carried out at the right time, e.g. by preparing projects and financing arrangements for them. As the lack of adequate capital maintenance is one of the most critical gaps in the life cycle of many services, support in addressing this phase is necessary to ensure the sustainability of services. Support can help identify due dates for capital maintenance and plan more systematically for them. That is indeed one of the main objectives in South Africa and Chile.

In spite of the claimed benefits, surprisingly little quantitative evidence exists on the impact of the existence of direct support, although the absence of such support is often identified as a factor negatively affecting service delivery in various studies. For example, Sy and Setiawan (2010) report on the high potential of CBOs as service providers in Indonesia, but also report that they are constrained in further development and professionalisation. This often results from a hands-off approach to recurrent support activities by local government, leaving a vacuum for CBOs to access technical and management support, and CBOs being less accountable for poor performance (Sy and Setiawan 2010).

Figure 1: Comparison between villages with support from circuit riders, and those without, in terms of performance of service providers in El Salvador.



Source: Kayser et al. 2010.

Where quantitative figures are available, they all point to better quality and improved sustainability of rural water services when service providers receive regular external support. Kayser et al. (2010) noted, in a study in El Salvador, a statistically significant higher performance of service providers receiving regular support from a circuit rider compared to ones not receiving support in a range of factors, including: higher rates of drinking water disinfection, improved operator knowledge about treatment, higher rates of tariff payment, greater transparency in accounting and water metering.

Schweitzer and Mihelcic (2011, forthcoming) found similar results in a study in the Dominican Republic. They conclude that community participation was higher in systems that were visited more often by supporting organisations. Financial durability, measured as the ability of tariff-generated income to cover operation and minor maintenance costs, also improved with increased frequency of visits from a supporting institution. However, Bakalian and Wakeman (2009), in a study in Bolivia, Ghana and Peru, did not find a statistically significant association between a village receiving a technical support visit (to help with repairs or maintenance) and a village having a working water system. However, in the same study, there did appear to be a correlation between performance and non-technical support visits (Whittington et al. 2009).

Other studies emphasise the change in performance and sustainability over time, since the establishment of recurrent support mechanisms. For example, in Chile, an analysis was done of the technical, financial and administrative factors comparing data from 2008 and 2010. This showed an overall increase in performance, with differences between regions (Fuentealba 2011). The SANAA programme of circuit riders in Honduras has been able to elevate the percentage of water systems classified as A (highest level of performance) from 7% in 1986, when it started, to 41% in 2007 (López 2011). MEME/DNH (2009) report increases in the financial performance of rural operators supported by the STEFI support system in Mali.

Beyond the simple relationship between direct support and system performance, it is also important to look at the frequency and quality of the support visits. A visit by a circuit rider once every two years is likely to have less impact than more regular visits. As Schweitzer and Mihelhic (2011) rightfully point out, the duration and the quality of the visit is also an important factor. The type of work done during recurrent support also makes a difference in terms of overall impact. For example, Whittington et al. (2009) see a more positive impact when recurrent work is focused on retraining water committees than when carrying out repairs directly. Unfortunately, to the best of our knowledge, there are no indicators yet that describe the relationship between a given level of recurrent support and the level of impact in terms of the system performance that might be expected.

5 What does it cost to provide direct and indirect support? And how is it financed?

Very little data is available on the impact of direct and indirect support. What is more, data on expenditure on support is patchy or non-comparable. Reasons for this may include the following:

- Few consolidated support mechanisms are still in place. Arrangements outlined in this paper are the exceptions rather than the norm.
- Direct and indirect support arrangements may exist but can be seriously under-resourced. For example, in many countries, local government may be tasked with providing support but lack the resources to do so. In such cases, the actual costs of direct and indirect support are not much of a guide to what is needed.
- The intensity and quality of the support provided differs. This may be due to differences in the service levels being supported, the topography and geographic area covered, and the densities and disperse nature of populations being attended to. Arrangements may also differ in the functions included in the service package. This means different examples have different cost levels.
- Different institutional arrangements result in different ways of accounting for costs. A contracted agency may budget and charge its costs and hence account for all of these; on the other hand, local government salary costs may be taken as a 'given' and not included in budget reviews.
- Expenditure on support may be combined with expenditure on other cost categories. Some of the cases presented below are examples of where one agency not only provides direct support but also carries out maintenance or capital maintenance. In its accounting, the agency may lump these cost categories together.

This section, therefore, takes a case study approach, presenting for each type of arrangement identified in Table 2 one or more examples for which cost data is available. For each case, a general overview of the arrangement is presented to give an idea of the intensity of support. The associated direct support costs are then provided. The section ends by making a comparison between the case countries. As cases were collected, we observed that the most structured cases of direct support come from (lower) middle income countries in Latin America and Southern Africa. Therefore, in the comparison, we try to differentiate the results according to the overall income level of each country. The last part of this section presents information on ExpIDS.

5.1 Expenditure on direct support

5.1.1 Direct support by local government: comparing Ghana, India and Mozambique

As part of its aim to analyse life cycle costs of water and sanitation service in Burkina Faso, Ghana, India (Andhra Pradesh) and Mozambique, WASHCost tried to collect primary data on direct and indirect support. For some of the same reasons mentioned above, this proved to be difficult:

- Direct support in Ghana, India and Mozambique is the responsibility of local government. Yet, in reality, support is provided by different line agencies at different institutional levels, each with its own accounts.
- ExpDS is only one part of the work done by the various agencies and is not always disaggregated as such by these agencies in their accounts.
- The amount and type of support provided is different.
- Lack of access to information. In Mozambique, information could only be collected at national level as no data was available on provincial and district salaries and operational expenditures. The national level is arguably the least detailed source for this type of information as the provision of post-construction support is the responsibility of the district.

An attempt has been made to link ExpDS explicitly to the type and amount of support provided, as this would allow inputs to be linked more closely to outputs. Table 5 gives an overview of the direct support modality in each country

and the actual expenditure involved for three out of the four WASHCost countries. Data from WASHCost Burkina Faso is excluded in this paper as data was still being analysed at the time of this paper's writing.

Table 5: Overview of direct support modalities in Ghana, India and Mozambique

Country	Formal mandate for direct support	Main responsibilities	Ad hoc support or supply driven	Number of staff involved in providing support	Are organisations contracted to do work?	Activities included in direct support costs	Estimated ExpDS US$/ person/year (2010)
Ghana[3]	Local government (DA) Central government (CWSA)	DAs: provide support to communities. CWSA: facilitate & backstop the DAs.	From projects	National: 30-50 people. Region: 10-15 people. District: 5 people.	Yes, in some cases, but this is not systematic. It is usually done on project basis.	Salaries. Monitoring and evaluation. Administrative expenditure.	0.78
India[4]	State government	Contracting or organising with state level training institutions or organisations. Outsourcing to NGOs. Supporting donor initiatives. Monitoring.	Often supply driven	Communication and capacity development unit at a state level with a maximum staff of 10.	Yes, usually state level government managed or autonomous training institutions with good staff.	Staff salaries. Information, Education and Communication (IEC) activities. Water quality monitoring. Demand management initiatives.	0.32
Mozambique[5]	District government	Contracting community organisation(s). Contract management. Monitoring.	Ad hoc	National: 30-50 people. Provincial: 5-15 people. District: 1-2 people.	Yes, they provide WASH support services in a district. Typical 4-6 staff (estimate) train and support local mechanics and artisans.	Provincial and district level: Salaries. Operational expenses. Training and contracting of local organisations.	0.0003 (sanitation) 0.0012 (water) 0.0015 (Total)

Source: WASHCost data 2011.

In spite of the data limitations, a number of insights can be derived from this analysis of costs. Firstly, most support is ad hoc or project-based. As a result, the level of support is below what is needed, according to interviewees. Secondly, it is highly likely that current expenditure is insufficient to provide the support that is formally agreed in the national policy or legislation. This can be illustrated further by an example from Ghana.

3 ExpDS based on actual WASH-related salaries and operational expenditure reported by the head and regional offices of the Community Water and Sanitation Agency (CWSA) and the District Water and Sanitation Teams (DWSTs). Cost data was then converted to district per person figures based on respective 2009 populations. CWSA expenditure over 6 years (2004 to 2009) was turned into per person cost based on current (2009) rural population representing 55% of national population and then brought into current costs for 2010 using the GDP deflator multiplier to convert past costs to current costs.

4 ExpDS estimated, based on budget documents and actual expenditure at the habitation level.

5 ExpDS based on the operational expenditure of the Provincial Directorate of Public Works and Housing (DPOPH), the Water and Sanitation Department (DES) and the District Planning and Infrastructure Services (SDPI).

Box 1 Relation between expenditure on direct support costs and service levels in Ghana

In Ghana, according to the law, District Assemblies (DAs) need to monitor the activities of the Water and Sanitation Teams (WATSANs) through their District Water and Sanitation Teams (DWSTs) and District Works Department (DWDs) as well as monitor the performance and functionality of water systems (Nyarko et al. 2011). In addition, the CWSA (Community Water and Sanitation Agency), the parastatal agency, has a role in supporting both districts and communities. Yet budgets for this are mostly inadequate. In order to assess the extent of this, ExpDS by both districts and CWSA was compared to the general level of service received in these three districts (Nyarko et al. 2011) using the water service level ladder developed (Moriarty et al. 2011). The results are presented in Table 6.

Table 6: Service level received and average Direct Support Cost per person per year in US Dollars (2010) in three districts in Ghana[6]

Region	District	Water service delivery level received[7] (% of population)		Direct Support Costs[8] US$ per person (2010)		
				CWSA (national)	DWST (district)	Total
Ashanti	Bosomtwe	Standard	34	0.37	0.28	0.65
		Sub-standard	61			
		No service	5			
Northern	East Gonja	Standard	10	0.37	0.08	0.45
		Sub-standard	85			
		No service	5			
Volta	Ketu South	Standard	13	0.37	0.17	0.54
		Sub-standard	84			
		No service	3			

Source: Nyarko et al. 2011.

Interestingly, in the district with significantly larger direct support costs (Bosomtwe), people also receive much higher water service delivery levels. In the Bosomtwe district, 34% of people receive a standard service level[9], compared to 10% in East Gonja and 13% in Ketu. The average direct support costs at district level in Bosomtwe are also more than three times higher than in East Gonja and almost a third higher than in Ketu South. At first glance, this seems

6 Data collected using surveys of 75 individual rural water point-systems (boreholes with hand pump and limited mechanised systems) belonging to 31 communities spread over three regions (Ashanti, Northern and Volta).

7 A service level is the combination of factors including quantity, quality, reliability and crowding. For Ghana, this means having at least 20 lcd, quality meeting national norms and a reliability of 95%. The water point should be within 500 metres, and be shared with no more than 300 people for boreholes and 150 persons for wells. A service is sub-standard when there is an improved water point but it fails on one of these criteria.

8 The Direct Support Cost (ExpDS) is based on actual WASH related salaries and operational expenditure reported by the head and regional offices of the Community Water and Sanitation Agency (CWSA) and the District Water and Sanitation Teams (DWST). The cost data was then converted to CWSA and district per person figures based on the respective 2009 populations. CWSA expenditure over six years (2004 to 2009) was turned into a per-person cost based on current (2009) rural population representing 55% of national population (Nyarko et al. 2011).

9 A detailed explanation of what each service level entails is included as Annex 1, but in general, the standard level is the level that is set in the National Water Policy as access to drinking water.

to indicate a more positive relationship between the service level that is received and the level of the average direct support costs. More in-depth research is needed in order to say if this finding can be generalised.

In Mozambique, districts have been able to contract organisations (NGOs or private firms) to provide direct support to water and or sanitation interventions since 2011. This new national approach for providing direct support is called PEC Zonal and is slowly being rolled out over the country after positive experiences with a pilot from 2008 to 2011 in 18 districts in the central region of Mozambique. In reality, the PEC Zonal approach is not direct support solely but rather a mix of support activities which also includes Capital Expenditure Software and support to Capital maintenance expenditure (Zita and Naafs 2011).

Since 2011, PEC Zonal has existed in 38 of the 128 districts in Mozambique. WASHCost Mozambique has been able to collect data on the per-person direct support cost that is provided by different organisations from all 38 districts in which PEC Zonal is active and this amounts to 94 unique one-year contracts from 2008 to 2011. The per-person per-year direct support expenditure for this model ranges from US$ 0.2 to 4.7 (average US$ 1.1 and mean US$ 0.6) based on the 94 contracts from 2008 to 2011 (Zita and Naafs 2011). WASHCost has tried to link the large variation with variables such as population size, population density, district size and current water coverage. However, no clear correlation could be found and the cause for the large variation could lie elsewhere. It could be partly explained by the fact that procurement is done in an open bidding process and, in some districts, there is little to no competition. Other possible explanations could be that each district arranges its own contract and, therefore, the bill of quantities with equipment desires and support specifications (and costs) vary.

The per-person per-year costs in this model are almost 1,000 times higher than the direct support expenditure data collected at a national level at an average of US$ 1.1 /person/ year compared to the US$ 0.0015/ person/ year reported in Table 5. However, the two figures cannot be compared, as the PEC Zonal includes other costs as well. It was not possible to assess which percentage of the costs of the PEC Zonal are real direct support costs, and which should be allocated to other cost categories.

5.1.2 Central government subcontracting regional utility: Chile[10]

One of the most comprehensive examples of direct support is from Chile. Here, regional utilities that provide water services to town and cities are contracted by the Central Ministry to provide direct support to rural community-based service providers. This consists of providing technical assistance and advice, as well as supporting the identification of capital maintenance projects. To that effect, the Ministry of Public Works establishes a contractual agreement with the regional utility, monitored through the regional divisions of the ministry.

This programme covers some 1,492 rural water supply systems, covering about 1.5 million rural inhabitants. The average costs of this programme in 2009-2010 were US$ 5,162,000/ year. The costs per system differ widely from one case to another, ranging between US$ 117 and 1,316/ system/ month. This wide variation is explained by factors such as the distance of the systems from a central point, and their size and complexity. However, taking the costs of the programme as a whole, the average cost is US$ 3,460/ system/ year or US$ 3.44/ person/ year. These costs are all borne by the central government through its rural water supply programme. To put these costs into perspective, the average spending by central government on capital maintenance for rural water supply has oscillated between US$ 65 and 110 million/ year over the past few years. Technical support thus represents 5 to 8% of capital maintenance expenditure.

10 This case study is a summary of Fuentealba (2011).

5.1.3 Central government subcontracting specialised agency: Mali[11]

Suivi Technique et Financier (STEFI) (Technical and Financial Follow-up) is a method for monitoring the functionality of water facilities and the financial costs of small town and rural water services. In its strictest sense, STEFI is a management information system, but it does have decision-support capability for formulating recommendations aimed at improving functionality (MEME/DNH 2009). It was developed and tested between 1994 and 2004 by the National Water Supply Directorate (DNH), with German assistance. It has subsequently been used in parts of Mali, Niger and Chad.

In the case of Mali, the DNH has established contracts with STEFI operators. They provide advice and assistance to service providers (CBOs and private operators) and provide information to service authorities, i.e. the *communes*. Specifically, they are responsible for:

- checking the functionality of water facilities
- collecting the bi-annual financial accounting of water service providers of their operation expenditures
- sending technical and financial reports every six months to local water authorities (i.e. communes), local water service providers and users
- formulating recommendations to improve functionality and planning
- consolidating cost data and reporting to the government

The data is communicated by the service providers to the STEFI operators via a radio system, and the data is compiled by accounting software. The information is available to the participating communes and service providers and is communicated to the government.

Monitoring costs are divided between the users (via tariffs established by providers), the *communes* and the government. *Communes* are responsible for two-thirds of the monitoring fee that pays the STEFI operators annually or six-monthly.

MEME/DNH report differences in the systems supported by STEFI and those without such support. Systems with support have the following benefits:

- Higher network productivity (higher water consumption registered and reduced water losses).
- Life expectancy of small networks doubled (with according cost savings).
- Water prices and tariffs decreased because of higher efficiency.
- Advocacy for fundraising both from the government and the communes facilitated.

The total costs of STEFI are equivalent to US$ 0.34/ person/ 2010 (MEME/DNH 2009). This is equivalent to around US$ 0.06/ m^3 sold by the associated service providers. The benefits of STEFI, in the form of a reduction in unaccounted for water, have been estimated to be equivalent to US$ 0.16/ m^3/ 2010 (MEME/DNH 2009).

5.1.4 Central government through deconcentrated structure: Namibia[12]

In Namibia, the policy of community-based management for all rural water schemes was adopted throughout the country in the 1990s. Each water point has a Water Point Committee (WPC), which is responsible for the day-to-day operation of the infrastructure as well as the collection of tariffs to cover these costs. Technical support is provided by the local offices of the Directorate of Water Supply and Sanitation Coordination (DWSSC), which is based in each region. DWSSC receives requests for major maintenance on an ad hoc basis as and when problems are reported. These requests can be mechanical, electrical or related to civil works maintenance. The DWSSC also provides support on administrative matters to WPC's. It does not provide preventive direct support. This model presents a mix of direct support with operation and maintenance activities.

11 This case study is a summary of MEME/DNH (2009).

12 This case study is a summary of Gibson and Matengu (2010).

In 2010, an evaluation of this support model was carried out in the Kavango and Caprivi regions (Gibson and Matengu 2010). Access to safe rural water supply is much lower in Kavango: 53%, compared to Caprivi: 82%. The nature of water schemes between the two regions varies considerably. Kavango is predominantly by diesel or electricpowered schemes with stand-pipes (65% of all schemes). In the Caprivi region, hand pumps dominate, with 65% using that technology.

The assessment pointed out that there were constant and substantial backlogs in attending to requests and these appeared to be growing (Gibson and Matengu 2010, p. 23). Gibson and Matengu (2010, p. 23) asserts that:

> *"The maintenance work performed by DWSSC was considered effective but often late due to long supply chain times in receiving spare parts and insufficient travel funds. The lack of a travel budget meant support could often only be provided for part of each month".*

It was very difficult to identify the required technical and institutional support, as well as the necessary funding. For example, Gibson and Matengu (2010) found it hard to estimate realistic transport costs to provide support in settlements located far from the operational hub.

Maluti GSM Consulting Engineers therefore organised a workshop with head office staff, regional managers, operational supervisors and field staff to assess the resources that would be required, based upon an activity-based cost model. The model consisted of generic resource inputs (time, travel, materials and energy) for each type of scheme. This type of assessment was possible owing to the homogenous nature of the schemes (Gibson and Matengu 2010, p. 24). When compared to the actual budget in 2010, the cost model calculated that more than double the present amount spent is needed for institutional and technical support (see Table 8) (Gibson and Matengu 2010).

Table 7: Budget and cost model for recurrent support

	Kavango region	Caprivi region
Budget 2010 for support (US$/ person/ year)	4.88	12.01
Required budget for support, according to cost model (US$/ person/ year)*	11.27	23.89

Source: calculations based on Gibson and Matengu 2010, and 2001 census data

Although there is large variation between actual budgeted costs and modelled costs, the per-person per-year costs for providing support are substantial in both regions. These ranged between US$ 4.88 to US$ 12.01 per person per year in the 2010 budget to US$ 11.27–to 23.89 per person per year in the cost model that was developed (per-person costs may be slightly overestimated as the population of 2001 was used.).

As this support combines operation and maintenance support and direct support, for this study an effort was made to assess how these costs were distributed over the categories outlined in the life-cycle costs framework. While Gibson and Matengu (2010) do provide a breakdown of costs, these follow a different type of framework. Undertaking a detailed re-categorisation of these costs using the the life-cycle costs framework would have required re-analysing the source data. As this was impossible an estimate of the order of magnitude was made. A first step in this was to separate the operation and maintenance (OpEx) costs from the broad category of support costs, using figures from the Gibson and Matengu (2010) study, as shown in Table 8 (see next page). As can be seen the support costs – costs such as travel, salaries of technical support staff and office – form the largest percentage. Gibson (personal communication) estimates that approximately one third of these costs are dedicated to what is referred to as direct support. The other 66% covers support for operation and maintenance, yielding a figure of approximately 23% of all costs dedicated to direct support. Combining these with the data presented in Table 7 yields an actual spending

on direct costs of between US$ 1.12 and 2.76, and a required support of US$ 2.5 to US$ 5.49. The variance in these figures is explained by the specificities of different schemes in terms of technology and distance. And, to facilitate the detailed planning of direct support activities, more detailed studies will need to be carried out. However, for the purpose of this paper, and in order to arrive at a magnitude estimate of the direct support requirements, it can be concluded that direct support costs in Namibia are around a couple of dollars per person per year.

Table 8: Estimated cost breakdown of recurrent support in two regions in Namibia

	Kavango region	Caprivi region
Operation and maintenance expenditure		
Water Point Committee	15%	15%
Energy	3%	2%
Major repairs	3%	1%
Material	8%	10%
Expenditure on support		
Technical support	15%	16%
Office expenses	3%	3%
Travel	53%	53%
Total	**100%**	**100%**

Source: categorised based on Gibson and Matengu 2010.

5.1.5 Association of community-based service providers: SISAR, Brazil[13]

The Integrated System for Rural Sanitation (or SISAR to give it its local acronym) is an organisational model for managing rural water and sanitation in the rural areas of three states in North–East Brazil (Bahia, Ceará and Piauí). The development of these SISARs started in 1996 as associations of community-based service providers, with a dedicated operational unit which provides technical and administrative support to its individual member communities. In the State of Ceará, eight SISARs cover between 25 and 112 systems each, representing between 15,000 and 72,000 users (Meleg 2011).

A SISAR has the following responsibilities:

- To jointly administer, maintain and coordinate operations for its associates' water and sanitation systems, whereby tasks are shared between the local water users group and the SISAR.
- To set and secure payment for realistic tariffs.
- To represent the affiliated associations.
- To promote hygiene education, along with greater participation in associations.

The members interact with their SISAR through a general assembly of elected presidents of each local association. The management council of a SISAR has eleven members of which six represent the local user associations and five represent the state and municipal agencies. Each SISAR has three departments; technical support, administration and commerce, and social issues. Each department has a head and one or two assistants.

13 This case study is a summary based on Meleg (2011) and Water21 (2011).

Each community has one operator for day-to-day operations and possibly more if a supply system has more than 300 connections. The operator receives a monthly payment from the SISAR, which is based on the payment rate by users (as an incentive to good performance).

The financing of this model is through a user tariff, based on metered connections and collection of bills. The tariff is sufficient to fund:

- Operation and maintenance expenditure. There is some cross-subsidisation, managed by SISAR, from larger rural systems to smaller communities in rural areas. This financial sustainability in OpEx costs serves as a pre-condition and guarantor of independence and self-administration, freeing the utility from the inappropriate (political) pressures experienced by earlier organisations (Schiller and Schienle, 2004).
- Capital Maintenance Expenditure. This is managed centrally by SISAR (replacement of pumps, rehabilitation of wells and replacing of pipes) to ensure that services continue at the same level of performance that was first delivered. There have been occasional one-off investments by others. For example, CAGECE, the state utility in Ceará, has provided material for the refurbishment of old water meters and supported water quality analysis in specific cases). National or international funds would only be required for large extensions of the system, or rehabilitation of older systems developed prior to joining SISAR in order to meet SISAR's technical standards. In order to meet the CapManEx costs, business plans are developed at the level of the SISAR as the basis for calculating recovery of these costs through the tariff.
- Direct support costs. The initial costs of establishing the structure of SISAR has been co-financed between the State, through CAGECE, KfW (German Development Bank) and the World Bank. The running costs of the model are covered by user tariffs.

Each SISAR specifies what proportion of tariffs collected by the service providers have to be forwarded to them to fund central activities.

The specific costs of each SISAR differ. Table 9 provides some basic data on one such SISAR (BBA with headquarters in Quixada, Ceará). This SISAR has 12 staff, of whom three are technical staff, seven have an administrative-commercial background, one has a social science background and one is responsible for general services.

Table 9: Costs of BBA SISAR based in Quixada, Ceará, Brazil

Cost item	Costs (equivalent of US$/person/2010)
Operation and maintenance expenditure	2.60
Capital maintenance expenditure	3.07
SISAR personnel expenditure	2.79
Other expenses	0.84
Total costs SISAR	**9.30**
Additional electricity charges to users	3.80
Total costs to the users	**13.30**

In this case, the costs of direct support are difficult to single out, as a significant cost category (personnel costs) is both for direct support and operation and maintenance. Most important, however, is the recognition that support costs are significant in relative terms, representing around 25% of the total water costs to rural users. In absolute terms, this is an amount of US$ 3.63 / person/ 2010 (combining both personnel and other expenses of SISAR).

5.1.6 Local government subcontracting a specialised agency: South Africa[14]

In South Africa, municipalities can contract a Support Services Agency (SSA), which can be a private company or a NGO. Gibson (2010) undertook an analysis of the actual costs incurred during a nine-year support programme, in which a private company, the Maluti GSM Consulting Engineers, provided technical and institutional support to CBOs, carrying out basic tasks at scheme level in two district municipalities in the Eastern Cape province (Alfred Nzo and Chris Hani District Municipalities). The project served a total of 429 villages comprising of 67,437 rural households. Schemes included in the SSA programme varied in technology and population served, and ranged from large multi-village schemes supplied from dams and water treatment plants to, hand-pump installations (Gibson, 2010, p.5). But, the scope of work differed between the two areas, due to different types (and number) of settlements and systems.

Table 10: Different characteristics of the two areas attended by the SSA in South Africa

Area	Number of settlements covered under SSA contract	Number of households	Predominant types of systems	Pipelines attended (kms)
Alfred Nzo District Municipality (2004-2005)	144	27,154	Regional gravity-fed schemes	± 750
Chris Hani District Municipality (2004-2009)	285	40,283	Boreholes with motorised pumps, and distribution and hence more mechanical and electrical installations	± 1300

Source: Gibson, 2010.

The SSA support entailed both direct support and operation and maintenance tasks, including capital maintenance.

As an SSA, the Maluti GSM Consulting Engineers were responsible for (Gibson, 2010, p. 6):

- supporting local operators in carrying out repairs and maintenance
- service and repairing mechanical and electrical equipment (75% of all mechanical and electrical installations were to be visited each month, with no installation to be neglected for longer than two months).
- delivering diesel where required
- procuring and delivering material and spares
- preparing monthly reports
- providing technical support (engineering)
- facilitating the functioning of the CBOs (each CBO was to be visited every month)
- training local operators

Service level targets were set in the contract between the SSA and the municipality, which the SSA was expected to achieve. The SSA could then bill the municipality according to the terms of the contract.

For this case a unique dataset exists with a tightly ring-fenced set of cost data related to operational effectiveness. The data shows that the total cost for this was US$ 18.76/ person/ year in the Chris Hani District Municipality and US$ 8.06/ person/ year in the Alfred Nzo District Municipality (see Table 10)[15]. This includes both expenditure on operation, capital maintenance and direct support. Gibson (2010, p.12-13) suggests that the difference in costs between the two districts can be explained by the significantly higher levels of support that was required because of the greater

14 This case study is a summary of Gibson (2010).

15 Gibson (2010) provided figures per household. For comparison, these have been converted to per-person costs, using an average Eastern Cape household size of 4.1 persons/household (Healthlink 2011).

number of mechanical or electrical installations in the Chris Hani District Municipality. Mechanical and electrical installations with moving parts were far more prone to failure than buried or static infrastructure such as pipelines and reservoirs. The greater distance of the Chris Hani District Municipality schemes from the base of the operations also increased the costs significantly (Gibson, 2010, p. 12). In the Chris Hani district, schemes were located on average at a distance of 100 kilometres from the base of the operations, compared to 50 kilometres in the other district.

Table 11: Actual support costs in US$ (2010) in two district municipalities with service levels

Municipality	Monthly (US$)	Annual (US$)	Cost/person/year in US$	Water quality	Continuity of supply
Alfred Nzo	78,839	898,073	8.06	83%	84%
Chris Hani	258,248	3,098,979	18.76	98%	96%

Source: Gibson, 2010

Note:
1. These figures have been adjusted to the equivalent of 2010 current costs
2. Amounts exclude VAT
3. Exchange rate used is US Dollar 1.00 = 6.93 South African Rand

The study also measured the level of service received in both districts, in water quality and continuity of water supply. The service level received was significantly higher in the Chris Hani District Municipality in terms of water quality and continuity of supply. It is suggested that this difference in service delivery is not related to the level of support received but an inherent function of the infrastructure; the communities in the Alfred Nzo District Municipality rely predominantly on surface water sources without treatment facilities and this tends to deliver water of lesser quality than those with treatment systems (Gibson 2010, p. 21). To raise the level of service received in the Alfred Nzo District Municipality, investments would need to be made in infrastructure.

The Gibson (2010) study also provides a breakdown of the relative contribution of different cost items to the total costs. For the purpose of this study, the authors have re-categorised these costs, using the life-cycle cost components. (see Table 11). Doing a detailed re-categorisation of these costs using the life-cycle costs framework would have required re-analysing the source data. As this was impossible an estimate of the order of magnitude was made, using a similar approach followed in the Namibia case So, a first step in this was to separate the operation and maintenance (OpEx) costs from the broad category of support costs, based on the figures from Gibson (2010).

Table 12: Relative contribution of different support costs to the total support cost, using the life-cycle costs approach

Item	Alfred Nzo District Municipality	Chris Hani District Municipality
	Relative contribution to total costs (%)	Relative contribution to total costs (%)
Operational Expenditure (OpEx)		
Salaries of CBOs	25%	19%
Fuel	2%	4%
Work contracted out (engineering, water quality testing)	4%	9%
Materials and spares	4%	15%
Subtotal OpEx (%)	**35%**	**47%**
Expenditure on support		
Technical staff	50%	34%
Office costs	-	1%
Travel	15%	18%
Subtotal support costs (%)	**65%**	**53%**

Source: based on Gibson 2010.

The data shows that the technical staff costs of rural water schemes are large in proportion to other items. Gibson (personal communication) estimates that around a third of these support costs are dedicated to direct support while, the remainder is for support to operation and maintenance proper. This would then yield a percentage of some 17-21% of the total costs be dedicated to direct support. Combining this with the figures in absolute terms presented earlier, would then yield an expenditure on direct support of in between 1.69-3.93 US$/capita/year. The data provided by Gibson (2010, p. 22) also illustrate that the costs of providing technical support to rural settlements may vary significantly from scheme to scheme. Factors affecting the costs of support include the relative distance of the schemes, which in turn is related to the population density and the type of technology in use which is related to water resources availability.

5.1.7 NGOs: ASSA in El Salvador[16]

The Asociación Salvadoreña de Servicios de Agua (ASSA) (Salvadorean Water Services Association) offers direct support to 170 communities in rural El Salvador, through the circuit rider model. This support arrangement was developed by the National Rural Water Association in the United States in the 1970s. The model is designed to provide ongoing technical assistance so that the CBOs and their water system operators have the capacity to prepare for and overcome technical, financial and operational obstacles. The model consists of a trained technician, the circuit rider, who makes monthly visits to rural communities to address operation and maintenance problems and to train CBOs and their operators in areas such as water quality and disinfection, water source protection and accounting and budgeting. Circuit riders also hold workshops every few months for operators and water committees on all issues related to operation, maintenance and administration. This model has since then been replicated and adjusted to various countries in Central America, including, Guatemala and Honduras (see also Lockwood 2002). In El Salvador, the International Rural Water Association (IRWA), an arm of the National Rural Water Association (NRWA), supports

16 This case study is a summary of Kayser et al. (2010).

ASSA to carry out the circuit rider programme. In the case of ASSA, the circuit rider model consists of four main components (Kayser et al. 2010):

- Technical assistance: on-call assistance, monthly visit by technician, water quality testing, operator training in disinfection.
- Financial training in accounting, budgeting, transparency.
- Operational management: Village Water Committee responsibilities and importance of disinfection.
- Environmental sustainability: Protection of water source, encourage metering.

ASSA employs six people: three circuit riders, a secretary/laboratory technician, a marketing representative and a director. The marketing representative and the director also perform circuit rider activities.

In 2010, a study (Kayser et al. 2010) was carried out to evaluate the circuit rider model in 60 small rural and peri-urban community-run water supply systems in El Salvador. The study concluded that, in communities visited by circuit riders, there were statistically significant lower rates of microbiologically contaminated water, higher rates of drinking water disinfection, improved operator knowledge about treatment, less negative community perception of chlorine, higher rates of community payment for water service, greater financial transparency, and greater rates of household water meters (Kayser et al. 2010).

The cost of ASSA is US$ 50,000 a year, serving 170 communities or 51,000 households. This is a little less than US$ 1 per household per year (Kayser et al. 2010) or some US$ 0.25 per person per year (current cost 2010), assuming an average household size of four.

5.1.8 Combinations of different types of support: Chinda Municipality in Honduras

Some countries have various post-construction support mechanisms, and their functions may overlap. For these cases, the costs can be added together to gain an insight into the total costs. This is the case in Honduras, where various mechanisms have been tried out with varying degrees of success over the last few decades. As a result, complementary and overlapping support mechanisms are in place in various places. To assess the total costs of this, a detailed case study was done in the municipality of Chinda (see Smits 2011 for the full case study).

Chinda is a municipality in the western part of Honduras, with 5,500 inhabitants spread over 15 rural communities, each of which has its own gravity-fed piped scheme. A number of post-construction support mechanisms were found:

- The Municipal Association of Water Committees (*Asociación de Juntas de Agua Municial* or AJAM) brings together all water committees in the municipality's area of jurisdiction. The members provide support to each other by: reviewing financial accounts and annual reports, providing advice on reported problems, providing access to materials (e.g. buying chlorine in bulk and then distributing it) and through coordination with the municipality. To cover the costs of this, a surcharge of 1 Lempira (around US$ 0.05) is added to the water bill of each household in the municipality.
- The municipality provides direct post-construction support. To that effect, it has established its water and sanitation technical unit, consisting of one technician with a motor bike and computing equipment. The technician is supposed to visit all communities on a regular basis to do water quality tests and help address problems of water committees. Even though this is supposed to be supply-driven, in reality the technician only comes by when there is a problem. The municipality has a budget line item for the salary costs of the technician, for travel costs and for some other minor running costs.
- The TOM of SANAA. This is the circuit rider referred to earlier in this document (see Table 3 and Section 4). The circuit rider visits each community at least once every eight months, in a supply-driven approach.
- Representatives of other line agencies. Various line agencies have technicians who are supposed to visit communities for support on specific issues, e.g. officers of the Forestry Institute provide support on watershed management and health technicians provide support on issues related to hygiene promotion. As these only happen in an ad hoc manner, they are not included here.

- NGOs. The NGO Water For People has been very active in this municipality, supporting the development and rehabilitation of infrastructure but also organisational development of water committees and of the municipal water and sanitation unit. It plans to provide some monitoring in the future, but as the extent to which this happens is not known, it could not be included in the cost estimation.

Table 13: Combined ExpDS in the municipality of Chinda, Honduras

Post-construction support mechanism	Expenditure (US$/2010)	Notes
AJAM	685	AJAM levies a charge of 1 Lempira per family per month to cover its own costs of travels and purchase of materials. There is no remuneration to cover the time costs of AJAM members.
Municipal water and sanitation technical unit	3242	Expenditure on salary costs of the technician, his transport and office costs.
SANAA	1000	No registry exists of actual expenditure. This is based on an estimation of salary of the TOM and his transport costs.
Other line agencies	N/d	Not estimated as this is mainly ad hoc support and limited in nature.
NGOs (Water For People)	N/d	Will need to be estimated as the extent of this is not yet known.
Total	*4927*	
Total (US$/ rural inhabitant per year)	**0.90**	

Source: based on Smits 2011.

The table shows that the total expenditure currently is at least some US$ 0.90 per inhabitant. The value of support may be a bit higher if one adds the support from other line agencies and NGOs, but this is unlikely to increase the figure drastically.

Whether this level of support is adequate is debatable. There is an overlap in the type of support provided by the three levels in aspects such as technical support. There is, however, a qualitative difference in the way such support is given. The AJAM and municipality, for example, do not have structured tools and instruments to provide the support, whereas the SANAA follows tested technical tools. Besides, as previously mentioned, support is often demand-based and not based on a planned series of monitoring visits, limiting the capacity to anticipate problems. Therefore, each of the three mechanisms on its own would probably be inadequate, but the combination of the three starts to approach a reasonable level of support.

Consolidated data on levels of support in other parts of Honduras are not known, yet water committees can expect to receive a relatively high level of support. A growing number of municipalities have active AJAMs, and various programmes are supporting their establishment. Yet few rural municipalities have dedicated water and sanitation technical units, and the level of municipal support received in Chinda cannot be expected across the country. The same applies to the technicians of SANAA. In some areas, particularly where there are ongoing programmes, such support is given but, in other areas, operations are limited. Therefore, the figure of US$ 0.90 per rural inhabitant may be a bit below a reasonable level of support, a level of support that is not even provided across the country as a whole. It does show also that not all support costs need to be covered from one source. They can be made up of contributions from users (through their AJAM), local government and central government (through deconcentrated line agencies).

5.1.9 Comparing expenditure on direct support

Table 14 (see next page) provides a comparison of Expenditure on Direct Support from the various country cases. Where available, the costs of operational expenditure (OpEx) and capital maintenance expenditure (CapManEx) have been added for the sake of comparison. The country cases have been placed in order from lowest Expenditure on Direct Support to highest, and the figures are in US dollars (2010) per person per year per served population. For the sake of comparison, the typical type of service has been added as well as the country's income level, expressed per person and based on GDP (Gross Domestic Product), PPP (Purchasing Power Parity) and the income level according to the OECD/DAC list (OECD-DAC 2009). Figures have all been adjusted to 2010 levels.

The data illustrates two broad groups:

The first group comprises of cases where Expenditure on Direct Support costs is less than US$ 1 dollar per person per year. In all these cases, the institutional roles for direct support formally have been defined, but actual expenditure on activities is well below what seems to be required, as seen for example in Ghana. (Nyarko et al. 2011). In the case of STEFI in Mali, only some of the direct support activities are carried out, and they are mainly focused on monitoring (MEME/DNH, 2009). Towards the higher values of this group, a level of direct support is provided that starts to be reasonable, as in Honduras. The outlier in this group is the ASSA model in El Salvador, which has a very low cost but a good performance in terms of impact on service delivery (Kayser et al. 2010).

The second group consists of countries in which dedicated agencies not only provide direct support but also carry out capital maintenance activities, or at least act as an intermediary. The Chilean and Brazilian cases are examples of the second group, both with a similar level of per-person costs of some US$ 3.50 per person per year. Namibia and South Africa fall into the same group, though there direct support is combined with operation and maintenance activities. The figures for the actual direct support component of all support provided in those countries fall between US$ 1 and US$ 4/capita/year. These estimates represent about 20% of all support costs.

Given the limitations of the data, we must be careful in drawing firm conclusions. However, they do give a first indication of the order of magnitude that would be required for a meaningful level of direct support. The ideal level of recurrent support is likely to be in the order of magnitude of more than a dollar per person per year.

Table 14: Comparison of expenditure on direct support between various countries

Country	Institutional modality	Type of support provided	Expenditure on Direct Support (US$/ person/ 2010)	Rural water supply coverage % of rural population (WHO/ UNICEF, 2010)	Predominant types of services	GPD (US$/ person/ year) (2010), PPP (IMF 2010) and country category (OECD-DAC 2011)
Mozambique	District government.	- Contracting community organisation(s). - Contract management. - Monitoring.	0.0015	29	Borehole with hand pumps.	1.012 Least developed country.
El Salvador	NGO.	- Monitoring. - Technical assistance through circuit rider model.	0.25	76	Piped systems with household connections.	7,340 Lower-middle income country.
India (Andhra Pradesh)	Central government and state government.	- Contracting or organising with state level training institutions or organisations. - Outsourcing to NGOs. - Supporting donor initiatives. - Monitoring.	0.32	84	Mixed types of systems but, in general, basic to intermediate levels of service.	3,408 Andhra Pradesh: 1,180 (nominal). Lower-middle income country.
Mali	Central government and state government.	- Monitoring and reporting.	0.34	44	Borehole with hand pumps and small piped systems.	1,272 Least developed country.
Ghana	Combined support by district and centralised agency.	- Monitor WATSANs and performance and functionality of water systems. - Supporting districts and communities.	0.78	74	Mix of boreholes with hand pumps, and small piped systems.	2,725 Other low income country.
Honduras	Combined support by association, direct support by local government and deconcentrated agency.	- Technical support and advice. - Purchase of materials in bulk. - Review of financial and technical reports.	0.90	77	Piped systems with household connections.	4,194 Lower-middle income country.

Country	Institutional modality	Type of support provided	Expenditure on Direct Support (US$/ person/ 2010)	Rural water supply coverage % of rural population (WHO/ UNICEF, 2010)	Predominant types of services	GPD (US$/ person/ year) (2010), PPP (IMF 2010) and country category (OECD-DAC 2011)
Namibia	Central government through de-concentrated offices.	- Support in major maintenance.	Actual 1.12 – 2.76 Ideal: 2.59 – 5.49	88	Piped systems with standpipes; boreholes with hand pumps.	6,935 Lower-middle income country.
South Africa	Local government contracting specialised agency.	- Support in O&M.	1.69 – 3.93	78	Piped systems with standpipes.	10,518 Upper-middle income country.
Chile	Central government contracting regional utility.	- Technical assistance and advice to community-based service providers. - Supporting the identification and management of capital maintenance projects.	3.44	75	Piped systems with household connections.	15,040 Upper-middle income country.
Brazil	Association of community-based service providers.	- Joint operation, maintenance with community-based service providers.	3.63	84	Piped systems with household connections.	11,273 Ceará: 5,200 (nominal). Upper-middle income country.

NB: All figures adusted to US$ (2010), current costs.

5.1.10 Financing expenditure on direct support costs

The responsibility for financing direct support costs depends on the model of support. From the cases studied above, it is clear that the majority of these costs are covered through public finances. When a national or local government provides support, or contracts an agency for that purpose, it covers these costs from its own tax base. The only example found where users contribute to the costs of such an agency is the case of STEFI in Mali. In association-based models, users contribute to running costs via membership fees, which are covered indirectly through tariffs. As some of the associations are linked to (international) NGOs, they are also co-financed externally, as in the case of ASSA. However, only in the case of SISAR are the full direct support costs of an association borne by the users though tariffs. This is also the case for the AJAM in Honduras, but their costs represent only a fraction of all direct support activities.

External donors were found to play only a minor role in covering the costs of direct support, and then limited to the initial establishment of the support agents, as in the case of SISAR, STEFI and the municipal unit in Honduras. They may also contribute indirectly to the operational costs of districts as, for example, in Ghana or Mozambique.

Community-based management is often the preferred service provision option in rural areas because it is considered cheaper than public utilities or private operators. Indeed, tariffs to the users may be lower than under any of the alternatives, as may be the costs to the service authority. However, for a good comparison, direct support costs do need to be added to the balance as they represent an additional expenditure, for both the public sector and users, as opposed to when only an operational tariff which is paid under utility management.

This division in financing direct support costs may also explain the sharp difference between the two groups of countries. The upper-middle income countries all spend amounts of money that are in the required order of magnitude. The ones in the first group all fall into the group of least developed and low income countries, with the exception of Honduras. Looking back at Table 3 and 4, it is clear that other countries, where more structured mechanisms for direct support are applied, all fall in the middle income group of countries. As the recurrent costs of direct support are not insignificant, and would have to come typically from public spending or from tariffs, it is clear that the opportunity to raise such funds is simply greater in middle income countries than in low and least developed countries. To put it differently, countries in the first group have less opportunity to cover recurrent support costs from tariffs and taxes. Countries in the second (higher spending) group also have higher levels of rural water coverage and often higher levels of service, typically piped systems with household connections. This means that they have less need to extend services to a non-served or underserved population and can instead invest in direct support.

5.2 Expenditure on indirect support

Consolidated data on indirect (macro-level) support costs is even more difficult to obtain. Table 15 (on next page) presents the average per person per year indirect support expenditure for Ghana, India and Mozambique as collected by WASHCost. Since exact data for indirect support expenditure in India is absent, the costs were estimated using some assumptions and expert opinion. Mozambique included data from the Rural Water Department (Departamento de Água Rural, DAR) and the Sanitation Department (Departamento de Saneamento, DES). WASHCost Mozambique also analysed the costs of three other departments: the Division of Planning and Control (Gabinete de Planificação e Controlo, GPC), the Department of Administration and Finance (Departamento de Administração e Finanças, DAF) and the Directorate of Human Resources (Direcção de Recursos Humanos, DRH). Since these three departments do not only deal with rural and peri-urban areas, a coefficient was applied, taking into account the weight of the sub-sector population. Other weighting factors are still being considered and the result could be to lower the figure for indirect support expenditure in Mozambique.

Table 15: Estimated average indirect support cost per person per year in US$ (2010) in Ghana, India and Mozambique[17]

Cost category	Ghana	India	Mozambique
Expenditure on Indirect Support (ExpIDS)	0.37	0.5	0.01

Indirect support expenditure in India and Mozambique is, according to the first analysis, higher than for direct support. Interestingly, the situation in Ghana is reversed; the average per-person per-year Expenditure on Direct Support is more than double that of indirect support costs. In Mozambique, preliminary analysis shows that expenditure on indirect support is ten times greater than Expenditure on Direct Support. This finding may partly reflect the extent to which decentralisation in these countries has taken place or has still to be completed. However, it also represents a cautionary note to underline the fact that these indirect support costs are a first attempt to quantify data that has rarely been investigated, for which there are no agreed sources and which is, therefore, cloudy.

17 Apart from the Ghanian figure that is based on Nyarko's study in 2011, cost country category ExpIDS estimates are part of the final research reports of WASHCost country partners in India and Mozambique. Both will be published in 2012.

6 Conclusions

Examples of direct and indirect support to rural water service providers (predominantly under various forms of community management) were examined for ten countries in Latin America, Africa and South Asia.

Of these, the most clearly defined and well-financed were found in middle income countries in Latin America (Brazil, Chile, El Salvador and to some extent Honduras) and Southern Africa (Namibia and South Africa). The mechanisms for providing direct support were clearly articulated in policy and implemented through (relatively) well-defined institutional arrangements. The mechanisms through which this was done differed and included the contracting of specialist agencies, such as private sector agencies, utilities and associations of community-based service providers. These all followed a supply-driven approach, in which some form of structured intervention allowed for the identification and treatment of potential problems at an early stage.

Where provision of direct support is seen as part of the functions of local government, as in Ghana, Mozambique and, to some extent, Honduras, such support is not provided systematically in practice. The main reason for this is lack of capacity and lack of dedicated resources. Local government in these countries is present in the water sector primarily as part of capital investment activities – typically financed by projects. In parallel to local government efforts, NGOs and others (including communities themselves) undertake ad hoc interventions – often to repair or rehabilitate water supply hardware that has already broken down. In other words, support is ad hoc, demand-driven and typically not preventative in nature in these poorer countries.

Indirect support seems to be more straightforward. Functions like planning and policy formulation, by their nature, are to be fulfilled by national level agencies and ministries. The capacity support function was found to be provided mostly through the deconcentrated offices of line ministries at province or departmental level, but there are big differences between the formal capacity support function and what happens in reality in each country. Associations of municipalities form another way of organising this component of indirect support.
Despite a growing body of case studies dealing with the provision of direct support to service providers, little data was found on the quantitative aspects of support. Neither the cost nor the impact of interventions has been systematically assessed.

Where costs data do exist, these need to be treated with caution as it is often aggregated in different ways in different countries – for example, sometimes it contains capital maintenance, sometimes it does not. Primary data collected through the WASHCost project in Ghana, Mozambique and Andhra Pradesh (India), while providing some insights, needs to be treated with caution as it has typically come from a single source and has proved difficult to verity. What is more, data collected typically relates primarily to budget allocations rather than to actual expenditure. No cost data was available from the private sector. It is therefore helpful to first treat data as an indication of the order of magnitude of expenditure on direct support. For detailed planning, other types of data is needed, including cost models, as in the case of Namibia and South Africa where the type of system and distance, rather than average per capita costs, were taken into account.

Evidence for the impact of direct support on service delivery is largely anecdotal, and negative in the sense that it narrates how lack of direct support leads to sustainability problems, rather than how the provision of direct support leads to better and more sustainable services. There are few statistics that describe the relationship between direct support and service delivery performance. However, where they do exist, they show a positive relationship.

A wide range of annual expenditure was identified for Expenditure on Direct Support (as shown in Table 16 on next page). All those countries with an annual Expenditure on Direct Support of less than US$ 1 per person per year reported that the relevant agencies were unable to fulfil their mandate. South Africa, Chile and Brazil on the other

hand, with an expenditure of between US$ 2 to US$ 3 per person, all reported reasonable levels of functionality, indicating that the expenditure was sufficient and the type of support, working. Modelled costs for Namibia also indicate a requirement in that order of magnitude.

Table 16: Annual expenditure on direct support in 10 countries in US$ (2010)

Case	ExpDS (US$/person/year)
Mozambique	0.0015
El Salvador	0.25
India (Andhra Pradesh)	0.32
Mali	0.34
Ghana	0.78
Honduras	0.90
Namibia	1.12-2.76 (actual) 2.59-5.49 (required)
South Africa	1.69-3.93
Chile	3.44
Brazil	3.63

Note: The figures for Namibia and South Africa are estimated percentages of all support costs.

Studies show that one reason for the apparent lack of impact from direct and indirect support where expenditure is low may simply reflect a threshold effect: put simply, not enough money is being spent to realistically expect an impact. These studies typically looked at the impact in a single country or area and no meta-analysis has been attempted.

Based on this, it can be suggested, tentatively, that expenditure of less than US$ 1 per person per year is insufficient to ensure reliable service delivery – and that expenditure above US$ 2 to US$ 3 per person per year is probably sufficient. The limited data available however, does not allow for stronger conclusions to be drawn at this point. It has to be noted that there is a danger in using cost per capita per person as a norm for planning as the factors driving support costs are not entirely, nor clearly based upon the cases studies covered by this paper. It is equally not possible to identify which types of direct and indirect support are most appropriate or indeed most cost-effective. Although it is worth noting that in all of the higher expenditure countries, support is not provided by local government but by dedicated agencies. More professional agencies, such as those seen in Chile and South Africa, are more expensive but also more effective. However, whichever arrangement is followed, the overriding message from this analysis is that support is not cheap, and it requires substantive funding to be effective. The ideal costs of direct and indirect support cannot yet be defined on the basis of these few cases, but it would probably be in the order of a couple of US dollars per person per year, which may represent a significant percentage of total life cycle costs of water services - particularly for rural point sources such as hand pumps. As seen in South Africa and Brazil, this may even be as high as 20-32%, though it appears to represent only 4-8% in the case of Chile's more sophisticated piped networks.

It is also clear is that the costs of direct support are borne largely by the public sector. The more successful examples are all fully financed by national or local government. Only the Brazilian example relies largely on user contributions through tariffs. Even association models, such as ASSA, are co-financed by external contributions. These case studies indicate that there might be some scope for co-financing between users and government; most likely, it will require a significant contribution from the public sector.

That provides an additional explanation for the difference between the two groups of countries. The countries where current Expenditure on Direct Support is below US$ 1/ person/ year are in the least developed or low income groups of countries. They simply lack the budget to fund recurrent costs, and the capacity of users to contribute to this is lower. Additionally, these countries have less coverage, and possible more pressure to dedicate water and sanitation budgets to investment in extending coverage by developing new systems, rather than by supporting existing services.

7 Next steps: providing effective and direct support to service providers

Based on the sample case studies looked at, a number of tentative suggestions can be made for the provision of direct support to rural water service providers.

Obtain a clear mandate for support: an essential first step for providing direct and indirect support is to identify who should undertake this role and the limits of their mandate. Identifying who should be responsible for providing support is not, of course, enough. However, without this first step, it is essentially impossible to make progress, and without clearly defined mandates, there is no realistic possibility of holding support agents to account for their actions (or lack of actions).

Provide sufficient (financial) resources: having identified who is going to provide what sort of support, it is essential to provide sufficient resources for them to fulfil their mandate. This starts with the human and material capacity, but ends with cash. Without a minimal level of investment, probably around two dollars per person per year, effective direct support cannot be provided. We recommend that further studies be done to identify the likely level of costs for direct and indirect support in those countries where expenditure is currently clearly too low. This may be done on the basis of modelling exercises where it is not possible to obtain empirical data.

Identify financial sources: where the cash comes from is a question that has to be answered at a country level. The case studies do show scope for user contributions through tariffs, but probably not to the full extent. Governments may need to provide the bulk of the costs of direct support.

A strong recommendation of this work is that potential financiers of capital investment in rural water services ask themselves whether finance for direct and indirect support expenditure is properly budgeted for and likely to be forthcoming. If the answer is no, they should accept that their investment is unlikely to be sustainable or to provide the envisioned level of service.

Ensure cost-effectiveness: Once organisations that provide direct and indirect support are clearly mandated and adequately financed (as they are in regions like Latin America and Southern Africa), the next priority is to create mechanisms to improve cost-effectiveness, for example through experimentation with different institutional arrangements, use of benchmarking and involvement of the private sector. This may entail activities such as developing appropriate budgets and cost models (as proposed for example in Namibia and South Africa), seeking synergy and complementarity between different direct support mechanisms (as in Honduras), optimising contract design for the provision of direct support services and use of competitive elements in awarding such contracts.

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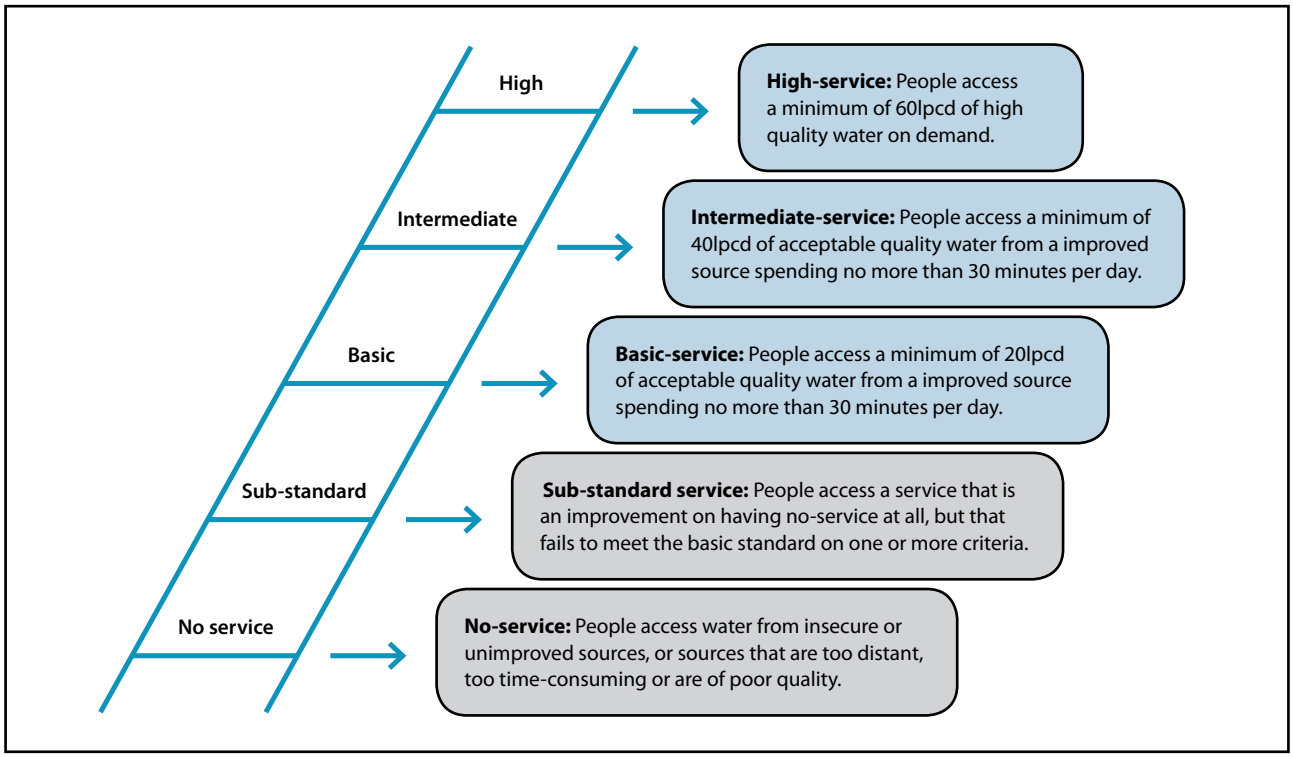
Annex 1: Service level ladder



Source: Moriarty et.al, 2011.