

6th Rural Water Supply Network Forum 2011 Uganda Rural Water Supply in the 21st Century: Myths of the Past, Visions for the Future
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Long Paper
Arrangements and cost of providing support to rural water service providers
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Abstract <i>This paper is about the costs of providing direct and indirect support to rural water service providers. It provides an overview of what such support entails, how this can be organised, what it costs, and how it can be financed. The paper is based on a desk review of existing literature in 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.</i> <i>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.</i> <i>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 more than US\$ 3 /person/year seems to be effective in those countries. Other countries, particularly in Africa were found to have levels of expenditure of less than US\$ 1 /person/year, and this was considered too low to be effective.</i> Keywords: direct support, indirect support, Expenditure Direct Support Costs (ExpDS), Expenditure Indirect Support Cost (ExpIDS), rural water supply systems, sustainability
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, which in rural areas are mostly community-based organisations (CBOs), although they may sometimes include private operators, local government or mixed arrangements. As access to rural waters supply increases, there is need to put more focus to ensuring that 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 will be 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 ² – they all point to the same thing:

¹ This paper is a part of the larger working paper by Smits S., Verhoeven J., Moriarty P., Lockwood H. and Fonseca C., called Arrangements and costs of support to rural water service providers, 2011, IRC International Water and Sanitation Centre

² 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

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 need for policies and legislation, which allows service providers to formally establish themselves; there is need for standard contracts and templates for their internal regulations; or, for national handbooks and guidelines on operation and maintenance.

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

1.1 Service providers and service authorities

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

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

For the service provision function, in most countries a range of options is available. The service authority can opt to provide services itself, (through a municipal department or municipal company), or choose to delegate this responsibility and contract an outside agency such as a community based organisation (CBO), private operator, public sector utility or company, or non-governmental organisation (NGO).

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 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.

1.2 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). Whittington et al. (2009) show how most communities in a study in Bolivia, Ghana and Peru, 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, as only that allows problems to be anticipated. The following types of activities are therefore considered part of direct support (based on Whittington et al. 2009, Lockwood and Smits, 2010 and Fonseca et.al, 2011):

'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.

- **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: e.g. 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 handpump mechanics may carry out certain repairs a CBO cannot do. 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 legal entity
- **Conflict resolution:** by moderating between different groups in the community
- **Support in capital maintenance:** supporting the community in identifying capital maintenance needs and helping identifying sources of funding for such works
- **Training and refresher courses:** of water committees and their staff (plumber, operator and administrator)
- **Provision of information:** This may go alongside training and refresher courses and may also consist of providing manuals, guidelines and other information material
- **Resource mobilisation:** Monetary or material support is normally not considered part of recurrent support. However, agencies providing such recurrent 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 recurrent 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.

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 to service providers and indirect support includes capacity support to service authorities.

1.3 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 (below) gives an overview of the life-cycle cost components.

Table 1: life-cycle cost components (Fonseca et. al. 2011)

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.

1.4 Arrangements for direct support

Various ways of classifying support arrangements can be found in literature (Edwards et al, 1993 and Lockwood 2002). This paper presents the various arrangements based upon the specific agency responsible to provide support (see Table 2). 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 2: Types of providers of direct support

Institutional arrangement for support agent	Definition	Examples
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 then usually done through local government technicians, such as handpump mechanics or promoters.	- Amongst others: Burkina Faso, Ghana, Mozambique and Uganda (Lockwood and Smits, 2011).
Central government or parastatal agencies	National government provides direct support from national level, or via deconcentrated offices, or sub-contracts a specialised agency to do so.	<ul style="list-style-type: none"> - 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).
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.	<ul style="list-style-type: none"> - 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 <i>Sistema Integrado de Saneamento Rural</i> (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 in an association at municipal level, called an AJAM (<i>Asociación de Juntas de Agua Municipal</i>). 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 also 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 handpump mechanics, who provide a mix of direct support and operation and maintenance activities.	<ul style="list-style-type: none"> - 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). - <i>Suivi Technique et Financiere</i> (STEFI) provides advice and assistance to service providers in Mali (MEME/DNH, 2009) - In Uganda individual entrepreneurs particularly handpump mechanics or area-based mechanics provide support.
Non-governmental organisations	In many cases support provided by non-governmental organisations is <i>ad hoc</i> . Still there are few examples where NGOs have specific direct support programmes.	- The <i>Asociación Salvadoreña de Servicios de Agua</i> (ASSA) offers direct support to 170 communities in rural El Salvador (Kayser et al., 2010).

From the overview above, the following variables in describing institutional arrangements for direct support have been identified:

- **Policy and institutional mandate.** The main variable is the policy and institutional mandate for direct support. Some countries have defined the need to support service providers clearly 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 institutional modalities through which this can be done.
- **Clarity on responsibilities.** In some cases, support agent responsibilities are very 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 a 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. The second would be 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 request 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 recurrent support running in parallel, (for example Colombia and Honduras). This is probably a reflection of the fact that the policy framework allows for and encourages direct support, but leaves it open how this is arranged. The advantage of that approach is that it allows for variations that reflect in country differences in 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 the case 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.

1.5 Arrangements for indirect support

Because of the nature of indirect support, the institutional arrangements for indirect support are

assigned to national level entities. Government ministries and agencies are tasked with responsibilities such as planning and policy formulation, or even regulation, if there is no independent regulator. Donors, NGOs, research institutes and other entities at national level may also contribute. Specific arrangements will differ from country to country, and are not considered so relevant for this study. However, there is one component of indirect support that we do consider merits more attention and that is 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 3 below provides an overview of the institutional arrangements for capacity support in a number of countries, based on Lockwood and Smits (2011).

Table 3: Capacity support arrangements 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 <i>communes</i> , but until very recently there has been no representation of the Water Department at this level. In addition, there is an institute dedicated to training of water technicians and professionals.
Colombia	There is no clearly articulated national strategy for capacity support. <i>Ad hoc</i> and <i>de facto</i> 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 <i>woreda</i> staff, but in practice this is also very <i>ad hoc</i> .
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 on-going in their region to which they provide operational and logistical support. Also, universities and NGOs support districts, on a project basis.
Honduras	Capacity support to municipalities is largely done on an <i>ad hoc</i> 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 <i>mancomunidades</i> , associations of municipalities in a specific geographical area.
India	There are block-level 'mother <i>Gram Panchayats</i> ' (local government unit) that are used to support <i>Gram Panchayats</i> in need. This is also done via capacity building and exposure visits. Strong <i>Gram Panchayat</i> in each district act as key resource centres for other <i>Gram Panchayats</i> in the district.
Mozambique	At provincial level the Department of Public Works and Housing is responsible for the capacity support role as well as coordination and supply chains, but 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	There is capacity support to the as service authority by different government agencies at national and regional level.
Uganda	Ministry of Water and the Environment has deconcentrated representation at 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.

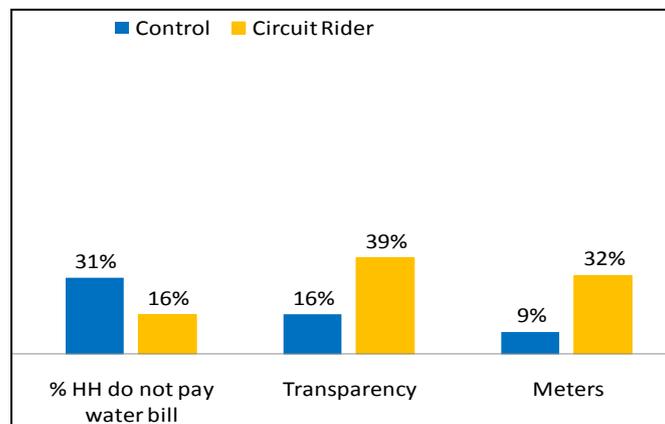
1.6 Benefits of direct support

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 the book-keeping, 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 the adequate level.
- Improving performance of service providers. In some cases, support can go beyond merely maintaining a certain level of service, but even 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 book-keeping 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 that 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 crucial gaps in the life cycle of many services, support in addressing this phase is necessary to ensure sustainability of services. Support can help identify and plan more systematically when capital maintenance is due. In South Africa and Chile, that is indeed one of the main objectives.

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 through 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 sustainability of rural water services improve 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 regularly receiving support from a circuit rider compared to the 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) did not find a statistically significant association between a village receiving a technical support visit (to help with repairs or maintenance) and having a working water system in a study in Bolivia, Ghana and Peru. However, in the same study, there did appear to be a correlation between performance and non-technical support visits (Whittington et al., 2009).

2 Methodology

This paper is based on a desk review of existing literature in seven countries and an analysis of primary cost data collected by the WASHCost project in Andhra Pradesh (India), Mozambique and Ghana during 2010 and 2011³. As there are no comprehensive global or regional datasets on expenditure on direct and indirect support, for the literature review a case study approach was taken, whereby we focused on those cases for which some data on expenditure on direct support costs were available, and which we then presented in a comparable format.

2.1 Analysis framework

There are not many established methodologies analysing the costs of water and sanitation service delivery to see if the investments made are delivering what it is expected. To address this gap the WASHCost project has developed a framework for analysis of costs and service level information which is called the Life-Cycle Cost Approach⁴. This paper makes use of this analysis framework to examine the expenditure on direct and indirect support.

2.2 How we collected the data

To collect primary cost data the WASHCost research team has involved key stakeholders from the implementing agencies from the beginning of the study and a consultative process was adopted to design the methods and tools for undertaking the study with the main objective of assessing the costs and the level of service delivered. The findings are based on surveys and data collection at

³ 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.

⁴ As part of the life-cycle cost approach a methodology has been developed for costing sustainable water, sanitation and hygiene (WASH) services by assessing life-cycle costs and comparing them against levels of service provided. Life-cycle costs refer to the costs of ensuring adequate water, sanitation and hygiene (WASH) services to a specific population in a determined geographical area - not just for a few years but indefinitely. The approach can be used by governments, investors, donors and users to plan for sustainable services by collecting life-cycle costs, developing and maintaining their own cost databases and incorporating life-cycle costs into management information systems and decision-support tools.

households, district, regional and national level – reflecting many hydro geological and socioeconomic contexts. The surveys have been extensive, but the collection of valid cost information has been limited. There is no claim that these findings are representative on a national level. Nevertheless, they can be considered to be broadly indicative of conditions found nationally in Ghana, Mozambique and the State of Andhra Pradesh in India.

2.3 Main issues

Not only is very little data available on the impact of direct and indirect support, but data on expenditure on support is patchy or non-comparable. Reasons for this may include:

- There are still few consolidated support mechanisms in place in the first place. Arrangements outlined in this paper are exceptions rather than the norm.
- Even where direct and indirect support arrangements exist, they may be seriously under-resourced. For example, in many countries local government may be tasked to provide 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 service levels being supported, the topography and geographic area covered, densities and disperse nature of populations being attended to. Arrangements may also differ in the functions they include in their package leading to the different examples having different cost levels.
- Because of different institutional arrangements, the way of accounting for costs is different. 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 mixed in with expenditure on other cost categories. Some of the cases to be presented below are examples where one agency not only provides direct support, but also carries out maintenance or capital maintenance. In its accounting it may lump these cost categories together.

3 Results and discussion

Table 4 (below) provides a comparison of the 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 the 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), purchasing power parity (PPP) 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:

A first group of cases, where expenditure on direct support costs is less than US\$ 1 dollar per person a year. These are all cases where the institutional roles for direct support are formally defined, but where the actual expenditure for these 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 a part of the direct support activities are carried out, mainly focused on monitoring (MEME/DNH, 2009). Towards the higher values of this group a level of direct support is provided that starts to being 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 those countries where there are dedicated agencies for direct support, but which 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 dollars per person per year. Namibia and South Africa fall into the same group, but have higher costs, though in those cases, it is more difficult to isolate the direct support expenditure from the capital maintenance costs. However, they do give an important insight into what the total costs of these cost categories are.

Given the limitations of the data, we must be careful in drawing firm conclusions. Yet, they 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 rather likely to be in the order of magnitude of more than a dollar per person per year.

Table 4: 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	<ul style="list-style-type: none"> - Contracting community organisation (s) - Contract management - Monitoring 	0.0015	29	Borehole with handpumps	1,012 Least developed country
El Salvador	NGO	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 subcontracting specialised agency	<ul style="list-style-type: none"> - Monitoring and reporting 	0.34	44	Borehole with handpumps, and small piped systems	1,272 Least developed country
Ghana	Combined support by district and centralised agency	<ul style="list-style-type: none"> - Monitor WATSANs, and performance and functionality of water systems - Supporting districts and communities 	0.78	74	Mix of boreholes with handpumps, and small piped systems	2,725 Other low income country
Honduras	Combined support by association, direct support by local government	<ul style="list-style-type: none"> - Technical support and advise - Purchase of materials in bulk - Review of financial and 	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)
	and deconcentrated agency	technical reports				
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
Namibia	Central government through deconcentrated offices	Support in major maintenance	Combined CapManEx and ExpDS: Actual 4.88-11.27 Ideal: 12.01-23.89	88	Piped systems with standpipes; boreholes with handpumps	6,935 Lower middle income country
South Africa	Local government contracting specialised agency	Support O&M	Combined OpEx and ExpDS 5.24- 9.94	78	Piped systems with standpipes	10,518 Upper middle income country

NB: All figures adjusted to 2010 levels

3.1 Expenditure on Indirect Support (ExpIDS)

Consolidated data on indirect (macro-level) support costs is even more difficult to obtain. Table 5 below presents the average per person per year indirect support expenditure for Ghana, India and Mozambique as collected by WASHCost.

Table 5: Estimated average indirect support cost per person per year in US\$ (2010) in Ghana, India and Mozambique

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

Source: WASHCost India (2011, forthcoming), WASHCost Ghana (Nyarko et.al, 2011), WASHCost Mozambique (2011, forthcoming)

Because of the absence of exact data for indirect support expenditure in India, 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.

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 almost a factor of ten greater than the direct support expenditure. 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.

4 Conclusion

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 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, in these poorer countries support is ad-hoc, demand driven and typically not preventative in nature.

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 deconcentrated offices of line ministries at province or departmental level, but there are big differences between countries between the formal capacity support function and what happens in reality. Associations of municipalities form another way of organising this component of indirect support.

Despite a growing body of case-studies dealing with provision of direct support to service providers, little data was found on the quantitative aspects of support. Neither the costs nor the impacts of interventions have been systematically assessed.

What cost data does exist needs to be treated with caution as it is often aggregated in different ways in different countries – for example sometimes containing capital maintenance and sometimes 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 verify. 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.

Evidence for 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 relation between direct support and performance in service delivery, but where they do exist, they do show a positive relationship.

A wide range of annual expenditure was identified for expenditure on direct support. 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. Chile and Brazil on the other hand, with expenditure of above US\$ 3 per person all reported reasonable levels of functionality – indicating that the expenditure was sufficient and the support working. This was also the case for South Africa, although here the cost indicated also includes capital maintenance expenditure.

One reason for the apparent lack of impact from studies of direct and indirect support where expenditure is low may, therefore, simply reflect a threshold effect: put simply, not enough money is being spent to be able to realistically expect to see impact. These studies

typically looked at 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 above US\$ 3 a person is probably sufficient. The limited data available does not allow stronger conclusions than this to be drawn at this point. 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 professionalised agencies, such as seen in Chile and South Africa are more expensive, but also more effective.

However, whichever arrangement is followed, the over-riding message from this analysis is that support is not cheap, and 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 probably it will be in the order of magnitude 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 handpumps. As seen in Brazil and South Africa, this may even be as high as 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 via 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 1 US\$/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. Besides, these are the countries where coverage is lower, and there may be more pressure to dedicate water and sanitation budgets to investment in extending coverage by developing new systems, rather than by supporting existing services.

5 Recommendations and next steps

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

Clarity of 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).

Sufficiency of (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 are 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.

Identifying financing sources: where the cash comes from is a question that has to be answered at the country level. The cases do show scope for user contributions through tariffs, but probably not to the full extent. Government 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 are 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.

Ensuring cost effectiveness: Once clearly mandated and adequately financed organisations to provide direct and indirect support are in place (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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