WATER AND SANITATION PROGRAM: **WORKING PAPER**

Sustainable Services through
Domestic Private Sector Participation

Financing Small Piped Water Systems in Rural and Peri-Urban Kenya

September 2011

Public Disclosure Authorized

wsp water and sanitation program
PPIAF PUBLIC-PRIVATE INFRASTRUCTURE ADVISORY FACILITY
GPOBA The Global Partnership on Output-Based Aid
THE WORLD BANK

This paper is conceived as a work in progress to encourage the exchange of ideas about development issues. For more information, please email Rajesh Advani at wspaf@worldbank.org or visit our website at www.wsp.org.

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Acronyms and Abbreviations

AMCOW	African Ministerial Council On Water
GPOBA	Global Partnership on Output-Based Aid
K Shs	Kenya Shillings
CWP	Community Water Project
DCA	Development Credit Authority
DfID	UK Department for International Development
DGIS	Netherlands's Directorate-General for International Cooperation
IFC	International Finance Corporation
MDG	Millennium Development Goal
MWI	Ministry of Water and Irrigation
NWCPC	National Water and Conservation Pipeline Corporation
OBA	Output Based Aid
PAC	Project Audit Consultant
PDF	Project Development Facility
PPIAF	Public-Private Infrastructure Advisory Facility
SO	Support Organization
SPA	Service Provision Agreement
WAB	Water Appeals Board
WASREB	Water Services Regulatory Board
WRMA	Water Resources Management Authority
WSB	Water Services Board
WSP	Water Services Provider
WSP-Af	Water and Sanitation Program – Africa
WSTF	Water Services Trust Fund

Executive Summary

Sector background and program overview

Community run small-scale water systems play a critical role in supplying consumers in the peri-urban and rural areas of Kenya. The importance of these providers has been recognized in recent reforms of the sector, which provide for a legal and regulatory framework for community based organizations to engage in water service provision outside major towns and cities. However, these providers often experience problems that hinder their ability to provide reliable services to consumers and expand their coverage. Their most notable problems are limited management capacity, low operating revenues and lack of access to finance. Public funds to improve these systems are largely absent, as these resources are allocated to developing new water sources and systems in very low-income areas with poor access. Alternative financing mechanisms therefore have a crucial role to play in supplementing the sector budget for rural water. At the same time, domestic banks do not typically finance investments in water infrastructure because of the long term nature of infrastructure finance and the perceived lack of creditworthiness of small-scale water providers.

To address these challenges, a program to finance investment in community-managed piped water systems was initiated in central Kenya in 2006. Under the program, investments of up to K Shs 12.5 million (US $ 160,000) in a community water project are pre-financed with 20 per cent equity from the community and 80 per cent debt from K-Rep Bank, a commercial bank specialized in microfinance lending. The loans have a grace period of one year for construction, followed by a five-year loan repayment period, and are priced at market interest rates. On completion of construction and on the achievement of pre-determined output targets, measured by an increase in the number of water connections and an increase in revenue from water sales, an output-based aid subsidy of up to 40 per cent of the total project cost is paid to the community. The subsidy goes towards reducing the principal loan amount, thereby ensuring that tariffs remain affordable.

In the pilot phase of the program, 80 million Kenya Shillings (K Shs) (US $ 1-million) was lent to ten community water projects, and with additional equity from the communities, this financed K Shs 100 million (US $ 1.3-million) of infrastructure. By November 2010, all ten community projects had completed implementation and received K Shs 35 million (US $ 450,000) in output-based aid subsidies, and moved into the operational loan repayment phase of the project cycle. The operating and financial performance of the ten projects has improved significantly, with 36,000 consumers being served as of November 2010. This increased the coverage in the service areas covered by these projects from 29 per cent to 41 per cent. The monthly volume of water production increased from 38,000 cubic meters to 85,000 cubic meters and the revenue collection tripled from K Shs 1.3 million (US $ 17,000) to K Shs 3.7 million (US $ 50,000) per month. The projects have been able to meet debt service costs from revenues generated from water sales.

The successful pilot is being scaled up with additional subsidy funds of K Shs 180 million (US $ 2.2 million) from the European Union's water facility; and K-Rep Bank has committed a revolving credit facility of K Shs 250 million (US $ 3.2 million) to financing investment in water projects countrywide.

Lessons from pilot project

A number of valuable lessons learnt from the pilot, will be useful in the scale-up phase and to other projects using a similar approach to finance small water systems.

1) The lender should have the in-house credit-appraisal skills typically used in project finance and should be prepared to lend to projects without tangible collateral. This is because borrowers generally do not have a financial track record or assets that support asset-backed lending. The lender needs to appraise a community's ability to meet its operating and finance costs from future water sales. This requires an understanding of water utility operations, cost and tariff structures, water-supply capacity and

constraints, and the nature of demand for paid water. The typical community water project does not have collateral to support asset-backed lending so the principal collateral that a borrower can offer is cash flow from water sales, which will be generated from the investments financed by the lender. The credit analysis must therefore establish financial viability from this perspective. It is the borrower's exclusive right to supply water to customers within the project area that provides security to the lender. It allows the lender to require a change in management to secure debt service payments in the event of default.

2) The willingness and ability to pay for water must be evident among the consumers being served by the project. This is what drives the cash flows needed to repay the loan. While the program targets communities in low-income areas, consumers with individual water connections in projects borrowing under the program pay an average monthly water bill ranging from K Shs 600 to K Shs 1,500 (US $ 7 to US $ 18), depending on the operating and debt service costs of each project. Residents who cannot afford individual connections benefit by being able to purchase water from point water sources (kiosks) installed by a project at lower tariff rates than those prevailing in the area prior to the project. In appraising the financial viability of a project, the lender must therefore be able to establish that consumers in the project area are willing and can afford to pay monthly water bills, and that demand for water from the project area is not eroded by competing water supply sources. Projects financed under the program must be able to generate enough cash from water sales to cover operating costs and complete their debt service payments within the maximum loan repayment period of five years.

3) It is critical to have a pool of capable companies providing business development services to support communities financed under the program. Projects should be pooled to enhance their attractiveness to a specialized operator and qualified operators should be encouraged to undertake design-build-operate contracts. Experience from the pilot project suggests that communities lack the skills and experience needed to develop, implement and manage water projects efficiently. Private consulting firms were hired to develop bankable loan applications on behalf of the communities and to supervise the projects during the implementation phase. During the post-implementation loan-repayment phase of the project cycle, the majority of individual projects financed under the pilot do not appear to generate sufficient free cash, after operating and debt service costs have been paid, to be able to contract with a private operator to manage their systems. However, where a private operator has been employed to manage a project, the financial and operational performances of the project have been significantly better than those managed by communities.

To improve the financial viability of community water projects, the projects should be amalgamated and specialized operators assigned to design, build, and then operate the systems under concession-type contracts for the duration of the implementation and loan repayment period. To bring economies of scale and scope to individual community water projects, each operator would need to manage a number of projects in geographical proximity under design-build-operate contracts. However it should be ensured that there are enough operators in the program to promote competition. This arrangement will provide the necessary motivation for an operator to invest resources into making the implementation and management of small piped water systems a viable business. Such contracts inherently contain incentives for an operator to ensure that the systems built are functional for the term of the five-year loan, thereby improving their sustainability. If specialized operators are willing to take financial risk, the lender could consider lending to the operator rather than to the community, and in doing so pass on the financial risk to a professional firm.

4) Legal recognition of community water providers is essential to access market finance. A key constraint that is affecting the scale-up of the program is the perceived lack of willingness on the part of the Water Services Boards (WSBs) (agencies that regulate community water projects) to license communities to engage in water services delivery. The services boards should recognize that a lender will not lend to a project that does not have the exclusive legal right to supply water in its service area because this is fundamental to a project's ability to generate cash to repay debt. Licensing communities to build and operate

the infrastructure to be created under the program and to charge a cost-recovery tariff to consumers will provide security to the lender.

5) Projects should structure interim disbursement of subsidy funds in order to achieve cost savings. Under the current program structure, disbursing the output-based aid subsidy at the end of the implementation phase increases the total project cost by 15 per cent to 18 per cent because of interest accrued during construction. It also increases the risk of default if construction cannot be completed within one year. While it is important to link the subsidy disbursement to outputs to ensure that specific project objectives are met, structuring a program to disburse partial subsidy payments on achievement of interim outputs would reduce project costs and the risk of default, thereby providing additional comfort to the lender. Programs considering a similar approach should therefore consider structuring outputs to mitigate risk to the lender and reduce project costs.

Conclusion

With the considerable public financial resources available in the water sector, the size of the market for a loan-linked product is likely to be limited over the medium term. However, public funds are not sufficient to build the infrastructure required to effectively meet the demand for water services; hence the increasing focus on cost-recovery tariffs and the considerable initiatives underway to access supplementary financial resources from the private sector. In its pilot phase, the program has shown that output-based aid subsidies can be leveraged by two and half times to secure co-financing from the private sector in order to expand water supply infrastructure in peri-urban and rural areas. The role of subsidies in improving affordability where market financing is used to pay for infrastructure is critical. This is because it may not be practical to expect full recovery of operational and capital costs in a sector that has traditionally relied on public funds to finance infrastructure. Furthermore, in securing its interest, the commercial bank provides a level of oversight to management that is not typically found in projects financed with grants and soft loans. This means the operational life of systems financed under this approach is likely to be significantly greater than that of systems financed with government or donor grants. The management structures put in place during the loan-repayment period should enable the communities to optimize the operations of the systems so that they continue to function efficiently in the post-loan phase, when significant free cash flow is likely to be generated and could be leveraged to further expand service delivery.

I. Introduction

In Kenya, community run small-scale water systems play a critical role in supplying and improving access to water services in peri-urban and rural areas. This is largely because municipally-owned water services providers currently supply only 25 per cent of the country's population and 39 per cent of the population within their service areas[1]. Historically, under a centralized institutional structure, a large number of communities were tasked with managing and recovering the operating costs of small piped water supply systems installed by government. The importance of these community providers has been recognized in recent reforms of the sector. These provide for a legal and regulatory framework for community based organizations to engage in water service provision outside major towns and cities. However, a host of problems complicate efforts to support these community organizations to become reliable service providers, including their limited management capacity, low operating revenues and lack of access to finance. Efforts to license and regulate the operations of community water projects have been hampered by the slow implementation of policies aimed at decentralizing water service delivery to communities in areas not covered by municipal water services providers.

In spite of considerable liquidity within the Kenyan financial sector, domestic banks do not typically finance investments in water infrastructure because of the long-term nature of infrastructure finance and the perceived lack of creditworthiness of rural and peri-urban small-scale water providers. Efforts to license and regulate the operations of community water projects (CWPs) have been hampered by the slow implementation of policies aimed at decentralizing water service delivery to communities in areas not covered by municipal water services providers.

To address these challenges, an innovative program that blends commercial debt and equity with subsidies to finance investments in community-managed piped water systems was initiated in central Kenya in 2006. The program aims to give community-based water providers access to medium-term local currency finance for infrastructure development and to expand the role of private operators in the development and management of small piped water systems. It also aims to make community-run projects bankable to suit the lending criteria of domestic banks. In its pilot phase, the program has shown that donor resources can be leveraged to secure co-financing from the private sector. As a result, the program is now being scaled up nationally to target an investment of K Shs 500 million, equivalent to US $ 6 million, in 50 community water projects over a five-year period. This paper discusses the structure of the program and the results achieved under the pilot phase. It shows how the program, within the institutional set-up of Kenya's water sector, addresses key impediments that typically inhibit private sector lending to rural water projects.

[1] Source: Water Services Regulatory Board data for 2009/10.

II. Overview of the Market for Small Piped Water Systems

Coverage and market for water services

Out of a population of 39 million,[2] 59 per cent of Kenyans have access to an improved water supply through piped systems, point sources and rainwater harvesting systems. In rural areas, where access is estimated at 52 per cent,[3] 3.7 million people representing 12 per cent of the rural population are served by piped household connections.[4] This is significantly higher than the sub-Saharan Africa average of 5.9 per cent of rural households being supplied by individual connections.[5] It suggests that there is demand for piped water in rural Kenya. When sector reforms were initiated in 2000, there were some 925 rural piped systems in Kenya.[6] Three hundred and fifty-five of these were operated by communities under an autonomous arrangement with the Ministry, 555 small systems were operated by the Ministry of Environment and Natural Resources, and 14 larger systems by the National Water Conservation Pipeline Corporation. The Water Act of 2002 provides for the management of government run small systems to be handed over to community water service providers (WSPs) through contracts with Water Services Boards. Currently there are about 1,200 rural piped water systems with household connections that are run by communities.[7] This is in line with expected growth since 2000 when there were an estimated 925 systems. It supports current coverage data for piped water access, given that an average system serves about 3,000 people and that piped systems are estimated to serve a population of 3.7 million.

However, much of the piped water supply infrastructure is run down as a result of years of under-investment in maintenance. Leaking distribution and storage systems and inadequate water sources are a common feature of piped systems throughout the country. Metering is virtually non-existent and little is known about the production and distribution capacity of these systems.[8] A survey conducted by the Ministry of Water and Irrigation in 2008 estimated that only 58 per cent of rural water systems were functional.

The lack of functional water supply infrastructure has led to excessive prices for domestic water in peri-urban and rural areas surrounding major towns, where residents pay between K Shs 100 and K Shs 250 (US $ 1.30 – US $ 3.30) per cubic meter for water sold by informal providers at point sources and delivered door to door by water vendors. Yet water sold through piped household connections is much more accessible and is almost always cheaper than that sold at point sources. For example, the average price charged by urban water companies in the towns of Nakuru, Embu, Kericho and Malindi during 2010 was K Shs 62 (US $ 0.83) per cubic meter. The rural population being served by boreholes and standpipes is estimated at 4.6 million, and is a strong source of latent demand for new piped water systems. Box 1 describes the experience of a peri-urban community in establishing a new piped system to supply water to residents for domestic use.

[2]Source: World Development Indicators for 2009 (The World Bank).

[3]Source: Joint Monitoring Project data for Kenya 2008.

[4]Source: Kenya Country Status Overview 2 (2010 WSP-Af for the African Ministerial Conference on Water - AMCOW) based on data from the Sector Investment Plan (MWI – Jan 2009).

[5]Source: Country Status Overview 2 Synthesis report for sub-Saharan Africa; WSP-Af for AMCOW; 2010.

[6]Source: Kenya review of the water and sanitation sector; World Bank report #22182; May 2001.

[7]Small-scale water scheme survey and market assessment for Kenya, April 2011; IFC Sanitation and safe water for all programs.

[8]Source: Analysis of Kenya Country Status Overview 2; WSP-Af for AMCOW; 2010.

Box 1. Establishing a new piped water system in a Kenyan community

Kiamumbi Water Project was developed to meet the demand for piped water in a peri-urban community. The project draws water from a dam built by a farmer's cooperative society in the 1970s to irrigate about 700 acres of coffee. As coffee farming became unprofitable due to low market prices, the members of the society moved into small-scale dairy production, and eventually began sub-dividing and selling land for residential use while continuing to carry out intensive farming activities. This reduced the demand for water for irrigation and introduced the idea of using the dam to supply households with water for domestic and livestock use, as residents then obtained water from vendors and shallow wells. The community borrowed K Shs 10 million (US $ 135,000) from K-Rep Bank, under the pilot program supported by the Global Partnership on Output-Based Aid (GPOBA), the Public-Private Infrastructure Advisory Facility (PPIAF) and WSP-Africa, to finance a system that would supply potable water to 750 households. The project was completed in August 2009 and the community contracted a private operator to run its system on a three-year management contract. The project generates monthly revenues of K Shs 760,000 (US $ 10,000) from the sale of 9,000 cubic meters of water at an average rate of K Shs 82 (US $ 1.05), and makes timely debt service payments of K Shs 140,000 (US $ 1,750) to K-Rep Bank every month.

Capital requirements and sector financing

Kenya has a Millennium Development Goal (MDG) target to connect 73 per cent of the population to improved water supply by 2015. For this to happen, rural water coverage would have to increase from the current 52 per cent to 66 per cent. If the current technology mix is maintained, 5.3 million people will have access to piped household connections in 2015. An investment in infrastructure of K Shs 16 billion (US $200 million) will be needed to connect an additional 1.6 million people to the 3.7 million in rural areas that currently access piped water (assuming a per capita cost of US $ 125)[9]. This estimate is based on a unit cost model for water systems in Kenya that was developed by the Water and Sanitation Program – Africa (WSP-Af) in 2005. It assumes a consumption rate of 50 litres per capita per day, which is the average consumption for projects analysed under the program so far. Further investments of K Shs 23 billion (US $ 290 million) in alternative technologies and of K Shs 31 billion (US $ 390 million) in replacement and rehabilitation are required between 2010 and 2015.[10] This means to reach the MDG targets the total investment needed in rural water is K Shs 70 billion (US $ 900 million) or K Shs 14 billion (US $ 175 million) per annum.

The water sector in Kenya has traditionally relied upon government and donor resources to fund infrastructure development and in some cases to subsidize operating and maintenance costs as well. Private sector equity and debt from commercial banks currently play a negligible role in financing the sector. The annual water sector budget in 2010 amounted to K Shs 32 billion (US $ 420 million), of which K Shs 12 billion (US $ 160 million) came from the Government of Kenya budget and K Shs 20 billion (US $ 260 million) from appropriations in aid, either in the form of soft loans guaranteed by the Treasury or grants. Eighty-two per cent of the budget goes towards development expenditure, while the balance goes towards recurrent sector expenditure.[11] Planned annual government funding for the rural water segment is estimated at K Shs 7 billion (US $ 90 million) and an additional K Shs 1.9 billion (US $ 25 million) is expected to come from development partners[4], which exposes a considerable finance gap of K Shs 5 billion (US $ 60 million) yearly. Moreover, these funds are generally allocated to developing new water sources and systems in low-income areas with poor access.

[9]MWI, "Assessing unit costs for water supply and sanitation services in Kenya"; Average of Kenya costs for piped system with borehole source applied at a supply rate of 40 l/c/d and indexed to CPI: Dec. 2005 = 185.18, Dec. 2010 = 343.13.

[10]Source: Kenya Country Status Overview 2; WSP-Af for AMCOW; 2010.

[11]Source: MWI presentation on sector finances, 2010.

Hence funds to improve existing systems are largely absent, leaving communities that manage existing systems with no alternative but to finance rehabilitation using their own resources. Alternative financing mechanisms therefore have a crucial role to play in supplementing the sector budget. Box 2 shows the example of a CWP that used private equity, debt and grants to carry out a system upgrade that resulted in considerable improvement in service delivery and reliability of supply.

Legal and policy framework

Major policy reforms initiated by the Government of Kenya in the late 1990s were aimed at improving the operating and financial performance of water utilities, in order to increase access and achieve better service standards in both urban and rural areas. The reforms are underpinned by the Water Act of 2002, which provides for a diminished role for government in implementing and operating rural water projects and increased participation for communities and the private sector in these activities. Outside major towns and cities, the Act provides for independent community based organizations to be contracted by Water Services Boards (WSBs) to undertake water service provision within the jurisdiction of the services boards. The decentralized institutional set-up proposed by the Act is described in Box 3.[12]

The authority for a community to operate as a rural WSP is either granted through a Service Provision Agreement (SPA) with its regional WSB – for systems that produce more than 2,500 cubic meters of water per day – or through an annual license issued by the WSB for "very small" systems that produce less than 2,500 cubic meters of water per day.[13] The SPA is a management contract that assigns the water services operating mandate to the provider, giving it a monopoly over the supply of water within its area of operation. The SPA defines the operational and performance characteristics between the two parties, and stipulates any fees that are payable by the WSP to the WSB and the regulator. The Service Provision Agreement is subject to regulatory oversight by the Water Services Regulatory Board (WASREB). While a standard Service Provision Agreement for an urban WSP is a complex legal document, various simplified forms are used for community projects. These aim to give the community the legal right to supply water and they provide for its operations to be taken over if the community fails to meet its obligations, of which debt service is the most critical to the lender. If a WSP fails to meet its obligations under the SPA, its WSB may step in and take control of any existing assets used in the provision of water services and reassign its mandate to another operator. In the case of very

Box 2. Financing a new water source and system upgrades at a Community Water Project

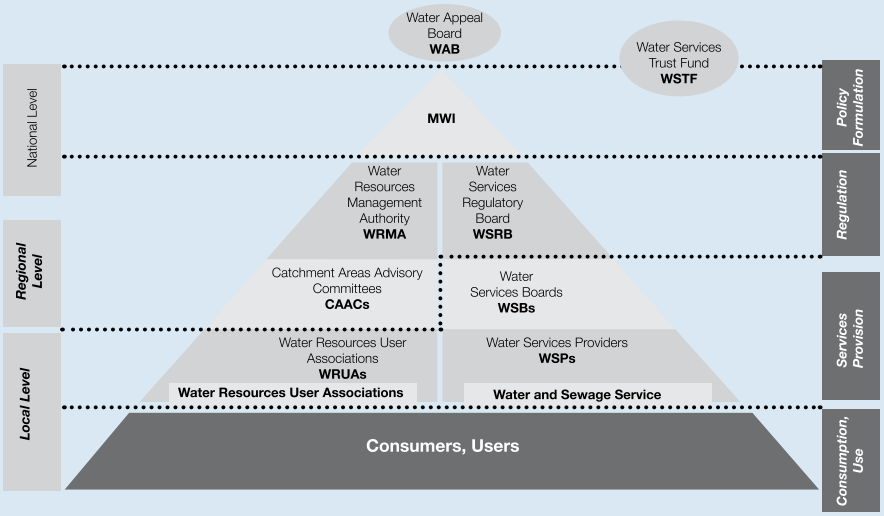
Karaweti Water Trust is a small piped water scheme developed in the 1970s. By 2005 the scheme was supplying water to 595 households and a number of schools and churches in a 15 km2 area. Supply was erratic, water sales were not metered, and customers were charged a flat monthly rate for water. The project sought to increase membership and revenue collection by providing more reliable water services. Between 2008 and 2009, the Trust developed a project that installed a new borehole to supplement existing supply and customer-level meters for all consumers. The project was financed with equity from the community, a loan of K Shs 4 million (US $ 54,000) from K-Rep Bank, a grant of K Shs 2 million (US $ 27,000) from the Global Partnership on Output–Based Aid (GPOBA) and technical support in project development and implementation from WSP-Af. This enabled the Trust to increase its number of connections by 38 per cent, to 825, and boosted average monthly revenue by 90 per cent, to K Shs 440,000. A survey conducted after implementation verified that the use of supplementary unsafe water sources had ceased because the project was able to provide adequate water services. Reliability of water service increased tremendously, with 87 per cent of customers receiving water 7 days a week: up from 8 per cent before the investment.

[12] The Water Act 2002 is currently being reviewed to harmonize it with constitutional changes brought about in the new Constitution of Kenya of 2010.

[13] WASREB categorizes WSPs that produce less than 2,500 cubic metres per day as "very small".

Box 3. Institutional setup of the sector under the Water Act of 2002

The Act provides for a clear separation in responsibilities for policy, regulation and service provision, as captured in the diagram.



Role of the key agencies:

The Ministry of Water and Irrigation (MWI) develops legislation, formulates sector policy and manages coordination between the different agencies.

The National Water and Conservation Pipeline Corporation (NWCPC), formerly responsible for the direct operation of large utilities, acts as the Ministry's implementing agency and is engaged in activities such as the construction of dams and pans for water harvesting and drilling of boreholes funded by the Government development budget.

The Water Resources Management Authority (WRMA) is responsible for the management and protection of water resources and for licensing the extraction of water from all sources. Six regional Catchment Area Advisory Committees advise the WRMA on resource management at the catchment level.

The Water Services Regulatory Board (WASREB) is the overall industry regulator that oversees the implementation of policies and strategies relating to the provision of water and sewerage services. The agency approves rates, sets rules and licenses and monitors the performance of WSBs and WSPs.

Water Services Boards (WSBs): Eight regional WSBs are mandated to provide water services by investing and maintaining water-related assets and appointing water service providers to operate these assets under contract. The Act provides for all government owned water and sewerage assets formerly under the control of the Ministry of Environment and Natural Resources, the thirteen urban councils and the NWCPC to be transferred to the WSBs.

Water Service Providers (WSPs) are companies contracted by WSBs to provide water and sewerage services to consumers in urban areas, and community water projects licensed to provide services to consumers in rural areas.

The Water Services Trust Fund (WSTF) is a conduit for government and donor investment in areas populated by low-income earners without access to clean water.

small providers, an annual license may be issued and regulated by the WSB without oversight from the WASREB. The SPA or annual license therefore allows a WSP to operate as a regulated independent business unit.

The 2002 Act also brought about significant tariff reform in the sector, aimed at ensuring operating and capital cost recovery, and hence the financial sustainability of WSPs. The use of rising bloc tariffs and the metering of all customer accounts is strongly encouraged by the WSBs and the regulator in order to improve financial performance at the utility level. In the medium to long-term, WSPs are expected to recover the full cost of providing services to their customers. "Full cost recovery" is defined as the total cost of providing services, which includes operating, capital, administrative, and debt service costs. Where community WSPs borrow to finance infrastructure development, they are obliged to meet the costs of debt service by incorporating operating and finance costs into their tariffs. Similarly, the benefits of any grants or subsidies to these projects are passed on to end users by way of lowering tariffs to incorporate these gains. The 2002 Water Act is currently being reviewed to harmonize it with constitutional changes brought about in the 2010 Constitution of Kenya. However, preliminary discussions with the review committee suggest that provisions relating to the commercialization of water services will be retained and that private sector participation in the delivery of water services will be further encouraged.

III. Opportunities to Access Market Financing

The financial autonomy and exclusive water service provision rights granted to communities as rural WSPs through provisions in sector legislation make them bankable stand-alone entities. At the same time, the limited access these utilities have to public finance presents an opportunity for commercial debt to finance investments in this market segment. The nature of demand for finance from these communities is suited to the lending policies of microfinance institutions, as they have experience in lending to community based organizations. Also, the size of loans required by community water projects is within the lending limits of a large microfinance bank. Experience from the pilot suggests that communities would struggle to generate more than K Shs 170,000 (US $ 2,200) per month for debt service. The affordable debt limit of a single community borrower is therefore not more than K Shs 10 million (US $ 130,000) for ten-year local currency financing at prevailing interest rates of between 16 per cent and 18 per cent. However, banks in Kenya do not typically lend for periods longer than five years unless the loans are backed by a significant long-term asset base. Commercial banks in Kenya have a deposit base of K Shs 1 trillion (US $ 12.5 billion),[14] suggesting that there is considerable liquidity for banks to expand their portfolios and diversify their assets.

The key impediments that inhibit bank lending to community water projects are the limited outreach of microfinance institutions and the lack of market-linked product development initiatives, especially in sectors such as water that have not been targeted by domestic banks. On the demand side, key impediments to borrowing are high interest rates and the lack of long-term market debt solutions, which are typically needed to finance infrastructure. For tariffs to remain affordable, bankable water projects require loans with a tenor of at least ten years, if financed with commercial money.[15] However, the short- to medium-term nature of bank deposits curtails the ability of financiers to lend beyond five years because regulation and supervisory practices encourage lenders to match the tenor of assets with those of liabilities on their balance sheets. The Water and Sanitation Program-Africa (WSP-Af) worked with K-Rep Bank, a local commercial bank specialized in microfinance, to explore structures under which a commercial financier would be interested in providing loan financing to CWPs. The pilot financing mechanism capitalizes on the opportunity for microfinance institutions to lend to rural water projects while addressing key impediments to bank lending and ensuring that tariffs remain affordable.

Design of the program to leverage market financing

In 2006, the Global Partnership on Output-Based Aid (GPOBA) approved a pilot program to be implemented by K-Rep Bank with technical assistance from the Public Private Infrastructure Advisory Facility (PPIAF) and WSP-Af that would facilitate access to financing for community-based water providers by blending output-based subsidies with commercial debt. Under the program, K-Rep Bank assesses the bankability of small water infrastructure projects that qualify for loans and pre-finances up to 80 per cent of the investment cost of projects that meet its internal risk assessment criteria. Projects that are successfully implemented receive a subsidy payment of up to 40 per cent of the project cost, but only after they have met service and revenue-related output targets set prior to loan disbursement. The effect of the subsidy is to reduce the borrower's debt service costs, which reduces the lender's credit risk and thus increases access to debt for small providers. The subsidy is provided by GPOBA, and

[14]Source: Central Bank of Kenya, Bank Supervision Annual Report 2009.

[15]Source: Analysis of the debt capacity of water utilities in Kenya carried out by WSP-Africa Finance Team in 2009.

WSP-Af supervises the implementation of the program and monitors the flow of grants and subsidies. Figure 1 shows the institutional arrangements under the program, and the project's financial structure is shown in Annex 1. The following key partners are involved in implementing the program:

- **K-Rep Bank.** K-Rep is the lead agency (project implementer and grant recipient) under the program and is responsible for approving loan applications, overseeing disbursements, and recovering the loans it provides to the communities.

- **Community Water Projects.** The community-owned small piped water projects are the water service providers in this program. They develop and manage the water assets.

- **Water Services Boards.** The WSBs enter into service provision agreements with CWPs, which give them the exclusive right to supply water within a demarcated area.

- **Support Organizations (SOs).** Specialized private firms that provide consultancy services to CWPs during the project development and implementation phases. These organizations must be pre-qualified by K-Rep Bank and the Water Services Trust Fund (WSTF).

- **Water Services Trust Fund.** The WSTF managed a specialized funding window, the Project Development Facility (PDF). This was funded by the Public Private Infrastructure Advisory Facility and provided grants to thirty-five eligible communities to contract consultants to develop loan applications on their behalf. The facility closed in September 2010.

- **Project Audit Consultant.** The PAC is responsible for verifying the outputs achieved by CWPs. To capture the project's impact on both new and existing customers, two output measures are used: number of new connections and average monthly revenue.

- **The Water and Sanitation Program-Africa.** WSP-Africa is a World Bank administered global partnership program that provides technical support to the local implementing partners, supervises the implementation of the program and monitors the flow of grants and subsidies.

- **The Global Partnership on Output Based Aid.** GPOBA is a multi-donor trust fund administered by the World Bank which provides the subsidy funds under the program. The GPOBA donors that provided the Output Based Aid (OBA) grant funding for this program are the UK Department for International Development (DfID), the International Finance Corporation (IFC), and the Netherlands's Directorate-General for International Cooperation (DGIS). The European Union also contributed subsidy funding to the program through GPOBA.

- **The Public Private Infrastructure Advisory Facility.** PPIAF is a multi-donor trust fund that provides grants for developing projects to be financed by the private sector.

- **Development Credit Authority (DCA).** A USAID facility providing a 50 per cent partial credit guarantee to K-Rep Bank during the project implementation phase.

Figure 1. Institutional arrangements

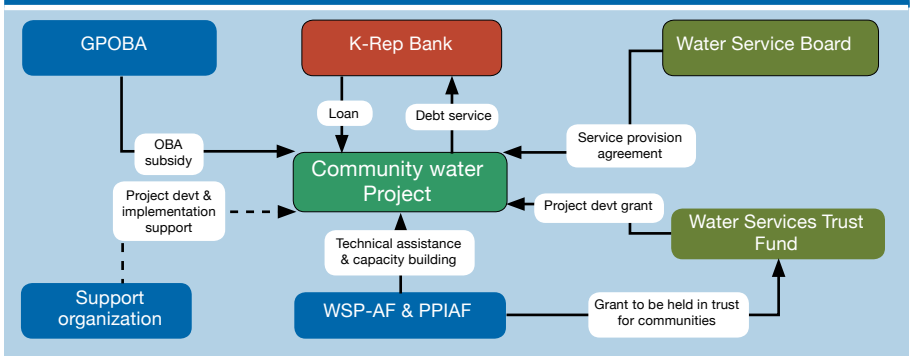
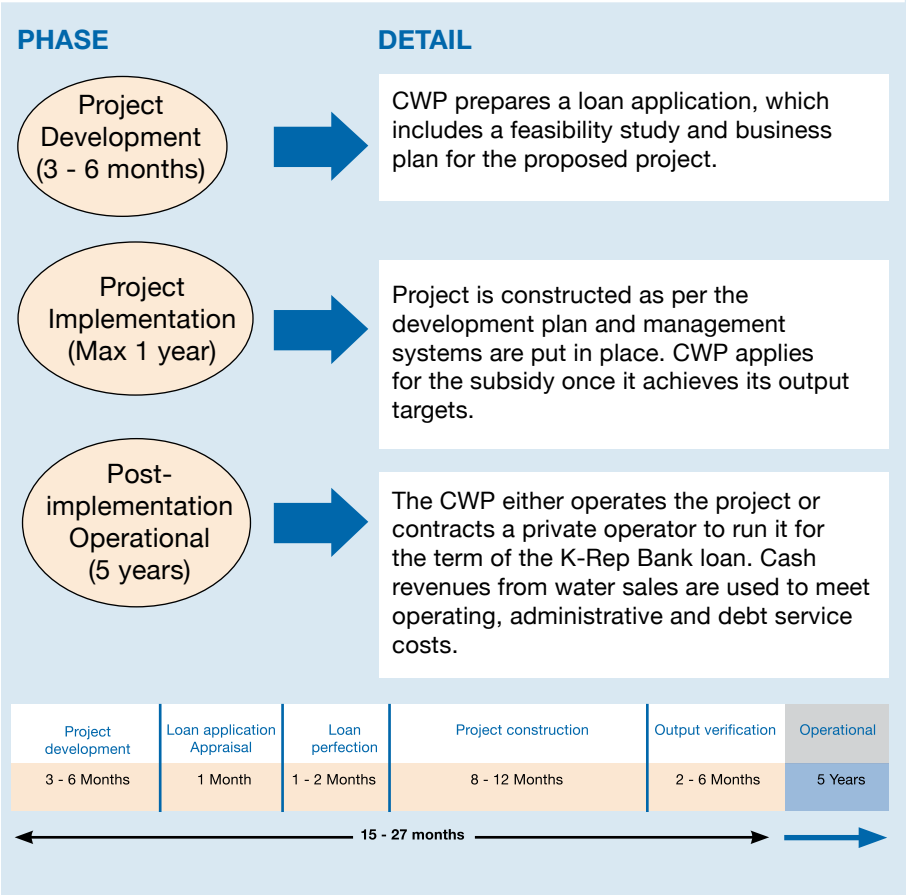


Figure 2. Project cycle



During project implementation K-Rep Bank takes significant construction and performance risk because the OBA subsidy is only paid once projects are successfully completed. By paying the subsidy only after the project is complete, the program ensures the efficient use of subsidies and provides incentives for borrowers to meet the key targets set out in the business plan. To mitigate the risk of implementation failure, K-Rep Bank has purchased a partial credit guarantee from USAID's Development Credit Authority for 50 per cent of the principal loan amount. Once projects receive the OBA subsidies they cease to be covered by the partial credit guarantee and the entire credit risk passes to K-Rep Bank during the post-implementation operational phase of the project cycle.

The project cycle, shown in Figure 2, has been designed to help K-Rep Bank identify bankable projects and to monitor the performance of these projects until loan repayment is complete.

Characteristics of projects financed under the program

The value of investments in individual projects financed under the program typically ranges from K Shs 5 million (US $ 65,000) to K Shs 12.5 million (US $ 160,000). Up to 80 per cent of the project cost is financed with a six-year loan from K-Rep Bank. This includes a one-year grace period during which interest is capitalized for projects that cannot generate enough income to cover interest costs during construction. Loans are priced at market interest rates, currently at the Bank's base rate,[16] plus 3 per cent to 5 per cent, depending on the Bank's assessment of risk. Post-subsidy monthly debt service payments range from K Shs 95,000 (US $ 1,200) to K Shs 160,000 (US $ 2,000) for the typical loan amount. Larger projects may be co-financed with equity or grants from other sources, and any loans in excess of K Shs 10 million (US $ 130,000) would need to be backed by formal security or the risk transferred to an established entity such as a municipally owned WSP. Box 4 describes the types of infrastructure investments financed under the program.

Community Water Projects financed under the program must be able to repay their loans in the five-year post-implementation operating phase of the project cycle. Applications for financing therefore need to be presented in a way that allows the lender to evaluate the bankability of the borrowers and the financial viability of the projects

[16]A Bank's base lending rate is the rate at which a Bank lends to its most creditworthy customers under asset backed lending arrangements, and is determined by movements in Treasury bill rates.

Box 4. Investments financed under the program

Type of investment	Description
Small piped water systems	The program mostly finances investments in the rehabilitation and upgrade of existing water projects, although up to 25 per cent of the portfolio is allocated to viable Greenfield projects. A typical system has 300 to 500 individual connections and serves between 1,800 and 3,000 people. There is often an anchor tenant (or tenants) that purchases large volumes from the project, thus improving its financial viability.
Development and augmentation of water sources	Equipping boreholes, constructing intakes at springs and rivers, and installation of rising mains. Technically risky investments, such as the drilling of boreholes are initially paid for with equity. Once the adequacy of the source has been confirmed, the lender commits debt to the project.
Pumps	Borehole and/or booster pumps are usually essential features of small piped water systems.
Treatment facilities	A treatment plant consists of a dosing chamber and filtration plant and is normally required where a project has an open source of water.
Storage facilities	Storage tanks made from PVC, concrete or galvanized steel are usually located at the highest point in the service area, from which water flows to households by gravity.
Distribution networks	Piped distribution networks that provide households with individual connections and meters, and communal water kiosks, are essential features of every project. Where projects are co-financed, K-Rep finances the last portion of the project, which is usually the distribution network, and other funds are used to finance the more risky upstream infrastructure such as boreholes.
Utility performance improvement	Installation of metering, billing, technical and financial management systems to improve the efficiency of water supply services.

being proposed. A financially viable project is one that generates sufficient operating revenues to meet its operating and administrative costs, an allowance for repairs and maintenance, and a minimum debt service cover ratio of 1.2.[17] Box 5 shows the project requirements sought by the lender, which are aimed at minimizing the risk of default and providing recourse in the event of default, and explains features of typical CWPs in Kenya that meet these requirements.

Project development

Applications for financing under the program need to be packaged in a way that allows the lender to evaluate them from a credit risk perspective. The capacity to develop high quality and timely loan applications is provided by support organizations, which develop bankable loan applications on behalf of CWPs. These are firms specialized in providing consultancy services to small water projects. In order to maintain quality control CWPs may only employ support organizations that have been pre-qualified by K-Rep Bank. A loan application consists of a feasibility study, business plan and supporting documents to help the lender assess the financial viability of the project, the credibility of the borrower and its ability to repay the loan in the project's operational phase. The range of services provided by SOs during project development is described in Annex 3.

A project development facility funded by the Public-Private Infrastructure Advisory Facility was set up at the Water Services Trust Fund (WSTF) to subsidize the costs of project development. The facility provided grants of K Shs 700,000 (US $9,000) to individual CWPs to subsidize the cost of support organization project development fees. Each CWP applying for a project development grant made

[17]Debt Service Cover Ratio is calculated as: Net cash after operating and maintenance expenditure and tax / debt service (principal + interest).

Box 5. Typical requirements for qualifying projects

Project requirements sought by the lender	Typical project features that meet the requirements
Timely completion of project implementation	• A qualified support organization acts as the project manager during the implementation phase of the project cycle. • As the subsidy is only disbursed upon achievement of outputs, incentives for project completion and subsequent performance are enhanced *(after expiry of the grace period, the borrower is obligated to make debt service payments on the full loan amount until the subsidy is paid).*
Maximum loan repayment period of 5 years and affordability of debt service payments	• The subsidy reduces the amount of debt service by 50 per cent, and makes monthly payments on a 5-year loan equivalent to those of a 10-year loan at market rates.
Revenue and cash flow adequacy during the loan repayment phase	• Strong demand for paid water. • Adequate and sustainable water resources. • 100 per cent metering of all water sold. • Rising block tariff structure and computerized billing and accounting system. • Efficient operational and financial management systems, which may be achieved by outsourcing management to a specialized private operator.
Project has the legal right to supply water and exclude competition in its area of operation	• CWP is licensed as a WSP that has a Service Provision Agreement or annual license issued by its WSB, or a sub-SPA third party agreement with an urban WSP. • CWP is licensed by WRMA to extract enough water to meet the projected demand required to meet all operating and debt service costs.
Project has the right of access to land where key infrastructure, such as pumps, water sources, storage tanks and treatment facilities, is located	• The land housing key assets must be owned or leased by the CWP
Recourse to control of the borrower's assets in the event of default	• Borrower (CWP) is registered as a legal entity that can be sued in its own right. The acceptable forms of legal registration are: society, cooperative, and trust by perpetual succession, or limited liability company. • Assignment of rights to the project's assets and receivables including bank accounts. • Step-in rights that permit the lender to request the WSB to appoint an alternative operator to manage a project that is in default. • Mortgage over the site where key infrastructure, such as pumps, storage tanks and treatment plants, sit.
Collateral that can be liquidated in the event of default	• With every debt service payment, the borrower is required to pay an additional 15 per cent of the instalment amount as "contractual savings". These funds are held on the borrower's account as security until loan repayment is complete. • Attach any registered assets of the borrower, such as land or vehicles, as security for the loan. • Negative pledge on assets financed with the loan.

a non-refundable cash contribution of K Shs 150,000 (US $2,000) towards business planning costs. To address the significant demand for project development grants, K-Rep Bank and the WSTF use a robust screening process to evaluate applications so that only projects that are thought to have a good chance of being financed are awarded a grant. This includes an analysis of the applicant's financial history, an outline of the project design, approximate loan requirements, analysis of the reliability of the water source and competing water supplies, demand for paid water in the service area, an analysis of the income profile and ability of consumers to pay for water, and a no objection from the WSB for the CWP to set up a project and supply water to consumers in the area. The loan application and appraisal process is summarized in Annex 2.

Project implementation

On approval of a loan application, a project moves into the implementation phase and is financed by 20 per cent cash equity from the community and a loan from K-Rep Bank amounting to a maximum of 80 per cent of project cost. If project costs are in excess of the maximum permitted loan amount of K Shs 10 million (US $ 130,000) and the corresponding 20 per cent equity of K Shs 2.5 million (US $ 32,000), the difference is met by additional equity contributions. Loan disbursements to finance project construction and associated costs are then made in tranches on a pro-rata basis according to the project's debt-to-equity ratio, after risky investments such as borehole drilling have been financed with equity. At least 10 per cent of the equity must come from the community, in order to demonstrate financial commitment to the venture and to ensure that the members have a vested interest in the project's success. The other 10 per cent may come from external sources such as government and donor contributions. The most common sources of community equity are deposits or advance connection fees paid to the CWP, or retained earnings in the case of existing projects, or community assets that are sold to raise capital.

Project implementation supervision is provided by a support organization, which is paid from the GPOBA grant up to a maximum of K Shs 1 million (US $ 12,600) per project. To provide continuity of support it is desirable that the support organization recruited for project implementation be the same as that used for project development. The SO acts as the project manager during the implementation phase and carries out activities aimed at mitigating construction and post-implementation operating risks. The activities carried out by a support organization during implementation are shown in Annex 3. By obtaining regular progress reports on all projects financed under the program from SOs, K-Rep Bank can centralize its supervisory role and reduce its project monitoring costs.

Project implementation must be completed within one year of the first loan disbursement, as the borrower is obligated to make monthly debt service payments to K-Rep Bank on expiry of the grace period. When choosing contracting options, communities must consider that delays in construction can significantly increase interest costs. A CWP may either manage construction of the project itself, through sub-contracts, or employ a turnkey contractor to carry out the work. The key factor to consider when choosing a contracting option is cost versus timely completion of project construction. Turnkey contracts are more costly than community managed contracts but can be implemented more quickly, thereby resulting in interest cost savings during construction.

Output verification and disbursement of subsidy

On completion of the project implementation and achievement of the output targets, the CWP makes an application to K-Rep Bank for the Output Based Aid subsidy. An independent Program Audit Consultant then verifies the extent to which the CWP has achieved its output targets in order to establish the amount of subsidy to be awarded. On disbursement of the approved subsidy to the CWP, the amount is swept into the borrower's loan account with K-Rep Bank in order to reduce the CWP's outstanding principal loan amount and consequently the monthly debt service obligation. The maximum amount of subsidy payable to a borrower is 40 per cent of the eligible project costs, up to a maximum of 50 per cent of the principal loan amount plus interest during construction. This implies that costs funded by equity contributions in excess of 20 per cent of the project cost will not qualify for subsidy finance. This ceiling ensures that a borrower services at least half the loan over the amortization period, thereby securing the lender's income

stream and supporting the project development objective, which is to test the viability of using microfinance for infrastructure development in small piped water schemes. The formula for calculating the OBA subsidy amount is shown in Annex 4.

Post-implementation operational phase

During the operational phase, the CWP is expected to generate sufficient cash from water sales to cover its operating and maintenance, administration, and debt service costs. The borrower maintains a revenue collection account with K-Rep Bank into which proceeds from water sales are banked and from which standing order debits are made to meet monthly debt service and contractual savings payments. The borrower also reports to K-Rep bank on critical aspects of project performance, such as billing, collections, energy and chemical consumption, operating costs, and unaccounted for water. This information helps the lender monitor the borrower's performance and provides vital information about small piped systems that has hitherto been absent in Kenya.

Rural CWPs often lack the skills and resources to effectively manage water systems once they are built, hence borrowers are encouraged to hire a private operator to run their systems under a management contract. By outsourcing their operations to specialized operators, CWPs can benefit from economies of scale, as management costs per connection diminish; and from economies of scope, as the range of management services provided expands. For example, a specialized operator managing several CWPs could share human resources and technical and commercial equipment across projects. A specialized operator could also provide services that would otherwise be unaffordable to an individual CWP, such as advanced leak detection, plant maintenance equipment, GIS mapping, and network expansion and investment planning. A description of services offered by private operators to CWPs financed under the pilot program is shown in Annex 3. There are however instances where CWPs have existing management that is capable of generating sufficient cash to ensure loan repayment. In such cases the CWP may continue to operate its system and implement any performance improvement recommendations suggested by K-Rep Bank.

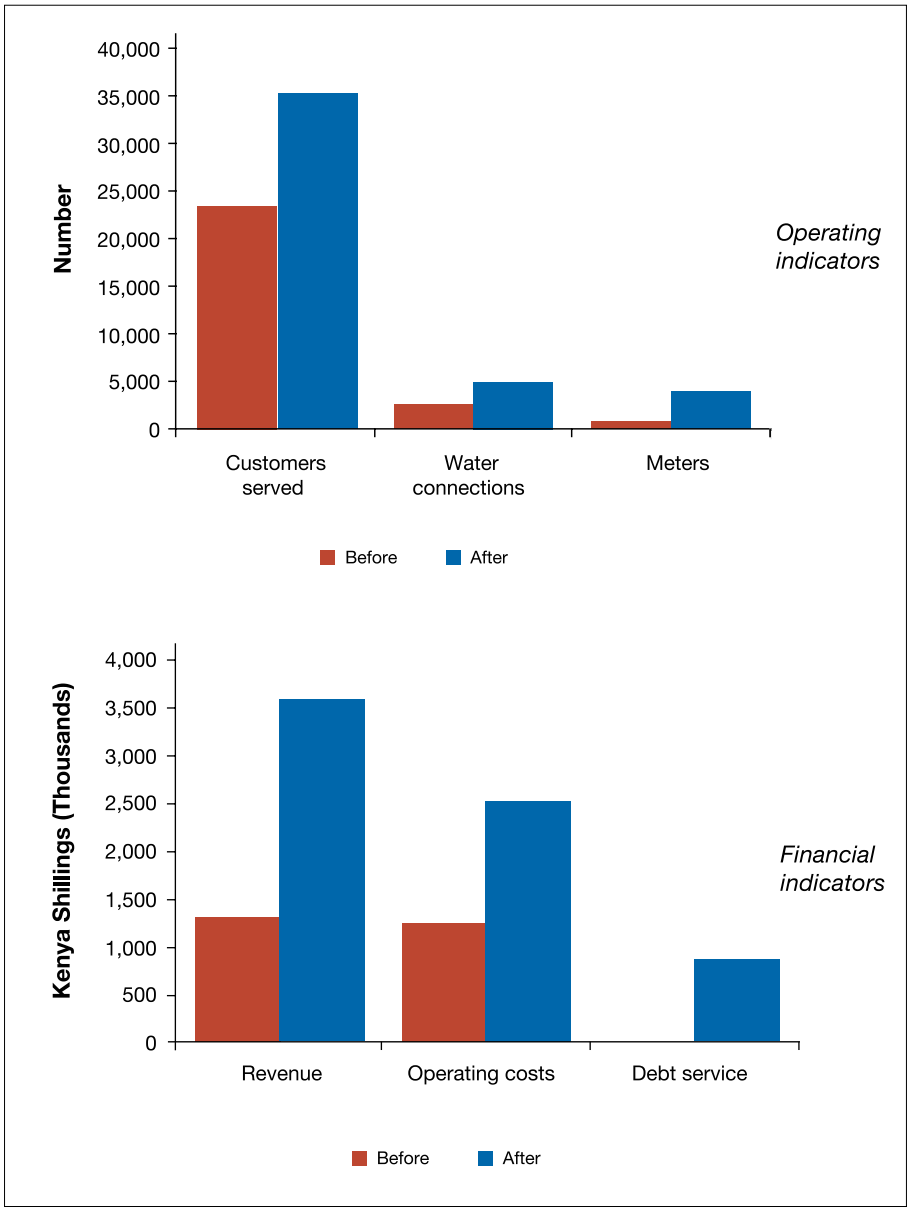
IV. Results Achieved in the Pilot Phase

Under the pilot scheme initiated in 2004, K Shs 80 million (US $ 1 million) was lent to ten CWPs and K Shs 22 million (US $ 300,000) was mobilized as equity by the communities to finance K Shs 102 million (US $ 1.3 million) of infrastructure. By November 2010, all ten community projects had completed implementation and received K Shs 35 million (US $ 450,000) in output-based aid subsidies and moved into the operational loan repayment phase of the project cycle. The successful pilot within the Athi WSB area is being scaled up with additional funding of EUR 1.5 million from the European Union's water facility and has been widened in scope to target projects countrywide. The additional financing by the European Union brings the total amount of grants available under the program to US $ 3 million.

A variety of investments were funded under the pilot in both green and brown field projects. These include source development from springs, rivers, boreholes, and an existing dam; installation of new pumps; water treatment facilities; storage tanks; distribution systems; system operating and financial management systems improved and put in place where there were none before; and meters installed in nine of the ten projects that completed implementation. The operating and financial performances of the ten projects have improved significantly since they were financed under the program, with 36,000 consumers being served as of November 2010.

Volume water production and revenue collection increased notably and the projects have been able to meet debt service costs from revenue generated from water sales. The key operating and financial performance highlights are presented in Figure 3.

Figure 3. Operating and financial performance highlights



The overall performance of the ten projects financed under the pilot is summarized in Table 1.

Table 1. Performance indicators for projects financed under the program

Performance indicator	Before project	After project
Number of individual & shared water connections	2,900	5,300
Number of customers served	23,800	36,000
Number of metered connections	1,200	4,400
Water services coverage in the service area	29 per cent	41 per cent
Monthly volume water production	38,000 cubic meters	85,000 cubic meters
Revenue from water sales	K Shs 1,350,000 (US $ 17,000)	K Shs 3,700,000 (US $ 46,000)
Monthly O&M costs	K Shs 1,300,000 (US $ 16,000)	K Shs 2,600,000 (US $ 32,500)
Monthly debt service costs	NIL	KShs 900,000 (US $ 11,250)
Average collection ratio	Not known	95 per cent

In addition to the tangible results highlighted in Table 1, there are several intangible benefits that have accrued to projects financed under the pilot. Metering has been a priority on all projects, largely because K-Rep Bank would not approve projects for financing that did not meter each customer account. In addition to providing reliable data for billing, meters enable the efficiency of the distribution network to be mapped and provide data on water losses; however, consolidating and analyzing water volume data from the metered network remains a challenge in most projects. Observations and informal discussions revealed that newly connected households, and those receiving more reliable water supply as a result of the investments, have increased their income through activities such as kitchen gardening, livestock rearing, and mini greenhouse projects. Paid employment has also been created by the CWPs. Record keeping has improved in most projects, which now maintain individual customer billing cards, accounts, customer records and complaints registers. All projects have audited accounts in accordance with the requirements of K-Rep Bank. Computerized billing and accounting has been introduced in only the one project that is managed by a private operator.

Physical water losses are significant, with total unaccounted for water across the ten projects estimated at 34 per cent. Reducing physical water losses is especially important in schemes that use electric pumping, because electricity constituted 32 per cent of the total operating and maintenance costs of the nine schemes that employ some form of pumping. The total monthly debt service across the ten projects amounts to 25 per cent of monthly operating revenue, as measured by actual cash revenue collected.

Progress under the scale-up phase

In order to develop a pipeline of viable community projects that could access financing under the program, a project development facility was established at the Water Services Trust Fund with a US $ 523,000 grant from PPIAF. Thirty-five communities received project development grants from the facility and contributed a further US $ 70,000 towards project development to hire specialized operator to prepare feasibility studies, business plans and loan applications on their behalf. The program has encouraged these operators to build human resource and technical capacity to serve CWPs and to plan to operate the CWPs as private operators under management contracts in the post-implementation phase. As of June 2011, K-Rep Bank has approved loans of K Shs 88 million (US $ 1.1 million) to 18 new projects with investments totalling K Shs 120 million (US $ 1.5 million). There are initiatives underway to develop more projects for financing under the program, including those using new arrangements being piloted, which are discussed in Section 5. Business planning for these projects will be supported by WSP-Af and PPIAF.

V. Lessons for Scaling Up

The pilot phase of the program has demonstrated that commercial debt can be used to finance infrastructure in small water systems. The Output Based Aid subsidies are being used to align financing costs with the ability and willingness to pay for piped water. On completion of the project, it is expected that US $ 3 million of OBA grants will have leveraged US $ 6 million of private debt and equity for investment in water infrastructure, clearly showing the leveraging potential of the product. The following valuable lessons from the pilot can be applied to the scale-up phase:

1) The lender should have the in-house credit appraisal skills typically used in project finance and should be prepared to lend to projects without tangible collateral, as borrowers generally do not have a financial track record or assets that support balance sheet lending.

The lender needs to blend the capacity to work with community groups with the sophisticated credit analysis and monitoring skills used in project finance. Adequate capacity is required to appraise a CWP's ability to meet its operating and finance costs from future water sales. This requires an understanding of water utility operations, cost and tariff structures, water supply capacity and constraints, and the nature of demand for paid water. The principal collateral that a borrower can offer is its cash flow from water sales that will be generated from the investments financed by the lender, and so the credit analysis must establish financial viability from this perspective. The borrower's exclusive right to supply water to customers within the project area provides security to the lender because it has the power to require a change in management to secure debt service payments in the event of default.

In this program, the lender built its in-house credit appraisal capacity by putting together a project appraisal team led by an experienced water engineer. The team works closely with the specialized project development and implementation consultants employed under the program. These activities are aimed at obtaining project-specific technical and financial data to inform the lending decision. Training and support in developing project appraisal tools and in marketing the loan product have been provided by WSP-Af, which initially identified K-Rep Bank as an implementing partner that was keen to support this innovative financing concept. A key factor in K-Rep's decision to implement the program is the fact that CBOs are an important part of the bank's customer base. The size of the loan portfolio needs to be large enough to produce sufficient income to cover the unique portfolio management costs. In this case, K-Rep Bank has created a revolving credit facility of K Shs 250 million (US $ 3 million) to finance investment in water projects countrywide.

2) The willingness and ability to pay for water must be evident among the consumers being served by the CWP: it drives the cash flows needed to repay the loan.

Tariffs have been structured on rising block principles, and the average bill per individual household connection per month has gone up to K Shs 800 (US $ 10) from K Shs 600 (US $ 7.50) before the projects were implemented. While the program targets communities in low-income areas, consumers in projects borrowing under the program pay an average monthly water bill of K Shs 600 to 1,500 (US $ 7 to US $ 18), depending on the operating and debt service costs of each project. A CWP must have sufficient scale to generate the necessary revenue to meet costs. A typical project financed under the program has between 350 and 600 individual connections, and tariffs vary from K Shs 35 to K Shs 80 (US $ 0.45 to US $ 1) per cubic meter. The poorer residents who cannot afford individual connections benefit by being able to purchase water from point water sources (kiosks) installed by the projects at lower tariff rates than those prevailing in the area prior to the project.

Hence, in appraising the financial viability of a project, the lender must be able to establish that consumers in the project area are willing, and can afford to pay monthly water bills, and that demand for water from the project area is not eroded by competing sources of water supply.

CWPs financed under the program must be able to generate enough cash from water sales to cover operating costs and complete their debt service payments within the maximum loan repayment period of five years.

3) It is critical to have a pool of capable companies providing business development services to support communities financed under the program. Projects should be pooled to enhance their attractiveness to a specialized operator, and qualified operators should be encouraged to undertake design-build-operate contracts.

Experience from the pilot project suggests that communities lack the skills and experience needed to implement and manage water projects efficiently. To build a pipeline of viable projects that could be financed by K-Rep, PPIAF provided a grant to fund the development of bankable loan applications to be appraised by the lender, while WSP-Af provided technical assistance to improve the quality of loan applications. The loan applications are developed by consultants that are tasked with implementing the projects for the term of the loan in order to pass the operational and performance risk from the communities to private-sector companies specialized in the development and construction of water supply systems. These companies can provide much-needed expertise during a period when most projects will experience significant cash stress on account of debt service payments. The program has short-listed three companies to provide support to CWPs under the program, and various training activities have been undertaken to build the capacity of these firms. The lender oversees procurement of consulting and management services and is counterparty to the contracts signed between companies providing support and the communities.

Individual CWPs financed under the pilot do not appear to generate sufficient free cash after they have paid for direct operating expenses and debt service, to be able to contract with a private operator to manage their systems in the loan repayment phase. Under existing operator contracts, there have also been problems with meeting the operator fee because control of the cash from water sales rests with the community. To improve the financial viability of CWPs, the projects should be clustered and specialized operators assigned to design, build, and then operate the systems under concession-type contracts for the duration of the construction and loan-repayment period. To bring economies of scale and scope to individual CWPs, each operator needs to manage a number of projects in geographical proximity, while ensuring that there are enough operators in the program to promote competition. This also provides the necessary motivation for an operator to invest resources into making the construction and management of small piped water systems a viable business. A design-build-operate contract inherently contains an incentive for an operator to ensure that the systems built are functional for the term of the five-year loan, thereby improving their sustainability.

Given that transferring risk from the community to the specialized operator will reduce risk to the lender, the program should also consider financing the operator rather than the community. Under such an arrangement, the operator would take on the obligation of repaying the loan and raise the necessary equity through a combination of its own cash and connection fees from customers in the project area. This would require the operator to have a lease type arrangement to manage the systems until loan repayment is complete, which would mean the operator earns the revenue generated and meets all operating, maintenance, administrative and debt service costs of running the systems. The operator would also require a return on equity where its own resources have been used to finance the project. Any unforeseen capital costs would have to be met by the communities or through tariff increases. The communities and WSBs would need to approve tariffs and monitor the performance of the operator in order to mitigate the risk of consumer exploitation. Considerable work would have to be done to sensitize communities on the benefits of such an arrangement. The appetite of domestic private operators to take on the operating and performance risks at prices that are affordable to consumers, and their capacity to provide sufficient operational and financial resources to run a number of systems efficiently, would have to be appraised.

4) Active measures should be put in place to license the operations of CWPs as stand-alone entities or through existing municipally owned WSPs where projects are situated within the service area of a licensed WSP.

A key constraint that is affecting the scale-up of the program is the perceived lack of willingness on the part of Water Services Boards to issue Service Provision Agreements or annual licenses to communities that are applying for financing. In order to avoid fragmentation, the WSBs prefer that municipally-owned Water Service Providers expand their services to reach consumers in areas currently served by community run projects. But access to finance for infrastructure development and operational inefficiencies remain key constraints for municipally owned WSPs, which supports the case for communities to fill the supply gap until WSPs have sufficient financial and technical capacity to expand service delivery. Water Services Boards should recognize that a lender will not lend to a project that does not have the exclusive legal right to supply water in its service area because this is fundamental to a project's ability to generate cash to repay debt. Licensing communities to build and operate the infrastructure to be created under the program and to charge a cost-recovery rate to consumers will provide security to the lender.

As an alternative model for increasing coverage, the program is experimenting with financing un-served communities situated within the service provision area of licensed Water Service Providers. Financially viable projects are more likely to be situated in these peri-urban areas, and several WSPs in small and medium sized towns have the technical expertise to build and manage small piped water systems but lack the necessary financial resources to do so. Under a build, own, operate arrangement, the WSP mandates the Community Water Project to finance, build and own a small piped water system within its service area. The CWP finances the system using a loan under the program and contracts the WSP under a lease arrangement to implement the project on its behalf and to manage the system for the duration of the loan. The lease fee paid by the WSP to the Community Water Project covers the CWP's debt service costs and provides additional cash to cover the CWP's initial equity investment. This effectively transfers project implementation and operational risk from the Community Water Project to the Water Service Provider and provides the lender with additional security to guarantee the loan, as the credit-worthiness of the urban WSP is likely to be significantly better than that of the CWP.

5) Projects should structure interim disbursement of subsidy funds in order to achieve cost savings: paying the subsidy on project completion increases overall project costs significantly.

Under the current program structure, disbursing the OBA subsidy at the end of the construction phase increases the total project cost by 15 per cent to 18 per cent because of interest costs. It also increases the risk of default if construction cannot be completed within one year. While it is important to link the subsidy disbursement to outputs so as to ensure that specific project objectives are met, structuring a project to disburse partial subsidy payments on achievement of interim outputs would reduce project costs and the risk of default, thereby providing additional comfort to the lender. Programs considering a similar approach should therefore consider structuring outputs to mitigate risk to the lender and reduce project costs.

VI. Conclusion

With the considerable public financial resources available in the water sector, the size of the market for a loan-linked product is likely to be limited over the medium term. However, public funds are not sufficient to build the infrastructure required to effectively meet the demand for water services: hence the increasing focus on cost recovery tariffs and the considerable initiatives underway to access supplementary financial resources from the private sector. In its pilot phase, the program has shown that Output Based Aid subsidies can be leveraged by two and half times to secure co-financing from the private sector in order to expand water supply infrastructure in peri-urban and rural areas. The role of subsidies in improving affordability where market financing is used to pay for infrastructure is critical. This is because expecting full operational and capital cost recovery in a sector that has traditionally relied upon public funds to finance infrastructure may not be practical. Furthermore, the operational life of systems financed under this approach is likely to be significantly greater than that of systems financed with government or donor grants. In securing its interest, the commercial bank provides a level of oversight to management that is not typically found in projects financed with grants and soft loans. The management structures put in place during the loan repayment period should enable the communities to optimize the operations of the systems so that they continue to function efficiently in the post-loan phase when significant free cash flow is likely to be generated and could be leveraged to further expand service delivery. Programs targeting similar approaches should assess the market to ensure that there is a sufficient pipeline of financially viable and technically feasible projects to warrant the establishment of a leveraging mechanism, and that the legal framework offers the necessary protection to secure the interest of commercial lenders. Further consideration needs to be given to institutionalizing the support mechanisms needed to develop the project pipeline, especially if the program is to achieve sufficient scale. Critically, funds for technical assistance, grants, and OBA subsidies under this program have been provided by World Bank Group organizations. If government grants are to be leveraged in a similar fashion, it is crucial that an institutional framework that supports the development of a pipeline of financially viable projects be established to facilitate private-sector bank lending to water projects. Any such framework must recognize the fact that a commercial bank will conduct an internal credit risk assessment of every project it intends to finance.

ANNEX 1: Financial structure of projects financed under the program

Source of finance	During construction	After outputs are achieved	Rationale
CWP equity	20%	20%	Ensures that the borrower has a vested interest in the success of the project. *Equity is initially used to finance risky investments such as borehole drilling, and is then disbursed on a pro-rata basis with debt during project implementation.* *As there are several external sources of community funds available in Kenya, such as the Constituency Development Fund, NGOs, and political donations, at least 10 per cent of the equity must come from members of the community that will be customers of the project.*
K-Rep Bank loan	80%	40%	K-Rep pre-finances up to 80 per cent of project cost using its own resources. The maximum loan term is 1 year grace plus 5 years. Interest is payable on the amount of principal outstanding, and may be capitalized during the grace period. *Loans are priced at market rates using K-Rep Bank's internal risk assessment. Once achievement of the outputs is independently verified, the subsidy is credited to the borrower's loan account with K-Rep Bank, reducing the project's debt to asset ratio from 0.8 to 0.4.*
GPOBA subsidy	0%	40%	Reduces debt service costs and so allows the project to supply water to consumers at affordable rates. *At the time of signing the loan agreement, the CWP is set two output targets to be achieved: a service coverage target measured in number of connections and a revenue target measured in total monthly cash revenues realized. The subsidy is paid to the CWP on achievement of output targets and swept into its loan account with K-Rep Bank.*
Total	**100%**	**100%**	

ANNEX 2: Loan application and appraisal process

	ACTIVITY	KEY FEATURES	TIMEFRAME
1	**Expression of demand**	*CWP submits an Expression of Demand application for a project development grant*	
2	**Screening of expression of demand**	*K-Rep Bank screens the Expression of Demand for viability. Viable projects are forwarded to WSTF for vetting and award of a project development grant*	**4 weeks from submission**
3	**Loan application preparation**	*CWP prepares a complete loan application and project proposal with support from the SO for submission to K-Rep Bank.*	**6 months**
4	**Loan application appraisal by K-Rep**	*K-Rep Bank undertakes due diligence and risk analysis, and makes a conditional loan offer if the application is successful*	**4 weeks**
5	**Loan perfection**	*On acceptance of the conditional loan offer by the CWP and compliance with the terms therein, K-Rep Bank commissions a baseline survey of the project, which forms the basis for establishing the revenue and service coverage output targets to be achieved by the borrower.*	**6 weeks**

ANNEX 3: Services provided by support organizations

Table 1. Range of services provided by support organizations during project development

Tasks to be performed by SOs during project development	Rationale
Feasibility study that assesses resource capacity and demand for paid water, and provides rough estimates of project cost	Gives an indication of technical feasibility from a supply and demand perspective. The demand for paid water is of critical importance, as it drives the project's ability to repay the loan. A technically feasible project can proceed to advanced planning stages.
Engineering Report with detailed design drawings and costed bills of quantities	Mitigates construction and operational risk from a technical perspective and provides accurate cost data for the business plan.
Business Plan with detailed financial analysis of the project, showing the proposed tariff structure, service coverage, volume sales targets and operating and finance costs.	Enables the lender to ascertain financial viability on the basis of Debt Service Cover Ratios and provides critical data for setting output targets to trigger the disbursement of the OBA subsidy.
Assimilate supporting documents such as past financials, electricity bills, community constitution, registration details, list of members and community leaders, copies of minutes indicating that the community has discussed borrowing from K-Rep Bank, and equity contribution plan.	Helps evaluate governance structures and bankability of the project, and provides data to assess the credibility of the borrower.
Work Plan that schedules activities to be undertaken during implementation.	Allows for implementation progress to be tracked and enables a loan disbursement schedule to be developed.
Pursue formal registration of the CWP as a legal entity that can borrow and be sued in its own capacity.	Most CWPs in Kenya are registered as self-help groups which are not recognized by the lender as bankable entities. CWPs should be registered as one of the acceptable legal forms: society, cooperative, trust by perpetual succession, or limited liability company.
Collateral identification and verification	Identify assets that can be attached in order to provide recourse to the lender in the event of default.
Pursue a WRMA extraction permit and an SPA that will allow the CWP to extract and supply water within its project area.	Essential legislation that gives the project the right to extract and supply water and to exclude competition from its service area. This addresses key supply and demand risk issues.

Prepare a Project Report for the National Environment Management Authority showing that the project complies with environmental legislation.	All projects receiving funding through the World Bank must comply with country environmental regulations.
Prepare a post-implementation project management plan showing staffing arrangements, technical maintenance plans, and billing and commercial procedures to be followed in the operational phase.	Efficient management is a prerequisite for timely loan repayment.

Table 2. Range of services provided by support organizations during project implementation

Tasks to be performed by SOs during project development	Rationale
Pre-construction project management.	Facilitates loan disbursement by ensuring that prerequisites such as mobilization of cash equity and attachment of securities offered as collateral are met by the borrower.
Competitive procurement of construction contractor and/or suppliers and documenting all procurements for audit purposes.	Maximizes value for money and allows quality standards to be monitored.
Scheduling and supervision of activities as per the work plan.	Helps keep the project on track to achieve its targets in a timely manner and facilitates the implementation of remedial measures where necessary.
Facilitate verification of output targets.	Prepares the project to be audited by the Program Audit Consultant to minimize delays in obtaining the infrastructure subsidy.
Implement the operational management plan, including the set-up of technical and financial management, billing, and project monitoring and evaluation systems.	Improves the efficiency of management during the loan repayment operational phase of the project cycle.
Address training needs at the community level.	Builds capacity at the community level to monitor and evaluate the performance of the system and to understand the community's obligations in the project's operational phase.
Complete as built drawings and project operating manual.	Mitigates the risk of technical failure during the operational phase.

Table 3. Services offered by Private Operators to CWPs

Contract structure	The operator is contracted competitively and paid a fixed monthly fee plus a share of net operating cash. The fee is subject to penalty deductions if performance targets relating to the continuity of supply, billing, and non-revenue water are not met.
Services offered by private operators	
Operation of the water supply system	Carry out day-to-day tasks such as operating the pump, dosing chamber and filtration plant; monitor the water supply and distribution system; install new connections; and carry out disconnections and reconnections as required.
Provision of commercial services	Read customer meters, install and operate a computerized billing system, maintain accounting records and conduct day-t- day financial management, such as payment and receipt processing, maintaining stock records and the customer database, and handling customer enquiries and complaints.
Provision of technical and maintenance diagnostic services	Test water quality, identify system leaks, analyze network maintenance requirements and pump functionality, and install and manage a GIS mapping system when affordable.
Financial analysis, budgeting and investment planning	Prepare annual reports, budgets and capital expenditure plans.

ANNEX 4: OBA subsidy formula

Subsidy = Total eligible project cost x Total Score x 40% (up to a maximum of 50% of loan amount + interest during construction period)

Where:

Total Score = (Coverage weight X Coverage score + Revenue weight X Revenue score)

Coverage weight = 0.5

Coverage score = Actual number of connections ÷ Target Number of Connections or 1, whichever is less

Revenue weight = 0.5

Revenue score = Average Monthly Cash Revenue over previous 2 months ÷ Target Monthly Revenue or 1, whichever is less

Eligible project costs

- Infrastructure assets
- Infrastructure related labor costs
- Electricity access
- Permits and legal fees
- Valuation fees
- Project related consultancy paid for by the CWP
- Interest during construction.

September 2011

WSP MISSION:
WSP's mission is to support poor people in obtaining affordable, safe, and sustainable access to water and sanitation services.

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PPIAF PUBLIC-PRIVATE INFRASTRUCTURE ADVISORY FACILITY

GPOBA The Global Partnership on Output-Based Aid

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