# NEXUS PLANNING PRIMER

## LESSONS FROM CASE STUDIES

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*The views expressed in this publication are those of the author.*
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# 1. INTRODUCTION TO THE NEXUS PLANNING PRIMER

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## 1.1 Why Planning?

In 2010, we argued in *Peri-urban Water and Sanitation Services* that as long as central transfers remain a large proportion of revenues of local authorities (municipalities or utilities); there will be little incentive for local plan preparation based on a search for opportunities for cost reduction (Kurian and McCarney 2010). We argued that central transfers encourage engineers and planners to prepare grander, more expensive plans. A large proportion of transfers actually support overheads like staff salaries and a smaller proportion of the remainder goes toward infrastructure construction, with little or no investment in maintenance. The Harrod-Domar model that influenced international aid flows in the 1970s spotlighted two issues in this regard: 1. Recipient countries had no incentive to save but to spend ever-larger amounts on infrastructure construction and 2. Recipient countries had no incentive to improve returns on investment by investing in periodic maintenance, increasing service coverage or improving service quality (ibid., 20; Bhagwati 2010). A key question that guides much of the analysis of case studies contained in this volume is to what extent a Nexus Approach that emphasizes synergies and interdependence across sectors and environmental resources can help advance sustainable development under conditions of global change: urbanization, demographic transformation and climate variability. The case studies discussed in this volume highlight the importance of planning structures (central budget transfers, taxes and tariffs, functions and functionaries) and processes (budget cycle, feedback loops between service delivery outcomes and decision making) and autonomy of local authorities (*governments and utilities*) in agenda setting, programme implementation and monitoring and evaluation (Kurian and Ardakanian 2015; Kurian and Meyer 2015).

## 1.2 Why Planning Clinics?

Lindblom introduced the thesis of "incrementalism" to argue forcefully that the selection of appropriate means (e.g. technology) for achieving policy objectives (e.g. improving access to water and sanitation services) does not proceed based on rational selection among available choices. Quite to the contrary, he argued that policymaking is based on a political process that involves negotiation and bargaining. From a nexus perspective trade-offs and synergies are constantly being explored within larger institutional structures involving electoral politics and processes of bureaucratic decision-making (Batley 2004; Horowitz 2003). Decision making therefore may be understood as involving a continuous process of adjusting the "value system" to the "reality system" (Gregory 1997, 188). Realistically speaking, then policy goals may be approached not as problems to be solved once and for all, but as norms and standards that are maintained and modified over time. Such a perspective emphasizes three issues that serve as cornerstones of this planning primer. First, decentralized planning that emphasizes the principles of accountability and autonomy can serve to prioritize development challenges in the context of available financial and environmental resources. Second, information is key to enhancing accountability of decision-making processes by placing for public debate/scrutiny the use of discretionary instruments (Lipsky 1980).

Finally, local level planning is understood as an iterative rather than a sequential process providing critical inputs to the process of public policy formulation, implementation and monitoring (Kurian 2010, 21).

We devised the concept of "planning clinics" to emphasize the iterative nature of the planning process (Kurian 2010, 268). Planning clinics can be useful in identifying priorities, articulating a vision of reform, developing action plans and encouraging a "learning by doing" approach to plan implementation. Clinics may help provide a diagnosis based on individual case history, discuss a set of exploratory treatments and chart out a timeline of individual action. In many cases, clinics may signal action that may be required to be taken on a larger set of institutional factors that constrain the delivery of funds, clear delineation of roles and responsibilities, and norms for disbursement of transfers, taxes and tariffs. A planning clinic that is well organized can potentially generate a wealth of useful insights that may lend themselves to cross-fertilization and piloting. The three cases we present in this primer we hope will play this role and support the identification of generalizable design principles covering planning, implementation, monitoring and capacity development (including curriculum, research methods, pedagogy and teaching/training didactics). However, for cross-fertilization and piloting lessons to emerge, we must first articulate a comparative framework that captures lessons emerging from case studies by pointing to their underlying causes of success or failure. In the conclusions chapter of this primer, we will attempt a discussion of elements of a comparative framework that can enable a discussion of cases contained in this volume.

## 1.3 Why a Planning Primer?

The above perspective allowed us to delineate three pathways of incremental reform based on a reading of experience from the developing world with regard to water and sanitation services. These models included the following (ibid., 21):

- Radical donor assisted reform (e.g. water privatizations of the 1980s) in response to a national crisis;
- Design of radical reform measures based on political mandate received during an election (e.g. Buenos Aires and Manila water sector reforms) that met with resistance at implementation stage; and
- Gradual reform with possibility of capture by special interest groups (e.g. water engineers lobby in Sri Lanka).

A planning primer sets out to lay down certain generalizable principles based on analysis of case studies. By contrast a planning manual would lay out a series of sequential steps and associated check lists for each planned activity. One of the important lessons emerging from following the implementation of Millennium Development Goals (MDGs) is that international aid could play an important role as facilitator: leveraging resources from traditional grant sources and combining them with resources from international private sector (Kurian 2010, 152). It must be acknowledged however, that different contributors to the resource pool may have different interests: grant sources rely on

taxes and so may be accountable to national parliaments while on the other hand, private sector financing may be driven by commercial or philanthropic motives and be accountable to corporate shareholders. Our review of lessons emerging from the MDG process highlighted a number of issues that are pertinent to the mandate of United Nations University, which is to serve as a think-tank of the UN system, especially in the context of the post-2015 Sustainable Development Goals (SDGs) and monitoring framework (Kurian and Meyer 2015).

While it is true that political decentralization has occurred in many developing countries, sub-sovereign entities like municipalities do not have the power to raise revenues through taxes or set tariffs for services (Batley 2004). In this context, it must be emphasized that municipalities and utilities have important inputs to provide in deciding on tariff levels and quantum of equalizing transfers to ensure that targeting of services at poorer consumers is effective. We pointed out in this context that there is a serious knowledge gap with regard to understanding financing instruments, associated transaction costs, and typology of risks relative to financing options (Kurian 2010, 152-153).

It may be possible that direct grants and loans can play an effective role in financing implementation activities, for example, improved Operation and Maintenance (O&M) through twinning of municipalities in industrialized countries with their counterparts in developing countries. Another opportunity that could be explored would be to support design of legal and regulatory instruments like improved building codes and inter-governmental financing norms. Knowledge institutes like UNU can play the role of a broker in designing and implementing a monitoring programme involving municipalities and utilities through identification of robust SDG benchmark indicators. We discuss three cases in this primer. The first case relates to reform of Manila water services in the Philippines. The second case relates to a Honduras social investment fund covering water and sanitation services. The third case relates to a planning clinic exercise that was undertaken to develop a road map for institutional reform for rural water supply services in Tanzania. All three case studies are based on experiments that emphasize results-based financing for reform of water and sanitation service delivery. While there are important lessons that can be gleaned that relate to decentralization and local planning, the three cases emphasize different aspects of institutional reform to greater or lesser degree depending on particularities of the situation. We adopt a comparative framework in the conclusions chapter with the objective of: 1. Highlighting key lessons emerging from individual cases; 2. Highlighting generalizable principles that lend themselves to cross-fertilization and piloting; and 3. Identifying issues of data classification, knowledge consolidation and translation.

# 2. CASE 1: HONDURAS SOCIAL INVESTMENT FUND

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## 2.1 Executive Summary

Providing sustainable and safe water and sanitation services to low income populations continue to be a challenging task that governments and development partners have undertaken with varied success. Traditional financing mechanisms for water and sanitation infrastructure may lead to situations where low-income families are left out of the schemes due to their lack of capacity to pay for domestic water or sewerage connections or, other circumstances where some infrastructure is rendered useless due to lack of users.

This case study, prepared by the United Nations University Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), explores an attempt made at tackling the access challenge focusing on the role of Output Based Aid (OBA) in helping low income families to access water and sanitation services in Honduras.

In several countries, the Global Partnership on Output Based Aid (GPOBA) implemented OBA pilot schemes for water and sanitation that supported individual projects. These schemes proved to enhance transparency, accountability and effectiveness in the use of public funding.

Building on this success history, the Government of Honduras (GoH) and GPOBA implemented an OBA facility, housed at the "Fondo Hondureño de Inversión Social" (FHIS) (Honduran Social Investment Fund) to support projects proposed by service providers that would focus on serving low-income families.

Several factors including the novelty of the financing scheme and associated procedures, competing financing sources, unresolved pre-financing issues for some service providers and insufficient training conspired against success in the initial stages.

After about a year of very little progress, the GoH and GPOBA took a few measures to instill more energy to the project. Among others, these measures included:

- transferring the administration of the facility to a different department within the FHIS,
- a deeper engagement with local authorities and banks providing guarantees and funds to pre-finance the investments, and
- additional support provided by consultants to enhance the quality of the projects proposed by the service providers.

These actions opened the door to a more successful second stage that led to the implementation of thirteen projects.

Overall, the exercise was successful, as it achieved the goal of facilitating access to water and sanitation services for low-income families while using the available public funds in a transparent and efficient way.

However, it was clear to the stakeholders, particularly the GoH and GPOBA that creating and running an OBA facility requires considerable effort in setting up adequate organizational structure, providing training to the teams responsible for screening projects, and handholding throughout the process.

It was also clear that OBA funding should have a clear target niche of projects or be complementary of other tools for project finance to avoid competing with concurrent financing tools and achieve maximum effectiveness.

## 2.2 Introduction

Traditional financing mechanisms, based in providing public funds for procuring materials or equipment and hiring contractors, has not always led to the desired results. Often, water and sanitation infrastructure built through some of these projects goes underutilized or not used at all due to focus on inputs rather than on results. In many cases, low-income households are unable to connect to water or sanitation networks because they cannot afford to pay the connection fees.

This situation prevents them from enjoying the benefits of the new infrastructure while depriving service providers of the associated revenues. In the specific case of sanitation, if a considerable portion of the population does not connect to the networks, wastewater treatment plants would not receive the expected flows, rendering them ineffective.

Output Based Aid (OBA) is a relatively new financing approach that has proven to be successful in using subsidies to facilitate access to basic services, like water and sanitation, for low-income families that otherwise would have to resort to other, generally more expensive, lower quality options. Sometimes, OBA subsidies are used as incentives to produce other results like increased volume of treated wastewater for instance.

This financing approach, focused on results, was developed to overcome the shortcomings of traditional input-based financing.

Among the advantages of the OBA approach, the fact that the funds are disbursed upon independent verification of the agreed results goes a long way towards improving transparency and effectiveness of the projects.

However, given that the OBA approach requires that the service provider assumes more risk, the design of the intervention is more demanding and some aspects like access to finance, implementation capacity and oversight framework that contribute to a conducive-enabling environment, as well as the way to ensure value for money need to be thoroughly addressed.

The use of subsidies requires that sufficient funds be guaranteed to reach all the intended beneficiaries, while the need to ensure value for money requires that, in designing the intervention, attention be paid to the capacity of the end beneficiaries

to pay for a portion of the cost to access the service. This, in turn, leads to a more robust sense of ownership of the project and a strong commitment to pay the ongoing water and sanitation tariffs.

Pilot projects have been carried out in several countries and attempts were made to test potential scale up mechanisms by having governments implement OBA schemes as a way to channel fiscal funds transfers in a more effective and transparent manner.

This document was prepared to illustrate one such scale-up exercise, using OBA tools to channel public funding in an efficient and transparent manner to projects that have the ultimate goal of providing water and sanitation services to low income families in Honduras.

This document shows the initial steps made at establishing the OBA facility, the obstacles that hindered a successful implementation during the initial stages, and the measures taken to overcome them, concluding with some "lessons learned" for future exercises on OBA facilities for water and sanitation projects.

## 2.3 Background

Even though Honduras is rich in natural resources, by 2006, several international financial organizations considered it one of the three poorest countries in Latin America and the Caribbean, with a per capita income of US$ 3,792.89 (World Bank 2006). Some of the structural factors contributing to this situation are:

- Unequal distribution of income and resources,
- Insufficient and poor quality investment in human capital, and
- Lack of a dynamic economy.

A year earlier, Honduras ranked 118 out of 174 countries taking into account its Human Development Index (HDI) at 0.584 (UNDP 2005).[1]

In 2006, Honduras' population was approximately 7,037,000 inhabitants (PAHO 2013), out of which 49.2% resided in urban centers (PAHO 2014) and showed signs of accelerating urbanization. Service coverage for potable water and sewerage was 85% and 72% respectively (WHO 2015), but urbanization of the population was creating peri-urban areas completely deprived of the infrastructure needed to provide these services. The Pan-American Health Organization (PAHO) points out that 23% of the contagious diseases in Honduras are waterborne.

It was clear to most stakeholders that the main obstacle hindering the extension and quality improvement of the potable water and sanitation services was the lack of financial resources. Investment needs exceed the GoH's financial capacity, thereby requiring additional support, which might come in the form of donations, diverse subsidies and loans.

[1] By 2013, despite an improved HDI at 0.617, Honduras ranked 129 out of 187 countries.

Given these issues, the sector landscape in 2006 showed:

- Low service coverage vis-à-vis GoH's development goals and MDGs,
- Unfinished works and completion deadlines being extended, and
- Infrastructure with insufficient capacity to meet total demand.

The authorities were conscious of these issues and a few years earlier, the Presidential Commission for Government Modernization (Comisión Presidencial de Modernización del Estado, CPME) played an important role in the organization and reform of the sector. This resulted in the 2003 Drinking Water and Sanitation Sector Framework Law (Ley Marco del Sector Agua Potable y Saneamiento), which focused on the improvement of service provisions through decentralization.

The law envisaged that each local authority should decide on a service provision modality that could take the form of government owned, private or mixed service provider, and it should be autonomous and financially viable. Service provision would be transferred from the National Water and Sanitation Authority (Servicio Autónomo Nacional de Agua y Alcantarillado, SANAA) to these local service providers.

In many towns and areas within cities there are also other service providers called "juntas de agua" (water boards) that would continue providing the service in their corresponding service area but would be controlled by the national regulator (Ente Regulador de los Servicios de Agua Potable y Saneamiento, ERSAPS).

Over the previous five years, the FHIS have been carrying out most of the water and sanitation investments in municipalities with modest support in basic maintenance activities from the SANAA. Additionally, there were a number of donors, which were active in the sector, and there was a need for a consistent strategy for the implementation of projects as well as their respective funding.

As a result, authorities were open to explore innovative financing sources and mechanisms to satisfy investment needs, while providing transparency and efficiency in managing resources, better application of subsidies, and improved output quality within a reasonable timeframe. Therefore, there was an opportunity to introduce the OBA approach as a mechanism that may constitute a sustainable and realistic option to contribute to the development of the water and sanitation sector in Honduras.

## 2.4 Some Considerations at Design Purposes

It is noteworthy that, despite the good track record that GPOBA had in the application of the output-based aid concept to individual water and sanitation projects, they have no experience in setting up an OBA facility thus far. This led to many aspects of the project being designed from scratch on a theoretical basis and considerable uncertainty on how project implementation would result.

To overcome this lack of experience, project design banked on FHIS experience in the implementation of water and sanitation projects in peri-urban and rural areas. For instance, FHIS project approval checklists were adapted for the OBA facility as part of the framework to submit and select project proposals.

This represented an innovative approach, which was tested on concrete analysis using data from the pipeline of projects that were analysed during project preparation. Using local project information from FHIS and testing it against published international experience (e.g., WHO experience and subsidy amounts used in OBA projects in other countries), a series of parameters (mostly unit costs for various outputs) were developed and verified.

At this stage, the design team identified a few risks related to OBA projects and proposed mitigating measures, as indicated in Table 1 below.

It is important to keep in mind that the Honduras OBA facility was a first attempt to implement an innovative results-based financing scheme to improve the efficiency of public funds utilization. This also made this project a potential source of lessons to be learned from its implementation successes and missteps.

Table 1: Risks and Proposed Mitigation Measures

| Risk | Proposed Mitigation Measures |
|---|---|
| Potential mismanagement of funds by the implementers. | Development of a subproject manual (to be shared with implementers).<br><br>Inclusion of subprojects in the scope of the annual external audit. |
| Implementation risks (implementers not delivering the expected results). | Disbursement of subsidies upon delivery of pre-agreed outputs (core principle of OBA).<br><br>A unit within FHIS was designated to manage the OBA facility, which included Technical, Procurement and Financial Management Specialists funded by GPOBA. |
| Construction and operation costs inefficiencies. | The OBA facility incorporated a methodology to rank subprojects, which acted as a proxy to competition. |
| Low uptake for applying to the facility funds, as most funding for the sector was channeled through the traditional input-based approach; the interest for participating in an OBA scheme could have been limited. In addition, service providers and implementers needed to comply with eligibility criteria that included multiple aspects (technical, environmental, social, institutional, and financial). | The project team together with FHIS carried out consultations with subproject implementers and designed the framework based on subproject profiles already prepared by service providers or project implementers that were looking for available funding. |

| Risk | Proposed Mitigation Measures |
|---|---|
| Weak capacity of public implementers to absorb the increased risks of an OBA approach, including pre-financing capacity, institutional capacity to procure the works, and technical capacity to implement the works including supervision. | The facility included a revolving fund with government funding of US$1 million to provide bridge loans to public implementers.<br><br>The project included funds for technical assistance to support project implementers to strengthen weak areas such as procurement and supervision capacity. |
| Low capacity of service providers to manage, operate and maintain the systems. | As part of the eligibility criteria, the OBA facility required certain implementation capacity not only to carry out the infrastructure but also priority was given to subprojects that provided clear institutional arrangements for the management, operation and maintenance of the water and or sanitation systems. In addition, the funds for technical assistance could have been used to strengthen these areas. |

## 2.5 The OBA Facility Project

### 2.5.1 The Project in a Nutshell

#### 2.5.1.1 Project Objectives

The overarching objective of the project was to test a mechanism that proved to be an efficient and transparent way for financing individual water and sanitation infrastructure projects in many countries, but this time functioning within a national entity that would evaluate and provide funding to subprojects that pass the selection criteria (the OBA facility).

The project also aimed at improving access to water and sanitation services to about 40,000 low-income households through: (1) Increasing the number of domestic water connections with meters, yard taps, public points (stand posts), and water availability (quantity); and (2) Increasing water quality and household connections to sewer systems in selected peri-urban and rural communities. The project targets communities where the average per person income is on average less than US$46 per month or US$ 2 per day.

#### 2.5.1.2 Design Principles

This project was designed taking into account the Strategic Plan for Modernization of the Potable Water and Sanitation Sector, which aims to meet the Millennium Development Goals by implementing fundamental transformations of the sector. As mentioned above, at the center of the drinking water and sanitation sector shortcomings lies the limited financial capacity of the GoH, requiring support through donations, diverse subsidies and loans.

The project envisages two types of implementers. Public Implementers are national and municipal institutions including FHIS, SANAA, water boards ("juntas de agua"), community groups in developing neighbourhoods ("barrios en desarrollo") and NGOs. Private Implementers are those entities that have at least one private shareholder that is responsible for management, operations and capital planning. To be eligible for funding by the OBA facility, each subproject implementer must fulfil the FHIS and OBA eligibility criteria.

**Among the most relevant design principles, we can note that:**

- Subsidies are one-off unit cost subsidies, and not consumption subsidies.
- Disbursement of subsidies will take place upon independent verification of pre-specified outputs.
- Tariffs for each subproject should cover at least operation and maintenance costs.
- For private implementers, pre-financing would be from internal cash generation or loans from local commercial banks.
- Pre-financing for public implementers should be made available through bridge loans to be provided by the OBA facility through a FHIS contribution (an aggregate amount of US$ 1 million) constituting a revolving fund.[2]

Through three components, the project provided a total of US$ 4,440,000 allocated as described below.

Component 1 (Subsidies): US$ 4 million to subsidize eligible water and sanitation subprojects.

Component 2 (Technical Assistance): US$ 150,000 to help local subproject implementers formulate viable and eligible proposals for funding by the OBA facility as well as to support public implementers, as necessary during subproject implementation.

Component 3 (Project Management & Independent Verification): US$ 240,000 to assist FHIS in the management of the OBA facility and US$ 50,000 for the selection of a specialist consultant to undertake the activities of the Independent Verification Agent.

### 2.5.1.3 Institutional and Contractual Arrangements

The project entailed the following institutional and contractual arrangements:

- The creation of a specialized OBA facility housed within FHIS and supported by consultants (Component 3), to evaluate, select and prioritize water and sanitation projects to be funded by the OBA facility. The OBA facility was also intended to provide technical assistance (Component 2) to help improve subproject design to ensure they were eligible for funding and to support subproject implementation, as appropriate.
- The World Bank established a Designated Account[3], administered by FHIS, to which GPOBA funds would be transferred according to project needs. FHIS also contributed funds on the order of US$ 1,000,000 to the OBA facility by paying into

[2] Bridge loan funds are to be repaid to the OBA facility, so they can be used at a later date for pre-financing other subprojects.
[3] The functioning of a World Bank Designated Account in the context of this GPOBA project is the same as a traditional escrow account. In it, funds can only be used for certain purposes and FHIS has no ability to release such funds until prior conditions are met.

an Operating Account, as a condition of effectiveness to the signing of the Grant Agreement, to be used as bridge funds for the purpose of pre-financing public subproject implementers. FHIS should ensure that the Operating Account has at least US$ 1,000,000 to be used as bridge funds throughout the life of the project.

- The International Bank for Reconstruction and Development, acting as Administrator of the GPOBA, and the Republic of Honduras through the Secretaria de Finanzas on behalf of FHIS would sign a Grant Agreement outlining the roles and responsibilities of FHIS and GPOBA regarding the project.
- After signing the Grant Agreement, each subproject implementer and FHIS would sign a Performance Agreement (PA) describing the roles and responsibilities of each party. FHIS was to guarantee to GPOBA that all appropriate procedures, safeguards and fiduciary issues would have been completed or were to be completed as part of the obligations of the implementer in respect of each subproject. A no objection from GPOBA would be required prior to effectiveness of each subproject PA.
- FHIS would bear full responsibility for overseeing compliance of the execution of the project including all fiduciary responsibility vis à vis GPOBA.
- ERSAPS would contract with an Independent Verification Agent to conduct ex-post reviews of the completeness, accuracy and authenticity of documentation provided by the implementers, as well as undertake ex-post physical spot checks for a meaningful and random sample of connections. Implementers in conformity with the respective PA would conduct such technical audits upon receiving notice of completion. The Independent Verification Agent should be selected from a list of consultants previously submitted to the GPOBA for no objection.
- The OBA facility would pay an initial amount equal to 10% of the subproject cost upon signing each PA. After the initial disbursement, all other payments would be done against Payment Indicators, specific to each subproject. Each Payment Indicator should correspond to outputs in two categories. Category A was related to the physical completion of working sewerage, water connections or public water taps and category B was related to collection of payments for the sewerage and water connections and, continuous and adequate functioning of the public water taps.

### 2.5.2 Operation Scheme of the OBA Facility

Housed within FHIS and with support from specialized consultants, the OBA facility would screen, select, prioritize and subsidize subprojects responding to specific requests by potential implementers. Each subproject implementer will make a request to FHIS for a one-time subsidy represented by a unit cost per connection, which will be payable against pre-specified outputs for each subproject.

The OBA facility would operate on a four-month cycle, evaluating subprojects as they are received and ranked against other subproject applications for each period. At the end of each cycle, eligible projects would proceed to implementation. The process is described in more detail below, while Figure 1 shows how the OBA facility would operate.

#### 2.5.2.1 Stage 1: Subproject Application and Pre-Identification

The cycle would start when the OBA facility receives a subproject application. In this stage, the following aspects would be determined:

- Confirmation of ownership or right of usage of water resources,
- Water resources reliability,
- Willingness of the population to connect to proposed services, and
- General characteristics of the implementer (local Junta de Agua, Municipality, NGO, or private operator).

Each subproject must meet each of the FHIS Eligibility Criteria (including legal, technical, financial, social and other considerations) in order to be eligible to pass to Stage 2.

#### 2.5.2.2 Stage 2: Subproject Assessment

During this phase, the OBA facility would undertake a review of existing subproject documentation to determine whether it would be feasible and reasonable to proceed with subproject appraisal, subsidy determination and ranking (stage 3). Key activities by the OBA facility during the assessment phase were to scrutinize the technical design and proposed solution including:

- Review of preliminary project design (e.g. efficiency, completeness of technical details, drawings and Bills of Quantities).
- Appropriateness and sustainability of proposed (or identified) technical solution (for example a project may have been approved by FHIS Eligibility Criteria but the technical solution proposed may not be considered appropriate for GPOBA funding).
- Reasonableness of proposed subproject costing.
- Subproject implementer's capacity to implement the proposed project.
- At this stage, the OBA facility would determine whether the information received was appropriate and if there was a need (and if indeed it would be justified) to make use of the OBA facility's own technical assistance resources under Component 2 to obtain or refine further information on the relevant subproject.

#### 2.5.2.3 Stage 3: Subproject Appraisal, Subsidy Determination and Ranking

In this stage, the OBA facility staff would carry out two activities:

- A full technical, socio-economic, environmental and financial feasibility review and determination of the maximum subsidy requirement for each subproject; and
- A ranking exercise to compare subprojects against each other in order to best allocate its limited resources against a universe of competing subprojects that could potentially be eligible.

#### 2.5.2.3.1 Subproject Appraisal and Subsidy Calculation

The key issues reviewed at this stage include:

- Technical and Environmental Feasibility including the quality of existing project documentation, appropriateness and sustainability of proposed (or identified) technical solution and ownership of water resource/availability of water resource.
- Socio-economic Feasibility entailing willingness of the population to connect to proposed services, user contribution to the proposed connection charge (capacity and willingness to pay), unit cost per connection and amount of subsidy required to access safe water or adequate sanitation and economic net present value (NPV) of subproject.
- Implementation Feasibility, meaning the existence and capacity of implementer (or community support to project if rural) in terms of collection efficiency, access to financing, management capacity, etc. and implementer willingness and ability to provide service to the project area.
- Financial and Economic Feasibility, comprehending the analysis of cost recovery capacity (tariff covers at least operation and basic maintenance costs) and financial net present value of subproject.

The financial feasibility evaluation included an assessment of the required subsidy based on each subproject's costs and tariffs. As it was a requirement that the tariffs charged to customers must cover at least operation and maintenance costs, the proposed OBA subsidy would be equal to the subproject's total investment minus the different contributions to be deducted from the total investment in the following order: community contributions (e.g. land, in-kind labour, etc.), municipal contributions, other donor contributions and, as appropriate, any contributions from the tariff over and above covering operation and maintenance expenses.

For those projects where the implementer was public, the total community contribution had to be at least 20% of the subproject cost. The community contribution may be composed of the following blocks:

- The OBA subsidy was capped at US$ 90 per person for water services and
- The OBA subsidy was capped at US$ 96 per person for sanitation services.

For subprojects to be eligible for further consideration, economic NPV must be positive and financial NPV must be negative without subsidy and positive with subsidy. This effectively implies that only subprojects with clear social benefits, where the implementer is not financially able to execute the subproject would be considered.

#### 2.5.2.3.2 Subproject Ranking

Subprojects that passed the appraisal stage were ranked following the criteria described below to best allocate the limited available resources.

- Lowest subsidy per household with new service,
- An index based on a comparison of investment amount, operation costs and subsidy per capita against equivalent per capita reference costs as provided by the World Health Organization (WHO), and
- An index relating economic NPV of the project to total OBA subsidy required.

#### 2.5.2.3.3 Subproject Implementation

To implement each subproject, its implementer was to prepare tender documents based on the project design documents, including technical design, bills of quantities, specifications, and instructions to tenderers along with draft contracts and related forms. Five different contractual arrangements were envisioned for each implementer to choose from:

- All in contract: Contractor provides all materials and labour.
- Material and Skilled Labour: Implementer undertakes all non-skilled labour as part of the community contribution to the value of the project.
- Labour Only: Implementer provides skilled and unskilled labour.
- Direct Hire for Specific Tasks: Project is broken down into component parts and each component is issued to a separate contractor.
- Materials Only: Implementers decide to source the materials itself.

In addition, the implementer enters into a Performance Agreement with FHIS (through the OBA facility) where it assumes responsibility for delivering the outputs that will trigger subsidy payments.

#### 2.5.2.3.4 Environmental and Social Safeguards Compliance

The OBA facility would ensure that the subprojects eligible for funding complied with any environmental and social regulations and requirements, providing mitigation as necessary.

### 2.5.2.4 Baseline Assessment and Output Verification

Based on the assessment under Stages 1, 2 and 3, the OBA facility determined the targets for each subproject, stating them clearly in the Performance Agreement. Before the start of construction, the OBA facility arranged to have the beneficiary community visited together with the Independent Verification Agent (IVA) contracted by ERSAPS to determine and document the baseline situation related to the specific outputs for each subproject. This included the number of existing connections if the case, and to confirmation of the eligible project cost, related cost per capita and resulting OBA subsidy.

Every six months the implementers reported their accomplishments to FHIS, so the IVA would conduct visits to the corresponding subproject and prepare an Outputs Verification Report for submission to FHIS and GPOBA as a basis for subsidy payments.

The auditor performed the following services:

1. Annual financial audit of project accounts.
2. Semi-annual technical audit of output deliveries including:
    a. Verification of new connections
    b. Billing records for new connections.
3. Ex-post review of the contracts for the subprojects and their respective adherence to the project set procedures.
4. Ex-post review of the contracts for consultancy services developed and entered into by the OBA facility.

### 2.5.2.5 Procedure for Payments from the OBA Facility to the Implementers

To report the achievements and verify them, implementers and IVA used Performance Payment Indicators, specific to each kind of subprojects (Table 2). The following is the disbursement scheme used:

Table 2: Performance Payment Indicators

| Performance Payment Indicators | Category | Unit | Expected output |
|---|---|---|---|
| **Water Subprojects** | | | |
| Total # of households connected and receiving potable water | A | Households | TBE4 |
| Total # of micro-meters in operation | A | Micrometers | TBE |
| % of collection with 180 days of invoicing | B | % | > 80 % |
| Operating efficiency (Operating revenue/Operating costs) | B | - | > 1 |
| **Sanitation Subprojects** | | | |
| # of new sewer connections (households connected). | A | Households | TBE |
| # of new micro-meters installed and in operation (if applicable) | A | Micrometers | TBE |
| Operating efficiency (Operating revenue/Operating costs) | B | - | > 1 |
| # of collections with 180 days of invoicing | B | % | > 80 % |
| Operating efficiency (Operating revenue/Operating costs) | B | - | > 1 |
| **Public Water Kiosks Subprojects** | | | |
| # of new water tanks installed | A | Tanks | TBE |
| # of public taps installed | A | Taps | TBE |
| # of public taps operating after 180 days | B | % | > 80 % |

- Advance payment: 10% of the total subsidy required upon signing the Performance Agreement.
- Fulfilment of all Category A indicators: 65% of the total subsidy required upon verification by the IVA of the corresponding outputs achieved.
- Fulfilment of all Category B indicators: 25% of the total subsidy required after verification of six months of bills being sent and paid for the new connections.

Category A indicators refer to physical completion of the new infrastructure while Category B indicators are linked to O&M efficiency in the provision of services. The latter were measured six months after the subproject became operational, thus focusing on the sustainability of the system.

## 2.6 The OBA Facility in Operation

### 2.6.1 First Steps – A Slow Start

The Grant Agreement between the Government of Honduras and the World Bank was signed 19 June 2007.

The Projects Department, an already existing unit within FHIS responsible for conducting a full analysis of projects (including pre-feasibility, feasibility, technical studies, analysis of social and municipal participation, sustainability, implementation cost) and taking the proposal and turning it into implementable projects, assumed the operational responsibility of the OBA facility.

This department was selected due to the skills of its staff to formulate and evaluate eligibility, economic and financial viability and social, environmental and gender aspects of the projects. These skills where considered relevant, as the screening process used by the OBA facility involved similar analyses.

After completing the effectiveness conditions, including the issuance of an Operations Manual acceptable to the World Bank, the OBA facility started operations in 2008. Under the first cycle of subprojects assessment (Phase 1), the OBA facility evaluated twelve projects and signed two contracts with implementers, which are currently in execution.

One contract was signed with SANAA grouping twelve water subprojects in sixteen peri-urban areas of Tegucigalpa. These projects include the installation of meters, construction of tanks, and laying of distribution lines, payable against working household connections. The contract with SANAA, a public implementer, was for a subsidy amount of US$ 0.9 million. The contract with SANAA was accompanied by a bridge loan of US$ 0.63 million.

The second contract was signed with Aguas de Puerto Cortes (APC), a private implementer, for a subsidy of US$ 0.18 million. The output increased water quality to households. As part of Phase 2, eighteen subprojects with public implementers and four subprojects with private implementers were assessed and ranked. Taking into account this assessment and the availability of funds for additional contracts, the OBA facility

envisaged signing four more contracts with public implementers and two additional contracts with private implementers in 2009–2010.

However, the first year of the project was marked by slow implementation progress. The key issues affecting project implementation were:

- Difficulties faced by implementers in preparing documentation to meet subproject application requirements.
- Difficulty in gathering enough candidate projects (applications) that comply with all eligibility criteria, and thus also gathering a pipeline to be able to pick the ones that comply with eligibility criteria. For example, there was a round of evaluations where no project was selected. Mostly the intent was to find private implementer subprojects that comply with eligibility criteria.
- Challenging access to pre-financing by private operators: Access of pre-financing for private implementers was challenging. Based on the project design, the pre-financing of subprojects was the responsibility of private implementers. They were expected to use their own funds or arrange pre-financing for their subprojects themselves. Most private operators of water and sanitation services in Honduras did not have enough liquidity to finance new works. They usually performed operation and maintenance tasks, which did not require large amounts of up-front capital. Obtaining loans from private banks took time (as was the case of APC), thereby impacting subproject implementation timing. In projects involving wastewater collection systems, additional financing was needed for intra-domiciliary connections, which were not included in the initial project design, delaying implementation until extra financing was obtained.
- Delays in obtaining bank guarantees: In the case of public operators, the Operations Manual established that Municipalities needed to present bank guarantees to obtain the 10% subsidy and bridge loan. The use of bridge loans for the pre-financing of the subprojects slowed down the implementation of subprojects of public implementers. The project included as part of the design a US$ 1 million revolving fund with Government funds to pre-finance the subprojects of public implementers (SANAA and municipalities). The bridge loans were provided by the amount of the bank guarantees that the implementers were able to provide. Thus, the pre-financing was given in segments. Processing these payments through the Government took time and on occasion, the transfers were held for months, affecting the pace of subproject implementation.
- Obtaining environmental licenses for construction also slowed down implementation.
- Political instability: Implementation delays were somewhat linked to the coup d'etat suffered in 2009 by the Government of Honduras. The World Bank put in place a six-month pause because of political instability. Due to political problems related to this event, the OBA facility was practically halted for more than a year.

### 2.6.2 Getting Back on Track

Given the identified difficulties, GPOBA and FHIS agreed that, probably the Department of Major Infrastructure (Departamento de Infraestructura Mayor – DIM), also within FHIS, might be better suited to deal with such issues. This department immediately took steps to improve the performance of the OBA facility.

After becoming acquainted with the project design and operations manual, the first step was to hold a re-launch meeting with local authorities (many of them represented by their public works departments), GPOBA, potential contractors, NGOs and some community representatives.

In this meeting, the different stakeholders received explanations about the facility and the requirements to avail of the subsidies. Many local authorities expressed their concern about the need for pre-financing works. At the time, there were other sources of funding for water and sanitation projects and some municipality representatives considered the process of obtaining OBA funding too burdensome.

However, other municipalities lacked access to such funding sources and decided to explore the OBA route. Therefore, the staff at DIM decided to work with these municipalities and to continue to pursue the two projects mentioned above (with SANAA and APC).

Each of these fronts presented its own issues to be resolved. On the one hand, SANAA had cumbersome procurement and administrative procedures that forced DIM staff to follow very closely each step of the implementation process, making sure that decisions were made timely and effectively. Nevertheless, the project that was supposed to be completed in one year took three years to deliver the expected outputs.

For APC (and other private implementers), the main obstacle was approaching commercial banks to request loans for pre-financing the work (see below for an explanation of how this issue was covered by OBA facility staff).

To launch new projects, the OBA facility requested local authorities and private implementers to submit project packages, including engineering design, economic and financial evaluations and other descriptive and evaluation elements. The local authorities submitted proposals with varied levels of quality.

The OBA facility staff made a quick evaluation of these proposals and paid visits to each proposed project to ensure that the engineering designs and other aspects of the proposal were accurate and the projects were physically viable. For instance, for sanitation projects they ensured the availability of land for treatment lagoons.

In parallel, for projects where the implementer was public, the local authorities took responsibility for the social marketing and promotion of the projects. They did this through information and consultation meetings (cabildos abiertos) where the community learned about the project and committed their contribution (some people paid a monetary contribution while others provided labour to dig trenches and other physical work).

Moreover, OBA facility staff verified that the municipalities had included in their budgets the corresponding counterpart financing before providing the green light to continue the process and GPOBA staff ensured that the National Government provided the monies committed for the revolving funds used to pre-finance the projects implemented by public entities.

Even once these aspects were sorted out, the municipalities had trouble proving a bank guarantee for the 10% advance payment they were to receive from the OBA facility. No municipality (of those applying for the subsidy) had ever requested such guarantee and it required quite some effort to sort this issue out.

For private implementers dealing with commercial banks, OBA facility staff and consultants worked with them to show that the projects would be financially viable when the subsidy was taken into account and with such analysis, the private implementers applied for loans with commercial banks. In one case, a bank consulted with OBA facility staff to confirm the documentation submitted by the private implementer regarding the availability of the subsidy scheme and its operation.

Besides this approach, APC worked out an agreement with the municipality and the commercial bank whereas the monthly cannon that APC paid to the municipality was pledged as guarantee for the loan provided by the commercial bank to pre-finance the work.

Then, the OBA facility staff provided advice on how to improve those proposals that did not comply with some requirements and conducted the economic and financial evaluation of those that were satisfactory in order to rank them according to the pre-established criteria, as set in the Operations Manual. This was carried out with assistance from consultants funded through the third component of the grant.

Another aspect to highlight is that the OBA facility staff felt the need to restrict the geographical reach of the project due to the limited availability of capable staff that made it very difficult to supervise subprojects that might be quite far apart from one another. This was also achieved by ensuring that most subprojects were of comparatively large size (between US$ 250,000 to US$ 1.5 million).

### 2.6.3 Results

After all these aspects were sorted out and one cycle of subprojects evaluation was completed and implementation started, other cycles ran much more smoothly and the OBA facility was able to deliver the expected results, as shown in Table 3.

## 2.7 Lessons Learned

The Honduras National OBA facility project was finally successful, as a result of good reflexes on the part of the Government of Honduras, represented by FHIS and GPOBA to tackle the teething problems of the first ever OBA facility to be implemented.

The process of understanding the hindering issues and resolving them left quite a few lessons that might help when making decisions and designing future OBA facilities. Some of these lessons are summarized below.

Table 3: Results and Relevant Data

| Subproject | Sub-project cost (US$) | Allocated subsidy (US$) | Foreseen connections | Actual connections | Subsidy as percentage of sub-project cost |
|---|---|---|---|---|---|
| **Drinking water** | | | | | |
| SANAA (Public) | 1,281,644 | 766,570 | 7,700 | 6,311 | 59.8% |
| Aguas de Puerto Cortes APC - (Private) | 382,427 | 180,847 | 285 | 730 | 47.3% |
| Municipalidad de El Naranjito, Santa Barbara (Public) | 422,256 | 178,754 | 1,050 | 1,050 | 42.3% |
| Municipalidad de San Agustin, Copan (Public) | 401,158 | 113,975 | 523 | 683 | 28.4% |
| Municipalidad de El Paraiso, (Public), Santa Cruz | 346,265 | 233,255 | 390 | 425 | 67.4% |
| CRS - JAPOE (Private) | 483,607 | 299,678 | 1,520 | 1,520 | 62.0% |
| CRS - San Juan (Private) | 866,692 | 449,592 | 1,167 | 1,167 | 51.9% |
| **Sub-totals drinking water** | **4,184,049** | **2,222,672** | **12,635** | **11,886** | **53.1%** |
| **Sanitation** | | | | | |
| Municipalidad de San Antonio, Copan (Public) | 479,645 | 207,654 | 368 | 368 | 43.3% |
| Municipalidad de San Jeronimo, Copan (Public) | 359,988 | 199,206 | 258 | 258 | 55.3% |
| Municipalidad de El Naranjito, Santa Barbara (Public) | 1,425,371 | 831,772 | 1050 | 1050 | 58.4% |
| Aguas de Choloma (Private) La Twana y San Antonio | 438,565 | 328,298 | 747 | 747 | 74.9% |
| Aguas de Puerto Cortes APC - (Private), la Esperanza | 306,772 | 210,397 | 321 | 321 | 68.6% |
| **Sub-totals sanitation** | **3,010,340** | **1,777,328** | **2,744** | **2,744** | **59.0%** |
| **Total** | **7,194,389** | **4,000,000** | **15,379** | **14,630** | **55.6%** |

### 2.7.1 Financing Landscape

The facility should be well integrated in the overall financing framework for the sector. One of the key issues hindering a smooth rollout of the facility was the fact that many municipalities had access to other financing mechanisms that were already in place and offered a traditional process that was well known to their employees.

Given the nature of the OBA subsidies, which is to facilitate access for low-income households to basic services, integrating the scheme to other financing mechanisms may have proven more attractive to all municipalities. For instance, some of them could have financed their projects using traditional sources of funding while tapping the OBA facility to provide equal opportunities for low-income households that could not afford to pay for the connection fees embedded in the traditional financing scheme. In this way, local authorities would have seen a complementary role of the OBA facility vis-à-vis other funding sources and not a competing one.

### 2.7.2 Awareness and Communication Actions

Considering that OBA is a relatively new funding scheme that requires adaptation to its procedures, solvency requirements, and administrative and evaluation mechanisms, emphasis should be given to communicating its innovative features and functionality. The information, communication and education actions should target specific audiences as described below.

#### 2.7.2.1 Local Authorities

Many mayors and municipal government representatives realized the different nature of the proposed scheme only during the re-launch meeting held by DIM when the facility was transferred to them after more than a year into implementation. Some of them decided to go back to traditional funding sources while others understood that this was their opportunity to avail of funding that otherwise would not have been at their disposal for water and sanitation projects.

A more intense preparatory communication campaign would have reduced confusion and accelerated preparation and submission of proposals. It may have also accelerated the solution to some of the problems like pre-financing and management of guarantees, as discussed below.

#### 2.7.2.2 Banks

Meeting with banks before launching the OBA facility would have prepared the potential providers of pre-financing funds to deal with potential implementers more efficiently and in shorter time, thus accelerating the overall implementation of the scheme.

Meetings could have been held with participation of both stakeholders that would take part in the pre-financing deals to clarify and iron-out all wrinkles in the pre-financing procedures and loan payback process.

#### 2.7.2.3 Contractors and Service Providers

Making sure that contractors and service providers interested in participating in the scheme understood all the requirements (technical, financial, etc.) that should be fulfilled to gain access to OBA funds would have also accelerated the process.

Meetings with these stakeholders would have led to better understanding and devising solutions to the various obstacles they met while trying to obtain guarantees or request pre-financing loans.

#### 2.7.2.4 Population

During the implementation of the OBA subprojects, it was left to the local authorities to promote activities to the population. Even though the municipalities were quite active and effective in achieving community awareness and participation, there was little involvement of staff from the OBA facility team in such activities. This was mainly the result of the limited number of staff managing the facility and its impact was quite limited.

However, a stronger involvement, either direct participation or through the preparation of information, communication and education material would have helped to homogenize the message transmitted to the population, making sure that all communities were on the same footing and understanding when deciding to go for the new funding scheme or not.

### 2.7.3 Institutional Capacity for Implementing the Scheme

The initial allocation of responsibility for managing the facility proved to be wrong. Most likely, this was not a consequence of a lack of technical capacity on the part of the staff of the department selected for implementing the facility, but more likely due to a lack of enthusiasm in pushing for the introduction of an innovative mechanism that required a harder effort than providing financing through traditional funding tools.

So, beyond assessing the technical and analytical skills of the staff in the potential implementing agency, it is critical to understand the incentives that will make it attractive for these staff to go the extra mile to explain the new scheme and understand, deal and sort out the obstacles that may arise until the new mechanism is understood and adopted by all stakeholders as another tool for financing water and sanitation projects.

### 2.7.4 Technical Capacity of Implementers

Even though there were no major issues regarding this aspect, bearing in mind that the very nature of OBA schemes relies on the ability to deliver the agreed results, it is crucial to make sure that the implementers have the wherewithal to do so.

### 2.7.5 Supervision and Verification

The facility was designed to have national reach. However, should the facility have supported subprojects throughout the country, the subprojects would have been thinly scattered and would have stressed the resources available for supervision and verification. In this light, the decision to reduce the geographical reach of the facility was appropriate. Probably the facility should have been designed from the beginning for a region, at a scale adequately adjusted to the available subsidy resources, so the density of subprojects would be in line with the resources available for supervision and verification.

A larger amount for subsidies and complementarity with other financing mechanisms would probably have given the facility enough capital to fund a much larger number of projects that would have supported a larger team, which would have been able to supervise and verify results of subprojects in the whole country. Therefore, adjusting the geographical reach of the facility to the available resources for subsidies is critical to keep supervision and verification costs in check.

### 2.7.6 Scalability

All the aspects discussed above, if well resolved, would contribute to the scalability of a pilot OBA facility like the one implemented in Honduras.

However, besides the technical issues mentioned, it is critical to make sure that the facility would have guaranteed funding to support a programme at a scale compatible with the needs of the population, while being just one more tool in a well-designed functioning sector financing architecture.

In Honduras, besides the commitment of the government to provide funds for pre-financing the subprojects implemented by public entities, there was no follow-up strategy or a scheme to synchronize the OBA financing mechanism with other financing tools. However, as this was the first attempt to see if the concept would work, more emphasis was placed on testing the potential for such a scheme to work and what obstacles and challenges may arise.

In the future, to scale-up this experience in Honduras or start from scratch in a different country, serious consideration should be given to the role OBA would play in the financial architecture for the sector and the funding sources for it.

## 2.8 Conclusion

After implementing several Output-Based Aid schemes in many sectors and countries, including water and sanitation in Latin American countries, GPOBA decided to conduct a pilot implementation of an OBA facility in Honduras as a way to prove whether it was possible to implement at a national level the same kind of subsidy scheme that GPOBA was doing, piloting this kind of project all over the world.

**The ultimate goals of this exercise were:**

- Facilitate access to basic services for low-income households.
- To prove OBA as an effective, efficient and transparent way to allocate scarce resources associated with its access facilitation features.
- Make it attractive for national governments to adopt this kind of financing mechanism.
- Be a trailblazer for other results-based financing mechanisms as a way to facilitate adoption of such funding schemes that tend to promote project ownership by implementing agencies, higher effectiveness and more transparency in resource allocation.

It is clear that the first objective was achieved, as almost all the service provision targets were accomplished, which also proved the effectiveness referred to in the second objective. Resource allocation was transparent due to the ranking mechanism and explicit selection procedures.

However, the efficiency of the mechanism was not completely clear, as the transaction costs were somewhat high as compared to the size of the project. Nevertheless, this could be attributed to the fact that this was the first ever OBA facility to be implemented at a national level and, as a pilot, was necessarily small. This also led to relatively higher supervision costs, which in turn demanded limiting the geographic footprint of the project to allow the small supervision team to visit all projects, keep track of the progress and solve problems as they popped up.

The fact that many municipalities that would have had problems accessing other types of financing and that the pre-financing issues were resolved increased the attractiveness of the OBA financing mechanism for other governments. However, it was clear that making sure that this kind of scheme is better synchronized with the overall financing menu for water and sanitation projects in the country would have increased its attractiveness in general and for other countries around the world.

Nevertheless, it may be argued that adoption by the Government of Indonesia of a results-based incentive mechanism to make budget execution more effective was supported by the experience of the Honduras national OBA facility. This serves as proof that the latter objective has been achieved in principle, although continuous adoption of such schemes would reinforce this assertion.

Overall, and despite the teething problems discussed in this document, the Honduras national OBA facility project could be considered a success and a source of inspiration and useful experience for introducing more transparent, effective and efficient mechanisms for the allocation of scarce public resources.

# 3. CASE 2: PHILIPPINES WATER SUPPLY IMPROVEMENT PROJECT

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## 3.1 Executive Summary

Providing sustainable and safe water and sanitation services to low-income population continues to be a challenging task that governments and development partners have undertaken with varied success. Traditional financing mechanisms for water and sanitation infrastructure may lead to situations where low-income families are left out of the schemes due to their lack of capacity to pay for domestic water or sewerage connections or, other circumstances where some infrastructure is rendered useless due to lack of users.

This case study, prepared by the United Nations University Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), explores one of the first pilot projects implemented to prove the Output Based Aid (OBA) approach and its effectiveness in bridging the access gap for low-income families to connect to water supply service networks.

At the time this project was conceptualized, the Global Partnership on Output Based Aid (GPOBA) had the plan to implement pilots in several countries to prove that the OBA approach could help the poor to be on an equal footing when needing to access basic services while enhancing transparency, accountability and effectiveness in the use of public funding.

The relatively recent concession of water and sanitation services in Metro Manila provided a good opportunity to test the concept. Given the prospect of resorting to a private service provider, the Manila Water Company Inc. (MWCI) was proving to be quite efficient and effective in tackling the multiple shortcomings of the service in the concession area.

The service regulations in Manila established a connection fee to access either the water or sanitation service and become a regular customer. However, low-income families could not afford to pay the fee and had to resort to water vendors to avail of water for drinking, cooking and other daily chores. The unit price they paid for such vended water was between six and ten times higher than what they would have paid to MWCI.

Low-income families in Manila live in geographically identifiable areas that could be easily targeted by the service provider and MWCI had an ongoing programme to assist these communities to organize and access the service in some kind of communal service that was less expensive than paying for the regular individual connection fee.

However, this model was showing some exhaustion and there were problems within some communities as paying for the joint bill was uphill for some community dwellers. Therefore, providing targeted subsidies for these families seemed like the best way to help them obtain individual connections and become regular customers like any other household in the city.

The OBA project provided a solution by helping each household become an individual customer and deal with MWCI directly. However, several issues arose that required adjustments to the project operation. Among those issues, the lack of a Nexus Approach to the project design resulted in a problem that could not be resolved at that time, as

there was no foreseen way to deal with the wastewater resulting from the increased water consumption enjoyed by the low-income families once connected to the network.

Despite this and other minor issues, the OBA approach proved very effective in achieving the expected objective of getting the poor connected to the water service network and become regular customers of the utility, enjoying reduced unit prices and being able to use more and safer water.

## 3.2 Introduction

Traditional financing mechanisms, based in providing public funds for procuring materials or equipment and hiring contractors has not always led to the desired results. Often, water and sanitation infrastructure built through some of these projects goes underutilized or not used at all due to focus on inputs rather than on results. In many cases, low-income households are unable to connect to water or sanitation networks because they cannot afford to pay the connection fees.

This situation prevents them from enjoying the benefits of the new infrastructure while depriving service providers of the associated revenues. In the specific case of sanitation, if a considerable portion of the population does not connect to the networks, wastewater treatment plants would not receive the expected flows, rendering them ineffective.

Output Based Aid (OBA) is a relatively new financing approach that has proven to be successful in using subsidies to facilitate access to basic services, like water and sanitation, for low-income families that otherwise would have to resort to other, generally more expensive, lower quality options. Sometimes, OBA subsidies are used as incentives to produce other results like increased volume of treated wastewater for instance.

This financing approach, focused on results, was developed to overcome the shortcomings of traditional input-based financing.

Among the advantages of the OBA approach, the fact that the funds are disbursed upon independent verification of the agreed results goes a long way toward improving transparency and effectiveness of the projects.

However, given that the OBA approach requires that the service provider assume more risk, the design of the intervention is more demanding and some aspects like access to finance, implementation capacity and oversight framework (factors contributing to a conducive enabling environment), as well as the way to ensure value for money need to be thoroughly addressed.

The use of subsidies requires that sufficient funds be guaranteed to reach all the intended beneficiaries, while the need to ensure value for money requires that, in designing the intervention, attention be paid to the capacity of the end beneficiaries to pay for a portion of the cost to access the service. This, in turn, leads to a more robust sense of ownership of the project and a strong commitment to pay the ongoing water and sanitation tariffs.

Testing all these aspects of the OBA approach meant the selection of potential pilot projects should be done thoroughly to make sure that some of the risks of such innovative financing tools were kept to a manageable level, as it was certain that there would be teething problems.

This document was prepared to illustrate one such pilot project, using an OBA tool to channel subsidies in an efficient and transparent manner to low-income households that, otherwise, would have not been able to afford the connection fees to be hooked-up to the water network in Metro-Manila.

The scope of this document ranges from the project design, initial operations, changes to the design to adapt to changing situations and regulations, design shortcomings that could not be overcome, results achieved, and some lessons that could be useful for future projects.

## 3.3 Background

### 3.3.1 The Concession Environment

In the late 1990s, the government of the Philippines decided that the best way to deal with the deterioration of the water and sanitation services and to reach universal access in the Metro-Manila region was to join forces with the private sector through the concession model. It was also decided that the metropolis would be split into two areas that would be served by two private concessionaires, so some kind of completion through comparison would be possible.

Therefore, the government-owned Metropolitan Waterworks and Sewerage System (MWSS), which is responsible for the delivery of water supply and sewerage services led the concession process and signed in 1997, two 25-year concession contracts based on a geographic division of the urban area. The east zone with a population of 2.3 million was contracted to the MWCI, and the West zone with a population of 4.4 million was contracted to the Maynilad Water Services (MWSI).

Among other requirements, in terms of service obligations, the concessionaires were required to expand coverage of water supply, sewerage and sanitation services, to ensure 24-hour water supply to the majority of the connections, to maintain water pressure at 16 psi by 2007, and to meet the national health and environmental standards on water and wastewater quality. MWCI was also obligated to cover households in depressed areas and informal settler communities who may not be able to afford individual connection fees by installing public faucets (1 per 475 people).

MWCI made steady progress towards those commitments and, by the time the pilot project was being considered, the Non-Revenue Water had been reduced from 63% in 1997 to 29.9% in 2006. The company also met or exceeded its major service obligations and was financially sound. Among the most important achievements, access to and reliability of services, including to low-income households, increased substantially, and

reliability in terms of 24-hour availability increased from 26% of customers in 1997 to 98% in 2007. At the end of that year, MWCI was supplying water to 5.1 million residents of the Metro-Manila area under its responsibility.

MWSI, in contrast, faced several management and financial issues and was unable to fulfill the contractual expectations. On March 8, 2001, a long process started with the west zone concessionaire suspending payments of its concession fees and, in the end leading to MWSS taking the west zone services back from MWSI in 2005. The Government of the Philippines re-tendered the concession. A new concessionaire took over MWSI in January 2007, and performance improved.

However, when the OBA project was being designed in 2007, it was not possible to foresee this improved performance as the new concessionaire was just taking over the service. So, GPOBA decided to work only with MWCI to implement the pilot project and this case study will focus on this experience.

The relevant institutional framework also includes the MWSS Regulatory Office (RO), which is responsible for setting and monitoring water and sanitation charges, service operations and infrastructure plans, as well as acting as a second resort for customer complaints. The RO approves the concessionaires' business plans and adopted a "reward and penalty" system to compel them to be effective and prudent in its operations.

### 3.3.2 The Social Programmes

Tending to their obligations of supplying water to low-income areas, within a year after taking over, both concessionaires implemented programmes to bring piped water to certain Barangays where low-income households are located. A Barangay is the smallest administrative unit in the Philippines and a "Barangay Captain" leads it. For low-income families, Barangays provide a way to organize social activities and safety nets. The fact that the low-income households were somewhat geographically concentrated in these Barangays made it easier for the concessionaires to lay out the infrastructure needed, although more often than not, some narrow alleys had to be cleared before the pipelines could be installed.

The scheme in the east zone, served by MWCI, was the "Tubig para sa Barangay" (water for your community) or TPSB programme. While in the west zone, MWSI implemented the Bayan-Tubig (community water) programme. The programmes built on the community culture in the Philippines through working with Barangay leaders who would engage the community for the consultation and decision process.

These programmes allowed the newly connected customers to get more water and pay much lower rates than before, when they had to resort to water tankers or other vendors to avail of water for daily use. However, for some households the connection fee was still too expensive, even considering the installment plans offered by the concessionaires.

The TPSB programme enabled poor households to connect easily to a running water system through systematic installation of water meters.

Initially, MWCI offered a "communal" or "shared" meter option to reduce the connection fees for individual households (including the possibility of paying it in three monthly installments), whilst placing more responsibility on those individual households/communities for connecting households (downstream of the meter) and maintaining that private infrastructure.

In this scheme, two to seven households form groups and share one mother meter and may opt to install individual submeters with one household acting as the leader during collection and remittance of payment to the concessionaire. This resulted in lower monthly expenses than using public faucets.

Subsequently MWCI switched to provide "bulk supply" or "shared" bills. This was a scheme that required active participation of the community, which would manage a mini water distribution system that serves its members and is billed as a single account with one mother meter for the entire community.

The community is responsible for reading individual meters, billing and collection for all its member-households who were each given individual connections with respective submeters. This placed the pressure and costs of bill collection on the beneficiary communities.

Even though the resulting monthly costs were lower than vended water, they were higher than for group taps. Final prices to households were a little higher than what the community paid the concessionaire since the community paid for its meter reading, billing and collection activities, and token honoraria for the overseers.

Initially, communities were charged higher bulk tariffs, a practice MWCI with the consent of RO later modified by using social tariffs.

To overcome some of the issues mentioned above that proved problematic for MWCI and the communities benefitting from the TPSB programme, a new scheme was introduced through installation of individual meters in a bank-arrangement (several meters installed side-by-side inside a protected structure) in accessible and strategic locations (entrance of alleys, sidewalks, visible spots along the street, etc.). This facilitated a more efficient, accurate and easier meter reading and reduced illegal tapping, a common problem encountered in the previous practice of door-to-door meter installation, while providing for individual billing of each household.

However, even though TPSB provided alternative solutions to supplying water to low-income households, several evaluations, while recognizing its merits, also pointed out equity concerns, and the already mentioned drawbacks of the shared billing approach. MWCI suffered significant customer management and credit issues with this approach where some individual households did not pay their share of the billings, becoming free riders, as MWCI remained reluctant to disconnect the whole community.

Thus, MWCI decided to favor the bank-arrangement and individual connections solution with support from an OBA scheme funded by GPOBA. This scheme would also aim at solving the equity issues whereas the subsidies to be provided would allow the lowest income communities to be able to afford the connection fees.

## 3.4 Some Considerations at Design Stage

Being one of the early pilots that GPOBA was looking to implement, emphasis was given to reduce the potential risks inherent to the OBA approach. Some of the design elements that presented themselves as simplifying the design were the following.

### 3.4.1 Targeting

The OBA approach requires that subsidies be provided to those that cannot afford to access the services by their own means. This is achieved through geographic, means testing or self-targeting mechanisms. The situation in Metro-Manila, with low-income households grouped in certain Barangays provided a textbook chance to use geographical targeting, which generally provides the best accuracy-cost ratio. It is very inexpensive to identify the lowest income areas in the metropolis and it is rare that some households in those areas would be able to afford the connection fee without the subsidy.

However, in this case accuracy was further improved by demanding potential beneficiaries to submit a certificate indicating that they were indigent (very much like a food stamp scheme), which is already an ongoing mechanism in the Philippines for other purposes.

### 3.4.2 Pre-financing of Works

One hurdle that is usually the most difficult to overcome in OBA schemes is finding service providers able to access funding for pre-financing the works and waiting until results are verified by the Independent Verification Agent (IVA) before collecting the subsidy payment.

In this case, the strong financial standing of MWCI provided an easy way to clear this issue, as the concessionaire opted to finance all materials and works through its internal generated cash flow.

### 3.4.3 Subsidy Amount

At the time of project design, the total connection charge for an individual service connection was relatively high at PHP 7,531.73 (US$ 167). This charge includes the components with its corresponding prices indicated in Table 4.

Table 4: Service Connection Components and Charges

| Component | PHP | US$ Equivalent (approx.) |
|---|---|---|
| Meter deposit | 1,020.00 | 23.00 |
| Guarantee deposit | 600.00 | 13.00 |
| Connection fee | 5,911.73 | 131.00 |
| Total | 7,531.73 | 167.00 |

Combining community feedback, MWCI's experience working with indigent communities and a household survey carried out for the purposes of designing this pilot project, the design team concluded that poor households would only be able to afford to pay the meter deposit and guarantee deposit of PHP 1,620 (US$ 36) if this could be paid in twelve installments.

The concession agreement provides for the connection fee to be indexed on an annual basis in line with Consumer Price Index (CPI) data produced by the MWSS-RO. To mitigate the risk of cost inflation, it was agreed that the unit subsidy would be similarly indexed. The unit subsidy (or other aspects of the scheme design) may also be adjusted to reflect modifications to the connection fee resulting from tariff and charge reviews undertaken by the MWSS-RO.

## 3.5 The Manila Water Supply Pilot Project

### 3.5.1 The Project in a Nutshell

#### 3.5.1.1 Project Objective and Indicators

The project sought to increase access to piped water supply services for poor households in Manila and in so doing, enhance the welfare of these households. The key indicators to track progress against these objectives were:

- Number of new connections made in low income, indigent communities, at service quality levels as specified by the MWSS-RO (24-hour supply, at pressure of at least 5 psi).
- Increased consumption levels by beneficiary households as a proxy indication for improved hygiene and reduced incidence of water borne diseases.
- Reduction in household expenditure on water by target households, as a proxy indicator for increased household welfare; other factors related to higher productivity due to reduced illness and eliminated wait times were also measured (GPOBA 2007).

The first indicator would be used as part of the indicator that would trigger subsidy payments by GPOBA to MWCI on behalf of the low-income households that were connected, as described below.

It was also intended that the project would:

- Contribute to a deeper understanding in the Philippines of output-based approaches to the use of public funds,
- Build on and deepen MWCI's successful service expansion programme to low-income communities, and thus,
- Contribute to broader public and political support for private sector involvement in critical infrastructure services, which remains fragile given the diverse track record of private concessions in Manila and the Philippines broadly.

### 3.5.1.2 Design Principles

#### 3.5.1.2.1 Equity

A key concern at design stage was to highlight the contribution to equity of access that OBA subsidies make, giving low-income customers the opportunity to connect to the network and receive good quality piped water as any other potential customers had.

With this in mind, the pilot OBA project was designed, with the only exception of the meter arrangement, as a regular service extension project including the installation of booster pumps, reservoirs and distribution lines, with an estimated total project cost of around US$ 17.6m.

The OBA project, which aimed at connecting 21,375 low-income households to the water network in four years, was part of the investment plan that brought the number of water connections from some 580,467 at the end of 2006[4] to 857,981 by the end of 2011 (MWCI 2011). Table 5 below shows the total cost of the project and the contributions each party made towards meeting the costs.

Table 5: Total Project Cost and Parties' Contributions

| | Amount per Service Connection | Total Amount (PHP) | Total Amount (US$) | Percentage to Project Cost |
|---|---|---|---|---|
| MWC | 29,600 | 632,693,574 | 14,060,000 | 80% |
| Customer | 1,620 | 34,627,500 | 769,500 | 4% |
| GPOBA | 5,911.73 | 126,000,000 | 2,800,000 | 16% |

#### 3.5.1.2.2 Simplicity to Measure Outputs

Usually, OBA schemes for water services tend to split subsidy payments with a first installment to reward physical completion of the outputs and a final payment to ensure sustainability of the service. This second payment is made a few months after physical completion, once satisfactory service provisions have been verified independently for a pre-set period (usually six months).

Given MWCI's strong operational and financial performance, it was considered that a single payment could be a convenient approach for this pilot project. This payment would be made after a single output was independently verified. This output was defined as the provision of a working household connection that has delivered acceptable service for a period of three months.

[4] Author calculation based on data from MWCI quarterly report to the Philippines SEC as of 31 March 2007.

This definition meant the postponement of the physical completion payment for three months while advancing the sustainability payment by the same measure. This was possible due to the strong financial standing of the implementer that could wait those three months to receive the first installment of the subsidy payment, usually equivalent to 80% of the total unit subsidy. It is important to remember here that other customers would pay the full connection fee in three monthly installments so; the waiting period was not a major hurdle for MWCI.

On the other hand, advancing the sustainability portion of the subsidy payment would compensate for the delay in the physical completion payment whilst not compromising the quality of service provisions over time, as MWCI was showing continuous operational improvements year after year. Table 6 below shows the comparison between the usual approach used in similar OBA projects and the one used for the MWCI pilot.

Table 6: Outputs and Unit Subsidy Payment Schedule

| | Portion of unit subsidy paid after verification of | | Sustainability output verified after |
|---|---|---|---|
| | Physical completion | Sustainability output | |
| Usual approach | 80% | 20% | 6 months |
| MWCI pilot | 0% | 100% | 3 months |

#### 3.5.1.2.3 Gradual Approach

Given that the MWCI pilot was one of the first ones in the water sector, it was decided to move gradually, award only US$ 1,000,000 for subsidies and leave the option of escalating it to the full agreed upon amount once implementation was assessed as successful in terms of connected households and customer satisfaction.

The scale up was further dependent of additional funding to be provided by the International Finance Corporation to GPOBA.

### 3.5.1.3 Project Components

Through two components, the project provided a total of US$ 1,050,000 (to be increased to US$ 2,850,000) allocated as described below.

Component 1 (Subsidies): US$ 1.0 million to subsidize connection fees (to be scaled up to US$ 2.8 million).

Component 2 (Independent Verification): US$ 50,000 to pay for the activities of the Independent Verification Agent.

Given the capacities of MWCI technical staff and its solid financial standing, it was agreed that project design and construction supervision would be carried out by MWCI's own staff and without provision of Technical Assistance funds by GPOBA.

#### 3.5.1.4 Institutional and Contractual Arrangements

The roles and responsibilities that each party played are indicated below.

1. The implementing agency was MWCI and it was responsible for:
    c. Construction of works,
    d. Hiring consultants,
    e. Provision of services,
    f. Ensuring that targeted communities are indigent through socio-economic surveys of target households and discussions with local authorities, and
    g. Collecting all the information required for adequate monitoring and evaluation.
2. Community based organizations assisted MWCI during the promotion and public consultations stages.
3. MWSS-RO provided endorsement to the project and received updates on progress as per the existing regulatory reporting obligations, but did not assume any additional responsibility in the project.
4. MWCI submitted periodic output reports and claims for payments that would trigger the verification and payment process.
5. An independent auditor hired by MWCI in accordance with World Bank procurement policies and appointed subject to a no-objection by the World Bank/GPOBA verified the outputs reported by MWCI.
6. Newly connected households became customers of MWCI and were subject to the same terms and conditions as other customers and enjoyed the same rights in terms of quality of service (pressure, water quality, etc.) and customer service standards.

### 3.5.2 Project Implementation Process

#### 3.5.2.1 Identification of Beneficiary Communities

The project targeted small pockets of households/communities located within larger service areas of MWCI that were already served or would be served shortly. Furthermore, subsidies were targeted to reach households predominantly below the poverty line that, for 2007, was reported as PHP 8,061 (US$ 179) per month for a family of five with a single income earner (out of which PHP 4,805 (US$ 106) would be to cover basic food needs).

Eligible communities were classified as indigent communities and the Barangay Chairman was responsible to confirm such status formally.

Manila Water adopted three approaches to assess eligibility:
1. Survey potential communities, leverage its expertise accumulated through its TPSB programme. Surveys were conducted on a small number of representative, pre-iden-

tified, unconnected communities to confirm average household incomes below the poverty line, and average monthly expenditure for water supply.
2. Manila Water obtained certification from the barangay of the indigence (poverty level) of each community included in the OBA scheme. This assessment by the barangay is based on a survey by local governments, used for allocation of social welfare support. The surveys use a limited number of "most basic needs indicators", each of which is a proxy indicator for income, enabling a scoring of households. Only the lowest 25 to 30% typically qualify as indigent.
3. Manila Water automatically included the communities under socialized housing projects.

After being nominated and prioritized by MWCI, the selected communities should be further endorsed by the Local Government Unit in the sense that there are no development plans for the area for the following five years and confirmed by the Output Auditor (see below).

### 3.5.2.2 Selection of Eligible Households

MWCI staff then selected beneficiary households from the nominated communities through an assessment of the socio-economic condition of each household via a survey that followed an agreed format and was used to ensure that the eligible households fulfilled the following criteria:

1. Had no individual water service connection with MWCI.
2. Was a bona fide member of the community.

In a few cases, after the survey was completed, some households within a community were considered ineligible for subsidy. Nevertheless, they were included in the design of the corresponding water system and connected, but received no subsidy and had to pay the full connection fee.

### 3.5.2.3 Application

Once an identified community was surveyed as described in section 3.5.2.2, MWCI staff conducted a public consultation with the residents of the community to explain the project, the responsibilities of each party and gather community concerns.

MWCI staff further explained the procedure to be followed and requested that each household complete an individual application form and a promissory note committing to pay their portion of the connection cost.

### 3.5.2.4 TPSB Project Design and Construction

Even though subsidized by GPOBA, each project under the scheme was still considered a TPSB project. Thus, MWCI carried out the design and bill of quantities and then procured the materials and works following their own procedures, which had been assessed as satisfactory by the World Bank.

The contractor then proceeded to build the network and connections, including a yard tap in each house while MWCI supervised the quality of the contractor's work. This was later verified by the IVA as part of their sample verification of outputs (see below).

Some communities had cooperatives that were able to do plumbing work and, at the request of the newly connected households, built after the meter installations, brought the water to kitchen and bathrooms. This could only take place after the meter facilities construction costs were paid by the households so, very few opted to build them.

As an option, MWCI also offered to build this after the meter facilities as well as a restroom to be paid by the customer in thirty-six monthly installments. Very few households requested such facilities.

#### 3.5.2.5 Creation of Customer Accounts

After receiving the applications, MWCI created new customer accounts that were activated once the connections were commissioned. Each new account recorded initial payments by the household and the accounts receivable from the customer for meter and guaranty deposit (and after-the-meter facilities and restroom, if it was the case), as well as the accounts receivable from GPOBA for the subsidy.

#### 3.5.2.6 Acknowledgement from Beneficiaries

The beneficiaries were required to acknowledge formally that the water connection was completed and the meter was installed. This was implemented through the following procedure:

1. MWCI provided a spreadsheet containing the list of beneficiaries, name and customer account number to the contractor.
2. The contractor vendor input the number identifying the water meter installed to each household and forwarded the document to the community that collected beneficiaries' signatures.
3. The file was returned to the contractor and then to MWCI, which in turn submitted it to the IVA to be used in the verification process.

#### 3.5.2.7 Output Verification

From time to time MWCI submitted to GPOBA reports that indicated the new communities covered by the project, the number of households served and the completion date, among other data, forms and certificates that accredited compliance with the OBA project requirements. Once three months had passed since the last reported connection was finished, GPOBA shared this information with the IVA requesting its verification.

The IVA checked several elements before issuing the Output Verification Report that supported the disbursement request.

The most important task for the IVA was to verify the new connections and its service condition. To do this, the IVA visited each newly serviced area and verified that:

- There were newly installed connections and water meters (on a sample basis),
- The service was continuous (24-hour water supply) (on a sample basis),
- Water pressure was at least 5 psi (as measured in key points in the network that ensured that the whole area was properly served), and
- Water bills were delivered substantiating consumption (on a sample basis).

The IVA also authenticated the signed household certificates indicating satisfaction with the service provided and that the area had no previous water supply service provided by MWCI.

Once the IVA was satisfied with the results of the verification, a report on the inspection was submitted to MWCI and GPOBA, which was used to approve disbursement requests.

In addition to the monitoring and verification of actual outputs for subsidy disbursement, the following additional information was collected by MWCI and copied to GPOBA for monitoring and tracking purposes:

1. Improved hygiene and reduced incidence of water borne diseases resulting from increased consumption levels by beneficiary households as measured by the number of diarrhoea cases in Metro Manila reported by the Department of Health.
2. Reduction in household expenditure on water by target households, which would provide a proxy indicator for increased household welfare. This was measured by the household monthly expenditure on water as reported by the households in the surveys for the baseline and from MWCI billing system after households were connected.
3. User assessment of project/service as a qualitative indicator reported by the beneficiaries as No service / Poor / Fair / Good / Very Good.
4. Service Availability as a quantitative indicator based on the percentage of time with 24-hour supply with water pressure of at least 5 psi.
5. Time savings for women per household, measured as hours per day as reported by the households.

#### 3.5.2.8 Disbursement

Once GPOBA received the Output Verification Report, the disbursement procedure began. In case all outputs were confirmed, GPOBA proceeded to pay the unit subsidy multiplied by the number of verified connections to MWCI.

If there were discrepancies, MWCI was informed and submitted a new disbursement request indicating the number of connections considered compliant by the IVA and the payment was then approved and disbursed by GPOBA. In such cases, MWCI proceeded to rectify the non-compliant connections to claim subsidy payment together with the following submission.

#### 3.5.2.9 Environmental and Social Safeguards Compliance

MWCI together with World Bank specialists screened the subprojects to ensure that the potential environmental impacts were addressed in the project design. The identified environmental impacts were deemed manageable, site-specific and temporary. They were limited to the curbside debris, which resulted from the roadside diggings due to pipe laying and the temporary re-routing of vehicle and foot traffic due to road blocks to separate the construction work from the usual traffic flow. The impacts were easily mitigated as MWCI was experienced in making sure that their projects do not pose any adverse impacts to the environment. MWCI planned for the restoration of the diggings, disposal of the remaining debris and traffic re-direction as needed.

As there were no relocations foreseen in the beneficiary communities, no particular measures were taken. However, as MWCI had experience in the implementation of other World Bank Group projects, the environmental and social frameworks of such projects were considered satisfactory for the purposes of this project.

## 3.6 Implementation of the OBA Pilot Project

### 3.6.1 A Jump Start Connecting the Poor, Slow Administration and Other Developments

The Grant Agreement between the Manila Water Company and the World Bank was signed October 19, 2007, and became effective January 11, 2008.

MWCI had extensive experience with donor-supported operations showing capacity to implement projects. An operational manual was prepared, detailing procedures for the OBA scheme, including fiduciary, safeguards, reporting, monitoring and evaluation aspects. MWCI would implement the project through its business managers in the targeted territories, which would contribute to the desired leveraging of community culture, as MWCI had invested in community relations since its concession began in 1997.

Given the well-oiled machine of the TPSB programme, the concessionaire was fast to build the networks and connect the communities identified during the project preparation stage. By January 31, 2008, MWCI was reporting the completion of 4,028 new connections and by year-end, the number of new customers grew to 10,642.

However, it took quite some time for MWCI to retain the services of the IVA and by mid-2008, the University of the Philippines Engineering Research and Development Foundation, Inc. was hired to independently verify the outputs reported by MWCI.

This delay, combined with the fact that for internal reasons there was high rotation of MWCI staff managing the project, caused further delays in the preparation of the output reports including the supporting information, in particular the pressure maps required to demonstrate compliance with service standards.

The learning curve proved to be very steep for the concessionaire, requiring training of MWCI staff to comply with disbursement application procedures due to the high rotation of human resources mentioned above, as well as the introduction of more efficient ways to prepare pressure maps.

By mid-2009, MWCI received the first subsidy disbursement associated with only 1,567 of the 10,642 connections built so far. It is to be noted that, due to all the indicated delays, coupled with the impact of typhoon Ketsana (known in the Philippines as tropical storm Ondoy) that hit the Metro-Manila area on September 26, 2009, MWCI delayed further construction activities and the next batch of 1,327 connections was completed only in the second quarter of 2010.

Furthermore, in communities affected by typhoon Ketsana, verification was delayed because documentation destroyed during the storm had to be reproduced before verification could be completed.

Concurrently with this development, and as a result of the rate rebasing of 2007/2008, the MWSS-RO issued the "Implementing Rules and Regulations for Additional Meter and Clustered Connection Charges for Open/Depressed Communities", IRR 2008-06, ruling that households in the indicated communities willing to connect to the service would pay only one third of the prevailing connection fee, as adjusted based on the CPI, whilst the concessionaires should shoulder the remainder. In fact, the two thirds not paid for by the new customers would be cross-subsidized by all other customers through the tariff.

Effectively, through this ruling, effective September 15, 2008, the regulator reduced the connection fee from PHP 7,532 (US$ 167 equivalent) to PHP 2,625 (US$ 58 equivalent), making it more affordable for low-income households to connect to the networks.

However, this had an impact in the OBA pilot project. Given such reduction in the connection fee and provided that the low-income household would still pay the same amount as before the ruling, the subsidy should be adjusted to cover the remainder, as adjusted based on the CPI. The evolution of the unit subsidy is shown in Table 7 below.

Table 7: Evolution of Unit Subsidy

| Date | Unit subsidy |
|---|---|
| 19 October 2007 | 5,911.73 |
| 15 September 2008 | 2,025.75 |
| 12 February 2009 | 2,214.15 |
| 15 January 2010 | 2,285.00 |

By early 2010, the IFC approved the additional funding for GPOBA, clearing the way to fund fully the pilot project up to US$ 2.85 million. However, time was running out to fully implement the project and achieve the original target of 21,375 connections, much less the new number that would result from considering the connection fee reduction mentioned above. So, given all the indicated developments it was clear that the Grant Agreement needed to be revised.

### 3.6.2 Project Restructuring

The original closing date of the project was 30 June 2011. However, on 31 May of that year, MWCI requested an extension of the project until May 31, 2013 and a small reallocation of funds between categories.

Even though the cumulative disbursement up to the date MWCI requested the extension was only 27% of the total subsidy amount that could be granted (US$ 756,751 out of US$ 2,800,000), GPOBA considered the request favorably and, on June 29, 2011, formally increased the grant amount, granted the extension of the closing date and the reallocation of funds. The new amounts for the two components were US$ 2,750,000 for subsidies and US$ 75,000 to pay for the work of the IVA.

Before MWCI proceeded to request the extension there were several discussion rounds to deal with the issues that were hindering a faster implementation and assess the chances that the proposed solution would be satisfactory. The issues tackled during these discussions and resolutions adopted were:

1. MWSS-RO ruling IRR 2008-06 that reduced the connection charge and caused the reduction of the unit subsidy. It was agreed not to modify the target of 21,375 connections, as it was deemed that overachieving the target would not cause any problem to the parties.
2. Difficulty in identifying low-income communities that offered a suitable situation to implement the subsidy scheme. This was caused by the fact that in many pre-identified communities there was a considerable proportion of households that would not be eligible to receive the subsidy and MWCI was concerned about the social tensions that could arise due to the differential treatment dispensed to some neighbours as compared to others. It was agreed that the extended closing date would allow MWCI to identify new communities that presented suitable cases for the subsidy scheme.
3. Delays caused by high rotation of MWCI staff managing the project and other administrative hindrances. Extensive training was provided to new staff and it was agreed that the new team would be retained in their positions until project closing. Should there be a strong need to change a project team member, a handover process should be fulfilled and reported to GPOBA.
4. After the newly connected households were using their piped water for some time and realized that the expenditure for water was much lower than before, the volume of water used increased, as did the volume of wastewater. However, the lack of sanitation or sewerage facilities was causing the wastewater to run onto the roads and alleys. It was agreed that MWCI would propose solutions that they

deemed socially and technically acceptable. However, issues like the unit subsidy to be granted to each household, the sustainability of the solution, the output indicator to be used as trigger for payment and the way to verify the results were to be studied and defined after the technical solution was submitted to GPOBA.

The positive resolution of the request for restructuring of the project was based not only on the strong operational and project implementation track record of MWCI and the understanding that the solutions proposed to the issues affecting the project were well grounded, but also on the fact that the process to produce the documentation for verification and process the request for payments were improved. This was demonstrated by the prompt disbursement of additional US$ 375,028, bringing the total disbursed amount to US$ 1,131,179 or 41% of the new total subsidy amount.

However, MWCI decided to focus on building new connections and defer the verification process and further claims for payment until 2013 when they would call for one last verification exercise to cover all the newly connected households and claim the corresponding payment. This can be seen in Table 8 in section 6.3.

MWCI kept the same project team throughout the remainder of the duration of the project, as agreed. This was beneficial in terms of producing all the information for output verification and other monitoring and evaluation.

However, despite several presentations and discussions, it was not possible to reach an agreement on the sanitation/sewerage solution to be implemented, mostly because the solutions proposed by MWCI were expensive and required a high proportion of subsidy to be affordable to the affected communities.

### 3.6.3 Results

Despite the administrative and regulatory issues that affected this pilot project, MWCI was able to connect 28,562 households that became customers and were able to enjoy higher volumes of water at a lower cost than before. Table 8 below shows the number of connections made each year as well as the subsidies disbursed throughout the project duration.

In the table, it is possible to see the impact of all the issues described in previous sections and the results of the restructuring of the project. The lag in subsidy disbursement is noticeable compared to the earned subsidy due to the connections that were built. Even though the nature of the OBA approach lead naturally to a certain lag between these two indicators, the magnitude of the lag in this case clearly reflects that there were administrative issues that went beyond the regular waiting time for the verification process to take place.

The table shows an overachievement of almost 34% with respect to the original target of 21,375. This was mostly due to the reduction in the unit subsidy derived from the reduction of the connection fee mandated by IRR 2008-06.

Table 8: Evolution of Connections Built and Subsidy Disbursement (World Bank 2013)

| Year | Connections built | | Unit subsidy | Earned subsidy amount | | Disbursed subsidy | |
|---|---|---|---|---|---|---|---|
| | Current | Cumulative | | Current | Cumulative | Current | Cumulative |
| 2008 | 10,642 | 10,642 | 94.97[5] | 1,010,658 | 1,010,658 | 0 | 0 |
| 2009 | 0 | 10,642 | 0.00 | 0 | 1,010,658 | 271,789 | 271,789 |
| 2010 | 1,327 | 11,969 | 50.68 | 67,252 | 1,077,909 | 131,151 | 402,940 |
| 2011 | 228 | 12,197 | 54.78 | 12,491 | 1,090,400 | 728,239 | 1,131,179 |
| 2012 | 13,508 | 25,705 | 58.80 | 794,248 | 1,884,648 | | 1,131,179 |
| 2013 | 2,857 | 28,562 | 59.96 | 171,302 | 2,055,950 | 924,771 | 2,055,950 |

However, the overachievement is the result of not modifying the target after such reduction of the unit subsidy, as the parties agreed that part of the amount for Component 1 would probably be used for sanitation projects, which did not materialize. This impacted on the level of disbursement, which was less than 75% of the originally granted amount.

Besides the connecting low-income households, as measured by the number of new connections, the project had other objectives with associated indicators as shown in Table 9 below, while the achievements are shown in Table 10.

Table 9: Other Project Objectives and Indicators

| Objective | Indicator |
|---|---|
| Improved hygiene and reduced incidence of water borne diseases resulting from increased consumption levels by beneficiary households | Number of diarrhoea cases in Metro Manila |
| Reduction in household expenditure on water by target households, which would provide a proxy indicator for increased household welfare | Percentage of household income spent to buy water |
| User assessment of project/service | Qualitative indicator based on public perception of the project and service (No/Poor/Fair/Good/Very Good) |
| Service availability | Percentage of customers receiving service according to standards (24 hour supply of with water pressure of at least 5 psi) |
| Time savings for women per household | Hours per day saved by women in household |

Customer survey also showed that consumption increased after households were connected to the network, as respondents indicated that they used 4 $m^3$ to 8 $m^3$ before being connected as compared to 8 $m^3$ to 12 $m^3$ afterwards.

[5] Weighted average considering the reduction introduced by IRR 2008-06.

Table 10: Benefits Derived from the New Connections

| Indicator | Baseline value | Target | Results achieved |
|---|---|---|---|
| Number of diarrhoea cases in Metro Manila[6] | 27,372 | No target | 23,443 |
| Percentage of household income spent to buy water | 13%[7] | ≤ 5% | 1% to 2%[8] |
| Public perception of the project and service | N/A | N/A | Very good[9] |
| Percentage of customers receiving service according to standards | N/A | 95% | 100%[10] |
| Hours per day saved by women in household | N/A | N/A | 2 hours per day[11] |

## 3.7 Lessons Learned

The various issues and circumstances that conditioned implementation of the Output Based Aid - Metro-Manila Water Supply Improvement Project provided fertile ground to extract useful lessons for future implementation of similar projects. The lessons considered more relevant to this purpose are summarized below.

### 3.7.1 Equity of Access

It is clear from this case that the use of targeted results-based subsidies played a critical role in ensuring equity of access with transparent and efficient use of public funds. Even after the reduction of the connection charge mandated by the regulator, the connection fee was beyond the means of the lowest-income inhabitants of Metro-Manila and the subsidies provided the necessary support to breach the access gap.

### 3.7.2 Higher Level Impacts

As the project measured the effect of installing the connections in other aspects of the life of the beneficiaries, like increased productivity due to time savings and reduction in water borne diseases, it was possible to see the link between the direct output of the project and potential impact. Although more evidence might be useful to confirm these links, this case provides some evidence that could inform the design of schemes that could use different Results-Based Financing (RBF) mechanisms to achieve improvements in standards of living of the population involved.

The central government could provide Cash on Delivery aid (COD) to local governments that improved certain parameters like incidence of water borne diseases and local governments use OBA subsidies to get all the inhabitants in their area of jurisdiction connected to water and sewerage networks among other improvements (garbage collection, etc.). It could be applied also to reduction in crime levels and improved transport (see 3.7.8.2 below).

[6] Department of Health latest data for 2008 and 2011 respectively.
[7] Calculated as PHP 1100 spent from a household income of PHP 8,404 (World Bank 2013, page iii)
[8] Calculated as PHP 110 to PHP 196 spent from a household income of 10,032 (World Bank 2013, page iii)
[9] Public Assessment of Water Service 2012.
[10] Water pressure is 16 psi on average in the areas served by the project. MWCI data as of 2013.
[11] Customer survey results as of 2013.

### 3.7.3 Implementing Agent

Even though MWCI had an impressive operational and project implementation record as well as experience with World Bank financed projects, there were several problems linked to the lack of skills of the staff managing the project. This was mostly due to the frequent rotation of the project team staff.

Once MWCI committed to keep the team composition stable and followed through on that commitment, the staff were trained and implementation, verification of outputs and disbursement performances were noticeably improved.

It was clear that MWCI capacity to build connections and deliver the service was excellent as physical completion was far ahead of schedule, with almost half of the original target achieved within the first year of project effectiveness.

However, it was also proved that technical, operational and even financial prowess is not enough if the implementing agent fails to keep a strong team managing the project. This might sound obvious in project management, but it is critical when the project is innovative in nature.

Close monitoring and capacity building by the World Bank and GPOBA team was critical to assist in overcoming the issues described above.

### 3.7.4 Community Selection and Household Targeting

Even though the project adopted a straightforward approach to community selection and household targeting, the mechanism lacked flexibility to approach areas with mixed populations with low-income and low/middle-income families. MWCI manifested its concerns about the possible social tensions that may arise in such communities due to the differential treatment that some would receive as compared to others.

However, given the well-trained staff involved in the TPSB scheme since the early days of the concession, it could be argued that it could have been possible for MWCI to organize such communities through awareness and communication actions that would have ironed out potential wrinkles or help identify those communities that were more amenable to accept such differential treatment.

Of course, the problem arose mostly due to the reduction in the connection charge through IRR 2008-06. However, it should be clear that at the design stage some consideration should have been given to the possibility of such scenario taking place at some point during the project implementation, particularly as the rate rebasing exercise that resulted in such connection charge reduction was taking place at the same time the pilot was being designed.

### 3.7.5 Holistic Approach

Probably the most valuable lesson to extract from the project to improve the outcomes and potential impact of future similar projects is the need for a holistic approach to providing basic services to depressed areas.

Even though the project design mentioned an option to include sanitation as part of the package offered to potential new customers, the project actually focused on providing water connections to them. This indeed proved to be beneficial on some aspects but detrimental on others. At a minimum, the beneficial effects could have been larger, should a holistic approach covering water supply and sanitation, be adopted.

For projects with a strong social focus, it is highly advisable to use what is known as a Nexus Approach at the design stage to provide for integral solutions that would maximize social benefits that will also translate into augmented positive economic effects.

Families could have enjoyed internal plumbing and wastewater disposal facilities that could have been designed using innovative mechanisms compatible with future development of sewerage networks, if the adoption of communal sewerage networks was not acceptable to MWCI in the urban context it operates.

This would have avoided the spill of wastewater on streets and alleys and probably contributed to a more dramatic reduction in cases of diarrhoea, improved living standards and productivity while keeping roads clean and free from foul odors.

**Integrated Solutions**

Of course, the unit subsidies should have been higher and the number of beneficiaries might have been smaller. However, using a Nexus Approach to project design would have provided those beneficiaries with an integral solution, instead of solving one problem while worsening another one, as they had to figure out how to dispose of the increased volume of wastewater. Many of them could not enjoy all the benefits of piped water as many continued to use containers to store water from the faucet installed through the project and used it in the same way they were doing before. The main benefits they realized were the savings on procuring the water, monetary, time, and better quality water.

### 3.7.6 Supervision and Verification

On the one hand, using only one output as trigger for subsidy payment did simplify the process and reduced the cost of independent verification, but on the other hand, the loose definition of the way to verify the indicators that would tell whether the results were satisfactory or not led to delays on higher verification costs.

The one aspect that presented the most troubles was the confirmation of adequate water pressure in the newly served area. For some reason, MWCI initially found it difficult to produce the pressure maps that could demonstrate such level of service.

At the design stage, the team needs to ensure that the implementing agency has all the skills and systems to produce the information needed for verification purposes or, if that is not the case, find proxy indicators to cope with the lack of them until this shortcoming is resolved.

### 3.7.7 Scalability

Taking into account the issues mentioned above, there is ample potential to scale up this pilot project, not only in Metro Manila (with both concessionaires) but also in other parts of the world. Showcasing the success of this and other OBA pilots implemented in several countries should provide enough evidence to woo governments on the advantages of this results-based approach to deploy public funds in terms of efficiency and effectiveness.

### 3.7.8 Other Lessons Learned

#### 3.7.8.1 Impact on Demand

Being able to connect to the network resulted in lower water unit price (PHP/$m^3$). This led to increased consumption, despite the lack of adequate internal plumbing and sanitation facilities, showing the existence of unsatisfied demand. It is most likely that some unsatisfied demand still exists, given that many new customers still use the water in the same way as they were doing before the project, using containers to store the water and transport it to the areas where they actually use it.

#### 3.7.8.2 Impact on the Development of Other Infrastructure

In some communities, following the installation of the new network and connections, other agencies proceeded to build new infrastructure like improved roads and public lighting with positive impact in terms of reduction in the number of accidents and crime. It is unfortunate that, due to the lack of a holistic design of the OBA project, there was no infrastructural solution to the wastewater problem.

However, the fact that other infrastructure development followed the construction of the new water networks, even though not planned as part of the pilot project design, shows that there is an opportunity for designing development solutions that could address several infrastructure and service needs altogether.

This is particularly promising for attempts at upgrading urban slums. Given the evidence from this case, it could be possible for central or local governments to use RBF mechanisms to incentivize integration of urban planning and implementation of development programmes following logical sequencing and in tight sequence, accelerating the realization of benefits accruing from improved infrastructure.

In the case of Manila, while it is understandable that this project is a pilot to test the concept, it could not be expected to have more ambitious results. In hindsight, it would be much more effective to adopt a Nexus Approach that would use RBF incentives to tackle the whole water supply-wastewater cycle by providing for the installation of

water networks and connections, on-site sanitation with an appropriate collection and transport system, and treatment facilities to keep water bodies protected.

This could have been coordinated with some of the initiatives already materializing in Metro-Manila like the projects that monitor and control pollution on Laguna Lake or initiatives to improve the Pasig River (Manila Third Sewerage Project among others). The Laguna Lake protection scheme uses a "pollutant party pays" approach and part of the proceeds could be used to subsidize the construction of the internal facilities in low-income households that would allow for the collection of wastewater that would then be conveyed to treatment facilities, avoiding pollution in the catchment.

## 3.8 Conclusion

Ensuring that low-income families are on an equal footing to access basic services like drinking water is one of the best justifications to using subsidy schemes. The Manila Water Supply Improvement project used an OBA approach to ensure transparency and efficiency in the use of subsidy funding for that purpose.

Despite many circumstances that hindered the implementation of the project, the objectives were fulfilled and the original target of 21,375 new connections was overachieved by a margin of 34% while using only 73% of the original amount allocated for subsidies.

The overachievement was triggered by reduction in the connection fee mandated by IRR 2008-06 (issued by the MWSS-RO), which drove a consequent reduction in the unit subsidy amount. However, the pilot proved that the OBA scheme was instrumental in ensuring equity of access for the population reached by the project.

Even more important than the achievement of the connections target was the fact that households were able to use 50% more water and still pay about one tenth of what they spent to avail of water before being connected. Women in each household recovered some two hours of their time per day thanks to the project, so they could become more productive and incidence of water borne diseases was reduced, although more evidence might be needed to support attribution to the project.

The fact that it was possible to establish a link between the outputs of this project and improvements in higher level results like improved health hints to the viability of developing cascading schemes based on RBF instruments like COD and OBA. This would incentivize central and local governments to implement programmes and integrate infrastructure planning and execution initiatives that would result in improved living standards and increased productivity.

This idea is further reinforced by another outcome of this pilot project, as it was the improvement of other infrastructure in the project areas, like improved street lighting and new or improved roads and transport services, which lead to reduced crime levels and improved productivity through a reduction in reduced travel times and losses caused by accidents.

Keeping this rationale within the realm of the water sector, the project was also useful to demonstrate the importance of using a Nexus Approach towards planning and implementing these kinds of interventions.

Even though the project did not adopt the Nexus Approach, it was evident that such lack of holistic design mechanism led to an unresolved wastewater management problem and prevented many households from fully enjoying the benefits of receiving piped drinking water, forcing them to use less than the desired volume due to lack of appropriate sanitation facilities. Furthermore, the runoff of wastewater on streets and alleys is most likely a source of pollution for creeks and other water bodies.

Coordinating with other agencies, like the ones caring for water bodies within and surrounding the metropolis, could have been considered in designing the pilot using a Nexus Approach that complements the funds provided by GPOBA with other public funding coming from the pollution prevention and remediation schemes already under implementation in the area.

In this way, the whole cycle comprising water supply, wastewater collection, transport, treatment and disposal could have been taken care of through an integrated intervention.

However, it is only fair to remember that the pilot project was conceived to prove the effectiveness of the OBA mechanism to use public funds to bridge the access gap and ensure equity of access to the lowest income portions of the community.

As such, the project was very successful and provides a solid precedent upon which to build new initiatives that, if combined with a Nexus Approach, could be most effective to provide an integral solution to domestic water management in an urban context, involving all strata of the population, including the lowest-income families.

Not underestimating the need for a holistic approach to this kind of intervention, the pilot project was successful and a good example of the use of targeted results-based subsidies to achieve equity of access to basic services.

Many other OBA pilots for provision of drinking water have been implemented in several countries in urban and rural settings. Some of them benefitted from the lessons provided by the Manila case, which contributed to broaden understanding of the strengths and weaknesses of results-based instruments and ways to overcome the latter.

# 4. CASE 3: TANZANIA WATER POINT MAPPING PROJECT

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## 4.1 Executive Summary

The United Nations University Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES) prepared this Planning Primer as an initial contribution to facilitating the planning process for water projects and programmes. With this in mind, the primer was developed in parallel to the provision of advisory services to the Ministry of Water – Government of Tanzania (MoW), which requested this advice in order to implement and potentially enhance the Water Point Mapping System under development. Doing so, allowed us to show the planning process through a practical example and demonstrate how a theoretical framework was adapted to the actual circumstances at hand.

The Government of Tanzania, through the Ministry of Water developed a Water Point Mapping System (WPMS) and it is in the process of rolling the system out. Water point mapping, properly implemented could be a very useful tool for improving water services through adequate strategic and local level planning, monitoring and reporting among other potential uses. The WPMS in Tanzania was developed after assessing the initiatives carried out by several development partners and NGOs in various regions of the country.

However, the process of developing and rolling out the system has proven to be more challenging than expected and concerns about the success of the process and the quality of the final product was growing among stakeholders. The MoW is seriously committed to deliver a suitable product and requested the assistance of the UNU-FLORES to prepare a road map as a means to accomplish this end.

The UNU-FLORES team worked together with the Information and Communication Technologies (ICT) Unit at the MoW and the Water Development and Management Institute (WDMI) to put together the road map (which informed this primer). The team performed this task using a consultation process through which the stakeholders are informed of the objectives and consulted about expectations, challenges and their potential contributions to the process of developing, implementing and rolling out the WPMS.

The consultations were initiated with a Kick-Off meeting to organize the planning clinics as anticipated following the theoretical planning process. This participatory planning process consisted of a series of clinics designed to develop consensus and identify and strengthen partnerships among stakeholders to advance the objectives defined at the start of the process (Kurian and McCarney 2010).

However, the consultation process was modified after the first planning clinic (indicated under 1. below) as it was clear that the positions of many stakeholders were too far apart or were conditioned by the obstacles found in earlier stages of the development of the WPMS.

As a result of these discussions, the consultation process was carried out as indicated below:

1. A first planning clinic with a broad audience to discuss challenges and expectations for the long, medium and short term.

2. A set of breakout meetings, each with one stakeholder relevant to the planning process to understand better their points of view, expectations and foreseen challenges for the WPMS, and a field visit to Morogoro district to meet with the management team of a community-owned water service organization (COWSO) and with relevant authorities and administrative staff at the Local Government Authority.
3. A second round of breakout meetings with similar structure and participation as the previous round with the objective of discussing the proposed road map prepared with the information gathered in previous meetings and from secondary information while requesting further comments.
4. A regional workshop organized around the theme of "Water Point Mapping as a Drought Risk Mitigation Tool in Africa" including a presentation of a final draft of the road map.
5. A final meeting with MoW and the Prime Minister's Office for Regional Administration and Local Government, to finalize the draft road map that the MoW will use to have structured discussions with the stakeholders.

The breakout clinics that would have taken place (according to the theoretical scheme) including various stakeholders at a time (those concerned with a specific subject within the planning process) were changed into breakout meetings with one stakeholder at a time to understand better their points of views and identify the key obstacles for a constructive dialogue.

The UNU-FLORES team carried out this process during two missions to Tanzania, the first from January 27 through February 4 and the second from February 24 through 27 to interact directly with the most relevant stakeholders.

The team aimed at using the planning process as a means to identify the obstacles mentioned by the stakeholders, breakages in the dialogue between the parties and any points for potential collaboration.

Understanding the interests of each stakeholder, where they saw value in the system, what activities each was amenable or willing to support, and what obstacles they could foresee were the focus of the discussions.

This process allowed the team to identify that some stakeholders were interested in assessing the system as a potential tool for monitoring progress toward increasing water supply coverage with the end goal of implementing a Payment by Results (PbR) scheme. While others were keen to support the testing of remote sensing and mobile technologies for automatic updating of the water point database.

With these and other ideas, the UNU-FLORES team prepared a draft road map and sent it out to the stakeholders so they could prepare for a second round of consultations.

The second round of breakout meetings, combined with exchanges through written means of communication, discussed the ideas and concepts included in the draft road map. The team put together a final draft that summarized the ideas for advancing and enhancing the WPMS that were acceptable for all stakeholders and could be used by the MoW to hold structured dialogues with development partners like multilateral and bilateral aid agencies and other stakeholders to implement, rollout and enhance the WPMS.

This roadmap, included in section 6 below , was presented during the workshop identified in 4. above. During this workshop, most of the stakeholders consulted during the process were present and it was possible to confirm their agreement with the proposed road map.

A final meeting with the ICT Unit of the MoW, the WDMI and a representative of the Prime Minister's Office for Regional Administration and Local Government (PMO-RALG) allowed for confirmation of the ownership of the road map by MoW and to solidify a partnership between MoW and UNU-FLORES. The latter acted as a catalyst between development partners and the ministry through a champion appointed especially to advance the road map to institutionalize and enhance the WPMS.

## 4.2 Introduction

In early September 2013, the Ministry of Water requested UNU-FLORES to collaborate in addressing the capacity development priorities for sustainability of the Water Point Mapping exercise and to support the finalization of the draft vision document prepared by the MoW.

In response to this request, UNU-FLORES assembled a team consisting of Dr. Mathew Kurian (Academic officer, UNU-FLORES), Professor Manfred Buchroithner (Director, Technische Universität Dresden) and Eng. Mario Suardi (Consultant for UNU-FLORES) to collaborate with the Ministry of Water.

This team produced a road map for enhancement of the Water Point Mapping System under implementation in Tanzania (see section 4.3 below) as part of the response to the latter part of the request and in developing it; a draft vision document prepared by the MoW was used as a starting point.[12]

This document explains the consultation process carried out and the conclusions derived from this process, condensed in a draft plan (included in section 4.5 below) intended to enrich the dialogue between the MoW, the development partners and other stakeholders involved in the water sector in Tanzania.

The MoW sought assistance to address a number of priority areas that needed immediate action within the next two years as well as others identified during the consultation process, which could also be tackled within a five-year horizon. The priorities identified by the MoW were:

1. Identification of a standardized methodology to address governance issues and technical know-how for Water Point Mapping System sustainability based on pilot experiments in different parts of the country.
2. Identification of a procedure for further investment and resource allocation in a transparent and participatory manner.
3. Building capacity within the Water Development Management Institute of the ministry (WDMI) for policy relevant research based on data collected from WPM exercise.
4. Involving key stakeholders to address the issue of harmonization of special data sets or maps from different sources for administrative boundaries (villages, wards, districts, etc.).

[12] Sustainability of the Water Point Mapping System in Tanzania, Dar es Salaam, October 2013.

The UNU-FLORES team initially aimed at harnessing the opportunity of developing a plan for further implementing and enhancing the WPMS. Working together, the MoW, with the ICT Unit and the Water Development and Management Institute were the main players, and included development partners (like DfID, the World Bank, etc.) and other stakeholders (WaterAid, GIZ, etc.), as well as COWSOs.

The team would follow the planning process consisting of different planning clinics involving relevant stakeholders to identify expectations and challenges and strengthen partnerships to implement the identified activities according to an agreed schedule (Kurian and McCarney 2010).

However, several reasons (further explained in section 4.4 below) led the team to change the approach and, following a slightly modified planning process, aimed at producing a road map that could be used by the stakeholders for a structured dialogue. This would be carried out within the existing dialogue framework that would allow all parties to agree on the priorities, solidify partnerships and advance the different activities identified in the road map.

After this introduction, section 4.3 presents the background that led to intervention by the UNU-FLORES team while section 4.4 explains the original scheme of consultations and how it was modified due to observations by the team during the first clinic. This is intended to show how the consultative/participatory planning framework could be adapted depending on the circumstances.

Finally, section 4.5 includes the product of the planning exercise in the form of the roadmap that was shared with the Ministry of Water to help structure the dialogue with stakeholders.

## 4.3 Background

Between 2005 and 2009, several water sector stakeholders including WaterAid, SNV, Plan International, Concern Worldwide, Ingenieros Sin Fronteras and AMREF pioneered water point mapping in a substantial number of administrative areas (55 out of 132 rural districts) using broadly the same WPM methodology. The outcomes of these initial efforts were used to feed into discussions at national sector review meetings and by 2008, the indicated stakeholders in collaboration with the Ministry of Water decided to use WPM as a planning and monitoring tool.

The initial scope of the use of the WPMS comprised broad strategic planning, priority setting, local level planning and performance monitoring for the rural water supply services. In addition, it was considered that water point mapping data could be used to support proper operation, maintenance and replacement of the water points, if needed. Moreover, it could be used for advocacy and communication activities as the maps, if accurate, are powerful tools since they provide clear messages and communicate complex information quickly and easily. Web-based water point maps could be used to foster accountability and disseminate information to a broader audience.

Finally, the WPMS is seen as a tool to support monitoring and evaluation of the water sector delivery services and it can be used as a one stop information source for the Big Result Now initiative under implementation by the Government of Tanzania to accelerate the expansion water service of coverage in the country, among other goals.

However, it was necessary to build on the already existing experience to complete the information on all rural water points. Thus, the Water Sector Development Programme (WSDP) adopted the methodology to establish a comprehensive system to assist all concerned stakeholders in the country to have a clear picture of the status of the water supply services in terms of coverage and functionality and used that information for operations, maintenance and expansion planning purposes.

The challenge was to collect and make available accurate, reliable and up to date information regarding the current coverage of functional and non-functional public rural water points throughout the country with the view of improving decision-making and allocation of resources towards improving water supply services in rural areas.

The MoW retained the services of GeoData Consultants Limited starting November 2010 to perform the following tasks:

- Conduct a baseline survey of all developed public rural water points in the 132 Local Government Authorities (LGAs) areas of mainland Tanzania.
- Geo-locate each public water point using a Global Positioning System.
- Take geo-tagged photographs of each water point visited.
- Collect data on the functionality, management, technical specifications, quality and quantity of the water produced at each of the water points.
- Design, develop and institutionalize a functional web-based system to produce and make public accessible maps and data related to water point functionality and coverage.
- Increase the capacity of MoW staff, LGAs, and other users at Basin and Regional level in order to be able to use and update the WPM system.
- Launch of the system for public awareness and usage.

The contract, however, was extended several times and some of the tasks are still ongoing. The current status, as of February 2014 is as follows:

- The baseline was completed for 74,250 publicly developed rural water points in the 132 LGAs in mainland Tanzania, including all the parameters indicated above, the geo-location and geo-tagged photograph of each WP.
- The water quality data is based on perception rather than on laboratory test results.
- The web-based system has been developed and is functional. However, it is still to be institutionalized.
- Training of trainers is ongoing and it will be the basis for further improving staff capacity and skills to operate and update the data in the system.

However, beyond the need for updating the information of already uploaded and new water points and the move towards laboratory test-based water quality data, there are other challenges facing the usability of the WPMS.

1. The government of Tanzania is in the process of approving new shape files for administrative boundaries and, once the new shape files are approved and released by the National Bureau of Statistics or the Ministry of Lands, the water points' geo-reference attributes should be adapted for those new files.
2. Not all water points are visibly labelled. Labelling water points physically is considered an important feature for monitoring campaigns by entities such as the MoW, the Prime Minister's Office for Regional Administration and Local Government (PMORALG), Regional Secretariats, Civil Society Organizations, Non-Governmental Organizations, Development Partners and other key stakeholders.
3. Institutionalizing, rolling out and ensuring the adoption of the new system and updating mechanism by the Local Government Units (LGAs), District Water Engineers (DWE) and COWSOs. Embedding the system to work together with other government planning, monitoring and reporting systems.
4. Provide for the continuous training of current and potential users to ensure broad adoption and a common base for discussion.
5. Ensure the trustworthiness of the information uploaded and produced by the WPMS through a mechanism like the proposed Validation and Inquiry Process (VIP). It is very important that all responsible stakeholders (MoW, COWSOs, Development Partners, CSOs, etc.) agree on the way the VIP will be implemented.

Additionally, other aspects should also be resolved to ensure a smoother adoption of the system and the benefits of its availability to all stakeholders across the country:

1. A standard procedure for COWSOs registration. Currently there are various ways for COWSO registration and sometimes there are delays in this process. Speeding up COWSO registration is a way to secure the identification of responsibilities for operating and building water points including the update of the water points' data.
2. There is a need for reliable connectivity and Internet bandwidth for providing access to the system. LGAs and DWEs should be connected and have reliable access to the system. This is a critical challenge for rural areas where communication infrastructure is not as strong as in areas closer to urban centers.

It is clear that the potential of maps or spatial information could be further exploited. It is important, however, that new uses for this information are thought through carefully and in consultation with relevant stakeholders. An initiative by DfIDs for using the system as the monitoring tool for a Payment by Results scheme seems a good starting point and it may help to ensure the long-term financial sustainability of the system. The proposed action plan aims to contribute to such structured discussion.

## 4.4 Analysis of the Planning Process

### 4.4.1 Problem Scope

This primer aims at showing how to conduct a planning exercise that will incorporate the considerations for the provision of adequate service to the community while making sure that the water source is monitored to ensure its long-term sustainability as well as

appropriate handling of the waste generated by the operation of the system. The process is shown through the description of the activities performed while assisting the Ministry of Water to iron out issues on implementation of the Water Point Mapping System.

The first step was to understand the problem and design a way to interact with the stakeholders to define achievable objectives and activities to be performed with the aim of preparing a plan with scheduled tasks and responsible stakeholders for each of them.

The MoW indicated that the WPMS was under implementation and that the initial inventory of water infrastructure was finalized so, the main issue, and thus objective for the planning exercise, was to roll it out, ensuring that it would remain up to date and become the main tool for planning, monitoring and reporting the status of the rural water supply service in Tanzania. Using the Nexus Approach would ensure that the interaction between service provision and source conservation would be taken into account in the resulting plan.

So the initial aim of the team in assisting the MoW while developing the planning primer was to identify the planning gaps, the expectations of the stakeholders, the potential obstacles that may be encountered while implementing the actions agreed upon with the stakeholders during the planning process, and to form and/or strengthen partnerships between stakeholders with similar expectations, complementary skills and capacities to achieve the stated objectives.

As mentioned above, after the kick-off meeting and first planning clinic (see below), it was clear that the circumstances required a modification of the initial scope and, while still aiming at achieving most of the goals indicated above, it was clear that the exercise should put at the highest priority improvement in the quality of dialogue between the stakeholders.

Given the time and resources available, the result would not be the initially expected plan, with schedules and responsibilities for execution of the identified activities, but a road map indicating the main activities to be carried out together with an indication of the potential partnerships that could be explored. This road map would be used later by the MoW to have a structured dialogue with the stakeholders leading to the actual plan of activities.

### 4.4.2 The Stakeholders

With the initial problem scope identified as indicated above and after consulting with the MoW and reading secondary information about the water sector in Tanzania to identify suitable stakeholders, the team requested the MoW counterpart to set up the different clinics.

An initial broad list of stakeholders was prepared, as shown below, and they were invited to the first clinic. A more detailed description of their functions can be found in a draft vision document prepared by the MoW with assistance from GeoData Consultants Ltd. (Ministry of Water - Government of Tanzania 2013).

Relevant stakeholders included:

1. Government authorities of all levels of the executive branch and councils (Village Executive Officer, Village Council, etc.):
   a. Ministry of Water (Water Resources and Rural Water Supply and Sanitation, the Information and Communication Technology Unit and the Water Quality Services Division),
   b. Ministry of Health and Social Welfare (MoHSW),
   c. Ministry of Education and Vocational Training (MoEVT),
   d. PMO-RALG, and
   e. Regional Secretariat.
2. Regulatory and technical staff including:
   a. The Energy and Water Utilities Regulatory Authority (EWURA),
   b. National Environment Management Council (NEMC),
   c. District Water Engineers (DWE), and
   d. Regional water laboratories.
3. Service providers and community:
   a. Community owned water service organizations (COWSOs)[13] and
   b. Community representatives.[14]
4. Development partners and NGOs:
   a. WaterAid,
   b. The World Bank,
   c. Department for International Development (DfID),
   d. Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), and
   e. Others as deemed convenient by MoW.

As it is advisable in most planning exercises, the intention was to gather as large an audience of relevant stakeholders as possible with the idea of setting a common understanding about the planning process and start with it.

Later on, the list was slightly modified, excluding EWURA, as their jurisdiction is limited to the urban areas and included telecommunication companies due to their potential role in strengthening and modernizing the WPMS updating mechanism.

### 4.4.3 Original Consultation Plan

The consultation process would comprise an initial or kick-off meeting with representatives of the Ministry of Water (MoW) and, if possible, the PMO-RALG due to their role as coordinators of the planning and resource allocation process.

The kick-off meeting had the objective of reaching an agreement on the expected outcomes and finalizing other details for the set of planning clinics and consultation rounds, like confirming the list of participating stakeholders in each clinic/consultation, timing and other logistical elements.

[13] The water service providers in rural Tanzania (could be publicly or privately managed).
[14] It was considered convenient to identify in advance a relatively small, yet meaningful number of communities to be involved in the discussions.

The original consultation plan involved:

1. A first planning clinic with a broad audience to discuss challenges and expectations for the long, medium and short term.
2. A consultation stage comprising a set of mini clinics and field visits involving in each of them those stakeholders relevant to different stages of the planning process to define process indicators, pathways to reform, available resources and associated risks and obstacles.
3. A second round of mini-clinics with similar structure and participation as the previous round with the objective of discussing the proposed action plans, activities, reaching agreements on those actions and plans, and seeking to resolve any potential constraints and obstacles to implementing them.
4. A final planning clinic to solidify partnerships and get all stakeholders to agree with the proposed plan.

A more detail description of the planned activities is given below.

#### 4.4.3.1 Kick-Off Meeting

A two-hour meeting was planned, to confirm the priorities and the outcomes to achieve through the planning process. Stakeholders involved would be:

- Policy and Planning Division (MoW),
- Water Resources Division (MoW),
- Urban Water Supply and Sanitation Division (MoW),
- Rural Water Supply Division (MoW),
- Water Quality Services Division (MoW),
- Information and Communication Technology Unit (MoW),
- Water Development and Management Institute, and
- Prime Minister's Office for Regional Administration and Local Government.

It was clear that, the Government of Tanzania invested significant resources implementing the WPMS and the main objective of the planning process was to ensure that it would be properly rolled-out, operated and maintained to become an important element in the planning and service delivery (O&M) process. It was also clear that, the end goal of the Government of Tanzania was to ensure the provision of adequate water and sanitation services to all the population while protecting water and other resources.

Participation of the PMO-RALG was requested given their role in several aspects of local government processes like planning, budgeting, allocation of resources and capacity building. Later in the planning process, many levels of local governments would participate but, at this stage, this office could provide insights into the above-mentioned processes for all levels of local government. If PMO-RALG representatives could not be part of the kickoff meeting with MoW, a separate meeting could also be held, most preferably, on the same date.

The kick-off meeting should produce:

- A general description on how the WPMS would be used to support the planning process and later the operation and maintenance of the services.
- A tentative list to be used in the first planning clinic including expectations about the WPMS and the planning process and potential obstacles that may be encountered during the implementation of the plan including policy challenges and operational constraints.
- A confirmation of the timing, logistics and other details for the following planning clinics and consultation rounds.

#### 4.4.3.2 First Planning Clinic

Representatives of all stakeholders indicated in section 4.4.2 above were to be invited to the first clinic that would include an initial presentation by the UNU-FLORES team and MoW representative to explain the objectives of the exercise, the list of expectations and obstacles prepared during the kick-off meeting, as well as the expectations for the rest of the daylong event.

A presentation was to be given by the UNU-FLORES team to explain a relatively new concept for resource allocation known as Results Based Financing and its links to the Nexus Approach and resource conservation.

After the presentations, the floor would be opened for the other participants to express their views about the proposed exercise and to confirm or modify the list of expectations and challenges facing the planning process, the WPMS rollout and operation as a planning, monitoring and reporting tool.

These discussions would provide the necessary information for mini-clinics that would follow with the participation of sub-groups of stakeholders depending on the subjects to be discussed.

The Clinic would conclude with a wrap-up confirming the expectations, challenges and arrangements for the mini clinics to be held shortly after the first clinic. A strong commitment from the stakeholders was expected as a result of the planning exercise along with a buy in to be part of the implementation of the resulting plan.

#### 4.4.3.3 First Round of Mini Clinics

Even though the number and subjects of mini clinics would be defined during the initial Planning Clinic as well as the composition of the groups that will participate in each of them, some potential subjects that could require this kind of clinic and the suggested participants were drafted as follows:

- Legal and regulatory framework: Legal officer from local governments, PMO-RALG, EWURA, COWSOs.
- Service levels and parameters, associated costs, charges and capacity and willingness to pay: EWURA, PMO-RALG, EWURA, local authorities, service providers and communities (two mini clinics that could be held in one meeting with separate agendas).

**Flow of information**

- Allocation of resources, financing sources: MoFEA, EWURA, National Water Investment Fund, PMO-RALG, local authorities and COWSOs.
- Environmental and natural resources requirements and monitoring: NEMC, EWURA, PMO-RALG, local authorities and COWSOs.
- Capacity building and social marketing: MoHSW, MoEVT, local authorities, COWSOs and communities.

Representatives from MoW and UNU-FLORES would be present in all mini clinics.

Each mini clinic would be carried out as a meeting where the issues will be introduced and the participants would voice their points of view as well as proposals on how to deal with them during the planning and implementation process.

Some of these meetings could take place in one of the villages of one of the participant local governments. Even if this were not the case, the representatives of UNU-FLORES would visit some of these villages, wards or districts to achieve a better understanding of the situation, current practices and potential lines of action.

During the mini clinics, the team would start drafting a set of preliminary proposals and actions to be considered in preparing tentative action plans to be refined in a second round of consultations.

It was expected that each mini clinic would last for half a day to allow for adequate discussions to take place and record and confirm the agreements achieved.

#### 4.4.3.4 Draft Plan

At this point, the ideas and preliminary proposals gathered through all the clinics held would be consolidated by the UNU-FLORES team into a draft plan. After discussion with the counterpart at MoW, this draft plan would be put forward for consideration by the stakeholders that participated in the process so far in anticipation of the second round of consultations, as described below.

#### 4.4.3.5 Second Round of Mini Clinics

Once the stakeholders had time to review the draft plan, a second round of mini clinics would be held with the same structure and participants as in the first round.

The objective would be to confirm with each proponent of activities or initiatives that the same were properly taken into consideration in the proposed plan and to discuss

the whole plan in general terms to see if those activities or initiatives proposed by others are accepted or, even better, embraced by the other stakeholders.

In these meetings, which were expected to last for about three hours each, it might be necessary to narrow down the number of options in case more than one action line would have been proposed by different stakeholders.

This would also be the opportunity to identify or confirm partnerships for implementation of the actions identified in the proposed plan. Those stakeholders willing to participate or support one or more activities would express their commitment at this stage so it could be presented in the final planning clinic together with the final draft of the plan.

If for some issue or line of action there is still more than one proposal, these would be discussed in the final planning clinic as well, to reach an agreement on the final plan.

#### 4.4.3.6 Final Planning Clinic

This clinic would gather all stakeholders that in one way or the other participated in the process thus far. In this full day activity, the UNU-FLORES team together with the MoW representative would present the details of the proposed plan to be discussed by all participants.

To the extent possible, the discussion would cover all the tentative proposals, the conclusions of the two rounds of mini clinics would be presented, and the reason for leaning toward one of the options instead of the others would be explained.

Should more than one action line be still on the table for tackling a specific issue, they will be discussed by the plenary to decide the most appropriate course of action.

A final agreement on the action plan including timing and deadlines should be the conclusion of this final clinic. A leader or champion from the MoW would be identified, if not already naturally accepted by all parties, responsibilities assigned to the party best suited to implement each activity, and partners for as many activities as possible committed to collaborate and/or support the implementation of the different activities.

### 4.4.4 Actual Consultation Process

As it is the case with most planning exercises, and with all plans, things did not go as initially planned and it was necessary to re-design the planning and consultation process after the first two activities.

As indicated below, it became clear that the main challenge for the planning process was that, even though a dialogue framework was already established between several stakeholders, that dialogue was not working properly and each stakeholder was aiming to carry out some activity with focus on their own interest or losing interest altogether.

Even though the planning process did not turn out the way it was originally designed, the resulting process was successful in bringing the stakeholders together and providing a tool that could be used to structure the dialogue going forward.

Furthermore, it was possible to identify potential partnerships and cross contributions to the interests of different stakeholders.

We consider it useful to describe the actual process in the following sections, as this description may prove useful for early stages of planning projects or programmes.

#### 4.4.4.1 Kick-Off Meeting

This meeting was held as originally planned, although the Prime Minister's Office for Regional Administration and Local Government was not represented. The MoW indicated that they would participate later in the process.

Besides the other stakeholders present (i.e. all the required departments and units of the MoW), the consultancy firm responsible for the process also participated in the kickoff meeting. This participation was important to gather their perspective on the challenges facing the roll out and future operation of the WPMS.

The Water Development and Management Institute participated actively and it was agreed that discussion regarding capacity-building activities in collaboration with the United Nations University would be held in parallel and presented in the final planning clinic.

It is also important to mention that the leader of the efforts at the MoW is the head of the Information and Communication Technologies Unit. This ICT professional is an active and efficient player that was able to organize all the required meetings and activities while overseeing the capacity-building activities toward the rollout of the WPMS, as described below.

The kick-off meeting was carried out as planned and the participants developed a tentative list to be used in the first planning clinic including expectations about the WPMS, the planning process and potential obstacles that may be encountered during the implementation of the plan.

#### 4.4.4.2 First Planning Clinic

Even though this activity did not chronologically follow immediately after the kickoff meeting (one of the breakout meetings took place right after the kickoff meeting, as described in the next section), it is presented here to avoid breaking up the section about the first round of consultations and for clarity of exposition.

The significance of the fact that one stakeholder requested a breakout meeting before the first planning clinic took place was to become apparent later on. Particularly given that, this stakeholder did not take part in that planning clinic.

Nevertheless, the first planning clinic took place with the participation of a broad audience, although not as originally planned. In the end, this turned out to be beneficial, as will be evident.

Among those stakeholders that participated in the clinic, worth noting are the Water Resources Division, Rural Water Supply and Sanitation Division, Water Quality Services Division and the Information and Communication Technology Unit of the Ministry of Water, regional water laboratories, a community owned water service organization, various development partners, and GeoData Consulting Ltd.

There were no participants from other ministries including the Prime Minister's Office and Regional Secretariat as well as regulatory entities, District Water Engineers and the community.

After the team made the initial presentation regarding the purpose of the clinic and presented the tentative list of expectations and challenges for consideration of the participating stakeholders, the discussion showed that, even though the stakeholders shared most of the expectations listed, they saw other challenges to a successful implementation of the WPMS.

Most of all, it was evident that the dialogue between the stakeholders was not working well and frustration was growing among them. The stakeholders were not aware of the updating mechanism for the WPMS database that was adopted by the MoW, even though the document describing it had been shared with the stakeholders more than a month before the clinic.

The fact that one stakeholder requested a meeting before the clinic and did not attend also showed that not all of them shared the same approach as to how the dialogue should be handled.

**Applications of Remote Sensing for Verification of Water Points**

However, all stakeholders showed willingness to support the implementation of the WPMS, proposed several ideas on how to move forward and means for enhancing the system. They made suggestions for:

- Institutionalizing the WPMS to ensure its adoption,
- Using incentives (positive and negative) to encourage changes in agency behaviour
- Using remote sensing and automated updating mechanisms for the database,
- Enhancing the water quality data handled by the system,
- Incorporating data regarding the status of the water sources of each water point, particularly the aquifers, and
- Using the WPMS as a monitoring tool to support the implementation of a Payment by Results mechanism.

All these proposals were noted so they could be discussed at the following consultations.

At this point, given the available time and resources for the planning process, it was also decided that the team would aim to finalize a road map that would help structure the dialogue between the MoW and other stakeholders instead of a full plan for implementation and enhancement of the WPMS.

The roadmap would have a set of initiatives for rolling out, adoption and enhancement of the system that the stakeholders could agree upon and build partnerships around so they would be implemented.

With this in mind, the nature of the next consultations was modified from mini clinics to breakout meetings with individual stakeholders to understand their concerns and find out which initiatives they felt more prone to support actively while partnering with the MoW.

Keeping a dynamic and flexible approach to the planning process was helpful to achieve positive results that would lead to a constructive dialogue going forward.

#### 4.4.4.3 First Round of Breakout Meetings and Field Visit

Meetings were arranged with several stakeholders, most of them development partners like WaterAid, the World Bank and DfID, and a visit to Morogoro district, not far from Dar es Salaam, was carried out.

Building on the proposals at the first clinic, the institutionalization of the WPMS was further discussed with all stakeholders individually and while all of them agreed that it was vital to ensure consistent adoption of the WPMS, WaterAid was the most enthusiastic in providing ideas on how to go about it. A comprehensive approach was discussed that would include an administrative circular enforcing the use of the WPMS as the source of information about the status of the rural water service, but also the MoW should provide the appropriate training and incentives to the staff responsible for updating the database, among other measures.

It was clear that MoW could partner with WaterAid to explore the best way to advance the institutionalization of the system.

The World Bank showed strong willingness to support remote sensing and automated technologies for updating the database. However, as there were a few technologies to be considered, it was agreed that a first stage could comprise several pilots in different regions and involving different telecommunication networks to identify those technologies and service providers that worked better.

It was also concluded that more than one technology could be adopted depending on their performance in different circumstances and that one of them could be the backup option if the main one would temporarily not work.

Furthermore, as suggested by WaterAid, the UNU-FLORES opted to keep the paper-based updating option where COWSOs would report regularly to the District Water Engineer, who in turn would upload the data into the database as the fall back option, should no automated technology work at a certain point in time. Standardizing the reporting mechanism through forms and using mobile phones to expedite the reporting was also discussed. This discussion led to adding the mobile telecommunications companies as stakeholders that could contribute to enhancing the system. Meetings were arranged with them and it was confirmed their capacity and willingness to provide solutions to the proposed initiatives.

The meeting with DfID was mostly focused on the possibility of using the WPMS as a tool to monitor progress in increasing coverage of the rural water service so a Payment by Results (PbR) scheme could be set up that relied on the reports produced by the WPMS.

**Monitoring Water Points to Assess Effectiveness of Payments by Results Schemes**

To be useful for the PbR scheme as a monitoring tool, the WPMS should not only have a solid updating mechanism in place, but the information provided should be trustworthy. An independent verification process could be set up to fulfil this requirement. The team considered that this could provide an option toward facilitating the verification and inquiry process (VIP) pursued by the MoW. It could also provide the basis to implement a more transparent and effective resource allocation mechanism based on performance.

The visit to Morogoro district provided the chance to meet with the District Water Engineer (DWE), Local Authorities and the management team of a Community Owned Water Service Organization. It was extremely useful in getting insights into the reporting mechanism, as it would later be the source of data for the District Engineer to upload into the system.

The COWSO's management team seemed to be very motivated and conscious of the importance of their reporting. However, it was noted that their reports were done using their own format, reinforcing the idea of the convenience of standardizing the reporting format to facilitate the DWE upload job.

During the visit, the team also observed the training being provided regarding the updating mechanism of the WPMS. It consisted of a training of trainers that would later disseminate the knowledge to the other staff in charge of uploading the information.

#### 4.4.4.4 Draft Road Map

With the information gathered from the individual meetings and field visit, the team prepared a draft road map that was shared with the stakeholders to receive their comments before setting up a second round of individual meetings.

This draft included all the proposals discussed above together with others provided in section A. Annex below, where the road map is presented.

The activities were structured in a sequence broken down in immediate, short, medium and long-term and, for some of them indicating different stages of implementation.

A dual role for the UNU-FLORES was envisaged, as a facilitator of the dialogue between the MoW and the other stakeholders, supporting capacity-building efforts through training and a PhD programme working with the WDMI.

During the time between the two sets of breakout meetings, details of the final clinic were discussed with several stakeholders and it was arranged that some of them would make presentations covering the areas they were committing to support.

#### 4.4.4.5 Second Round of Breakout Meetings

The team modified the road map taking into account the comments received from the stakeholders and engaged in a second round of discussions in preparation for the final clinic that would take place shortly after.

These meetings were mostly useful to confirm the potential partnerships identified so far and that the comments had been properly incorporated into the draft road map.

At this point in time, the sentiment about the rolling out and implementation of the WPMS turned more positive than at the beginning of the planning exercise and the dialogue was already improved. A cooperation atmosphere was noticeable and the possibility of concluding the exercise with an agreement regarding the next steps seemed possible.

#### 4.4.4.6 Final Planning Clinic

This was set up as a regional workshop, involving high level officials from the Government of Tanzania and representatives from various African countries' governments and covered a broader range of issues. This was because the water point mapping initiative under implementation in Tanzania could be related to other initiatives in the region addressing the use of water for other activities like livestock and irrigation. It was also focused on drought risk mitigation tools.

The proposed collaboration between the WDMI and UNU-FLORES and the draft road map were presented alongside the contributions of other stakeholders including the World Bank and one telecommunications company regarding options for remote sensing and automated updating mechanisms.

To dig deeper in certain aspects concerning the rollout and adoption of the WPMS and broadening the range of its users, two breakout sessions were held during the clinic. One was concerned on the use of incentives (positive and negative) for the adoption of the system and keeping it up to date. The second focused on the kinds of capacity building needed to ensure that as many stakeholders as possible would adopt the use of mapping and geographic data visualization technologies for decision-making regarding the water service.

These breakout sessions contributed to finalize the road map and to stress the usefulness of collaborative planning among the stakeholders.

It was agreed with the MoW that a final meeting would take place the next day to firm up the commitments and agree upon the next steps by MoW and UNU-FLORES.

#### 4.4.4.7 Wrap-Up Meeting

The MoW organized the final activity in the planning process involving the consultancy firm, the WDMI, the PMO-RALG and the UNU-FLORES team.

During this meeting, a table summarizing the road map and identifying some partnerships to support its implementation was finalized along with a document indicating the commitment of the MoW to use the road map to structure the dialogue with the stakeholders. This table is presented in section 4.5.1 below including contributions from the participants.

The PMO-RALG confirmed their support to the work done so far and agreed that the road map would prove a useful tool in the process of rolling out, adoption and using the WPMS as a tool for planning, monitoring and reporting the situation on rural water service.

### 4.4.5 The Nexus Approach

This planning exercise was oriented to introduce the stakeholders to the Nexus Approach as a way to enhance the results of a planning process by taking into consideration other aspects beyond the specific focus of the planning subject.

The Nexus Approach highlights the interdependence of different traditional sectors like water, energy and food security, and the natural resources that underpin that security – water, soil and land. Based on a better understanding of the interdependence of water, energy and climate policy, this new approach identifies mutually beneficial responses and provides an informed and transparent framework for determining trade-offs and synergies that meet demand without compromising sustainability (Hoff 2011).

The Nexus Approach is relatively new and faces a number of challenges, one of which is the relative lack of data that could feed into understanding the interactions between the indicated sectors.

The WPMS may become an important tool in gathering those data. Beyond monitoring the status of the water points, the WPMS could provide data on water sources regarding availability and quality of the water.

Collaboration between countries in the region could lead to integrated systems covering irrigation and livestock water uses, as other countries are implementing WPMS for these sectors. Each country could share their experiences and assist in implementing similar systems in the countries that do not have them (cross implementation of system as well as sharing with countries that have not yet started with such systems).

However, to move toward this integration demands high level planning while the country systems are implemented and enhanced, so the data gathered are regarded as reliable and can be used in understanding the impacts of the interventions in different sectors.

**Data Visualization Techniques Can Aid to Integrated Planning of Environmental Resources**

The final workshop involved the participation of representatives of African countries that are using WPMSs and data visualization technologies for irrigation, livestock and drought prevention. Sharing these experiences is the first step in advancing the integration and the Nexus Approach. Planning for the adoption and enhancement of WPMSs and data visualization technologies is another important step. Producing this planning primer has the objective of contributing to the latter.

The primer was designed around an actual and recent case that allows showing how the circumstances and the way the planning exercise develops can demand a dynamic approach towards organizing the events and adapting the expected results to achieve a positive and constructive outcome. The team decided to lean towards this option instead of writing a manual, as the latter would provide a theoretical and static point of view about the planning process that could lead to a very rigid approach by those willing to implement the iterative planning process described here.

## 4.5 Conclusion

The signing of an agreement and the confirmation of the Prime Minister's Office of their support to the process provided confirmation that the planning exercise had been successful.

Understanding the situation and remaining flexible, with a dynamic approach to adapt the strategy to the circumstances proved very useful in achieving positive results. This primer aimed at reflecting this need for flexibility through an actual case instead of the theoretical rigidity of a manual.

The iterative planning consultations approach, adapted as discussed in the previous sections, proved solid and effective in bringing the stakeholders together and creating a collaborative atmosphere, even starting from a less than ideal situation. It allowed for achieving an agreement on structured way forward, and solidifying partnerships that would support such pathway to implementation of the system.

Furthermore, this planning exercise showed that the different efforts under implementation by other countries in the region on water point mapping and data visualization technologies could be shared and integrated as a way to advance the Nexus Approach. This primer could be useful in guiding the efforts to plan actions towards such integration.

Building on the momentum created by this planning exercise and the roadmap that resulted from it could support such integration. In a world ever more conditioned by climate change and the tensions between different sectors and the impacts of human interventions over natural resources, adopting a Nexus Approach for the planning process seems more than ever the only right option for the challenges ahead.

### 4.5.1 Summary Table

Table 11: Case 3 Summary Table

| Term | Goals | Framework | Identified Stakeholders | Funding Source |
|---|---|---|---|---|
| Immediate | Prepare road map, support workshop to facilitate discussion and present key proposals to MoW | | UNU-FLORES | UNU-FLORES |
| | Institutionalization | | | |
| | Training staff to update the information | Technical | WDMI- UNU-FLORES | |
| | Formalize procedures for gathering data | Technical / Legal | MoW- WDMI-UNU-FLORES | |
| | Develop data collection protocols | Technical / Legal | WDMI | |
| | Trained staff adopts new updating methodology | Technical / Legal | MoW-WDMI | |
| | Definition and implementation of policy/legal, institutional, technical and community participation frameworks | Institutional | MoW-WDMI | |
| | Incentives for WPMS adoption (positive/negative) | Institutional / Community | MoW-WDMI | |
| | Validation of data and system fitness | Technical | | DfID |
| | Define standard reports | Institutional / Community | MoW-WDMI | |
| | Define future actions/improvements with stakeholders | | MoW- WDMI | |
| Short | Planning and budgeting based on WPMS mandatory (using maps and tables from the system) | Institutional | PMO-RALG | |
| | Updating information (new/existing/future WP) | Technical / Community | DWE | |
| | Water quality Information (lab tests – database) | Technical | MoW- WDMI-UNU-FLORES | WB |
| | Aquifer status information | | MoW- WDMI-UNU-FLORES | |
| | Labelling of Water Points (coding issues) | Technical | MoW | |
| | Independent data validation | Technical | | DfID |
| | Remote/automated data collection and update (phase I – Selecting regions and technologies, start pilots) | Technical / Institutional | MoW | WB |
| | Standardize problem reporting | Technical /Legal | WDMI-UNU-FLORES | |
| | Define thresholds and escalation protocols | Technical / Institutional | WDMI- UNU-FLORES | |

| Term | Goals | Framework | Identified Stakeholders | Funding Source |
|---|---|---|---|---|
| Medium | Map scales | Technical | WDMI- UNU-FLORES | |
| | Incentive mechanisms – Results based Payments | Institutional / Community | WDMI-UNU-FLORES | DfID |
| | Review of the data updating mechanism | Technical / Institutional | WDMI- UNU-FLORES | DfID |
| | Broaden scope of use (other stakeholders) | Community/ Institutional | WDMI-MoW | |
| | Automating control of the updating mechanism (expiration dates) | Technical | MoW | |
| | Regular independent data validation | Technical | | DfID |
| | Remote/automated data collection and update (phase II – Pilots, evaluation and selection) | Technical | MoW | WB |
| | Service standards to respond to problems | Institutional and Technical | WDMI- UNU-FLORES | |
| Long | Integration with other administrative systems (PLANREP, EPICOR, MIS) | Policy/Legal and Institutional | MoW/PMO-RALG | |
| | Work with other agencies to maximize benefits | Institutional | MoW-WDMI | |
| | Integrate WPMS with other databases for data visualization (Nexus observatory / WDMI – UNU-FLORES) | Technical | WDMI-UNU-FLORES | |

# 5. CONCLUSIONS

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In this primer, we attempted to elaborate upon the links between decentralization and results-based financing. The three case studies focused on discussing the process of decentralized planning using Output Based Aid (OBA) as a specific example of results-based financing. An important point that was emphasized in the discussion relates to the issue of accountability and the importance of local planning as an iterative process. The water services case from Manila discussed the importance of performance-based contracts involving municipalities and private companies. The policy outcomes in terms of enhanced service coverage of poorer families and scope to bring about a secular decline in service charges were discussed. The water and sanitation case from Honduras discussed the process by which the Drinking Water and Sanitation Sector Framework was developed to encourage each local authority to decide on a financially viable service provision modality that could take the form of government owned, private or mixed-service provider. The Tanzania case discussed the formulation of a vision of institutional reform of rural water supply services based on the design and organization of planning clinics involving a diverse group of stakeholders including ministries, civil society, universities and international development agencies. A discussion of key lessons of the three cases presented in this primer is outlined below.

## 5.1 Honduras Social Investment Fund

**KEY LESSONS EMERGING FROM CASE 1:**

An important issue that was discussed in the case from Honduras related to the identification of a series of parameters to guide the establishment of norms for unit costs of infrastructure projects. To achieve this objective, data from a pipeline of projects were analysed during project preparation. Local data was compared with norms that were gleaned from published international reviews of project experience. Such an exercise went a long way in design of subsidy amounts for various elements of the project.

The design of subsidy elements was guided by the following principles:

- One of cost subsidies and not consumption subsidies.
- Disbursement of subsidies contingent upon independent verification of outputs.
- Tariffs for each subproject to cover at least operation and maintenance costs.
- For private service providers, pre-financing would be from internal cash generation or commercial loans.
- For public service providers bridge loans could be negotiated with OBA facility.

The case highlighted a number of challenges that were experienced when it came to actual project implementation. For one it was realized that the OBA facility had failed to adequately consult local authorities, donors, potential contractors and NGO/community representatives. At a consultation that was eventually organized, local authorities expressed their concern about pre-financing modalities and considered the OBA funding process to be too cumbersome. Further, when local authorities and private implementers were requested to submit proposals for project funding by including engineering design, economic and financial evaluations, the submitted proposals varied in quality. This is why it is significant to acknowledge component 2 of the project, which focused on developing capacity of local stakeholders to identify and develop local plans and priorities.

## 5.2 Metro Manila Water Supply Improvement Project

**KEY LESSONS EMERGING FROM CASE 2:**

The Philippine case emphasizes the issue of the regulatory environment. The Metropolitan Waterworks Sewerage System (MWSS) is responsible for setting and monitoring water and sanitation tariffs and oversees service operations and infrastructure plans. The MWSS approves concessionaires' business plans and adopted a reward and penalty system to ensure compliance with OBA plans. The case is also significant because it highlights the issue of metering and billing of services. This is an important basis for effective implementation of OBA programmes. In this connection, communal and private meter options, and bulk and shared billing systems were experimented with respectively. Another significant innovation of the programme was to experiment with geographical means testing to enhance the targeting of OBA initiatives at poorer segments of the population. For this purpose, the connection fee was indexed on an annual basis in line with the Consumer Price Index (CPI) data produced by MWSS.

The Manila case also highlights the importance of nexus perspectives that were overlooked in project design and implementation. For one, an improvement in water services delivery resulted in generation of larger amounts of wastewater that the project did not adequately consider because of the narrow sectoral focus of the project design. Second, links between effective delivery of water and sanitation services and public health and crime rates in an urban setting could have been more comprehensively addressed in the project design. Finally, the project also highlighted the importance of administrative culture in influencing project outcomes. For example, it was found that when composition of the project team was stabilized, the team could be trained on project monitoring that resulted in achievement of project outcomes relative to fund disbursement. One potential benefit of adopting a Nexus Approach was that the scope for scaling up OBA projects could be greatly enhanced.

## 5.3 Enhancing Source Sustainability of Water Projects, Tanzania

**KEY LESSONS EMERGING FROM CASE 3:**

The Tanzania case discusses the role of water point mapping strategy in supporting a results-based financing scheme. The MoW of the United Republic of Tanzania highlighted the following as priorities to design a strategy for results-based financing:

- Identification of a standardized methodology to address governance issues.
- Identification of procedure for further investment and resource allocation in a transparent manner.
- Building research capacity in the country to support data collection, analysis and knowledge translation.
- Involving stakeholders to address the issue of harmonization of spatial data sets or maps that clarify administrative boundaries.

We adopted a planning clinics approach to undertaking a regional consultation with a view to devising a strategy that supports results-based financing. As part of this process of consultation, meetings were organized with donors, ministry of finance and water, local governments, research and training institutes and universities, and NGOs. The planning clinic outlined a comprehensive approach that included issuance of an administrative circular enforcing the use of WPMS as a source of information on rural water supply services that guides allocation of financial and human resources by MoW. For this system to be effective, a robust and standardized verification system must be established to ensure reliability and consistency of data collected from various water points. For this purpose, it was felt that combination of both in-situ data gathering complimented with use of earth observations/remote sensing data may go a long way toward enhancing the evidence base for decision making related to management of rural water supply services.

## 5.4 Generalizable Principles Emerging from Cases

There are a number of important principles that can be gleaned from the three cases that were discussed in this primer. For one, decentralization can be an important principle that supports greater accountability and autonomy of decision makers. The cases show that central or local governments can use results-based financing schemes to incentivize integration of urban planning in development planning. This can be achieved through improved sequencing of project interventions to accelerate the realization of benefits from infrastructure projects. The use of geographic means testing can be a very effective method for targeting low-income households. The use of maps and spatial information can be a powerful tool in visualizing various scenarios with the objective of benchmarking delivery of water and sanitation services. Effective benchmarking strategies can go a long way in establishing links between disbursement of resources and achievement of policy goals and outcomes.

Second, greater accountability is usually supported by robust data and data analysis methodologies. In this context, the cases demonstrate the usefulness of index to calculate subsidy amounts and to guide periodic revisions of water service tariffs. For this purpose, innovative use proxy indicators were encouraged covering aspects of public health and income. Based on robust methodologies it was then possible to identify precise indicators that could capture envisaged service delivery outcomes. Some examples of service delivery outcomes included installation of water meters, water pressure and billing of water services, reduced incidence of water borne diseases, reduction in household expenditure on water services and time saved by women in terms of hours spent gaining access to water services. Given recent advances in mobile and GIS technology, it may be possible to collect and triangulate the veracity of data using a variety of medium paper-based statistical information and consumer perspectives on quality and adequacy of service delivery.

## 5.5 Issues of Data Classification, Knowledge Consolidation and Translation

Data, its generation, collection, sharing and analysis, and its power to influence decision-making and support coordinated action in support of policy goals is critical to supporting evidence based decision making. The Nexus Observatory, a flagship initiative UNU-FLORES provided the rationale for establishing the Africa Consortium on Drought Risk Monitoring. Through a focus on risk, it becomes possible to convince relevant ministries, Non-Governmental Organizations (NGOs) and donor agencies of the need to address issues of infrastructure operation and maintenance to support the delivery of critical public services such as water supply and irrigation. By collaborating with European universities, it could also become possible to combine in-situ data collection by regional partners with the power of remote sensing and earth observations to enable data analytics employing multiple mediums including mobile and GIS. This primer provides the theoretical basis for expanding upon the idea of a web-based observatory with the objective of bridging the science-policy divide in environmental governance. We posit that the absence of disaggregate, reliable and frequent information at appropriate scales makes it difficult to predict the environmental outcomes of infrastructure construction. Moreover the absence of regional capacity to collect, analyse and transmit information to decision makers curtails the ability of governments to respond to disaster risks effectively (Kurian et al, 2016).

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# ABBREVIATIONS

| | |
|---|---|
| APC | Aguas de Puerto Cortes |
| COD | Cash on Delivery aid |
| COWSO | Community-owned water service organizations |
| CPI | Consumer Price Index |
| DfID | Department for International Development |
| DIM | Departamento de Infraestructura Mayor |
| DWE | District Water Engineers |
| ERSAPS | Ente Regulador de los Servicios de Agua Potable y Saneamiento |
| EWURA | The Energy and Water Utilities Regulatory Authority |
| FHIS | Fondo Hondureño de Inversión Social |
| GIZ | Gesellschaft für Internationale Zusammenarbeit GmbH |
| GoH | Government of Honduras |
| GPOBA | Global Partnership on Output Based Aid |
| HDI | Human Development Index |
| ICT | Information and Communication Technologies |
| IRR 2008-06 | Implementing Rules and Regulations for Additional Meter and Clustered Connection Charges for Open/Depressed Communities |
| IVA | Independent Verification Agent |
| MDG | Millennium Development Goal |
| MoEVT | Ministry of Education and Vocational Training |
| MoHSW | Ministry of Health and Social Welfare |
| MoW | Ministry of Water |
| MWCI | Manila Water Company Inc. |
| MWSI | Maynilad Water Services |
| NEMC | National Environment Management Council |
| NGOs | Non-Governmental Organizations |
| NPV | Net Present Value |
| O&M | Operation and Maintenance |
| OBA | Output Based Aid |
| PA | Performance Agreement |
| PAHO | Pan-American Health Organization |
| PbR | Payment by Results |
| PMO-RALG | Prime Minister's Office for Regional Administration and Local Government |
| PP | Planning Primer |
| RBF | Results-Based Financing |
| RO | Regulatory Office |
| SANAA | Honduran National Water and Sanitation Authority |
| SDGs | Sustainable Development Goals |

| | |
|---|---|
| TPSB | Tubig para sa Barangay |
| UNU-FLORES | United Nations University Institute for Integrated Management of Material Fluxes and of Resources |
| WB | World Bank |
| WDMI | Water Development Management Institute |
| WHO | World Health Organization |
| WPMS | Water Point Mapping System |

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# A. Annex: Planning Clinics – An Illustrative Guide from Case 3

## A.1 Starting Point

From the discussions, it was clear that most stakeholders consider the WPM System (WPMS) as a tool that could play an important role in the expansion and operational improvement of rural water services.

However, it was also clear that the information in the WPMS database is outdated and the methodology for updating such information, although recently defined by the MoW, is yet to be implemented. The training for the staff responsible for such updating started at the end of January through a training of trainers to later cascade to the actual staff responsible for data updating.

Regarding water quality, even though the WPMS currently has some information on perceived water quality, this information is far from providing a proper representation of the actual quality of the water at each water point. It is mostly based on organoleptic perception and not on water quality tests.

District Engineers request actual tests whenever they have reasons to suspect that the water quality may not meet standards. Additionally, mining companies are required to comply with the standards so, the water near mining sites is tested to rule out pollution from such activities.

There is an initiative to set-up a database system to keep track of water quality at the water points based on test results, but the authorities need to define whether the database will be integrated into the WPMS or it will be a stand-alone system from which the WPMS will draw the results to complete the dataset for each water point.

The WPMS does not keep track of the situation of water sources, rivers, lakes, aquifers, etc. However, many stakeholders expressed their agreement with the importance of monitoring the situation of water sources for planning and development purposes.

In a similar fashion, the system does not collect any data on customer complaints or queries. Even though the system is not intended to be used as a customer relationship management tool, collecting information about the quantity and frequency of customer complaints could contribute to a better understanding of the condition of each water point.

It is to be noted that at the time of designing the system, the intention was to have a user friendly, easy to operate and low cost system to monitor the status of the water points, report on the situation and planning for better-targeted investments. This should be kept in mind while proposing modification to the WPMS.

## A.2 Vision

Collating the ideas provided by the participating stakeholders, a tentative vision for the Water Point Mapping System is provided below:

> A geo-referenced information system capable of providing timely, accurate and useful information for all purposes pursued by the Government of Tanzania regarding rural water services and resources, integrated with other government operational and administrative information systems while remaining operationally simple and cost effective.

This proposed vision is focused at the end of the time horizon considered at about five years. However, the road toward such scenario should contemplate intermediate stages as proposed below.

## A.3 Intermediate Goals

Taking into consideration the starting point indicated above, current on-going activities and the expectations and challenges discussed with the stakeholders, the following intermediate goals are proposed for the immediate, short, medium and long term. These terms are defined as follows:

1. Immediate term: within the next 4 months,
2. Short term: within 1 year from the starting point,
3. Medium term: within 2 years from the starting point, and
4. Long term: within five years from the starting point.

### A.3.1 Immediate-term Goals

For the moment, the main obstacle for the system to begin providing useful information is the fact that most of the data stored in its database are out of date. Thus, being able to update the database is the one most pressing need at this time.

The MoW decided that to update the information in the WPMS, the COWSOs and other service providers will report quarterly to the Local Government Authorities and the District Engineer will upload the information in the system. In the future, other mechanisms may be tested and, if successful, adopted.

However, achieving such readiness to implement the indicated updating methodology requires completing at least the critical activities listed below:

1. Training the staff responsible for updating the information,
2. Formalizing the administrative procedures for gathering data,
3. Developing data collection protocols, and
4. Getting the trained staff to adopt the new update methodology.

Staff training is ongoing through an initial training of trainers who will be responsible later for training the district engineers and other people who will be uploading the updates to the system. The MoW expects to complete this task by the end of April 2014.

In parallel, the Government of Tanzania should consider issuing a circular or other administrative instrument enforcing the use of the WPMS and its updating mechanism as the mandatory way to gather and report information regarding rural water services. A back-up system should remain in place, but it should be clear that once a District Engineer (DE) has been trained, the use of the WPMS is mandatory.

The discussions covered the convenience of an incentive mechanism to ensure the adoption of the system and updating mechanism. The majority favored the use of negative incentives in the form of restriction of funding to the districts or salary deductions. However, this issue would require further analysis to ensure that the right message is conveyed to those responsible for information updating.

While these activities are taking place, some additional activities could be carried out:

1. Verification of the existing accuracy and integrity of the information in the WPMS as well as the robustness of the system itself.
2. Define the standard reports that the system will produce for different stakeholders (President Delivery Bureau, Local Government Authorities, Development Partners, District Engineers, COWSOs, Community, etc.).
3. Define or confirm future actions and improvements with other stakeholders, as per the goals and actions proposed in the following sections.

### A.3.2 Short-term Goals

This section includes some objectives that are a natural continuation of those described in the previous section and some new goals that tend to expand the scope of use of the system or to complete the picture the system provides of each water point.

#### A.3.2.1 Institutionalization of the Water Point Mapping System

Introducing changes in administrative procedures is usually not easy and maintaining those changes might prove even more challenging. Taking certain actions to enforce and encourage adoption of the new procedure is critical to smoothing the transition.

One step the Government of Tanzania could take is to make it mandatory to use the WPMS to report the status of the water points after the relevant staff at the LGAs finishes the corresponding training.

However, to ensure that the system is being used, for the planning and budgeting exercise, those LGAs whose staff already received the training should include in their planning documents those elements that indicate that they have updated and used the WPMS for such exercise. At a minimum, the following information should be included:

- Maps produced using the WPMS showing the water points under consideration.
- Tables produced using the WPMS showing the relevant parameters used for the planning and indicating the date when the information was last updated.

Other measures could be designed to complement the ones indicated above, including the independent verification described below, to reinforce the transition to the new system.

### A.3.2.2 Updating the Information in the WPMS

Once the staff has been trained and has adopted the new updating methodology and the data collection protocol is in place, the main goal would be to finalize the updating of the information. This means:

- Including new water points not yet mapped,
- Updating information on water points already mapped, and
- Ensuring that information on water points to be built or under construction is reported to the corresponding authorities and the new water point is mapped pending confirmation of completion.

### A.3.2.3 Water Quality and Aquifer Status Data

As the WPMS is updated with accurate information regarding the operational status of the water points, steps should be taken to improve the information the system can provide on water quality and status of the aquifer at the water points. The proposed goals to be achieved in the short term in this respect are:

- Define whether the water quality database will be stand-alone or integrated to the WPMS.
- Create the necessary code, modify the database structure and the WPMS with adequate user interfaces to input the water quality data (if integrated) or the stand-alone system (if not integrated) and to produce the corresponding reports (in either case).
- Expand the data collection protocols to include data on aquifers, water quality and private water points, including data to be collected and frequency.
- Conduct the appropriate training for staff responsible to input data and produce relevant reports.
- Ensure adoption of new protocols for data collection and data input.

### A.3.2.4 Labelling of Water Point

Even though each water point has a code in the system, there are no labels in the water points' structure. It is proposed that a label including the water point code among relevant other data (like the coordinates) will be affixed to each water point, so the operators, the community and other stakeholders can easily identify them.

### A.3.2.5 Independent Data Validation

To ensure the quality of the data input in the WPMS and provide confidence to all stakeholders regarding its trustworthiness, it is proposed that the Ministry of Water will retain the services of an independent agent (NGO, university, research institute, consultancy firm, etc.) that will periodically verify a sample of the data stored in the database.

The firm will extract data from the database and proceed to the field to compare the actual situation with that reported by the WPMS. The discrepancies will be reported to the concerned COWSO and the corresponding LGA so they can resolve it and the discrepancy, and the outcome of the action taken by the COWSO and the LGA reported to the MoW.

If required, modifications to the data collection protocols, retraining of concerned staff or other measures will be taken to avoid repetition of discrepancies in the future.

### A.3.2.6 Selecting Regions for Piloting Remote Sensing and Data Collection Technologies

To reduce the administrative burden on COWSOs' and LGAs' staff to collect and input the data in the WPMS, it was agreed on the convenience to explore the usefulness and suitability of using remote sensing, automated data collection and input technologies.

As a first step, in the short term it will be convenient to define those technologies that will be tested (in-line sensors like flow meters, data input through text message based systems, etc.). Among other factors, data acquisition costs (cost of the hardware, installation and operation and maintenance), reliability of the technology, ease of use and low maintenance needs should be the most relevant aspects to take into account in evaluating potential technologies to be tested.

An evaluation of the COWSOs in the regions where the technologies will be tested will also be critical to improve the quality of the tests. Such evaluation of COWSOs will need to take into account their skill levels, willingness to participate and availability of communication services among other factors.

In parallel, after defining the technologies to be tested, discussions should be held with communication service providers to identify the most effective and less costly ways to transmit the information from the data collection points to the system servers.

At the same time, the interfaces to capture and input the data into the system should be developed. It is proposed that, even if the development of the required software is contracted out, staff at the Information and Communications Unit at the Ministry of Water participates and becomes fully knowledgeable on whatever software is developed.

### A.3.2.7 Create Standards for Water Point Problem Reporting

Currently the status for a water point is reported using standardized codes as "Functional," "Non-functional" and "Needs repair." However, whenever a water point is reported in the last two categories, the problem is described using a free text format. Introducing a codification for the different kinds of problems that could arise could facilitate planning and budgeting for the response.

Using the free text descriptions currently available in the database about the repair needs of the water points could help define what the standard codes should be. However, discussion with District Engineers, COWSOs' staff and water point operators could enrich the range of problems to codify so the set of codes implemented will cover the broader range of problems that could manifest.

Once codes have been created and the WPMS adapted to use them, for each code, a standard response could be designed and the corresponding costs could be associated to them to enable standardized planning and budgeting. Of course, the responses and their costs should be properly designed and calculated to account for the regional factors and avoid the one-size-fits-all approach.

The design of the response to identified problems should include identification of the agent responsible to implement such response. For minor problems, it should be the COWSOs' staff that will implement the response locally, while more complex problems should be escalated to the District Engineer.

Maybe at this stage or later on in the system improvement cycle, some algorithms may be created to define when a problem seems to be beyond the capacity of the District Engineer and needs to be escalated to higher level authorities or other government agencies like the breaching of a threshold number of non-functioning water points in the same district, persistent deterioration trends in water availability, and aquifer level drops among others.

All this could be integrated in reporting and response guidelines to be developed and the definition of threshold and escalation principles.

### A.3.2.8 Ensuring Maps can be Produced at Appropriate Scales

Since the WPMS is meant to be a planning tool, it is very useful to ensure that each individual WP can be displayed at different scales (the range could be from 1:10,000 to 1:500,000) associated with appropriate geo-information on the WP as a background that could be considered the "geo-context." This is essential for any future action, be it the improvement of discharge or water quality or the use of a certain WP for any as of yet materialized purpose.

This all requires geo-information of the nearer and/or wider surroundings. Since the Tanzanian authorities are studying two sets of shape files of topographic maps and this may take some time to be decided, it is advisable to use any of the geo-coded ultrahigh-resolution satellite imagery available on the Internet for this purpose, like "Google Earth" or "Bing Maps Satellite" as an interim solution.

### A.3.3 Medium-term Goals

#### A.3.3.1 Introduce Incentive Mechanisms Based on the Water Point Mapping System

Once the WPMS has been institutionalized (the districts are using it to update the information, which is independently verified), some incentive or financing mechanisms could be introduced, using the WPMS as a monitoring tool to measure progress achieved by each participating district toward the agreed results.

One development partner has already prepared a proposal along this line and the successful institutionalization of the WPMS could expedite its implementation.

Other incentives could be developed, like publishing ratings of most dynamic COWSOs (those faster to adopt the new mechanism or those that get the most out of the system, etc.) or other kinds of rewards, honorific mentions, certificates that enable them to train other COWSOs or proclaim them as the leader in their district, etc. to entice competition to adopt and persevere in the use of the system.

#### A.3.3.2 Audit the Data Updating Mechanism

It is proposed that, after the initial updating effort, the MoW will conduct an audit of the data updating mechanism to identify its strengths and weaknesses and design and implement actions to improve this mechanism.

This audit should also produce a continuous improvement procedure through which issues with the routine update procedures are identified, reported and dealt with so the system will be continuously improved.

This will provide reassurance to all stakeholders that the system is dynamic, trustworthy and that it will become more robust with time.

#### A.3.3.3 Broaden Use of the Data

Sharing data on water quality at the source and other source and aquifer data with water basin boards and other stakeholders could promote discussions on potential new uses for the WPMS information.

A dialogue with potentially interested stakeholders should be led by the ITC Unit of the MoW to explain the information held in the system and the ways to access the information. Each stakeholder could then elaborate on potential uses for the information and work together with the ICT Unit to see how the system could be modified, if needed, to suit their needs.

### A.3.3.4 Automating Control of the Updating Process

Each type of data could be labelled with the date it was acquired and could have an associated useful life; this would lead to the calculation of an expiration date for each piece of information in the system.

With this information, the system could issue warning messages indicating which data should be updated within a certain period of time (like showing a yellow flag) and which are already out of date and should be updated immediately (equivalent to a red flag). In this way, the relevant stakeholders could have a programme for updating the information for which they are responsible and control of the updating mechanism would be automated, making the system more robust and trustworthy.

For some kinds of data however, it might be better to set the updating flag to "as changes happen" mode to avoid useless efforts.

It is to be noted that even the water point photograph should be updated from time to time, as often times the structure could deteriorate and make the label of the water point difficult or impossible to read. An updated photograph will always be helpful to get a better understanding of the overall condition of the water point.

### A.3.3.5 Regular Independent Data Validation

Besides the initial data validation and the audit of the updating process, the independent data validation should be a continuous process that will keep the trustworthiness of the system.

### A.3.3.6 Evaluation of Pilots and Adoption of Successful Remote Sensing and Data Collection Technologies

Once the pilots are completed, the results should be evaluated and those technologies and procedures that have proven to be successful should be prioritized and adopted through its introduction in other regions.

The selection criteria used for the pilots, if proved useful, should also be used in the rollout phase. If warranted, when more than one technology proved useful and seems to be suitable in a certain region, a dialogue with the relevant staff should take place to define which of the successful technologies will be used in their region. This may facilitate the adoption of such technology.

### A.3.3.7 Create Service Standards to Respond to Reported Problems

Once the reporting on problems regarding the water points is standardized and the response actions, costs and identification of the responsible agent are integrated in the system, serving standards for solving the problems could also be introduced and implemented to define the maximum response time to solve a certain problem.

This would also help in planning and budgeting for the districts and could help in defining what problems should be escalated, either because the frequency is too high or the response time by the district is longer than the adopted standard.

Providing an adequate response within the agreed response time will also contribute to a successful and continuous use of the system by the COWSOs' staff, as they will feel that their efforts to collect and report the information on time produces an adequate response from the LGAs. Otherwise, the COWSOs' staff could feel discouraged to contribute to the regular updating of the system if they see that actions to solve the reported problems take too long or are not taken into account at all.

### A.3.4 Long-term Goals

The ultimate long-term goal would be to achieve the vision expressed at the beginning of this document. However, to achieve that stage, it would be convenient to accomplish first a final set of goals like the ones proposed below.

#### A.3.4.1 Integration with Other Administrative Systems

As the Government of Tanzania implements the use of more information systems for its planning and expenditure monitoring, integrating existing and new systems under a common interface could prove useful in getting more out of the increasing amount of information gathered in their databases.

Systems like the PLANREP, EPICOR and the WPMS working together could provide critical data to improve the effectiveness and efficiency of the planning, budgeting, execution and monitoring process. The Management Information System (MIS) could be the basis for the integration of all these systems.

Several government agencies (LGAs, Water Resources Department, Water Quality Directorate, Ministry of Finance and Economic Affairs among others) could take part in a multidisciplinary analysis to define what would be the best way to maximize the benefits of this integration.

A starting point could be to consider that EPICOR and PLANREP are providing financial information of the planning and execution of water supply projects while the WPMS could provide first hand, more detailed physical information for those processes and, if the codification, standardization and cost of the rehabilitation and expansion process are implemented, they could also provide input for the financial side of the planning and budgeting processes.

This integration together with the data visualization indicated in the previous section and all the other steps described previously should put the WPMS in a position very close to the vision described in section A.2 above.

### A.3.4.2 Integrate the Water Point Mapping System with Other Databases for Data Visualization

Data visualization covering water availability, census data, urbanization, demographic change, over-drilling, and rainfall/precipitation could be explored to make the planning, implementation and monitoring cycle more effective and efficient.

The nexus could be a good platform to implement this integration of several geo-referenced data, as it uses data visualization to facilitate data based decision-making and is naturally focused on using a multi-criteria analytical framework for data visualization and interpretation.

The Water Development Management Institute (WDMI), Ministry of Water, could play an important role in building capacity for data visualization through Train the Trainer Workshops (TTs), proposal writing workshops and PhD programmes in collaboration with UNU-FLORES and local universities.

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## ADVANCING A NEXUS APPROACH TO THE SUSTAINABLE MANAGEMENT OF ENVIRONMENTAL RESOURCES

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