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Tremolet, S, Evans, BE and Shaub-Jones, D (2010) *Output-based Aid for Sustainable Sanitation*. Working Paper. World Bank.

Output-Based Aid for Sustainable Sanitation

By Sophie Trémolet and Barbara Evans
with inputs from David Schaub-Jones*

About GPOBA

GPOBA is a partnership of donors and international organizations working together to support the delivery of basic services in developing countries using results-based financing approaches.

What is OBA?

OBA is a results-based mechanism to increase access to basic services—such as infrastructure, healthcare, and education—for the poor in developing countries. OBA is used in cases where poor people are being excluded from basic services because they cannot afford to pay the full cost of user fees such as connection fees.

This paper was produced in collaboration with the **Water and Sanitation Program (WSP)**, a multi-donor partnership administered by the World Bank to support poor people in obtaining affordable, safe and sustainable access to water and sanitation services.

Sanitation services are beneficial for communities at large. They generate strong positive health and environmental benefits to society (“externalities”). Public financing is an important way to stimulate the provision of these services, but there are serious issues with the way public subsidies for sanitation have been delivered up to now. Recent estimates show that the sanitation MDGs will simply not be met in a number of countries if “business-as-usual” continues.

Results-based financing (RBF) has emerged as an important new way of financing public services in general and basic services in particular. One type of RBF known as output-based aid (OBA) tends to be used to target subsidies for poor customers by providing service providers the incentives to serve areas of greatest need. Unfortunately, experience with OBA in sanitation is limited. One of the motivations for this paper is to consider why this is the case.

Given existing experiences in sanitation more broadly, and results achieved from OBA in other sectors, it appears that OBA could present advantages over traditional (input-based) financing for sanitation.

The attached study looks at how such OBA schemes might be designed by analyzing the sanitation value-chain, and what institutional, financing and risk mitigation measures would be required for each type of OBA scheme. Questions discussed include “what” outputs should be subsidized and “who” are the most likely candidates to provide output-based sanitation services.

Introducing OBA schemes for sanitation will only be one part of a larger set of necessary high-level sector reforms that countries need to undertake to substantially improve and scale-up access to sanitation services for the poor. Nevertheless, their introduction could go some way towards improving access through greater targeting and better incentives for service provision.

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A paper for GPOBA and WSP by Sophie Trémolet and
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September 2010

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1. Introduction

The objective of this study is to investigate how output-based aid (OBA) could be used to increase sustainable access to sanitation services. The preparation of this report was commissioned and funded by the Global Partnership on Output-Based Aid (GPOBA), and led in collaboration with the Water and Sanitation Program (WSP).¹ ²This study arose from the observation that, even though OBA has gradually emerged as an important way to finance access to basic services, experience with OBA-type financing in the sanitation sector has remained limited, with mixed results compared to other sectors.³

Box 1.1. Definitions used in the study

- **Sanitation is defined as the methods for the safe and sustainable management of human excreta**, including the collection, storage, treatment and disposal of feces and urine.
- **OBA (output-based aid)** ties the disbursement of public funding (in the form of subsidies) to the achievement of clearly specified results that directly support improved access to basic services. OBA payments are typically provided to the suppliers of basic services once the outputs have been delivered.⁴

This study is being conducted in two phases:

- **Phase 1** entailed the preparation of the present report. The objective of this report is to provide an overall framework of analysis for identifying why and how output-based subsidies may be considered in the sanitation sector. This report is targeted primarily at water and sanitation sector professionals who are in charge of designing sanitation projects, programs and policies and seek guidance as to how they could incorporate OBA components into the design of such interventions.
- **Phase 2** consists of identifying and supporting five sanitation projects that are under development and could incorporate OBA-type subsidies. It is expected that this phase will help with testing the range of potential output-based subsidies developed in Phase 1 and throw light on the practical issues to be considered when developing output-based subsidy mechanisms in the context of sanitation projects or programs.

1.1. Background to the study

Sanitation services are highly beneficial for communities at large, as they generate positive health and environmental externalities as well as other non-quantifiable benefits. A major concern is to address the needs of the unserved, both in rural and urban area, and provide access to basic services. Beyond access, sustainable sanitation services are critical in order to deliver maximum health benefits and minimize the negative impacts on the surrounding environment.

¹ The Global Partnership on Output-Based Aid (GPOBA) was set up in 2003 as a World Bank-administered donor-funded pilot program in order to test the OBA approach with a view to mainstreaming this approach within the International Development Association (the World Bank arm lending to the poorest countries) and with other development partners.

² This report was written by Sophie Trémolet and Barbara Evans with inputs from David Schaub-Jones. The authors gratefully acknowledge comments and inputs from World Bank staff who reviewed various drafts of this document, including Sylvie Debomy, Peter Hawkins, Mukami Kariuki, William Kingdom, Pete Kolsky, Esther Loening, Yogita Mumssen, Eddy Perez, Mario Suardi, Jan-Willem Rosenboom and Almud Weitz.

³ See Mumssen *et.al.* (2010) for a recent comprehensive review.

⁴ OBA is part of the broader family of “results-based financing”. Other forms of results-based payments, such as conditional-cash transfers are provided to the purchasers of the services (typically poor households). In sanitation, the distinction between CCTs and OBA is more difficult to draw than in other sectors given that households can either be service provider themselves (for example when they construct and empty their own latrines) or the purchaser of the service (for example, when calling on an entrepreneur to empty their latrines).

Public financing is an important way to stimulate the provision of these services to a level that can benefit society but there are serious issues with the way public subsidies for sanitation have been delivered up to now. Recent estimates show that the sanitation MDGs will simply not be met in a number of countries if “business-as-usual” continues,⁵ which means that increasing access to sanitation remains an urgent priority. The sector appears to be “lagging” for a number of reasons, including lack of political will and attention, insufficient financing, institutional fragmentation, low levels of awareness, and the taboo element attached to sanitation. Pressures on public finances worldwide, and constraints on allocating funding from one sector to another, call for increasing the total volume and the effectiveness of public financing to sanitation.

In recent years, results-based financing (of which output-based aid is a subset) has emerged as an important new way of financing public services in general and basic services in particular (particularly telecoms, energy or health and education, as set out in Annex A). Output-based subsidies tend to be used to target subsidies onto poor customers and where there are strong positive externalities from delivering a given service. GPOBA has initiated a number of sanitation projects but some have not been implemented as yet, whilst others have remained limited in scale or it is too early to assess results. A few national governments have also adopted output-based approaches to delivering subsidies for sanitation, such as the Government of Mozambique in the late 1980s, Brazil or India. These experiences remain little known outside their national boundaries, however, particularly in terms of their financing approach and have not been broadly replicated.

From the existing experiences in sanitation and results achieved in other sectors, it appears that OBA could present the following advantages over traditional (input-based) financing for sanitation:

- OBA could help extend access to sanitation in a sustainable and more efficient manner;
- OBA could help target subsidies for sustainable sanitation to disadvantaged households and deliver trackable results from subsidies invested in the sector, ensuring minimum “leakage” (as long as the subsidy source are clearly identified and secured);
- OBA could support the development and strengthening of sanitation service providers, whilst giving them incentives to serve areas of greatest need, including poor peri-urban and rural areas.

However, a number of factors have meant that OBA has not been widely used in the sanitation sector.

- **Overall, financing the sanitation sector in a sustainable manner is notoriously difficult.** Charging for sanitation is challenging, as households are often reluctant to pay for sanitation services, as they do not perceive their immediate benefits. Given that the sector receives comparatively little political attention, public funding also tends to be limited compared to the size of existing needs.
- **There is a lack of clarity on “what” should be financed.** The sector is multi-faceted and relatively complex, with a series of “sanitation services” provided alongside the “sanitation value chain”. Providing access to sanitation where it is not available is clearly a priority. In many cases, however, particularly in dense urban settlements, such access cannot be sustained over time unless the other segments of the broader “sanitation value chain” are adequately financed.
- **Lack of clarity on “who” should be financed.** A multitude of actors provide sanitation services, ranging from households themselves self-providing the service, local governments, utilities and small-scale independent providers usually operating informally.

⁵ WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2010).

The starting hypothesis for this study is that greater effectiveness in public financing of the sanitation sector may partly be achieved through using OBA mechanisms, where applicable and relevant. Key questions which are considered as part of this study include:

- What types of performance-based payments have been used or may be applicable for sanitation? What has been the experience to date with these types of approaches?
- What are potential types of OBA subsidies that appear suitable to the sanitation sector? What are potential stumbling blocks for the adoption of such approaches?
- At what level of the sanitation value chain could OBA-type subsidies be used and how could the delivery of such subsidies be structured?
- What other components, such as support services to sanitation entrepreneurs or pre-financing for investments through micro-finance organizations, small commercial financial services and mainstream banks, may be required to ensure the success of OBA schemes for sanitation?

Introducing OBA schemes for sanitation will only be one part of a larger set of necessary high-level sector reforms that countries need to undertake to substantially improve and scale-up access to sanitation services for the poor. Nevertheless, their introduction could go some way towards improving access through greater targeting and better incentives for service provision.

1.2. Report structure

The present report is structured as follows:

- ***Section 2*** examines why public funding for sanitation is required, what services and which actors need to be financed and what common issues have emerged with sanitation financing;
- ***Section 3*** reviews the experience with output-based subsidies in the sanitation sector. It then outlines common challenges with implementing OBA for sanitation and ways to alleviate them.
- ***Section 4*** explores in a systematic manner how output-based aid subsidies could be used to improve the effectiveness and fairness of subsidy delivery alongside the sanitation value chain.

In addition:

- ***Annex A*** introduces OBA mechanisms within the broader framework of results-based financing and evaluates how they have been used to improve the efficiency of subsidy delivery in many infrastructure and public sectors. This is intended to provide a brief description of OBA for sanitation sector professionals who may not be familiar with this approach.
- ***Annex B*** presents a check-list of issues to consider when designing a sanitation OBA project.
- ***Annex C*** includes a full list of references for this study.

2. The case for improving the effectiveness of sanitation financing

The main objective of this section is to provide a conceptual framework for evaluating why public financing should be allocated to sanitation (*Section 2.1.*), which activities need to be supported (*Section 2.2.*) and via which type of institutions (*Section 2.3.*). *Section 2.4* identifies common issues with sanitation financing and evaluates the need for adopting a results-based approach to financing these services.⁶

2.1. Using subsidies for sanitation: the rationale

Sanitation is a basic service with substantial positive impacts both on health and the environment which in turn generates benefits for the economy as a whole. It has been estimated that the economic benefits of providing sanitation may be in the order of just over nine times higher than the costs: that is a \$1 invested garners about \$9.2 of economic benefits.⁷ This can translate into significant benefits for the economy. For example, a recent study commissioned by the Water and Sanitation Program, the Economics of Sanitation Initiative, evaluated the impacts of inadequate sanitation on the economy of several countries in Southeast Asia, including Cambodia, Indonesia, the Philippines and Vietnam. The study showed that, due to poor sanitation, these countries lose an aggregated USD 2 billion a year in financial costs (equivalent to 0.44% of their GDP) and USD 9 billion a year in economic losses (equivalent to 2% of their combined GDP).⁸

Most of the benefits of sanitation accrue beyond the immediate household making the investment. This is due to the fact that sanitation exhibits strong external effects, mainly on human health and on the environment:

- ***Health externalities.*** Like immunization, sanitation has benefits beyond the immediate household who acquire the service. Safe collection of excreta has the effect of reducing the number of fecal-pathogens in the environment, which in turn reduces people's exposure to those pathogens. A significant number of people need to change their behaviors for this effect to occur.
- ***Impact on the environment through water quality.*** Lack of adequate sanitation has a direct impact on the quality of water resources, thereby limiting the overall quantities of water available for municipal use, as well as for other critical economic activities, such as agriculture, fisheries and aquaculture, industrial use, and tourism.⁹

In addition, sustainable sanitation may have beneficial impacts on other sectors, such as agriculture or energy production. Human excreta are a rich source of nutrients which are essential for agricultural production. They can also be used for energy production as a source of biomass. Given the current lack of market response, there may be a case for allocating subsidies to encourage the development of the market for re-use of by-products of the sanitation process for agriculture or energy production (biogas).

As a result, there is a strong case for allocating public financing to the sector in order to incentivize private investments with broader social and economic benefits.

⁶ This section will be particularly useful for readers with no prior knowledge of the sanitation sector.

⁷ Hutton, G. and L.Haller (2004).

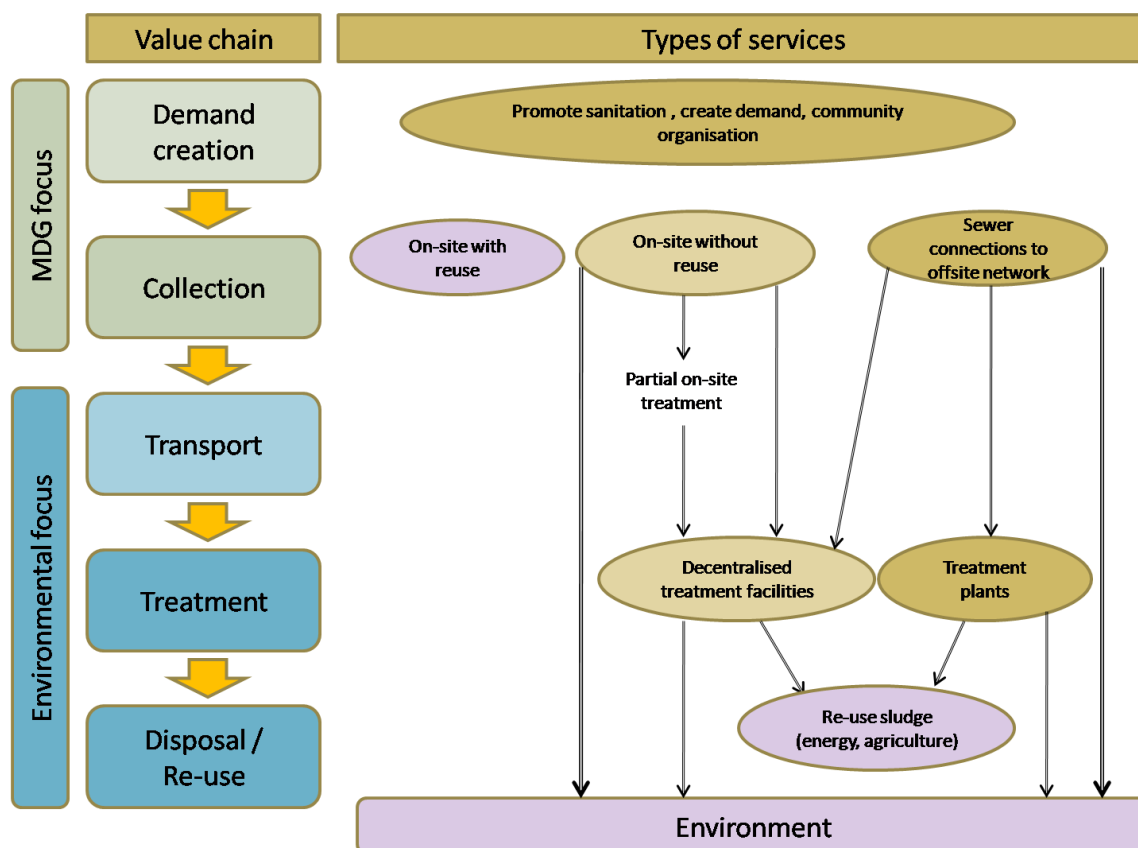
⁸ Hutton *et.al.* (2008) and Hutton *et.al.* (2009).

⁹ This impact may be particularly significant in dense urban settlements where unprotected latrines may contaminate the underlying aquifer, on which many residents may be dependent for water supplies via shallow tube-wells.

2.2. What needs to be financed: the “sanitation value chain”

Sustainable sanitation can be analyzed in terms of a series of services that need to be provided alongside what has become known as the “sanitation value chain”, as shown on Figure 2.1. In this section, we briefly describe each step of the value chain and why they are important for the provision of sustainable sanitation¹⁰.

Figure 2.1. The “sanitation value chain”



Demand promotion. Demand for sanitation is often low: as a result, fostering demand for sanitation can be seen as the first step of the chain of sanitation services.¹¹ Interventions to increase household and community demand for sanitation typically include promotion of sanitation in general, marketing of specific sanitation products, hygiene promotion, social development and mobilization (often linked to the formation of village committees or community groups in urban areas) and community triggering. Approaches that emphasize demand creation and let households carry out infrastructure investments (such as the Community Led Total Sanitation approach) have proven to be particularly effective, as they have enabled leveraging private household financing with a limited but well-targeted use of public funds. Experience to date has been largely confined to rural areas, however.¹²

¹⁰ In the context of sanitation the term ‘sustainable’ has multiple dimensions. The Sustainable Sanitation Alliance (SUSANA) suggests that while “the main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease[, I]n order to be sustainable, a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, it should also protect the environment and the natural resources.” SUSANA (2008)

¹¹ The reasons for this are discussed at length in Jenkins and Sugden (2006)

¹² See for example Trémolet, S. with Perez, E. and Koslky, P. (2010), Evans et.al (2009), TARU (2009)

Collection / access. Most importantly, human waste needs to be collected and separated from human contact. In the context of the Millennium Development Goals, this is commonly referred to as providing “access” to sanitation.¹³

Collecting the waste can be done either through on-site sanitation solutions (whereby excreta are collected, stored and sometimes treated close to the toilet) and off-site systems, where excreta are removed from the plot, most commonly via waterborne sewerage. In general, as density increases, networked systems are increasingly cost-effective compared to on-site sanitation solutions.¹⁴ Specific services need to be provided to collect the wastes not only from people’s homes but also from public spaces (railway stations, markets, etc.), work places and schools.

Transport. When latrines fill up they need to be moved or emptied while latrines connected to sewers will fail if the sewers themselves fail. If pits are not emptied and cannot be moved they cannot be used and households will revert to open defecation. This is a particular challenge in urban areas where density of housing increases the negative health implications of both open defecation and unregulated emptying of pits.

In most rapidly-growing cities, emptying is poorly organized and regulated. Householders either empty pits and tanks themselves or pay private operators to do so. Waste is often dumped in the environment nearby. Often there is no official disposal and treatment point, and where there is it is often far away. Pit and tank waste is heavy and costly to transport, and operators often incur additional costs because they have to pay to dump the waste at the official site. The result is that little on-site waste reaches the treatment plant and most ends up in nearby watercourses, waste ground or unofficial landfill sites.

Treatment. Treatment may take place either on-site (some on-site systems allow this, such as septic tanks) or off-site (when the wastes have been collected via sewer networks or pit latrine emptiers and transported to a sewage treatment plant). Onsite systems may also require this kind of downstream treatment in urban settings where onsite treatment is inadequate. Treatment of these waste flows is often (although not always) critical to protect downstream water resources, public health and the environment.

Reuse. Suitable treatment can result in waste streams being converted into a valuable resource for reuse. Reuse of treated excreta offers significant benefits both in terms of reducing the need to find safe disposal sites for wastes and because the ‘waste’ itself contains nutrients which are an important resource for agriculture or energy generation, either at a large scale (wastewater treatment plants with co-generation) or at the domestic/ community level through biogas plants.

In an ideal world without financing constraints, providing sustainable access to sanitation would require that services be provided alongside the entire value chain, so as to deliver the maximum health benefits as well as protection for the surrounding environment. This is what most developed countries currently aim for and most of them have gradually been tightening wastewater treatment requirements, for example, so as to ensure maximum protection for the environment.

However, in many countries where reaching the sanitation MDGs remains a distant prospect, emphasis is usually placed on providing access to sanitation, i.e. on collecting human excreta so as to separate humans from their excreta. In countries which are a bit further ahead or in dense urban

¹³ Target 3 of the Millennium Development Goals 7 is set out as follows: “To halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation”. See: <http://www.un.org/millenniumgoals/environ.shtml>.

¹⁴ While conventional sewerage can have high costs, technical innovation can bring dramatic cost reductions. For example, “simplified sewerage” (using smaller pipes buried at shallower depths) have been successfully employed in Brazil for many years as the standard design. Small-bore sewers, which only carry liquid waste from septic tanks, are also substantially cheaper to build and operate than conventional sewers.

settlements everywhere, considering the entire sanitation value chain would also be critical. In the medium-long term, sustainable access to sanitation is dependent on having appropriate transport, treatment and disposal/re-use options, which means that all steps of the value chain would need to be adequately organized and financed.

2.3. Who needs to be financed: understanding the market

Channeling public subsidies to sanitation requires understanding which institutions are providing services. This is not easy, as the sector is not very well structured. There are also critical differences between urban and rural sanitation markets.

The urban sanitation market is fragmented, which makes channeling subsidies relatively complex.

In urban areas, a water utility or a dedicated local government office is usually in charge of managing the sewerage networks and wastewater treatment plants. However, sewerage coverage is commonly very limited.¹⁵ Furthermore most utilities are in poor financial shape: they are often unable to cover their operational budgets and unwilling to finance new connections, particularly for the poor.

Local governments sometimes have a mandate to deal with onsite sanitation (or ‘sanitation’ in general) but are often unable to cover the operational costs of existing facilities or finance new services. The focus of local government actions is usually on the provision of onsite latrines, and some pit-emptying activities. In reality the majority of households are usually left to provide for themselves or to call on mostly informal and small-scale service providers to build and maintain their sanitation facilities. This tends to result in predominantly onsite systems of varying quality, and limited attention to transport, treatment or disposal of wastes.

Additional layers of institutional complexity (and confusion) are often created by planning authorities, environmental regulators and health authorities, all of whom may have some responsibility for aspects of sanitation but which rarely coordinate their activities.

In rural areas, households are the main investors in sanitation, usually building their own latrines.

Households may invest in on-site sanitation on their own or following some form of demand promotion activities conducted by a great variety of actors including Ministries, communities, NGOs, CBOs... This results in substantial variation in the quality of latrines being built and their ability to deal with the wastes adequately. Small-scale service providers tend to be involved with the supply of sanitation components (e.g. rural sanimarts) and latrine building. Ministries of water, rural development, agriculture and infrastructure may also sometimes implement sanitation projects or programs while the Ministry of Education is usually primary responsible for school sanitation.

2.4. Common issues with sanitation financing

There is a clear need to improve the effectiveness of public/donor financing in the sanitation sector.

In urban areas, the vast majority of sanitation financing tends to be delivered to utilities and local government despite their very limited ability to reach poor and unplanned communities. In such cases the focus appears to fall strongly onto the downstream (treatment and disposal) elements of the value chain, with little attention to access. Public financing for on-site sanitation is either non-existent (when governments argue that this is a private household investment) or delivered in the form of infrastructure subsidies, which suffer from a number of distortions. Regulations and penalties are often absent – and even where instituted, effective and appropriate funding and enforcement would require much careful attention.

¹⁵ In Sub-Saharan Africa, for example, a recent study found that amongst water utilities serving the largest cities, only around half offer sanitation services. Where sewer networks exist, they barely reach 10 percent of the population in the service area (Morella *et.al*, 2010).

Reluctance to finance sanitation is exacerbated because experience has shown that financing has often failed to achieve the objective of increasing sustained access to services. Common problems with sanitation financing include sector and household level distortions:¹⁶

- **Sector distortions** can include the delivery of unnecessarily-expensive systems; distortion and crowding out of other sources of funding, particularly from households and commercial funding, stifling of innovation and lack of financial sustainability where cost-efficiency is low.
- **Distortions at the household level** can include: poor targeting (usually towards non-poor households in the case of subsidies), delivery of unwanted or inappropriate systems which households or communities do not want or will not use, dependency and false demand when subsidized systems are preferred over other more suitable interventions, and lack of sustainability when financing only focuses on delivery of a toilet, not its operation and maintenance.

A financing regime that focuses on the delivery of a measurable and achievable output which it is reasonable to assume will contribute significantly to achieving the desired outcome would hold great potential to improve the delivery of public financing to sanitation. For example, such an outcome could be expressed as follows: “sustained access, particularly for the poorest, to sanitation services that protect public health and minimize negative impacts on the environment in a cost-efficient manner”.

The challenge however is that service providers may be unable to guarantee sustained services through interventions at one point along the sanitation value chain. For example, a subsidy that alleviates household financial constraints to accessing a toilet will not result in sustained service delivery if the system for removal of waste from that toilet via a sewer or cartage system is failing. Equally, a rehabilitated wastewater treatment plant will not increase access to sanitation for households if they are not connected to it. To achieve the required outcome, a blend of capital investments (or rehabilitation) and interventions that change the incentives for appropriate operations and maintenance of facilities may thus be required. As a result, financing which emphasizes results and blends or coordinates interventions across multiple steps of the value chain would be needed.

Output-based subsidies may offer the opportunity to deliver public funding into the sanitation value chain in a way that is cost effective and which has measurable impacts on access and environmental performance. In addition, they can offer a vehicle by which investments could be combined with ongoing operations and maintenance so as to enable outcomes to be readily monitored and improved performance to be incentivized.

¹⁶ For a more detailed discussion, see Evans *et.al.* (2009).

3. OBA: an attractive financing approach for the sanitation sector?

This section reviews the limited experience with OBA approaches to date in the sector (*Section 3.1.*). It evaluates the many challenges that have curbed its more extensive use so far and identifies potential solutions to address those challenges (*Section 3.2.*). *Annex A* gives additional background on OBA approaches, including references to how it has been used in other sectors.

3.1. Experience to date with OBA in the sanitation sector

The use of OBA-type financing in the sanitation sector is poorly developed compared to other sectors. Experimentation with OBA financing for sanitation has taken place in various institutional settings. The World Bank and the Global Partnership on Output-Based Aid (GPOBA), a multi-donor facility hosted by the World Bank to pilot the use of OBA financing, have been early promoters of the approach in a variety of sectors, including water and sanitation. In addition, other donor institutions have tested the approach. Finally, a number of developing country governments have incorporated elements of an OBA approach into the design of their own programs, even if the latter are not always “tagged” as OBA.

Although the World Bank initiated experimentation with OBA-type financing across a broad range of sectors, their experience with using OBA for sanitation has remained limited. According to a recent review led by GPOBA, water and sanitation accounted for only 5% of the total OBA portfolio for the World Bank Group as of 2009.¹⁷ This review estimated that there were 33 OBA projects with World Bank participation in the water and sanitation sectors, of which 24 were water supply schemes, 3 sanitation schemes and 6 providing both water and sanitation.

By contrast, water and sanitation accounted for approximately half of GPOBA’s own portfolio, largely due to the fact that GPOBA has to some extent focused on designing and developing OBA schemes in areas where OBA has been less tested, such as in IDA countries or in the water and sanitation sector. In terms of volume of subsidies disbursed, the water and sanitation sector accounted for 26% of GPOBA’s portfolio, the largest share attributable to a single sector.

GPOBA has initiated a number of sanitation projects but only two are currently under implementation. GPOBA is piloting one as part of a sanitation-only project (Senegal, see Box 3.1.) and the other within a broader water and sanitation project (in Morocco, as described in Box 4.2). One issue GPOBA has confronted is related to difficulties with charging for sanitation, which meant that some proposed projects were never implemented (as in Gharbeya, Egypt discussed in Box 3.2.) or are being implemented at a much slower pace than expected (as in Senegal, as discussed in Box 3.1.).

Box 3.1 - Senegal: OBA for on-site sanitation at household level

In Senegal, GPOBA is providing subsidies for on-site sanitation facilities in poor urban and peri-urban areas of Dakar, the capital city. The OBA component was developed in the context of a broader water and sanitation project funded by a group of donors and led by the World Bank, the Senegal Long Term Water Project. The OBA component built on an earlier IDA-funded project, PAQPUD (*Programme d’Assainissement Autonome des Quartiers Périurbains de Dakar*), which already involved an OBA approach, and led to the construction of 63,500 new on-site sanitation facilities in a demand-driven manner, benefiting more than 400,000 people between 2002 and 2008. The GPOBA project was initially expected to build on the PAQPUD and provide access to an additional 15,100 facilities to households living in the Dakar region (approximately 135,900 persons expected beneficiaries with about 9 inhabitants per household). Although the project was expected to end in February 2010, it has been extended up to the end of 2011, due to slow implementation.

After 1.5 years of implementation, the level of completion was relatively low (around 7% of the initial objective) due to a range of reasons, including:

¹⁷ Mumssen *et.al.* (2010).

- The economic crisis has significantly affected Senegalese households who face difficulties to pay for improved sanitation among other priorities such as food, school and other essential household expenses;
- The fact that beneficiary households have to pay the full amount of their upfront contribution (about 25% of the total cost) before the construction starts appears to be a major obstacle for most beneficiaries.

Some of the adjustments proposed to address these issues include:

- A strong involvement of the main micro-finance institution in Senegal (PAMECAS) to address the difficulties faced by beneficiaries to finance their up-front contributions; and
- A revised Information Education Communication (IEC) methodology with an upfront effort in terms of mass communication, an increased IEC budget and increased involvement of local governments.

Source: communication with Pierre Boulenger, Water and Sanitation Program.

GPOBA is also currently working with the National Water Supply and Drainage Board to design an output-based subsidy for sanitation services in Greater Colombo, Sri Lanka's capital. This project recognizes that acceptable sanitation with equivalent levels of service can be offered through both networked sewer connections and improved management of on-site sanitation systems and services. Thus poor people will be able to access improved services irrespective of whether they live within the areas covered by the existing sewer network or not.

Other donor agencies (bilateral and multilateral) and NGOs have sought to introduce OBA principles into the design of their projects. For example, the AFD has considered applying OBA mechanisms for water and sanitation in Morocco and South Africa¹⁸ but they have been limited in their ability to use the OBA financing mechanism by their inability to provide grants in such countries and dwindling grant budgets for other countries. Other bilateral donors have used OBA mechanisms for health and renewable energy (KfW) or energy (DGIS) but have not relied extensively on OBA in the water and sanitation sectors.

A few developing country governments have developed large scale sanitation programs using a results-based financing approach, including Mozambique, India and Brazil.

- In ***Mozambique***, from the late 1980s, the government, backed by a number of donors, has supported the development of local providers of improved latrines through subsidies based on the number of slabs and latrines sold to households.
- In ***India***, the approach of the Total Sanitation Campaign (a nation-wide program to boost sanitation coverage, particularly in rural areas) combines support to demand promotion activities and community mobilization, together with supply-side activities (support to rural sanitary marts) and hardware subsidies to households building latrines. Since 2004, these payments are paid to poor households (Below-Poverty Line households) once they have built a latrine and the village has reached Open Defecation Free status. Such payments can be considered as OBA payments to the extent that households are seen as providers of sanitation.¹⁹ In addition, in rural areas villages that achieve Open Defecation Free (ODF) status can apply for a monetary award (the Nirmal Gram Puraskar, NGP) in recognition of their achievement. Such award goes to the community as a whole, and can be used either for any type of community investment or for sanitation (depending on local variations to the program, see Section 4.1 for more details).²⁰
- In ***Brazil***, a Federal government program (PRODES) is financing the building of new or the upgrade of existing wastewater treatment plants based on these plants achieving pre-specified performance indicators in terms of the volume of sewage treated (see Box 4.2 for more detail).

Although these government-led programs are functioning at scale, they are not necessarily "tagged" as OBA programs. They may only display some characteristics of the OBA approach and

¹⁸ Trémolet, S., (2006).

¹⁹ Trémolet, S. *et.al.* (2010).

²⁰ For more details on the financing approaches in Mozambique and India, refer to Trémolet, S. *et.al.* (2010).

many suffer some design flaws (for example, the verification process for the NGP awards in India has been tainted by allegations of corrupt practices in a number of states, as discussed in Section 4.1.).

In sum, although OBA principles are frequently referred to in the sector, they have yet to be mainstreamed into water and sanitation project design. By contrast, the OBA approach is widely used in the telecommunication and road sectors (see Annex A for more details). There are of challenges that may explain why its use has remained relatively limited so far in the sanitation sector, as discussed below.

3.2. Common challenges with using OBA for sanitation

Challenges that have constrained the use of OBA in sanitation can be placed in three broad categories:

- Broader sanitation sector financing issues;
- OBA-related challenges;
- Challenges related to the use of OBA for sanitation.

We review each of these types of challenges in turn below and identify ways of addressing those challenges in order to increase OBA's viability in the sanitation sector, building on experience in other sectors where OBA has worked effectively.

Broader sanitation financing issues have impacted the viability of sanitation OBA projects

As highlighted above in Section 2.4, financing the sanitation sector can prove complicated. Many households do invest in latrines themselves and use pit-latrines emptying services where available, but when they are cash-constrained and paying for such services proves unaffordable, they may skimp on quality or dispense with accessing those services. As a result, the fact that demand for sanitation services tends to be difficult to predict accurately makes any sanitation program challenging to design and manage and this has also applied to OBA projects, as experienced in Senegal (see Box 3.1.). Conducting demand studies prior to designing the financing scheme and allocating substantial amounts to demand promotion activities would therefore be essential for the success of OBA schemes.

OBA financing mechanisms can only be viable if overall financing to the sector is clarified. Broader sector-wide factors may influence the outcome over which a service provider may have little or no control. One of the most obvious factors is the willingness or ability of a utility or local government to raise tariffs for networked services for example to cover the real costs of operation and maintenance. Charging for sanitation (sewerage in particular) can be difficult, due to unwillingness to charge or unwillingness to pay for a service that is valued less by individuals than by society as a whole. In Gharbeya (Egypt), for example, a proposed OBA scheme was not implemented due to an inability to raise sewerage tariffs (see Box 3.2.)

Box 3.2.: GPOBA project for wastewater services in Gharbeya, Egypt: the need for tariff reform

A GPOBA-funded technical assistance in the Gharbeya governorate in Lower Egypt explored the possibility of increasing connection rates to new wastewater treatment plants. Connection rates to many of the plants were so low that their operation was compromised. Connectivity was low because households had very low willingness to pay for new connections, preferring to pay periodically for emptying their on-site vaults by small independent operators than to pay the relatively high one-off costs of connecting to sewerage. In some areas there was no sewer network.

The main challenge in designing the project was that a contractor taking on the task of constructing new connections (and new elements of the network) could not guarantee their operation because there was no track record of effective operation of the treatment plants.

The solution was to combine the operation of the plants with the extension and connections to the network in the form of a concession to operate the plants, remunerated on the basis of volumes of wastewater collected and treated. This had the added advantage that the operator could assess whether the most efficient way to connect households was via new sewerage or by paying for vault-emptiers to deliver collected wastewater to the plant. The subsidy offered enabled households to be connected at an affordable price. A transitional subsidy was designed to cover income shortfalls as tariffs were gradually increased to cost-recovery levels.

While the technical solution was viable, it was dependent on the implementation of a previously-agreed progressive tariff increase (for water and sewerage services). Without the tariff increases, the company was unable to finance the concession contract (or indeed pay its own electricity bills to run the plants itself). The project was not deemed eligible to go forward with GPOBA subsidy funding without a clear resolution on this, and it has therefore been shelved.

Public subsidies for sanitation are usually in short supply, which means that few OBA experiences have operated at scale. When available public subsidies are limited, as it is usually the case in the sanitation sector, other sources of finance may be needed. In such a context, public subsidies (i.e. from government taxes) could be used preferably for subsidizing activities with a strong social benefit, such as access to sanitation,²¹ while alternative sources of financing could provide a reliable source of financing for OBA payments to incentivize other activities, such as wastewater reuse or the development of microfinance products for sanitation entrepreneurs.

These alternative sources of subsidies may include:

- **Cross-subsidies from customers connected to water supply may provide a good way to finance the sector and particularly extensions to the poor and disadvantaged customers.** Cross-subsidies between water and sanitation services are frequently encountered where both services are managed jointly, as it is the case in many OECD countries. In developing countries, the sanitation tax in Burkina Faso is a well-known example of a cross-subsidy between existing water and sanitation service customers and new customers getting access via on-site sanitation. If introduced, such a tax can provide a reliable source of subsidy, which can then be used to finance sanitation activities on an OBA basis.
- **Entities that benefit from improved sanitation services (such as hotels or aquaculture) can be a source of cross-subsidies.** Payments from these entities may or may not need to be mediated via the public sector. In the same way that “payment for ecological services” are made directly by the entity which benefits to the one that had to invest in ecological services, multi-sector agreements whereby the tourism industry would cross-subsidize activities to support adoption of sanitation at household level could potentially be considered.
- **Re-use of treated waste (provided that re-use activities are carried out) may generate additional revenues for the sector, which could be mobilized for extending access.**

There are intrinsic challenges with the design of OBA schemes

The requirement that service providers pre-finance their investments, which is fundamental to OBA financing schemes, has proved challenging in some cases. The introduction of an OBA subsidy requires that service providers pre-finance their activities using other sources of funds. In some cases, such pre-financing requirements can be a real constraint, especially when the service providers are small and have difficulties in accessing financing. As a result, the assumption that procurement processes would drive down costs has not always worked in OBA financing schemes, particularly in sanitation, as service providers in the sector are generally weak both financially and operationally. In Senegal, for example, some providers have internalized their financial risks or the high costs of getting credit to pre-finance the facilities and submitted high bids which turned out to be expensive, despite anticipated efficiency gains. Some providers also developed implementation strategies to reduce their intervention costs (by grouping and delaying delivery for example) to the

²¹ However, public subsidies tend to also be used to finance large infrastructure investments, such as sewers and wastewater treatment plants, even if they benefit only a small percentage of the population.

detriment of the beneficiaries, who had to wait a long time once their contribution had been made in order to get the facility built in their home.

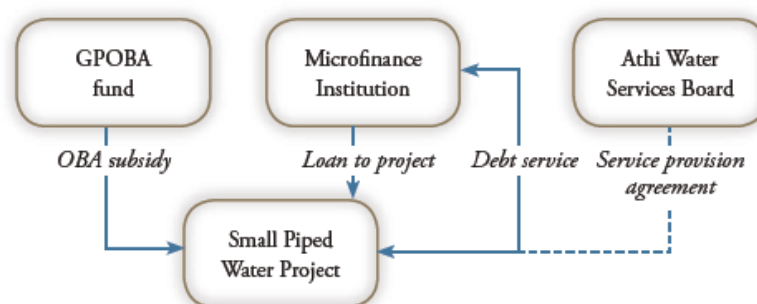
When designing an OBA scheme for sanitation, it is therefore essential to assess whether existing service providers (or new ones to be established) are able to bear the risks that are transferred through such financing approach, including performance risk and pre-financing risk. Such assessment would help with defining the accompanying measures that may be needed in order to enable service providers to deliver. These may involve financial support to help them finance upfront investment (via links with micro-finance institutions) or the provision of dedicated business support services, to help them adopt a more formal commercial approach and develop new skills, including monitoring and reporting. Combining OBA subsidies with micro-finance can be an attractive way of facilitating pre-financing by local service providers whilst maintaining the incentives on serving poor customers. This approach has recently been piloted in Kenya for the water sector, via K-Rep bank, a local bank with a focus on micro-finance and development projects (Box 3.3). K-Rep bank is currently looking to extend its experience and possibly apply this approach to sanitation.

Box 3.3. Combining OBA with micro-finance in Kenya: the experience of K-Rep bank

The Water and Sanitation Program and K-Rep bank have developed a pilot project for supporting local water service providers in Kenya that combines micro-finance to leverage commercial resources with output-based subsidies to ensure appropriate focus on network extensions. Although this experience was initially focused on the water sector, it has the potential for being replicated in the sanitation sector as well.

K-Rep Bank was officially established in Kenya in 1999 as a bank with a focus on micro-finance, small and medium enterprises, poor households and development-oriented enterprises. The pilot project was designed to address some of the constraints weighing on water service providers in reaching communities through micro-finance, which include limited exposure of micro-finance institutions (MFI) to the water sector and/or project finance; interest rates and tenors beyond what is affordable; and a lack of up-front collateral for small piped water systems.

Institutional and financial arrangements work as follows: the small piped water project (the borrower) contracts a loan with the micro-finance institution (K-Rep Bank) and is responsible for making debt service payments to this institution. Further to the Kenyan Water Act of 2002, the small water project has to sign a Service Provision Agreement (SPA) with the Water Service Board (WSB) in whose jurisdiction it falls (for example, the Athi Water Services Board-AWSB for the area surrounding Nairobi). Upon successful completion of the project, GPOBA pays subsidies to the small piped water project (see figure below), which reduces the overall size of the loan to the communities, and keeps debt service payments affordable. It provides better risk management from the lender's perspective and increases incentives for project completion as the subsidy is transferred upon the delivery of agreed outputs (including the increase in the number of connections and in revenues collected).



Prior to the subsidy release, the K-Rep Bank's loan amounts to 80% of the total investment. This share drops to about 40% upon successful delivery of the outputs (which needs to be independently verified) and payment of the subsidy. After the release of the subsidy, the MFI remains responsible for collecting the remainder of the loan that is to be covered from water revenues. Technical assistance grants are also provided to assist with project development: each community project receives a grant for management assistance during project implementation and during the first year of operations.

Source: Mehta and Virjee (2007), as quoted in Trémolet, S. and M. Scatasta (2010).

Another way of limiting such risk is to split the service providers' remuneration between an up-front payment (also referred to as "block grant") and a performance-based payment. Although this may reduce the incentives to perform, it may be necessary at least in an initial stage in order to help those service providers get established.

The viability of the schemes may be in question once the initial source of subsidy, provided within a pilot OBA scheme, stops. From an institutional perspective, enhancing the predictability of subsidy flows and reducing transaction costs may be facilitated through the establishment of national funds or institutions that could allocate subsidies to local service providers based on results (this is similar to the model of the Universal Access and Service Fund in the ICT sector, as described in Annex A). A recent GPOBA-led initiative led to the establishment of an OBA facility in Honduras.²² The Facility is to be housed within the Honduran Fund for Social Investment (FHIS) and will provide USD 4 million in subsidies for the financing of eligible water and sanitation infrastructure projects, selected based on rigorous identification criteria. The OBA Facility will effectively work as a challenge fund, in which subprojects compete with each other for funding. Pre-financing will also be made available through the Facility for those project implementers that need it, although the payment of the subsidy will remain linked to the output. Although the approach seems promising, the facility has yet to produce results, which means that it is too early at this stage to evaluate whether such "mainstreaming" OBA approaches, particularly in the sanitation sector can be successful or not.

Using OBA financing mechanisms for sanitation raises specific challenges

Measuring outputs may prove difficult. A key challenge in the sanitation sector (and other services which do not simply relate to infrastructure delivery but also require changes in behavior and deeply rooted cultural practices) is that outputs and outcomes are often difficult to measure and even harder to attribute to a single intervention. As a result, the definition of reliable performance verification mechanisms can be difficult. Methods to measure behavior change from sanitation interventions have been developed in recent years and can be used, however outputs may be comparatively harder to measure than for other sectors thereby increasing the costs of performance verification.²³

The transaction costs of putting together an OBA project can be high whilst sanitation projects tend to be relatively small-scale or compartmentalized. For example, in Sri Lanka, the costs of delivering services to the poor are small by comparison to the costs of putting the project together. This issue may be partly overcome via the setting-up of OBA sanitation facilities (as described above), which would be in a position to roll out OBA schemes in a number of locations throughout a given country thereby spreading the initial costs of defining the OBA financing mechanism.

OBA for sanitation deals with the first mile of the service as opposed to water/electricity, which deal with the last mile of the service. With water (or electricity), if the public authority brings the mains close to the community, then community action can build a tertiary supply network and it would be relatively easy to get communities to collaborate to do this; demand is relatively predictable. With sanitation, however, even if the community gets organized and removes waste from their surroundings, the health and environmental issues will not have been solved if they cannot connect to a working system (either sewers or decentralized treatment solutions for latrine sludge) as they cannot control what happens 'downstream'. In the sanitation sector, there is rarely a system that works to which people can be connected, so financing "access" requires allocating funding to the overall system of waste removal (and treatment or safe disposal) as well. This can be achieved through packaging OBA payments and contracts in a way that incentivizes sustainable service delivery alongside the entire sanitation value chain.

²² Mandri-Perrott *et.al.* (2009).

²³ Coombes and Devine (2009), Devine (2009)

The subsidy per household necessary to provide access to the service is usually higher than in other services, such as electricity, which means that sanitation does not compare “favorably” when examined in the context of subsidy allocation across sectors (as would be done in the context of funding allocation within GPOBA for example). This is partly due to the issue mentioned above: when subsidizing access to sanitation, it is often necessary to subsidize the systems that can make it functional, as such systems seldom pre-exist (either via sewers or transfer stations for on-site sludge). Reviewing the grants signed by GPOBA in 2009 for example, the cost per-person to GPOBA of the planned subsidies ranged between US\$7-48 for electricity, US\$12-267 for health, US\$2-10 for telecoms and US\$31-35 for water. The average per person subsidy was around US\$12 per person.²⁴ These figures can be compared to US\$84-183 for sanitation connections in a GPOBA project in Morocco. Cost in the planned GPOBA project in Colombo in Sri-Lanka range between US\$29-332 per person for on- and off-site connections although the cost to GPOBA has been brought down as the Government of Sri Lanka to fund part of the costs of extending sewers.

These challenges are real, but as Table 3.1 summarizes, potential solutions have been developed over the years in a number of sectors to deal with them.

²⁴ GPOBA (2010).

Table 3.1. Using OBA for sanitation: common challenges and potential solutions

Common challenges	Potential solutions
Sanitation financing challenges	
<ul style="list-style-type: none"> Households either do not invest in or skimp on quality of on-site sanitation solutions Demand for sanitation services unpredictable 	<ul style="list-style-type: none"> Conduct thorough demand assessment studies as part of the design of the scheme Allocate funding to demand promotion activities
<ul style="list-style-type: none"> Unwillingness-to-pay (or to charge) for sewerage services 	<ul style="list-style-type: none"> Build sewerage tariff increases as a condition for subsidy release Introduce cross-subsidies from water services
<ul style="list-style-type: none"> Available public subsidies are limited 	<ul style="list-style-type: none"> Build the case for sanitation investment to attract additional public funds Identify alternative financing sources, including: <ul style="list-style-type: none"> Cross-subsidies from other users or services Direct contributions from sectors benefiting from improved sanitation (e.g. hotels) Value generated from re-use
OBA-related challenges	
<ul style="list-style-type: none"> Service providers may not be able to mobilize financing to pre-finance investments 	<ul style="list-style-type: none"> Combine OBA schemes with access to finance, such as through micro-finance Split the service providers' remuneration between an up-front payment ("block grant") and a performance-based payment Package the services in order to attract larger operators, with better access to finance Package the services so as to combine services to poor customers with services with less risky sources of revenue
<ul style="list-style-type: none"> Service providers may not have the necessary business and management skills to meet reporting and performance verification requirements 	<ul style="list-style-type: none"> Provide business support services and assistance to formalize the services
<ul style="list-style-type: none"> The viability of the schemes may be in question once the initial source of subsidy, provided within a pilot OBA scheme, stops 	<ul style="list-style-type: none"> Set-up a domestic OBA sanitation facility in the form of a "challenge fund" with a secure source of subsidies to provide ongoing subsidies
"OBA for sanitation" related challenges	
<ul style="list-style-type: none"> Measuring outputs may be more difficult, and therefore more costly than in other sectors 	<ul style="list-style-type: none"> Methods to reliably measure behavior change associated with sanitation have been developed An allowance for potentially higher costs for performance verification need to be built-in
<ul style="list-style-type: none"> Sanitation projects tend to be small, especially when compared to the transaction costs of developing and implementing OBA financing 	<ul style="list-style-type: none"> Set-up a domestic OBA sanitation facility which can "roll-up" a given OBA subsidy scheme and thereby spread the initial design cost
<ul style="list-style-type: none"> Financing access to sanitation is the "first mile" of adequate sanitation services: subsidies may be needed to develop the entire system. The subsidy per household required tends to be higher than for other services 	<ul style="list-style-type: none"> Package OBA payments and contracts in a way that incentivizes sustainable service delivery alongside the entire sanitation value chain. Convey the message that even if costs investment are high, benefits to society are also very high

Despite these challenges, OBA as a subsidy-delivery mechanism holds the potential to improve the effectiveness, leveraging and targeting of public funds delivery to the sanitation sector. The next sections examine how OBA could be used more extensively along the various steps of the sanitation value chain.

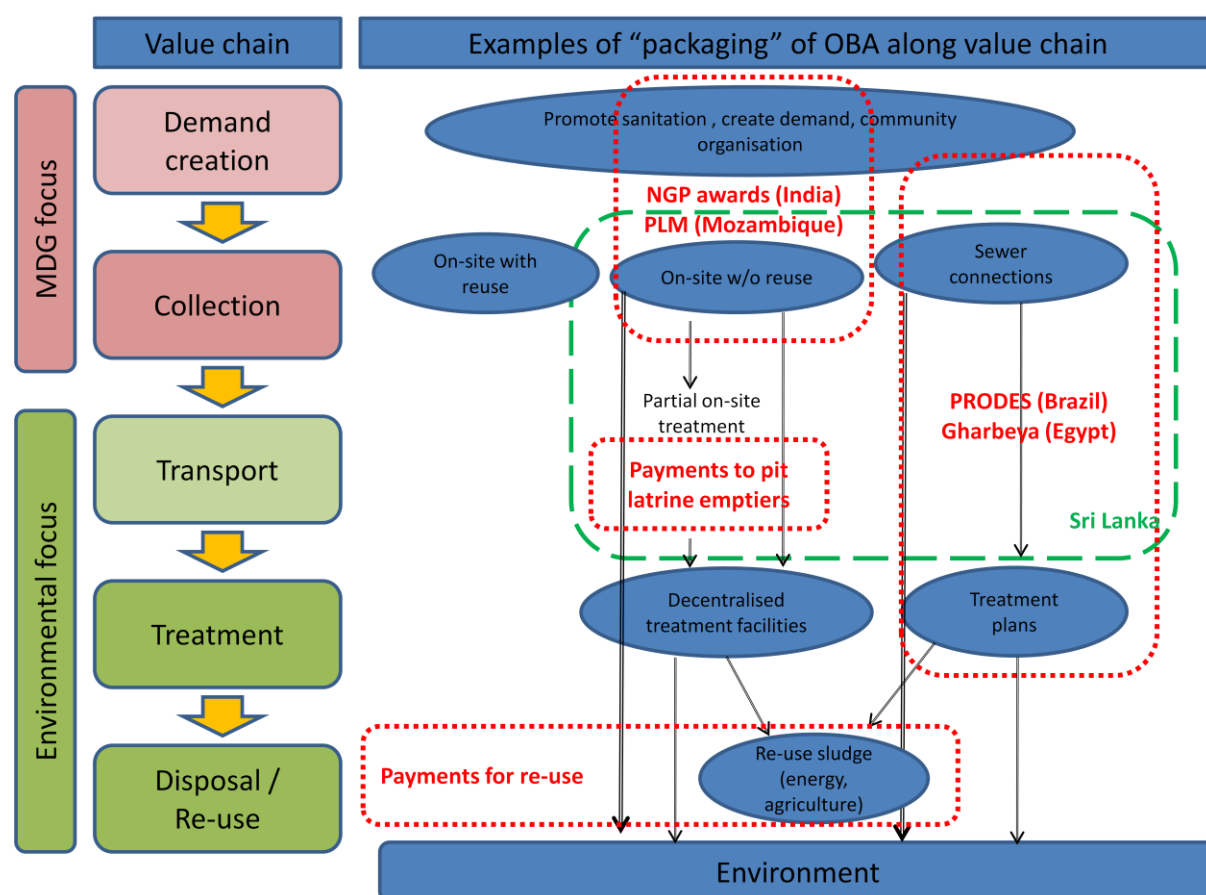
4. Evaluating the role for OBA across the sanitation value chain

Most people will be familiar with OBA to stimulate latrine construction (i.e. for collection/access). However, we argue in this section that OBA mechanisms can be used to finance a much broader range of activities, going from demand promotion (or generally “software” activities) all the way to re-use and safe disposal. As a result, this section examines how OBA could be used to finance the provision of sanitation services at each step of the sanitation value chain, as follows:

- **Section 4.1 - OBA for demand creation**, e.g. incentives for service providers to generate greater demand for sanitation goods and services;
- **Section 4.2 - OBA for collection/access**, e.g. payments to sell/install latrines or sewer connections and public/ community sanitation (such as community toilet blocks);
- **Section 4.3 - OBA for emptying of on-site sanitation and transport of wastes**, e.g. payments for safely transporting and discharging pit latrine content at designated points;
- **Section 4.4 - OBA for treatment and proper disposal of wastes**, e.g. payments for construction of sludge and wastewater treatment facilities and/or their operation;
- **Section 4.5 - OBA to encourage safe re-use of treated wastes**, e.g. encouraging farmers to purchase re-use products by giving them vouchers.

The design of individual OBA schemes will depend on the most appropriate way to package the provision of sustainable sanitation services, which means that each OBA scheme is likely to include a combination of several types of results-based subsidies. Some indicative options for packaging OBA support are shown on Figure 4.1. below, with examples of existing or potential programs cited.

Figure 4.1 – Potential ways of packaging OBA support along the value chain



Note: a package that would include OBA subsidies for all segments of the value chain could also be considered. This is what is currently envisaged in the Ganges valley in India.

The main focus of any intervention will be determined by identifying which funding gaps need to be filled, i.e. where market failures or affordability constraints mean that a sanitation service is being under-provided. For example, if networked sewerage exists but people are not connected, the principle focus for subsidies (either with OBA subsidies or not) will be on collection/access (building sewerage connections). If households have onsite facilities (such as basic latrines) but the pit waste is being indiscriminately dumped in the environment, the focus may be on fostering transport and safe disposal of this waste.

The further down the chain the subsidy is provided, the more likely it will be possible to implicitly subsidize previous steps of the chain.²⁵ For example, in Sri Lanka, GPOBA proposes to create incentives for better operation of onsite sanitation by combining a payment for operation of onsite systems with a subsidy for rehabilitation and construction of new facilities. This will create incentives for contractors to enter the market as “sanitation operators” in charge not only of building latrines but also of ensuring that they are adequately maintained and remain operational over time. In the PRODES program in Brazil, the utilities get a subsidy if wastewater gets treated; that subsidy also gives them incentives to connect new customers to the network, as this would increase the overall amount of wastewater that arrives in the treatment plant.

The packaging of sanitation services eligible for a payment could help foster the development of new sanitation service providers. For example, the *Programa de Letrinas Melhoradas* that ran in Mozambique from the late 1980s until recently led to the establishment of local workshops manufacturing and selling latrine slabs. Their development was first supported through capacity building activities. Following a sharp increase in production prices which had threatened their commercial viability, ex-post subsidies based on the sales of latrines were introduced in the early 1990s and contributed to strengthening their activities (such subsidies were later partly eliminated, leaving the local workshops having to make ends meet from selling bricks or renting out space).²⁶ In addition, the management of human excreta may need to be packaged with that of other waste streams, such as solid waste for example if latrines or drainage pipes keep filling up with rubbish. OBA subsidies could be provided in an integrated manner to encourage the formation of integrated solid waste and liquid waste entrepreneurs.

If used in a strategic manner, output-based subsidies can be used as a lever to trigger broader financing reforms in a demonstrative way. A small OBA scheme may not have sufficient leverage on the design of broader sector arrangements, and OBA should not preclude the need for greater prioritization of sanitation access through financial and regulatory measures at a higher sector reform level. However, the rigor of the OBA approach may help in thinking through the sector issues in a more systematic and strategic manner and if successfully implemented may prove a powerful lever for triggering much needed reforms in the sector. .

Below, we discuss each step of the value chain based on a similar structure. We start by identifying how these services are typically financed and what issues such “traditional financing” may create. We then review how OBA payments could be structured, identifying what type of services could be paid for, what outputs could trigger payment and who might deliver those services.²⁷ Finally, we evaluate the likely advantages and potential risks of using OBA for each type of services and indicate how such identified risks could be alleviated. Table 4.1 summarizes the various types of OBA mechanisms discussed in this section, including the outputs that can be used to trigger payment in each case.

²⁵ However, the further down the subsidy is provided on the value chain, the more necessary it may become to add performance indicators that strengthen the poverty targeting. Otherwise, companies may have a stronger incentive to connect rich or large customers rather than those who are poor and more difficult to reach, and likely to consume and therefore discharge less.

²⁶ See Trémolet *et.al.* (2010).

²⁷ In general, sanitation is regarded as a public-sector responsibility but elements of the value chain are commonly delivered by third parties. Third-party provision can be considered advantageous because of the opportunities offered through the procurement process of driving down costs through competition.

Table 4.1. Range of OBA financing mechanisms potentially applicable to sanitation

Value chain	Types of services	Indicative Outputs (for monitoring and payments)	Cost elements that could be partially covered ex-post		Type of service providers
			Capital costs	Operating costs	
Demand creation “software activities” (Section 4.1.)	Sanitation marketing	<ul style="list-style-type: none"> Number of people who build/use a latrine following demand promotion activities 		Staff salaries, transport costs, materials development	NGOs, CBOs, Local governments, Ministries, sanitation entrepreneurs
	Social mobilization, triggering	<ul style="list-style-type: none"> Village/community becoming ODF 			
	Hygiene promotion	<ul style="list-style-type: none"> Number of people adopting hygienic practices 			
	Product development	<ul style="list-style-type: none"> Volume of sales of new products 	Development costs	Staff salaries	Sanitation entrepreneurs, universities, engineering firms
Collection access (Section 4.2.)	Build on-site sanitation (pit latrines or septic tanks)	<ul style="list-style-type: none"> Village/community becoming ODF Number of latrines built for eligible households Number of slabs sold to eligible households 	Construction costs		Households (self-provision), masons, utilities, local government
	Empty latrines or septic tanks	<ul style="list-style-type: none"> Number of latrines emptied for eligible households Volume of waste removed 	Start up costs (equipment) and initial rehab of latrines	Running costs of equipment, fuel, salaries, costs of disposal	Households (self-provision), private operators (manual or mechanized), utilities, local government
	Build sewer connections	<ul style="list-style-type: none"> Number of new connections to eligible households 	Construction costs		Utilities Private contractors
	Build and operate community toilets	<ul style="list-style-type: none"> Number of eligible users 	Construction costs, land	Running costs	Local government, utilities, NGOs, CBOs
	Build and operate public toilet facilities	<ul style="list-style-type: none"> Number of toilet blocks installed in disadvantaged areas and meeting accessibility criteria 	Construction costs, land.	Running costs	Utilities, NGOs, Private contractors, local governments
Transport (Section 4.3.)	Transport pit waste and septage to designated discharge point	<ul style="list-style-type: none"> Number of latrines emptied for eligible households Volume of waste transported to approved location 	Start up investment costs	Salaries, fuel, costs of discharge	Utilities, local government, private contractors
	Build and operate transfer stations	<ul style="list-style-type: none"> Number of transfer stations built and still operating after a given period Volume of septage collected at transfer stations 	Construction costs, land	Salaries, fuel, costs of discharge	Utilities Local governments Private operators
	Build and operate sewerage systems	<ul style="list-style-type: none"> Number of eligible households connected to new sewers with satisfactory service (can be measured by surveys, payment of tariffs, etc.) 	Construction costs	Salaries, fuel, costs of discharge	Utilities, local government, community contractors, private contractors
Treatment (Section 4.4.)	Build, maintain and operate decentralized wastewater treatment facilities	<ul style="list-style-type: none"> Volume of waste collected at plant and treated to required standard 	Construction costs, land	Salaries, fuel, costs of discharge	Utilities, local government, community contractors, private contractors
	Build, maintain and operate principal wastewater treatment plants	<ul style="list-style-type: none"> Volume of waste collected at the plant and treated to required standard 	Construction costs, land	Salaries, fuel, costs of discharge	Utilities, local government, community contractors, private contractors

Output-Based Aid for Sustainable Sanitation

Value chain	Types of services	Indicative Outputs (for monitoring and payments)	Cost elements that could be partially covered ex-post		Type of service providers
			Capital costs	Operating costs	
Disposal/ re-use (Section 4.5.)	Build and maintain ecological toilets or biogas facilities	<ul style="list-style-type: none"> • Number of ecological/biogas toilets installed/used • Volume of productive agricultural inputs generated • Energy generated 	Construction costs, land		Local government, private contractors, communities
	Treat waste to standards required for reuse and deliver it to locations as required	<ul style="list-style-type: none"> • Volume (or %) of waste reused 	Construction costs, land	Salaries, fuel, transport costs (if required)	Utilities, local government, private contractors (large schemes) Local government, households and communities (for individual ecological toilet installations)

4.1. OBA for demand creation

Traditional financing approach. Demand creation is almost exclusively financed through public funds, except in the very rare cases where a private utility would finance this type of activity itself.²⁸ Public funds are either provided directly via government channels or via development cooperation. Data on the costs, outputs and outcomes of such software activities are seldom collected and there is little reliable information on effectiveness (see for example Peal *et.al.*, 2010). As a result, it is almost impossible to ensure that “value-for-money” is delivered via financing such software interventions.

Potential design of OBA schemes

Types of services. OBA subsidies could be used to pay for demand creation activities such as sanitation marketing, social mobilization and triggering or hygiene promotion. They could also be used to encourage the provision and use of micro-finance which would enable households to participate in self-provision of sanitation facilities. A linked intervention could provide incentive payments to organizations that develop new and appropriate products in a specific area.²⁹

Output indicators. There are a number of ways in which financing for demand creation can be linked to outputs. Service providers could be paid once the target change in behavior, commonly a shift from open- to fixed-place defecation and/ or the construction and use of a hygienic latrine, has resulted in household investment. As mentioned above (Section 3.1), this type of OBA payments underlies the design of the TSC and associated NGP (Nirmal Gram Puraskar) in India. The Indian government offers rewards to villages that achieve Open-Defecation Free status: although this payment is not directly linked to the costs of achieving such status in the first place, it is in recognition of the community’s ability to act collectively to stimulate demand and increase coverage.³⁰

Service delivery. These types of services can be provided by NGOs through performance-based contracts or delivered directly by local government staff (for example health extension workers), in which case subsidies would flow to local governments, as in the India example. Service providers may be paid all or part of the subsidy when this is achieved, depending on their ability to carry the pre-financing and performance risks.

Potential advantages. There are two main reasons for introducing output-based financing for demand promotion activities. The main objective of such an approach would be to stimulate a “commercially-driven” approach for these demand promotion activities which have proven to be critical for sustainable sanitation services. OBA-type financing might create incentives for service providers (public or private) to become more efficient and to plan and monitor activities more closely. Since impact monitoring of demand-creation activities has historically been very poor, this approach would

²⁸ Private utilities with incentives to increase coverage may sometimes market connections to their customers, through advertising, offering discounted connection fees and sending staff into the field to talk to people on a personal basis. Utilities also use similar techniques to encourage responsible use of facilities. For example, e-Thekwini Water in South Africa uses street theatre to encourage people not to put solid waste into pit latrines and sewer manholes.

²⁹ Participants to such a scheme would invest in development and payment would be made for a “winning” design. Additional payments could be made based on the sale of new products. Potential recipients of such subsidies could include entrepreneurs, but also universities or engineering firms. This type of payment would be similar to Advanced Market Commitments that exist in the health sector for the development of vaccines.

³⁰ We are describing NGP awards as OBA payments rather than as a Conditional Cash Transfers (CCTs), largely because in that case, rural households are self-providing the services and can therefore be seen as service providers (supply-side) rather than purchasers (demand-side). CCTs to households have not been used in sanitation as yet, although recent research by WSP in Cambodia suggested that there was potential to pilot such an approach (see Robinson, 2010).

also offer a first opportunity to generate knowledge about the cost-effectiveness of different demand-creation techniques in many countries.

Secondly, delivering funding on the demand-side allows for public investment in sanitation without crowding out household and community investment. This not only means that the total amount of funding available may increase but also encourages communities and households to innovate and develop cost-effective ways of achieving desirable outcomes. For example local innovations can bring down the costs of latrines, and households may make better decisions about investing in private, shared or communal facilities when their own money is being spent.

Potential risks. Past experience with payments for demand promotion activities have shown the importance of reliable performance verification mechanisms. In India, for example, some villages have been declared Open-Defecation Free and have therefore received an NGP award, although a large percentage of the population then reverted back to open defecation afterwards. As performance was to an extent self-monitored, there has been a tendency to over-report. Introducing third-party monitoring as well as community-monitoring (when independence can be maintained) would be essential to ensure that subsidies are not allocated on spurious grounds.

The potential risks of such approach include the fact that most service providers in this area tend to be relatively small NGOs or CBOs, with limited financing capacities (although in some countries, many of such providers are also health authorities working at a very large scale). This is an issue given the dearth of information on how cost-effective demand-side interventions can be and given that exogenous factors (local politics, poor harvests, natural disasters, financial crises) are all likely to have a significant and unpredictable effect on outcomes. Considerable care would therefore be needed to design a financing regime which defines outputs and balances risk appropriately. One way to do this is would be to split funding into two parts: block (input-linked, not OBA) elements and incentive (output-linked) elements. This is a common approach for example in the health sector.

4.2. OBA for collection/access

Traditional financing. On-site sanitation is typically financed by households themselves, with or without hardware subsidies from the government. Regarding sewer connections, these are usually paid for by households as well; in some rare cases, they receive a direct subsidy from the government or a cross-subsidy from other customers to help them cover the actual connection costs. Financial barriers are often cited by households as a reason not to have a toilet or sewer connection while service providers often claim these cannot be financed from revenue sources. Subsidies to remove this financial barrier often appear to be an obvious way of increasing access but issues with the delivery of such hardware subsidies for on-site sanitation in particular have been well-documented (see Section 2.4 for more details).

Potential design of OBA schemes

Types of services. Collection of fecal matter entails the initial construction of facilities (typically onsite latrines or sewer connections) and their operation. Thus subsidies could be used to pay all or part of the capital costs of new facilities and some or all of the costs of operation. Facilities might include household toilets, shared and community toilets and public toilets, as discussed in Box 4.1. below.

Box 4.1. Using OBA to support the development of public and community toilets

Public toilets, which are opened to all passers-by in public locations such as bus stops, markets and hospitals, can provide a critical sanitation service. A number of entrepreneurs or community organizations have developed public toilet facilities into a business, as users of the service need to pay a small fee to use them. Additional facilities are sometimes added to increase the scope of the business (such as washing facilities as in the Sulabh toilets in India or the ability to charge one's mobile phone in the Iko toilets in Kenya).

However, some of these existing businesses have been criticized for serving only the relatively wealthy groups and not catering for the needs of disadvantaged groups such as poor people, the sick, the elderly or even children. Making public toilets more pro-poor and catering for disadvantaged groups could be achieved via subsidies that could help cover part of the additional costs (such as including rails for disabled people or toilets accessible for children) of reaching those groups, especially if those investments were not deemed viable in a purely commercial operation.

Subsidies could also be used to channel investments towards **community toilets** (where commercial operators have been less successful). Community toilets, located within urban slums and informal settlements can provide better services for the poor: they are particularly useful in dense urban settlements where space is a serious constraint which can limit the ability to build household toilets.. The most successful models (championed for example by Mahila Milan in India and DSK in Dhaka, Bangladesh) rely on regular monthly payments by community members to cover the employment of a local resident as a caretaker. This often makes them more affordable than the pay-per-use commercial model. Outside users may be excluded or charged on a pay-per-use basis. Subsidies could be used to bring down the initial investment costs of land, construction, or the water and sewer connection which might bring the costs of building and operating community toilet blocks within reach of more poor communities.

Output indicators. Direct outputs for such subsidies might include numbers of toilets or sewer connections constructed, numbers of transfer stations constructed or the numbers of community or public toilets installed in targeted areas. To ensure that facilities are being properly operated and used, additional indicators, such as volumes of sludge collected, could potentially be used. Performance can be monitored immediately after construction and after a few months, in order to verify usage as this was done in Morocco in GPOBA financed schemes for sewerage connections (see Box 4.2.). A similar approach can be used in the case of community or public toilets, with payments linked to evidence that the facility is being used and operated correctly.

Box 4.2- Morocco: OBA for network connections to water and sewerage in unplanned urban settlements

In Morocco, GPOBA has established an OBA project which is working with several incumbent service providers (both public and private) to extend water and sewerage services into unplanned urban settlements which were formerly excluded from regular service provision. The project is embedded within The National Initiative for Human Development (INDH) which focuses on the extension of basic services to the poor, particularly in settlements which were previously considered illegal and ineligible to receive public services.

Launched in 2007, the project aims to connect 11,300 households to piped water and sewerage through a US\$7million grant from GPOBA. Implementation is carried out by incumbent service providers in each city: Amendis in Tangiers and LYDEC in Casablanca are both international private concessionaires, while RADEM in Meknès is a public utility. Details of the schemes and the costs of the subsidy vary by operator but in each case the output is a simultaneous connection to piped water and sewerage for individual poor households. The subsidy is paid in two installments: 60% on completion of the connection and 40% upon verification of at least 6 months of sustained service. Verification is carried out by an independent third party. Unit subsidies for sewerage connections vary from US\$421 in Casablanca to US\$913 in Meknès. This variation is due both to differing unit costs and differing ability to pay on the part of households in different cities. Initial progress under the scheme was slow, with only 2,000 eligible connections completed in the first year. The mid-term review suggested that this slow pace was largely due to a lack of familiarity with Bank procurement processes, investment delays upstream and lack of clarity over land tenure. The pace of investment has reportedly picked up in subsequent years and the Government of Morocco is now exploring options for scaling up the scheme.

Source: X. Chauvot de Beauchêne (June 2009) OBA Approaches Number 25: OBA in Morocco (part 1): Extending Service to the Poor in Urban Areas.

Service delivery. Construction and operation of collection facilities might be done by both private, third-party service providers, operating under performance-based contracts or by incumbent service providers and/or communities themselves. Subsidies can be delivered direct to service providers or given to households in the form of vouchers (to increase competition). Payments can also be made to

households who build latrines themselves to the agreed standard (which then become comparable to conditional cash transfers).

Potential advantages. Using output-based incentives would tend to result in latrines and connections that are needed while strengthening supply chains and promoting competition (particularly if financing is delivered via household vouchers). It has the significant advantage that it could also encourage rehabilitation of existing facilities if this is a cost-effective way of achieving the desired output. Finally, this type of subsidy can equally be applied to shared and public facilities as well as household sanitation.

Potential risks. The main risk is in assessing the quality of the output and verifying continuous usage. Most latrines (and indeed sewer connections) will work for a short time, but may fail in the medium term, especially in extreme conditions (high rainfall or drought for example). Pits may collapse as they fill up, and septic tanks may not provide treatment – all of these failings are unlikely to be evident in the short term. This means service providers may still be paid for substandard work unless output monitoring can be done very well and with no collusion. On the other hand, particularly for networked sewer connections, the service provider may be unable to guarantee a household service if the downstream system is absent, broken, poorly maintained or badly operated. Requiring a guaranteed service thus places undue performance risk onto the service provider.

Furthermore, given weaknesses on the supply side, competition would need to be encouraged with a great deal of care. Many sanitation entrepreneurs are not viable because they do not have repeated trade in a given area. Widespread deployment of output-based financing may not be viable if markets are nascent or absent. In many urban areas this type of subsidy may be best delivered through an incumbent service provider (most typically a public utility or local government department.)

In general, there are two primary mitigation strategies to address these challenges. Firstly, the use of community-based monitoring as part of the assessment of outcomes can overcome some of the challenges of ensuring sustained service delivery over time. Delayed or staggered payments can also help. Secondly, provision of collection facilities can be combined with responsibilities for transport and/or treatment so that service providers can gain control over downstream systems, thus giving them more control over outcomes and a more appropriate share of risk (see Section 4.3).

4.3. OBA for emptying on-site sanitation facilities and transport

Traditional financing. Emptying on-site sanitation facilities is usually financed by households themselves, who pay a charge to the entrepreneur providing such services. These charges may be insufficient to cover their costs, particularly the costs of discharging the waste in designated areas. With respect to sewerage, the costs of building and operating sewerage should in theory be covered by the sewerage charges levied on customers but these are seldom sufficient to cover the very significant costs involved.

Potential design of OBA schemes

Types of services. With respect to on-site services, OBA could be used to incentivize operators to empty on-site sanitation facilities more frequently, or to empty pits in areas which are relatively hard-to-reach (usually the poorest). Payments could also be linked to proper disposal – so that operators only receive subsidies for waste which is collected from low-income areas and delivered to the agreed disposal point. Delivering such subsidies can be done through a voucher system (so households pay using a voucher which can be redeemed by the operator for a subsidy once the voucher has been countersigned at the agreed disposal point). It can also be done through contractual arrangements which pay private contractors for improved operation of onsite systems in designated areas.

In a proposed GPOBA project in Sri Lanka, for example, subsidies are to be offered to the utility in return for certified delivery of regular emptying of onsite latrines for eligible households. Those households would pay a monthly payment for the service through the water bill. The utility intends to deliver this service by offering area-based contracts for rehabilitation and operation of onsite sanitation in targeted areas. Contractors will bid on a monthly fee for customers receiving a satisfactory service.

Subsidies could also be used to construct transfer stations to enable more efficient operation of onsite sanitation facilities. Subsidies could also be provided for the construction and operation of sewerage systems, either via extensions of the existing trunk network or decentralized systems with their own stand-alone treatment facilities.

Output indicators. Adequate emptying and transport can be measured based on the household (or community) having a working facility at the household (or community) level which is providing adequate services. This can be measured directly, by a combination of inspection and proxy indicators such as sewerage bills being paid, but may sometimes be easier to monitor by means of measuring the volumes of sludge collected from targeted areas, or the volume of sewage flowing from target areas to a treatment facility.

In particular, to encourage pit-latrine emptiers to bring pit-latrine waste to designated points (rather than discharging it in random locations), they could receive payments based on the volume of waste transported to approved locations.³¹

Service delivery. These types of services may be delivered either by small-scale private sector operators or by an incumbent service provider, public or private. In the case of third-party contractors, the approach may be structured in different ways depending on the scale of the market (availability and competence of third-party providers) and the requirements for monitoring the outputs.

Potential advantages. The main advantages of this approach are firstly that it focuses attention on the long term operation of sanitation – which is essential for such investments to result in sustained health benefits. The use of combined payment regimes which ensure both collection and proper disposal means that benefits are felt both at the household level and in the wider environment. A second advantage is that it addresses a market segment which particularly impacts on poor people. The costs of emptying pits are often prohibitive for poor people, but they often live in areas where overflowing pits combine with local flooding to create serious health hazards. A third potential benefit is that it may spur on technical innovation in an area which has been neglected largely because of the lack of commercial opportunity – namely the development of new pit emptying technologies suitable for low-income dense urban housing.

Potential risks. The main risks on the supply side relate to the challenge of operators guaranteeing a service in areas which may be hard to reach and where infrastructure may already be in very poor condition. Measuring outcomes may be difficult, particularly if there is a desire to ensure that pits are regularly emptied and that operators do not cause excessive contamination during emptying and transport. Other risks relate to cherry picking (operators will tend to pick on the easiest-to-reach consumers) and collusion at the treatment plant – whereby operators will be paid for delivery of wastes even if they are dumped elsewhere (this is likely to be a problem where pit wastes create operational challenges at the treatment works).

Most of these risks can be mitigated by careful design of contracts to operate onsite sanitation and by the appropriate selection of off-site alternatives where needed. Depending on the circumstances, the best solution may be an open competition for one-off household contracts or an area-based contract

³¹ In most cases, pit-latrine emptiers are charged by the utility operating the treatment plant for discharging their waste, thereby increasing the costs of providing those services to poor households and reducing the incentives for pit-latrine emptiers to discharge in designated points.

for good operation of facilities in an entire area. Combining collection with responsibility for treatment can also remove some of the performance risks as we discuss below.

4.4. OBA for treatment and proper disposal of wastes

Traditional financing. Construction and operation of plants is usually the responsibility of a single vertically-integrated utility although construction is often contracted out. Construction contracts are often separated from network development. Financing for construction tends to be input-based and there are no incentives to ensure that consumers are connected to new treatment capacity. Sometimes low-risk performance-based contracting is used (build-operate-transfer contracts are popular for example) but even then there are usually no incentives to increase connection rates. There are numerous examples of wastewater treatment plants that fail to operate after only a few months and never reach their intended capacity. The costs of operating treatment facilities are notionally recovered from tariffs but more commonly are funded through general operating subsidies. Where utilities are financially weak, the operation of treatment plants is often severely underfunded resulting in intermittent operations and poor levels of treatment.

Potential design of OBA schemes

Types of services. Subsidies can be used to bring down the costs of new and existing treatment capacity. Payments for the construction and commissioning of a working plant is one model which is already relatively familiar. Subsidies can also be used to pay the additional costs of providing treatment capacity in ‘difficult to reach’ areas, or to provide capacity to treat onsite septage rather than sewage. Finally, subsidies can pay part of the operating costs of systems which cannot be financed through revenues. These models can be used both for the construction of completely new systems (which may be small decentralized systems or major urban networks) or for the improved operation of existing assets (as for example in the case of Gharbeya in Egypt – see Box 3.2).

Output indicators. The outputs would need to include both the volumes of wastewater collected and treated and the quality of treatment achieved in order to ensure that such subsidies do not only subsidize treatment per se but also sustainable access across the entire value chain (see the example of PRODES in Brazil in Box 4.3 below). Indeed, in order to obtain the subsidy, the recipient would need to increase the rate of access so as to increase the volume of wastewater collected and treated.

Box 4.2. PRODES in Brazil: subsidies for ongoing operation of sewage treatment plants

Brazil significantly lacks sanitation services and in particular, sewage collection and treatment. In 1999, it was estimated that less than half of the sewage was collected and that only a third of the volume collected was treated. A National Water Resources Policy was adopted in 1997, which led to the creation of the National Water Agency (ANA), a federal agency in charge of regulating the use of water resources at national level, including wastewater effluents. In 2001, ANA initiated the River Basin Clean-Up Programme (PRODES, *Programa Despoluição de Bacias Hidrográficas*). One objective of this ambitious federal program was to create incentives for investment in wastewater treatment, either for building new plants, as well as upgrading or enlarging existing ones (by moving to a higher degree of treatment or building additional units).

Given the history of “wasted investments” in wastewater treatment (with large infrastructural works which have been either over-specified, unfinished or abandoned), ANA was keen to provide subsidies only for works that would actually deliver services. To meet this objective, instead of “paying for the works”, they adopted an OBA approach. The determination of the contract values are based on the project’s expected final benefits (removal of pollutant loads) rather than on the works budget, thereby giving a strong incentive to the investors (the water and sanitation utilities) to opt for cheaper and more cost-effective treatment options, which are also better suited to local realities on the ground. Payments to investors are awarded based on the performance of the plant at removing pollutant loads from raw sewage over 3 years following construction of the sewage treatment plant, thereby giving incentives to maintain good operational performance at least during that period.

Funds earmarked for each project are deposited on an escrow account at the Caixa Econômica Federal and are returned to the National Treasury if the utility fails to meet the performance indicators that trigger payment.

Between 2001 and 2009, PRODES resulted in pollution reduction benefiting 6 million inhabitants. This was achieved through ANA investing € 60 million and sanitation utilities (public and private) investing € 184 million. During that period, a total of 42 projects were carried out, with only 5% of the projects failing due to excessive delays in completion of civil works. In those cases, however, no disbursements were made and the funds (deposited in special escrow accounts) were returned to the National Treasury.

Source: Agência Nacional de Aguas, (2009); communications with P.A. Libânio and P. Thomas (ANA)

Service delivery. Performance-based third-party contracting for *construction* might increase the likelihood that treatment capacity is effective and efficient. Traditional BOT-type contracts may sometimes be appropriate. However, in order to link incentives for treatment with incentives to increase connection rates, more powerful performance-based contracts, similar to small concessions could be used to procure the construction or rehabilitation and operation of treatment facilities in combination with operation of the segments of the network which serve the specific treatment plants. The provision of subsidies as part of these performance-based contracts could ensure that poor customers are effectively served or that the efficiency of funding to utilities to improve the environment is increased.

Potential advantages. The main advantage of output based financing of treatment facilities is that it can prevent the wastage of huge sums of money by ensuring that treatment capacity is effectively utilized. Unless households get connected to treatment facilities there is little benefit to society in the original investment. Output-based payments encourage efficient and effective operation and create incentives for plant operators to increase the volume of waste water treated. These Operators may then be encouraged to pass on this incentive to onsite pit and septic tank emptiers by paying for delivery of sludge and septage to the treatment plant (so that the total volumes of wastewater treated are increased), and by constructing appropriate facilities for collection and pre-treatment of such waste streams.

Potential risks. Combining the operation of a treatment plant with the operation of networked services (including both sewerage and onsite sanitation) creates challenges. It may be difficult to find service providers who have the capacity to deliver both types of services in some locations. Contracting arrangements may be relatively complex, although the use of performance-based contracts with a focus on outputs can reduce complexity. On the other hand, it may increase costs as bidders seek to compensate for their assumed performance risk with higher prices. Where new networks and plants are needed, significant pre-finance may be required which may be a challenge where financing arrangements are not well established and may exclude some smaller service providers. Many of these constraints can be addressed with careful contract design and by blending input- and output-based payments within the contract.

4.5. OBA for reuse

Traditional financing. In some locations, “waste” products ranging from partially treated sludge and effluent from treatment plants to untreated discharges from on- and off-site systems are indiscriminately applied in agricultural areas. In some cases, farmers will pay for the product whilst in other cases the product is given away free or informally obtained. In some rural areas, households make use of toilet wastes as an agricultural input on their own or neighbors’ land.

In a few locations there is a more sophisticated market whereby farmers purchase waste from households (China, Afghanistan and Mexico are examples of countries where this practice has been established for hundreds of years in some locations). Few incentives exist for utilities/ service providers or households to ensure that the products are safe or that they are handled and applied safely.

With respect to reuse for energy production, a small number of utilities in OECD countries, Brazil and other locations have invested in wastewater treatment facilities with energy recovery that can be used to offset operational costs of the plants concerned. Very few smaller scale ‘biogas’ type facilities exist which rely solely on human waste – the biogas model has had more sustainable success at larger scale and in cases where additional organic and animal wastes can be added. These facilities have tended to be financed by developers against future revenues.

Potential design of OBA schemes

Types of services. OBA subsidies could be used to change incentives with respect to reuse – helping to pay either for investments in new types of treatment that render municipal wastewater suitable for reuse or encouraging farmers to make purchases by issuing them with vouchers. At the simplest level subsidies could pay for all or part of the costs of ecological toilets or household biogas systems in preference to conventional onsite toilets.

Output indicators. Outputs might be defined as working ecological toilets, or biogas toilets installed. In the case of municipal wastewater treatment, an output might be a commissioned plant with the capability of generating wastewater and sludge which is of an appropriate standard for reuse. However in the latter case a more ‘powerful’ measure of this output might be the volume of wastes of that standard which are actually generated or purchased for reuse purposes.

Service providers. In the case of household and community ecological toilets, service providers are most likely to be small-scale entrepreneurs engaging directly with households or working under contract with a public-sector agency. In the case of modified wastewater treatment, third-party contracting is likely to be the most common arrangement (as for treatment discussed above).

Potential advantages. Reuse of excreta is a particularly difficult concept in many cultures, and therefore promotion of ecological toilets, or reuse of wastewater, specifically for agriculture, can be very challenging. Furthermore the initial investment costs for ecological toilets are often much higher than the costs of alternatives. Where demand for sanitation *in general* has been generated, subsidies for *ecological options involving reuse* could help to tip the balance in favor of these technologies. In a more general sense, more funding in this area could also stimulate development of new and better products and potentially bring down prices. At Embangweni in northern Malawi for example, funding by WaterAid has encouraged local entrepreneurs to market simple ecological toilets known as Arboloos, rather than traditional pit latrines. In this case, subsidies have been provided to the entrepreneurs developing and selling the products, who have in turn encouraged their customers to buy more sustainable types of toilet.

A similar effect could be achieved for re-use of treated municipal wastewater. Generally municipalities and utilities have little interest in downstream environmental effects, or in the long-run viability of agriculture. Subsidies to encourage reuse of treated wastewater, or technologies that maximize nutrient retention so as to enable reuse, could be deployed to create incentives for these at municipal level.

Potential risks. The main risks relate to the difficulties in predicting the market value of the products of treatment processes. These are highly dependent on the agricultural markets and costs of fertilizer which in turn are predicated on energy costs, costs of raw materials, transport costs etc. The value of power generated from biogas and energy recovery from wastewater treatment is similarly variable and unpredictable. This makes designing the subsidy extremely challenging. Re-use of wastewater for agriculture is also strongly regulated in many countries, and investors may be reluctant to sink additional funding into technologies whose product is dependent on third-party decision making.

Annex A – Results-based financing and OBA

This Annex introduces OBA mechanisms in the broader context of results-based financing mechanisms. It is aimed at readers who may not be familiar with OBA approaches. It evaluates how OBA has been used to improve the efficiency of subsidy delivery for public services and infrastructure. Much of the discussion in this Annex is drawn from the recent World Bank publication by Mumssen et.al. (2010).

The observation that traditional subsidies have often failed to meet their initial goals is not unique to the sanitation sector. Yet, the argument for public finance to support the adoption of public goods and the investment in essential infrastructure remains valid. As needs grow and resources get scarcer (particularly in the context of the financial crisis), identifying ways that can maximize the impact of public funds becomes critical.

The ‘Output-based’ subsidies approach has been developed in the broader context of the adoption of results-based (RBF) financing mechanisms in both developed and developing countries, as a way to strengthen the effectiveness and accountability in the use of public funds for public outcomes. According to a recent review of OBA financing mechanisms published by the World Bank, “results-based financing (RBF) is an umbrella term that includes output-based aid, provider payment incentives, performance-based inter-fiscal transfers, and conditional cash transfers. What these mechanisms have in common is that a principal entity provides a financial or in-kind reward, conditional on the recipient of that reward undertaking a set of predetermined actions or achieving a predetermined performance goal. The ultimate aim is to increase the effectiveness of scarce public resources for the provision of basic services”.³² These rewards can either be provided to service providers (i.e. on the “supply side”, such as OBA payments) or to purchasers of these services (i.e. on the “demand-side”, such as Conditional Cash Transfers or CCTs).³³

Within this broader family, output-based aid (OBA) ties the disbursement of public funding in the form of subsidies to the achievement of clearly specified results that directly support improved access to basic services.³⁴ The full amount of subsidy is paid to the beneficiary (private, public or community operators) only once these results have been met and verified by a third-party. Subsidies are provided ex-post, once the outputs have been delivered, which means that the service provider bears some financing and performance risk. This encourages the use of private sector funds (leverage), which are usually needed to pre-finance a large portion of the costs. However, such pre-financing can represent a significant financial commitment for some providers, such as small-scale independent providers (SSIPs) involved with the provision of water or sanitation services.

The need for subsidy is assessed on the basis of the level of demand for the service, costs and social benefits generated. Subsidies are provided to encourage the provision of basic services to poor households in a targeted manner: a fundamental purpose is to encourage service providers to deliver services in areas that are not necessarily commercially attractive or where they would not naturally get involved without the subsidy. The amount of subsidy needed can potentially be reduced by introducing competitive pressure on service providers, which incites them to keep costs down for the

³² Mumssen, Y. (2010).

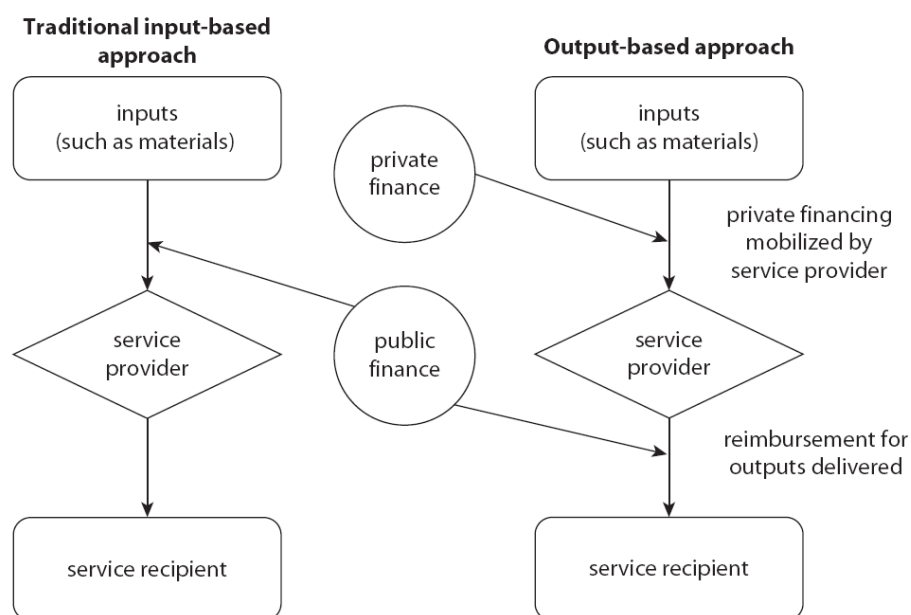
³³ Conditional cash transfers (CCTs) have increasingly been used to transfer cash to poor families who commit to meet specific objectives, such as immunizing their children or sending them to school, thereby helping to cover the associated costs of these activities (such as transport costs or the costs of school supplies) whilst bringing about an outcome which is beneficial to society at large. Substantial experience with CCTs for health and education has been accumulated, particularly in Latin America, where these programs first originated (such as the program *Oportunidades* in Mexico).

³⁴ Basic services include improved water supply and sanitation, access to energy, health care, education, communications services, and transportation.

same service quality. However, in a number of cases, the service provider is a large incumbent operator (such as a public utility) and the potential for introducing competitive pressures is limited.

In sum, OBA financing helps to direct subsidies to the targeted populations more accurately and to make operators accountable for funds through the monitoring of their actual performance. The objective is that OBA payments should only complement—and never substitute for—user tariffs as the main source of service providers’ revenue. Figure A.1 below provides a simple contrast of a traditional input-based approach to an output-based approach.

Figure A.1. Output-based approach versus traditional input-based approach



Source: Brook and Petrie 2001.

There are three main ways of delivering OBA subsidies: one-off subsidies, transitional subsidies and ongoing subsidies. According to Mumssen (2010), *one-off subsidies* are the most common application of OBA approaches and usually involve capital subsidies for access to a given service, but usually only after verification of a few months of satisfactory delivery. *Transitional subsidies* can be used to support tariff reforms, where a subsidy is used to fill the gap between what the user is deemed able or willing to pay and the cost-recovery level (for example, the long-run marginal cost) of the tariff. *Ongoing subsidies* may be required in cases where a continuous gap exists between affordability and cost recovery—including for consumption costs. For example, in Chile an ongoing subsidy is provided to eligible households based on income. The subsidy is channeled through service providers to poor urban households for a lifeline (minimum acceptable) amount of water consumed. Ongoing output-based subsidies normally fund the provision of basic services or maintenance in OBA projects in roads, health, and education.

In the last decades, output-based aid mechanisms have increasingly been used in a variety of infrastructure sectors. The OBA review cited identified that approximately 32 output-based aid (OBA) projects existed at the time of the official launch of OBA in 2002–03 within the World Bank group (WBG), totaling US\$1.5 billion in funding. Five years later, this number had risen to about 131 OBA projects with a total value of about US\$3.5 billion in subsidies in the WBG (excluding the US\$2.8 billion subsidy funded by recipient governments).³⁵ Of these, 58% were in transport

³⁵ These are projects from the World Bank Group but not necessarily funded by GPOBA, the World-Bank administered donor-funded pilot program set up to test the OBA approach with a view to mainstreaming.

(especially roads construction and rehabilitation) and 25% in health, which were the two biggest sectors (see Box A.1.).

Box A.1. Learning from OBA applications in other sectors

Information and telecommunication technology. OBA is now largely mainstreamed in the ICT sector, where universal access and service funds (UASFs) rely on explicit subsidies from wealthier, largely urban populations to help extend access on a performance basis to rural populations that are less wealthy and usually more costly to serve. The OBA projects involve a number of different ICT services, including public pay phones; telecenters; private phone connections; internet service, including private connections as well as wholesale facilities known as points of presence; and cellular networks. OBA for public pay phones is the most common type identified, with telecenters second, partly because of the more public—and therefore pro-poor—nature of these two services. The subsidy amount is often determined by having private companies bid on the lowest subsidy required for rollout of infrastructure and services.

Roads. OBA mechanisms have been used for many years in the road sector, mostly to finance ongoing road maintenance. The outputs on which private contractors are paid (for example, monthly) relate to the quality of road service provided based on clearly identifiable and measurable parameters (such as average speed obtainable). However, given that roads benefit everybody; these contracts do not specifically target the poor.

Health. Results-based financing has significantly grown in importance in the health sector in recent years (for more information on RBF for health, see the dedicated website set up by the World Bank: <http://www.rbfhealth.org/rbfhealth/>). The most common OBA contracts consist of financing service providers (such as NGOs or local government-run clinics) for basic services such as check-ups, maternal care or immunizations. Payments are linked to outputs via some contractual form that transfer part of the performance risk to service providers. Such contracts have been used successfully in Latin America (where they originated) but also in Rwanda and the Democratic Republic of Congo.

Water. OBA has mostly been used to expand water coverage via connection subsidies (there are numerous examples, such as in Paraguay, Morocco), to improve affordability for targeted groups via consumption subsidies (as in Chile or Colombia) and to ease the transition to cost-covering tariffs (as in the Guinea lease).

Source: Mumssen et. al. (2010), Marin (2002).

Most WBG OBA projects are in Latin America and the Caribbean, where the first OBA pilots in almost every sector were initiated, as well as in Africa, partly because of piloting efforts in that region by GPOBA. Although OBA was originally envisioned as a tool to enhance private sector participation, GPOBA has also attempted to pilot OBA with commercially viable state-owned enterprises in sectors where public utilities have continued to play a dominant role in service provision, such as the water and sanitation sectors.

The OBA review identified that the main benefits of a well designed OBA approach was to improve aid effectiveness by targeting intended beneficiaries, demonstrating value for money through competitive processes, leveraging and mobilizing private finance. However, they also pointed out that the ability to access pre-financing determined the extent to which subsidies could be output-based, as well as the capacity of local providers to implement and to monitor the services (including for the independent verification agents). The potential for success of OBA schemes is also determined by the broader environment, including the legal and regulatory frameworks, previous experiences with contracting, tariff setting regimes, etc...³⁶

³⁶ See Trémolet, S. and J.Halpern (2006) on the importance of institutional and regulatory arrangements.

Annex B – Check-list for sanitation OBA design

This Annex provides a check-list for the types of issues that may need to be considered when designing an OBA component as part of a sanitation project.

A more complete “OBA diagnostic” which can help practitioners determine if OBA is potentially appropriate in any given context can be found on GPOBA’s website (available from July, 2010).

This table could potentially form the basis for developing a guidance document on using OBA for sanitation alongside the OBA diagnostic tool which provides broad enabling environment questions for task managers of OBA projects. Aspects that are particularly relevant or difficult in the sanitation sector and would warrant further analysis and development are likely to include the following at the relatively upstream level:

- ***Evaluating the opportunity for an OBA approach:*** this would require consider first the institutional reforms that may be needed in the sector and whether any such reform could be implemented, to allow increasing overall financing to the sector;
- ***Identifying the component of the sanitation value chain where subsidies are required*** or existing methods for delivering subsidies could be improved.
- ***Packaging the OBA sanitation component within broader interventions***, such as related services (water, hygiene) but also housing, slum upgrading, roads or other less obvious such as electricity or telecoms.
- ***Identifying the source of the subsidy***, and ensuring that the subsidy source is predictable and reliable, examine the potential for cross-subsidies or even direct contributions from other sectors that would directly benefit from improvements to the sanitation system.

CHECK-LIST FOR SANITATION OBA DESIGN³⁷

Evaluating the opportunity for an OBA approach	
Assess overall environment	<ul style="list-style-type: none"> • Consider broader sanitation policy context and institutional framework • Evaluate previous experiences with results-based financing in the country and pre-requisites (such as possibility to contract based on performance, existence of independent verification agents, etc...)
Assess current status of sanitation services	<ul style="list-style-type: none"> • Evaluate the current performance of the sanitation value chain to identify where public intervention may be required • Determine which actors are currently providing the services or could be incentivized to provide them. Evaluate the impact that an OBA mechanism could have on existing service providers
Evaluate need for subsidies	<ul style="list-style-type: none"> • Agree on subsidy objectives: lifting affordability constraints, internalizing external effect, public investment in public good • Evaluate potential for reducing costs via change in service standards or competition between service providers • Identify existing sources of finance for sanitation and potential for increasing recurrent financing to the sector or improving targeting
Evaluate opportunity for OBA	<ul style="list-style-type: none"> • Can performance be defined in a precise and quantifiable manner? • Can poor households be identified and adequately targeted? • Can competition between services providers be introduced?

Designing an OBA component (if OBA approach warranted)	
Subsidy type	<ul style="list-style-type: none"> • Subsidy for capital investments / Recurrent subsidies?
Mechanisms to identify and target beneficiaries	<ul style="list-style-type: none"> • Potential targeting methods include geographical, means-tested, community selection, self-selection
Type of service providers	<ul style="list-style-type: none"> • Main service provider, small-scale service providers, households? • Ability to take on performance risk? • Potential for introducing competition?
Scope of services	<ul style="list-style-type: none"> • Evaluate how sanitation interventions may need to be packaged, both within the sanitation sector (components of the value chain) and outside (e.g. potential to combine with water services or solid waste collection)
Subsidy source	<ul style="list-style-type: none"> • Government sources, cross-subsidies, external transfers. • Evaluate potential for establishing institution to channel subsidies (such as UASFs in telecoms sector)
Performance indicators	<ul style="list-style-type: none"> • Output or outcome? • Indicator measured just after service provided or over time?
Subsidy amount	<ul style="list-style-type: none"> • Fixed subsidy (for a basic service) or percentage of actual costs? • Subsidy amount pre-determined or subject to competition
Service provider's remuneration	<ul style="list-style-type: none"> • Percentage of pre-financing required to make the service viable? • Need for block grants? • Ways of providing access to credit to help with pre-financing requirements?
Mechanisms for channeling subsidies	<ul style="list-style-type: none"> • Fund managed by the government, dedicated project unit, independent fund?
Mechanisms for verifying performance	<ul style="list-style-type: none"> • Existing mechanisms, potentially to be strengthened, or new mechanisms?
Mechanisms for resolving conflicts	<ul style="list-style-type: none"> • Existing mechanisms or new mechanisms to establish?

³⁷ Please see <http://www.gpoba.org> for the “OBA diagnostic tool” which provides more detail to help practitioners determine if OBA may be appropriate in a given context. Although this is not sanitation-specific, it provides more detail on basic aspects of OBA and the enabling environment. [Available from October, 2010]

Annex C – Bibliography

Agência Nacional de Aguas, (2009), *The Experience of River Basin Clean-up Programme – Prodes*, Brasília, ANA:MMA.

http://www.ana.gov.br/prodes/arqs/20090624_ExperienciaProgramaDespoluicaoBaciasHidrograficas_PRODES.pdf

Coombes, Y. and J. Devine (2009) *Introducing FOAM: A Framework to Analyze Handwashing Behaviors* WSP, Washington D.C.

Devine, J. (2009) *Introducing saniFOAM: A Framework to Analyze Sanitation behaviors to Design Effective Sanitation Programs*, WSP, Washington, DC.

Evans, B., C. van der Voorden and A. Peal (2009), *Public Funding for Sanitation. The many faces of sanitation subsidies*, A primer for the Water Supply and Sanitation Collaborative Council, Geneva.

http://www.wsscc.org/fileadmin/files/pdf/publication/Public_Funding_for_Sanitation_the_many_faces_of_sanitation_subsidies.pdf

Evans, B., J. Colin, H. Jones and A. Robinson (2008) *Sustainability and equity aspects of total sanitation programmes - A study of recent WaterAid-supported programmes in three countries*, WaterAid, London.

http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/clts_synthesis_report.pdf

GPOBA (2010), *GPOBA Annual Report 2009*, World Bank, Washington D.C.

Hutton, G., L. Haller (2004), “Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level”, *Water, Sanitation and Health, Protection of the Human Environment* 2004, World Health Organization, Geneva.

Hutton G, UE Rodriguez, L. Napitupulu, P. Thang and P. Kov (2008), *Economic impacts of sanitation in Southeast Asia, A four-country study conducted in Cambodia, Indonesia, the Philippines and Vietnam under the Economics of Sanitation Initiative (ESI)*, Water and Sanitation Program, February 2008, Jakarta.

Hutton, G. ed. (2009), *Economic Impacts of Sanitation in Lao PDR: A five-country study conducted in Cambodia, Indonesia, Lao PDR, the Philippines, and Vietnam, under the Economics of Sanitation Initiative (ESI)*, a research report for the Water and Sanitation Programme, April 2009, Jakarta.

Jenkins, M. and S. Sugden (2006) *Rethinking Sanitation; Lessons and Innovation for Sustainability and Success in the New Millennium – Human Development Report Office Occasional Paper*, UNDP

Mandri-Perrott, C., Schiffler, M. and Aguilera, A. (2009). “Output-Based Aid in Honduras: An OBA Facility for the Water and Sanitation Sector”, OBAApproaches series, Note Number 29, September 2009, GPOBA, Washington, D.C.

<http://www.gpoba.org/gpoba/sites/gpoba.org/files/GPOBA%20Honduras%209-15-09screen.pdf>

Marin, P., (2002), *Output-based Aid: Possible applications in the design of water concessions*, The World Bank, October 2002.

Mehta, M. and K. Virjee (2007), *Microfinance for Rural Piped Water Services in Kenya, Using and Output-based Aid Approach for Leveraging and Increasing Sustainability*, WSP Policy Note No1.

Morella, E., V. Foster and S. Ghosh Banerjee (2009), *Climbing the Ladder: The State of Sanitation in Sub-Saharan Africa*, The World Bank, Washington D.C.

http://www.infrastructureafrica.org/aicd/system/files/BP13_Sanit_sect_maintxtnew.pdf

Mumssen, Y., L.Johannes and G.Kumar (2010), *Output-based aid: lessons learned and best practices*, The World Bank, Washington D.C.

<http://www.gpoba.org/gpoba/ebook>

Peal, A., B. Evans and C. Van der Voorden (2010), *An Introduction to Sanitation and Hygiene Software Approaches: A Resource Book for Practitioners* Water Supply and Sanitation Collaborative Council, Geneva.

http://www.wsscc.org/fileadmin/files/pdf/publication/Hygiene_and_Sanitation_Software_WSSCC_2010.pdf

Robinson, A (2010), *Sanitation Finance in Rural Cambodia : Review and Recommendations* A study report published by the Water and Sanitation Program, Cambodia, May 2010 (also supported by the Asian Development Bank).

SUSANA (2008) *Towards More Sustainable Sanitation Solutions (version 1.2)*, Sustainable Sanitation Alliance, Frankfurt.

Trémolet, S., (2006), *Appliquer les principes de l'OBA aux services de l'eau et de l'assainissement*, Methodological guide, AFD/Suez-Environnement.

<http://www.afd.fr/jahia/webdav/site/afd/users/administrateur/public/pdf/guideOBA-VF2.pdf>

Trémolet, S. and J.Halpern (2006), *Regulation of water and sanitation services: getting better service to poor people*, OBA Working Paper Series, Paper No. 8, June 2006.

<http://www.gpoba.org/gpoba/sites/gpoba.org/files/Regulation%20of%20water%20and%20sanitation%20services-%20getting%20better%20service%20to%20poor%20people%20Working%20Paper.pdf>

Trémolet, S. with Kolsky, P. and Perez, E. (2010). *Financing On-Site Sanitation for the Poor. A Six Country Comparative Review and Analysis*, Water and Sanitation Program.

http://www.wsp.org/UserFiles/file/financing_analysis.pdf

Trémolet, S. and M. Scatasta (2010), *Innovative Financing Mechanisms for the Water Sector*. A report for the OECD's Environment Directorate, OECD, Paris.

<http://www.oecdbookshop.org/oecd/display.asp?sf1=identifiers&st1=9789264083653>

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2010) *Progress on Sanitation and Drinking-water: 2010 Update* ISBN 978 92 4 156395 6.

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