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**WATER, SANITATION AND HYGIENE SERVICES BEYOND 2015:
IMPROVING ACCESS AND SUSTAINABILITY**

Enabling investment in urban sanitation services through the sustainable full cost recovery principle

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Limited access to capital to invest in sanitation is key amongst a range of complex reasons that result in extensive lack of adequate sanitation services. Financing upfront investment has been identified as a particular knowledge gap for many sanitation practitioners. This paper discusses a project to enable participatory learning about financing investment in sanitation infrastructure services for sector practitioners. Findings from a desktop review were deliberated upon through an online discussion leading to fresh insights. The study recognised that leveraging revenue sources beyond tariffs is key to securing the relatively large amounts of upfront finance required, reflecting a departure from the 'full cost recovery through tariffs' paradigm. The new paradigm calls for greater commitment from local and national governments to support ongoing sanitation service provision, and 'sustainable full cost recovery' of lifecycle costs through a combination of four potential revenue streams (4Ts) – Tariffs from users, Taxes from government, Transfers from donors and Trade profits from the reuse of waste-derived products.

Introduction

Although access to sanitation as a human right has received increasing political support in recent decades, there is a significant gap between aspiration and reality. Progress towards the Millennium Development Goals (MDGs) for access to sanitation lags while the MDG for access to water has been met ahead of schedule. There are many complex factors that contribute to the lagging progress in sanitation, such as low valuation of services, invisibility, lack of political champions, weak governance and lack of skills and capacities, which are beyond the scope of this paper.

Limited access to capital to finance investment in infrastructure is cited as a one of the key challenges for both drinking water supply and sanitation services (OECD 2012). It is critical to address this challenge in order to progress towards the post-2015 Sustainable Development Goals (SDGs). The SNV Netherlands Development Organisation and its network of sanitation practitioners identified this subject as a gap in their knowledge. In particular, they noted that grants from donors were frequently the only source of capital considered by those responsible for sanitation service provision (typically local governments), and plans for sanitation services stalled when such grants were not received. Increasing and advancing our understanding of principles and examples of alternative sources of financing upfront investment is an important contribution to the broader sector as well.

This paper describes a project designed to inform and engage a target group of sanitation practitioners on current principles and mechanisms for accessing the relatively large amounts of upfront capital required for sanitation infrastructure investment. The project was commissioned by SNV, as part of the Knowledge and Learning component of its Sustainable Sanitation and Hygiene for All - Urban (SSH4A-U) program and was led by the Institute for Sustainable Futures at the University of Technology Sydney.

Approach

A desktop review of leading literature on financing in the water and sanitation sector was undertaken to clarify financing principles and mechanisms for accessing upfront finance for sanitation investments, and to illustrate their application through a small number of case studies. The main findings were shared and

opened for discussion through an online discussion group (Dgroup) forum from 2 September to 14 October 2014, facilitated by the SNV author. The Dgroup consisted of 120 members including policy makers, sanitation advisors, NGO practitioners and water and sanitation sector researchers from 36 countries. The aim of the discussion forum was both to inform this audience and to test and refine the findings of the review. Contributors to the discussion shared their experiences on the degree to which fundamental financing principles were applied in their countries of operation, discussed challenges and ways forward to improve the potential for financing infrastructure for sustainable sanitation services. The overall findings from the desktop review and discussion forum were synthesised in a Learning Paper (ISF-UTS 2014) that was made publicly available.

Changing understandings of costs and approaches to cost recovery

The principle that revenues must recover the costs of providing services in order for those services to continue being provided in the long term is widely acknowledged. However, understandings of exactly *what* those costs are, and *how* they should be recovered, have changed over time, largely influenced by the dominant economic conditions and ideas of the time.

Recent work through the IRC's WASHCost Project (<http://www.ircwash.org/washcost>) has highlighted the importance of accounting for all costs over the lifecycle of the sanitation service, and planning not only for the initial capital investment, but ongoing operations as well as refurbishment and renewal of assets as they age or reach their end of life.

Globally accepted ideas about where the financing for sanitation services should come from has undergone many changes, strongly influenced by developments in industrialised countries (Abey Suriya 2008). Three clear patterns of widely accepted thinking are evident:

1. Funding mainly by taxes (late 1850s to 1970s):

Since the industrial revolution when European countries began investing in sewerage systems in cities, sanitation was regarded as a public service, funded predominantly by government (through revenues collected from taxes), with users contributing to services through local government taxes or municipal rates. This approach transformed cities where the poor lived in conditions similar to slums in current day developing countries. It contributed to the rapid economic development seen in industrialised countries, but also led to low cost recovery and huge funding shortfalls in developing countries in particular.

2. Funding by tariffs (1980s onwards):

This period saw the rise of market economic thinking characterised by the 'recipe' of reducing government spending, reducing government provision of welfare and reducing taxes, along with the privatisation of state enterprises. This led to the dominant economic view that the full cost of providing services should be paid for by users, through tariffs. Although widely adopted as water sector policy, full cost recovery through tariffs is difficult to achieve when lifecycle costs are considered. Some industrialised countries are coming closer to full cost recovery through user payments, especially when their main activity is operation and maintenance of existing infrastructure (Trémolet & Rama, 2012); however, they are likely to require huge investments for the refurbishment of aging infrastructure (ASCE 2013) that tariffs are not likely to adequately cover. Most developing countries find it difficult to raise revenues from tariffs to recover even the cost of operation and maintenance (WHO 2014).

3. Funding by tariffs, taxes and transfers (the 3Ts) (since 2003):

Seeking paths to financing the water and sanitation MDGs, the 2003 Camdessus Panel proposed the concept of 'sustainable cost recovery' (OECD 2010) where the full lifecycle costs of water services are recovered through a combination of:

- tariffs (contributions made by service users in return of using the service),
- taxes (costs paid for by government funds raised through the tax system), and
- transfers (contributions made by international donors (ODA or 'overseas development aid') and a range of other charitable entities through grants, low interest loans and underwriting of projects through guarantees).

The notion of sustainable cost recovery, now endorsed by the OECD, recognises that using a combination of tariffs, taxes and transfers is a more realistic way for developing countries to finance lifecycle costs of water services, and can be used to leverage other sources of financing (from the commercial and private sector). Sanitation services have a large element of public good so partial funding through government taxes is justifiable (Edwards-Jones et al. 2000). Public funding is also essential to ensure that the poor are not excluded from services (Mehta, 2003). Furthermore, it is recognised that international donors and a range of other charitable entities can make useful contributions towards achieving the MDGs.

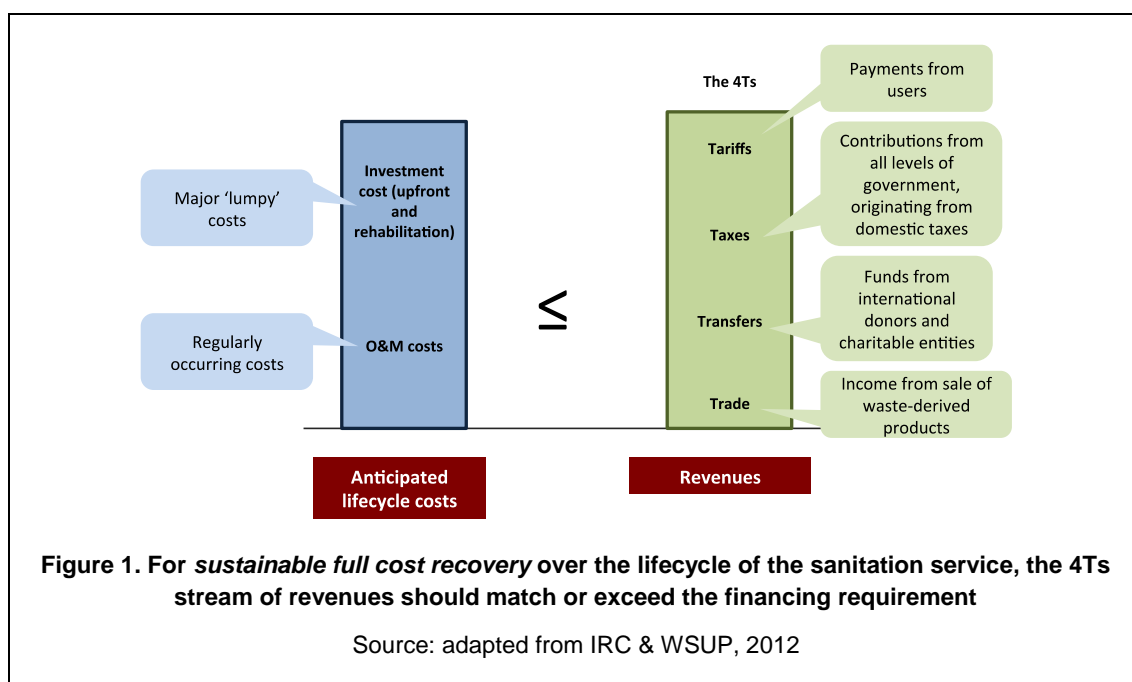
Sustainable full cost recovery for sanitation and ‘the 4Ts’

The Dgroup discussion on cost recovery principles for sanitation led to two clarifying refinements in terminology and concepts underpinning sanitation financing, and coining of a new term, ‘sustainable full cost recovery’.

Firstly, there is need to clarify that ‘sustainable cost recovery’ is a way to recover the *full* lifecycle costs of service provision through three revenue streams – and not just through tariffs as understood in the ‘full cost recovery principle’ that became established since the 1980s as described in the previous section. The omission of the word ‘full’ from the OECD’s ‘sustainable cost recovery’ could be misinterpreted as not achieving full cost recovery, as implied by some DGroup contributions. This paper therefore proposes the terminology of ‘sustainable full cost recovery’ to avoid any confusion.

Secondly, the possibility of creating an additional revenue stream from resource recovery and reuse, uniquely available in sanitation services and not water services, was recognised. Many Dgroup contributors wrote about the potential income from reuse of human waste such as compost and other fertilizer products, biogas, dried faecal sludge fuel and charcoal, effluent aquaculture (fish farming), and effluent irrigation. One contributor coined the label ‘Trade’ to describe this revenue stream as a 4th T (available after any additional costs and avoided costs are taken into account).

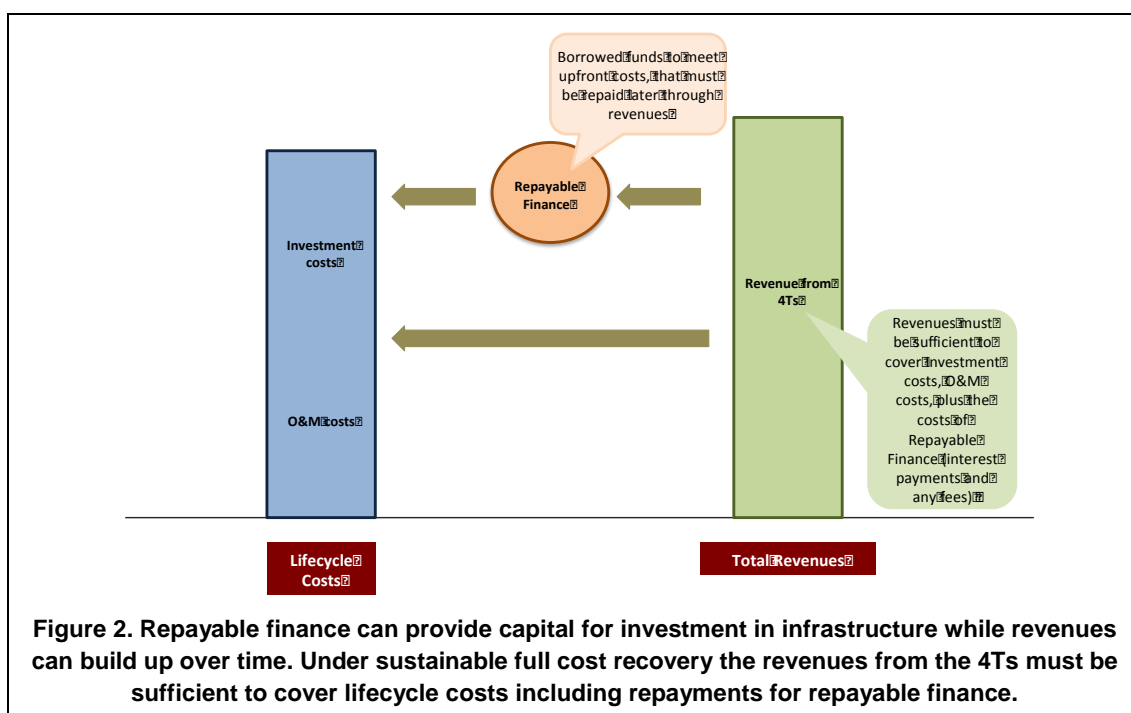
The benefit of giving recognition to 4Ts as the approach to cost recovery is that it serves as a prompt for sanitation stakeholders to seek four potential revenue streams including resource recovery in the initial design of their sanitation systems. For sanitation services that can be delivered in the long term, it is necessary that the revenues from tariffs, government contributions, donor support and sale of recovered waste products (4Ts) can fully cover the anticipated costs over the lifecycle of the service. Figure 1 below shows a simplified depiction of this requirement.



Accessing upfront capital through repayable finance

The main challenge in financing sanitation is about having funds available at the time that expenditures need to occur. In particular, how to access the relatively large sums required for the ‘lumpy’ investments (for upfront and rehabilitation of infrastructure), even when multiple revenue sources can be made available over time to meet the conditions in Figure 1 over the lifecycle of services.

A key way forward is through mobilising repayable finance to ‘bridge’ the shortfall in available upfront funds (OECD 2010). Repayable finance is made available ‘now’ when it is required, but has to be re-paid some time in the future together with any applicable interest charges. The primary sources of market based repayable finance include loans, bonds and equity (OECD 2010). The role of repayable finance is to help manage the timing of required funds. This approach accommodates revenue streams to build up over time from the different sources so that, over the lifetime of services, revenues are able to cover all lifecycle costs that include servicing the repayable finance debt (OECD 2010), illustrated in Figure 2.



In order to access repayable finance, prospective borrowers need to demonstrate that they have sufficient revenues to make repayments. This is generally a challenge for sanitation service providers that include municipalities, local governments, utilities and small service providers with limited access to sufficient reliable revenue streams. The importance of the ‘sustainable full cost recovery’ approach is that it enables multiple revenue streams to be utilized to leverage repayable finance.

Nonetheless, sanitation financing requires innovative arrangements to overcome structural barriers within the sector (OECD 2010). Such arrangements combine repayable finance with one or more of a variety of supporting mechanisms, including overseas development aid (ODA) and central government support in the form of concessionary loans, grants, guarantees from international financial institutions or national governments.

It is important to note that many of these innovative financing mechanisms have been piloted, but not expanded at scale. The reasons for this lack of scale up need to be examined further so services can be scaled up. These innovations typically bring together key stakeholders and combine commercial discipline with concessionary financing arrangements, often supported by ODA in different forms. The desktop review gathered a number of case studies and analysed in depth how the particular arrangements have been implemented. These showed that mechanisms have to be tailored to fit what is permissible and desirable at each specific location.

The desktop review highlighted that innovative financing schemes for urban sanitation infrastructure are largely absent (except for onsite sanitation). The majority of existing case studies are related to drinking water services where tariffs play a significant role. This highlights a key difference between sanitation and drinking water services, since willingness to pay is higher for water than sanitation. On the other hand, the sale of waste-derived products can potentially provide a revenue stream to offset low tariffs, provided any additional costs for producing them is lower than the revenues generated. There are many pilot projects that successfully demonstrate revenue streams from sanitation waste, which are less focused on proving financial viability at pilot scale. For these to be financially viable at scale requires mutually reinforcing institutional and sociocultural transformations to support new practices and attitudes, new markets and business models, and regulations, amongst others, to overcome safety concerns and cultural taboos against human waste in many places. The issue merits more attention to develop not only technically feasible but also financially viable re-use options together with the municipalities and town authorities. There is increasing recognition that resource reuse from sanitation will be important in a resource constrained futures (Mitchell et al., 2011). The current study reinforces the opportunity and need for piloting the 4Ts in innovative financing mechanisms, to put learning into practice and begin to create the necessary shifts towards sustainable sanitation for all.

Observed practices in financing urban sanitation

Contributors to the Dgroup discussion shared their experiences, perceptions and opinions on a diverse range of issues related to financing urban sanitation in their countries of experience. In the summary of key issues below, ‘countries’ refer to the countries that contributors referred to in the discussion.

Observations on cost recovery and use of tariffs, taxes and transfers

- ***There is a low level of understanding of innovative financing mechanisms by local governments.*** Innovative financing mechanisms were considered too theoretical, complex and remote for the majority of local governments. It was noted that finance innovations may be discussed in academic and development circles, but for the large majority of local governments there remains an expectation for ‘lumpy’ capital to come from external grants from donors or as transfers from the national level.
- ***In all countries, initial investments in sanitation infrastructure were funded through donor aid (transfers), with contributions from national and local governments*** (most ODA transfers are conditional on co-investment by governments). This may contribute to selection of technology options that do not fully take local contexts into account.
- ***There was no clear evidence of arrangements to repay loans that financed large scale initial infrastructure.*** Contributors described examples where centralised sewerage has been installed with international loans but the operators were struggling to keep infrastructure running while many parts of the system have fallen into disrepair.
- ***Planning for recovery of lifecycle costs was rare in practice,*** with little consideration given to financing sanitation systems from commissioning, to on-going operation and maintenance, to asset repair and rehabilitation. This is consistent with the findings of the GLAAS report (WHO 2014) that fewer than one quarter of reporting countries have national plans in sanitation that are being fully implemented, funded or regularly reviewed.
- ***Tariffs and taxes were used for financing operations and maintenance, but were generally insufficient*** due to either low willingness to pay or low willingness/ capacity to charge, or both.
- ***Payment of tariffs is important for improving services.*** Consumers are more likely to demand better services and exert pressure on service providers to deliver better services. People are also more willing to pay for services that are proven to be excellent.

Observations on other factors that affect financing and equitable service delivery

- ***Good governance is a critical prerequisite for financing principles to be effective.*** Corruption and poor governance have had a significant impact on what finances are actually available for sanitation as well as on the willingness of users to pay. Lack of skills and capacities to deliver what is required over the lifecycle of systems is another governance challenge.
- ***There are systemic inequities in where investments are made*** with greater investment directed to larger cities than small towns, and wealthier neighbourhoods receiving centralised sewerage that usually bypasses poorer neighbourhoods. The GLAAS report (WHO 2014) supports this observation that more than half of all aid commitments to water and sanitation are directed towards “large systems” (such as sewerage).
- ***There were systemic inequities in how costs are distributed, with the poor paying a disproportionate share.*** The delivery of centralised sewerage services received significant support through public funds (taxes), while onsite systems received little to none. Since wealthier neighbourhoods are usually served by sewerage systems while poorer neighbourhoods are served by on-site technologies, this common financing practice served to perpetuate the inequalities. Furthermore, poorer households frequently contributed labour and local materials towards the initial investment in community scale systems that go ‘unaccounted’ so the real investments they make is not recognised.

There was wide agreement that both anticipated lifecycle costs and potential revenue streams need to be considered from the start when designing sanitation services, until the conditions in Figure 1 and 2 are met. It points to an iterative planning process leading to a choice of sanitation infrastructure with lifecycle costs that are affordable to the recipient society and where these costs can be recovered through affordable tariffs and government payments (raised through taxes), as well as through transfers and trade as possible.

Conclusion and key learning points

A key challenge in the emerging sanitation sector in developing countries is that many key stakeholders in the urban sanitation sector do not consider sanitation a priority and do not see options for financing upfront

lumpy investments besides grants. Depending solely on transfers from external (international) sources leaves those responsible for service delivery with no control over fulfilment of their responsibilities. In order for greater domestic control, alternate sources of lumpy capital through repayable finance are needed, including the revenue streams for repayment. However, limited understanding or engagement by local governments (or those responsible for sanitation service delivery) about innovative financing mechanisms required to access repayable finance, can delay progress.

Thinking about creating adequate revenue streams may be a critical first step for stakeholders currently unable to consider innovative schemes for accessing repayable finance. Moving beyond the conventional ‘full cost recovery through tariffs’ mindset is likely to be the key to this. The proposition of an alternative paradigm for ‘sustainable full cost recovery’ that departs from ‘full cost recovery through tariffs’ is an acknowledgement that affordable and equitable tariffs are unlikely to be adequate to fund the costly infrastructure associated with sanitation services in developing countries (especially when pipe networks are involved).

The ‘sustainable full cost recovery’ paradigm put forward in this paper reflects the argument for using a combination of 4 revenue streams (4Ts) to recover lifecycle costs of services:

- *Tariffs* that include innovative tariffs and cross subsidy schemes (IRC & WSUP, 2012), that underpins a service provider’s ability to borrow, and gives users the right to demand quality services.
- *Taxes* that fulfil governments’ responsibility for achieving the wider societal benefits of improved sanitation, through contribution of public funds to support sustainable full cost recovery that ensures long-term services that are not reliant on tariffs alone.
- *Trade* where net revenues are created through the sale of waste-derived products and services, which may reduce environmental impacts as well.
- *Transfers* from international and local donors or charitable entities through grants, low interest loans and underwriting projects through guarantees), including output based aid used to leverage access to repayable finance.

Extending understanding and use of ‘sustainable full cost recovery’ amongst practitioners and governments can be a critical first step towards greater exploration of innovative financing schemes to access necessary upfront capital, and associated increases in access to essential sanitation services in the future. It will require active engagement with practitioners and governments to pilot financing schemes and identify policies and institutional frameworks to enable ‘sustainable full cost recovery’ at scale, over time.

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