

# Evaluating the effectiveness of public finance for sanitation

A synthesis report



WaterAid/Jon Spauill

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## Acronyms and abbreviations

APL	Above Poverty Line
BPL	Below Poverty Line
CCDU	Communication and Capacity Development Unit
DAWASA	Dar Es Salaam Water and Sewerage Authority
DAWASCO	Dar es Salaam Water and Sewerage Corporation
DOH	Department of Health
DSM	Dar Es Salaam
DWSM	District Water and Sanitation Mission
GDP	Gross Domestic Product
GoB	Government of Bihar
Gol	Government of India
GP	Gram Panchayat
IHHL	Individual Household Latrine
INR	Indian Rupees
JMP	Joint Monitoring Program (WHO/UNICEF)
MDGs	Millennium Development Goals
MKUKUTA	Tanzanian National Strategy for Growth and Poverty
MoFEA	Ministry of Finance and Economic Affairs in Tanzania
MoHSW	Ministry of Health and Social Welfare in Tanzania
MoPH	Ministry of Public Health in Thailand
MoWI	Ministry of Water and Irrigation
MoU	Memorandum of Understanding
NAWAPO	National Water Policy, Tanzania, 2002
NBA	Nirmal Bharat Abhiyan
NESDP	National Economic and Social Development Plan
NGP	Nirmal Gram Puraskar
ODF	Open Defecation Free
PHO	Public Health Officer
PIP	Project Implementation Plan
PMO-RALG	Prime Minister's Office – Regional Administration and Local Government
PRI	Panchayat Raj Institution
RSM	Rural Sanitary Mart
RWSS	Rural Water Supply and Sanitation

SHG Self Help Group

SWSM State Water and Sanitation Mission

THB Thai Baht

TSC Total Sanitation Campaign

TZS Tanzanian Shillings

WSDP Water Sector Development Program

WHO World Health Organisation

Note: for reference, the current exchange rates used in this report are:

1 USD = 33 THB (June 2010)

1 USD = 47 INR (June 2010)

1 USD = 1,465 TZS (June 2010)

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# 1 Executive summary

As the Joint Monitoring Project (JMP) 2012 report established, the Millennium Development Goal target for sanitation is far from being met. To try and address this lack of progress and boost sanitation coverage, policy initiatives, both globally and locally, such as the Sanitation and Water for All partnership and the eThekweni declaration, signed by African leaders in the context of AfricaSan in 2008, have called for increasing public funding for sanitation. This is vitally important, but existing funding to sanitation is not well-tracked and it is difficult to compare the effectiveness of alternative public financing strategies for the sector. It is therefore essential to identify ways in which public funds can be spent effectively to maximise long-term benefits to health, welfare and productivity.

## Study overview

WaterAid initiated this study to evaluate the effectiveness of public financing in promoting and supporting sustainable solutions for improving household sanitation. Case studies were gathered in 2010 to evaluate public funding for sanitation in three locations:

- Rural Thailand, taking a retrospective look at the period between 1960 and 1999, during which Thailand went from 0% to almost 100% sanitation coverage.
- Rural Bihar, India, examining the approach and the impact of the Total Sanitation Campaign between 2000 and 2010.
- Urban Dar es Salaam, Tanzania, evaluating the distribution of public funding for sanitation at city-level over the course of a three-year period between 2006 and 2009.

In each country, the objectives of the research were:

- To gather reliable information on the level of public financing for sanitation provision.
- To identify the different existing sources of sanitation financing and determine the share of financing originating from households and public sources for different components of the sanitation ‘value chain’ (from collection to safe disposal).
- To make recommendations about how public finance could be better targeted to increase household investments and accelerate progress towards universal access.

## Report overview

This report provides a brief overview of the methodology developed for the purpose of the study and synthesises the main findings on the effectiveness of public financing for sanitation in the three case study locations. Given the limited number of case studies and the fact that they were carried out in very different country contexts, it was not possible to draw broad and definitive conclusions about what works best to improve the effectiveness of public financing for sanitation. Instead, this synthesis report seeks to identify challenges relating to equity and sustainability and outlines emerging lessons for improving the allocation and targeting of public funds.

## Case study key findings

**The Thai case study stands out as a model of effective use of public funds to promote and support improvements in sanitation on a large scale.** Total coverage was achieved in Thailand by the late 1990s after 40 years of sustained public intervention, with a sharp reduction in mortality linked to diarrhoea. This success was the result of a comprehensive programme that provided sustained, long-term funding with careful sequencing of demand and supply side interventions and effective targeting of public subsidies to leverage private funding. Although not explicitly targeted at the poorest people, policies in Thailand have reached the most deprived people by providing hardware subsidies after demand for improved sanitation had been established.

Such subsidies were first provided through revolving funds (applied in different ways, depending on local circumstances) and then through the provision of a ‘Sanitation Activity Package’, which consisted of

mostly hardware funding for seven activities, including water supply storage, excreta disposal, solid waste management, wastewater treatment, food sanitation, vector control and household sanitation. Villages had flexibility for allocating those funds to the interventions or the recipients who needed them most. Such policies succeeded in leveraging substantial household investments in sanitation: the study estimated that each baht of public funds leveraged THB 17.4 of private funds from households.

A focus on sanitation was established at the highest level of government (through the King of Thailand) and was reflected at all levels of government, from the central government to the village or district officials, with the presence of informed and competent officers. The Thai government was able to learn from previous results and to adapt the policy directions to changing circumstances, including a rapid coverage increase and rising prosperity.

**In Bihar, substantial public funding was allocated to sanitation under the Total Sanitation Campaign (TSC)**, with approximately INR 20 billion (USD 425.5 million) set aside for the TSC by 2006. This is equivalent to approximately USD 5 per rural habitant in Bihar. The TSC achieved substantial results, as it supported the construction of 2.5 million latrines, of which one million were built by households below the poverty line. However, the results were not as good as expected and several areas of weakness in the allocation of public funds have been identified. Only 20% of the amount initially allocated had been spent effectively by mid-2010, even though the TSC ended in 2012. Software budgets in particular were under-spent. Whereas software spending represented about 9% of funding allocated under the TSC, only 15% had been spent by mid-2010. As a result, although coverage did increase by 18% between 2006 and 2010 and reached 27.9% in mid-2010, it fell far short of the ambitious targets set by the TSC campaign, which planned to achieve 78.2% coverage by that time.

Several factors, examined in the case study, can explain such low effectiveness in public spending, for example, the inability of staff at local government level to disburse funding for software. Under the TSC, sanitation policies aimed to provide subsidies to the poorest households, identified as being below the poverty line. However, short of a comprehensive programme to address both the demand and supply side, the TSC failed to establish sustained behaviour change in households both above and below the poverty line.

**In Dar es Salaam, the only case of urban sanitation reviewed in this series, limited public funding for urban sanitation has been made available, despite substantial budget being allocated to the water and sanitation sector as a whole.** The case study revealed that only USD 17.7 million (or USD 0.34 per capita) had been spent, mostly on hardware activities, on sanitation in Dar es Salaam between 2006 and 2009. The study also reported a significant discrepancy between expenditure on on-site sanitation and spending on sewerage. Whilst only 10% of Dar es Salaam's population is connected to sewerage networks, 99% of public funds were used to finance these networks and associated sewage treatment. While software activities are the only sanitation activities carried out by municipalities, the allocated budget appeared derisory in comparison to the scale of the sanitation challenge and most of this budget was absorbed by administrative costs rather than health promotion activities.

As a result of this concentration of public funds on sewerage network and the lack of funds made available for on-site sanitation activities, 70% of the city's population dispose of untreated faecal sludge in the environment, a practice that causes frequent cholera outbreaks in the city. The study found that building and maintaining on-site sanitation solutions is more expensive than the costs and ongoing charges of being connected to an existing sewerage network, and that the network covers predominantly the more well-off parts of the city. Financing policies in Dar es Salaam are therefore regressive towards the urban poor. The cost of constructing improved latrines is much higher as a proportion of income for households living below the poverty line than the costs of a network connection.

### Overall lessons learned

Based on the learning from the case studies, it appears that governments can do a lot to improve the effectiveness of public spending to sanitation, as summarised below.

**Allocate public funding to support development of underlying sector systems and processes: generating demand, supporting supply.** A key factor of the Thai story is its emphasis, from the very inception on training and capacity building. The Thai case study is also an example of a rigorous monitoring and evaluation system, which reported not only on latrines being built but also on their usage – unlike the monitoring system in Bihar, which placed heavy emphasis on latrine construction.

**Ensure careful sequencing and appropriate balance between investments in software and hardware elements in the sanitation value chain.** The Thai government invested heavily in software activities and provided hardware support only later on in its sanitation programmes, having built solid demand among households. In contrast, Bihar allocated over 90% of its sanitation budget to hardware subsidies as soon as the TSC was in place.

**Adapt sanitation policies to address emerging challenges and ensure equity and sustainability.** After demand had been established mostly through software activities, and coverage had reached 40%, the Thai government policy shifted towards hardware subsidies, initially provided via revolving funds and then provided directly to the villages (as the Sanitation Activity Package) for them to allocate. This was combined with the launch of an honorary award in 1987, the ‘Golden Ring’, to incentivise provincial governors to compete to accomplish universal coverage in their area. This evolving approach supported the achievement of full coverage in just under 40 years, in the context of solid economic growth.

**Explore the potential of credit mechanisms to leverage household investment and enable cross-subsidy at local level.** Credit was used in Thailand as a mechanism to leverage household investments through revolving funds managed by local communities.

**Strengthen service providers and invest in rationalising the management of the sanitation chain.** In Bihar, NGOs are seen as key implementers but their financial situation was weakened by disbursement delays. In Dar es Salaam, informal service providers for faecal sludge removal and transport of on-site sludge receive no public support and can only provide a weak service as a result.

**Make sanitation a political priority and clearly define institutional responsibilities and accountability for progress.** In Thailand, official commitment to improve access to sanitation was established at the highest level through the King of Thailand and was reflected at all level of government. Such strong political will was almost absent in Dar es Salaam whereas in Bihar, although the TSC provided substantial funding to solving sanitation issues, the government of Bihar failed to build sufficient capacity.

#### **Going forward: areas for future research**

Financing to sanitation needs to be tracked in a more systematic manner. Our present level of knowledge and understanding of financial flows to water and sanitation is very limited, due to the lack of reliable tracking systems. This lack of information impedes the provision of effective public policies. The methodology developed for this study provided a strong basis for the development of the UN-GLAAS TrackFin initiative, which aims to define and test a globally accepted methodology to track financing to water, sanitation and hygiene at the national level, based on the example of the health sector’s National Health Accounts. It will also be important to evaluate financing flows against outcomes (in terms of increases in coverage, equity and sustainability, and leverage) rather than in isolation, and in a larger number of cases in order to draw conclusions across a larger sample.

## 2 Introduction

### Context for the study

As the Joint Monitoring Project (JMP) 2012 report established, the Millennium Development Goal target for sanitation is far from being met. To try and address this lack of progress and boost sanitation coverage, policy initiatives, both globally and locally, such as the Sanitation and Water for All partnership and the eThekweni declaration, signed by African leaders in the context of AfricaSan in 2008, have called for increasing public funding for sanitation. This is vitally important, but existing funding to sanitation is not well-tracked and it is very difficult to compare the effectiveness of alternative public financing strategies for the sector.

This study starts from the premise that public funds have a significant role to play to improve households' access to sanitation in order to address market failures and ensure effective provision of public goods. Such funds can be allocated to finance software activities (such as behaviour change campaigns) and hardware activities (such as the construction of sewerage networks, treatment facilities or subsidies for latrine construction).

The use of public funds for sanitation is inadequately tracked at present and it is therefore very difficult to compare the effectiveness of alternative public financing strategies for the sanitation sector. On the other hand, there is growing evidence that the way in which public funds are used to support sanitation sectors can have widely diverging results. In addition to increasing the total amount of public funding available to the sector, it is therefore essential to identify ways in which public funds can be spent more effectively in order to maximise long-term benefits to health, welfare and productivity. Using such public funds in an efficient, effective and equitable manner raises important questions that relate to the allocation, sequencing and targeting of funds.

### Study overview

WaterAid initiated this study to evaluate the effectiveness of public financing for sustainable household sanitation. The objective of the study was to evaluate, in a small number of cases, whether public financing is provided in a way so that sustainable sanitation services can be provided at household level. Although sanitation needs to be effectively provided everywhere (including where people live, but also where they work, study or travel), the study focuses on sanitation facilities at the household level and does not cover communal or school facilities, given that financing approaches for the latter are usually very different<sup>1</sup>.

The objectives of the research conducted in each country were:

- To gather reliable information on public financing of sanitation provision (including hardware and software).
- To identify the different sources of sanitation financing and determine the share of financing originating from households and public sources for different components of the sanitation 'value chain' (from collection to safe disposal).
- To make recommendations about how public finance could be better targeted to increase household investments and thereby accelerate progress towards universal access to sustainable improved sanitation.

### Overview of the research methodology

The project started with the development of a common methodological framework for evaluating the effectiveness of public finance across the entire value chain of services that are required to deliver sustainable sanitation services (see Boxes 1 and 2 for definitions). The methodology included an approach

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<sup>1</sup> The study focuses on facilities used by individuals when they are in their dwellings and in which they have invested themselves. This may include facilities that are shared by several neighbouring households but not facilities that are shared by a large number of transient population (in market places or bus terminals for example). Paying community blocks in slums are also not included as they would likely be financed differently.

to track financing flows and identify a common set of criteria for evaluating the effectiveness of public funding for sanitation. This is briefly summarised in the analytical framework in section two, below.

### Box 1: Defining sanitation

**Sanitation:** Consistent with the Joint Monitoring Programme (JMP) for Drinking Water Supply and Sanitation, this study defines sanitation as ‘the methods for the safe and sustainable management of human excreta’. This includes associated hygiene promotion as it supports sustainable sanitation uptake and behaviour change.

**Sustainable sanitation services** are defined as follows:

- Sanitation is available to all, including poor and disadvantaged groups.
- The whole chain of sanitation services, from collection to safe disposal, is covered, which means that the objective of safely separating humans from their excreta is achieved with minimum damage to the environment.
- Sanitation facilities are effectively used and maintained (operation and maintenance of sanitation is adequately planned and financed).

The **sanitation value chain** includes the collection, transport, disposal and reuse of human excreta. Services provided alongside the sanitation value chain are represented in Figure 1: The sanitation value chain.

### Box 2: Defining sanitation financing

‘Financing’ refers to the means by which funds are provided to cover the costs of sanitation services. An analysis of how financing is provided to the sanitation sector needs to examine:

- **Financing sources**, which can include public or private sources. Public finance is defined as financing which originates from the tax base, whether on a national or sub-national level, or at the international level (as is the case for most donor funds, ie ODA, that pass through national government budgets). Financing from non governmental organisations (NGOs) is considered public finance, but treated separately because these funds are usually off-budget. Private finance is considered to originate primarily from household budgets, from one-off investments into on-site sanitation facilities to a regular tariff paid to an urban sewerage operator.
- **Financing agents** are institutions or entities that have a programmatic control over the allocation of funding and manage and distribute funds in the sector. Financing agents pool funds from different financing sources and pay for or purchase water, sanitation and hygiene services. They may mobilise their own funds or simply act as a financing channel by reallocating funds that they receive from elsewhere. Examples of such financing agents would include Ministries, sector development funds, service providers.
- **Financing instruments** refer to the way in which funds are provided, ie either on a non-repayable basis (ie grants or subsidies from the public sector or payments and investments by households) or on a repayable basis (ie loans, seed financing for microfinance revolving funds, guarantees, and private investment with expectations of a return on equity).

### Case study research in rural Thailand, Bihar, India, and Dar es Salaam, Tanzania

The common methodological framework was then applied to three case studies: urban sanitation in Dar es Salaam, Tanzania, and rural sanitation in Bihar, India, and Thailand. Whereas the case studies in Dar es Salaam and Bihar provide an evaluation of public spending over a period of three years, the Thailand case study takes a historical perspective and examines how the country achieved a dramatic increase in rural coverage since the 1960s through continuous political and financial attention.

Case studies were selected to provide a range of country contexts and sanitation policies. Given that Thailand has frequently been referred to as a success story in terms of increasing rural sanitation coverage, this historical case study was selected to serve as a reference point for what has worked in practice. By contrast, the other two cases were examined to try and identify potential for improvement in the allocation of public funds, bearing in mind that WaterAid and SHARE is currently working both in Tanzania and India.

The case studies were conducted from February to June 2010 by a team of international consultants working in close coordination with WaterAid staff as well as national consultants. The research methods included a comprehensive review of available literature, interviews with key sector actors, primary data collection and subsequent analysis.

The case studies were prepared based on a common structure, to include the following:

- An overview of the country context and of the sanitation sector, including policies and status of the sector particularly in terms of coverage.
- A map of the sector's institutional set-up and financing flows to answer the question: 'who is financing what?'
- An analysis of the state of sanitation services in the study area during the study period, in order to understand what has been done (physical indicators) and how much it cost.
- An analysis of the effectiveness of public spending according to a set of common criteria.

### Synthesis report objectives

This report provides a brief overview of the methodology developed for the purpose of the study and synthesises the main findings on the effectiveness of public financing for sanitation in the three case study locations. The individual case studies are also available online.

Given the limited number of case studies and the fact that they were carried out in very different country contexts, it was not possible to draw broad and definitive conclusions about what works best to improve the effectiveness of public financing for sanitation in general. Instead, this synthesis report seeks to identify challenges relating to equity and sustainability and outlines emerging lessons for improving the allocation and targeting of public funds. It also seeks to contribute to the ongoing development of methodological approaches to assess sanitation sector financing. In particular, in India and Tanzania, it is hoped that the findings of this study will help inform ongoing policy debates over how public funds can be used most effectively to promote and support sustainable improvements in sanitation.

### Report structure

- **Section three** presents the analytical framework used for completing the case studies.
- **Section four** gives an overview of sanitation services in each of the case studies, evaluates the effectiveness of public spending based on three main criteria (comprehensiveness, equity and leveraging) and extracts key lessons from each of the case studies.
- **Section five** draws out lessons from the study as a whole.

In addition, Annex 1 provides a very brief summary of key facts and figures from each case study and Annex 2 includes a list of key references. The full case studies are available online.

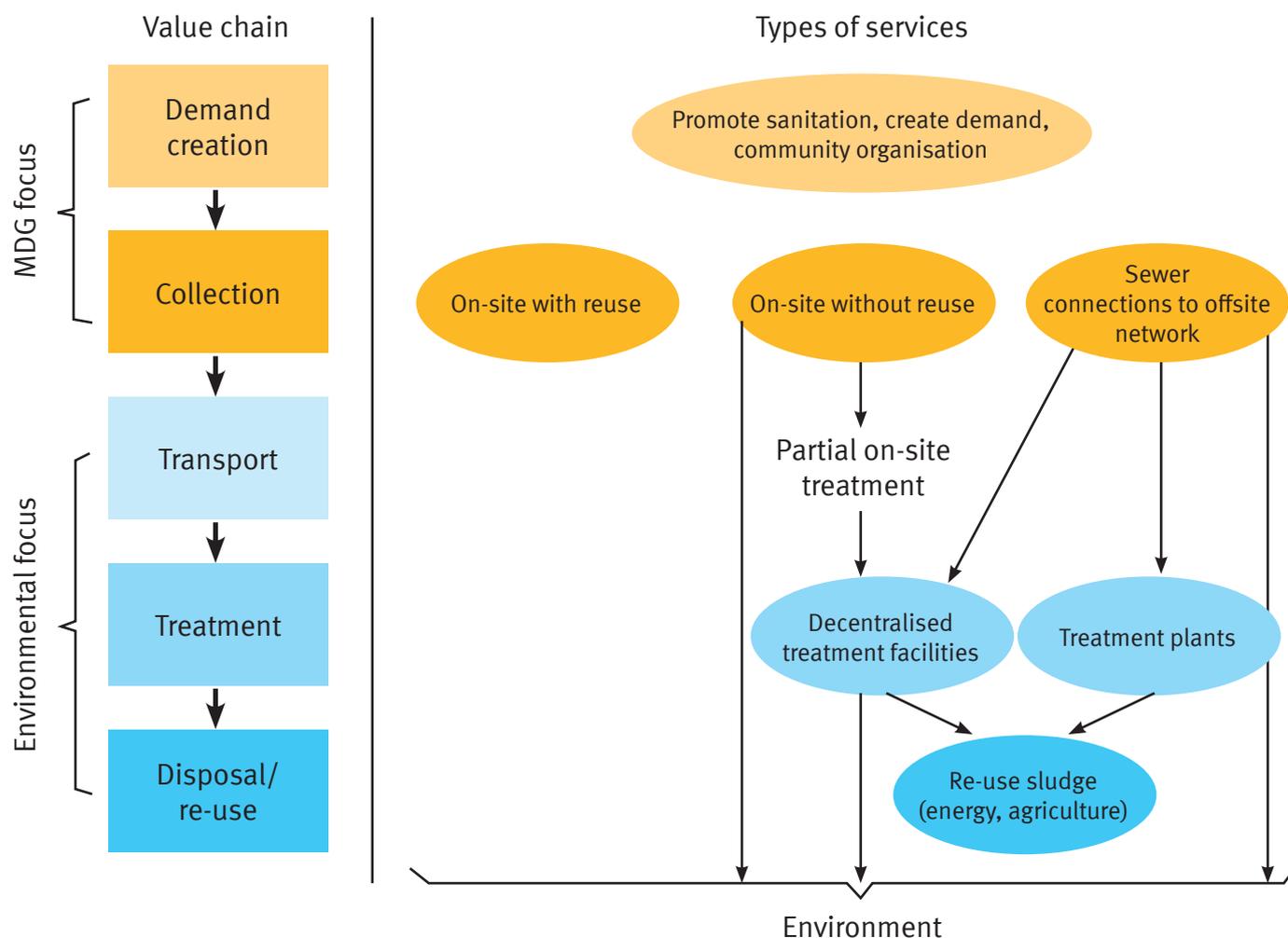
### 3 Analytical framework

This section sets out the analytical framework underlying the preparation of the case studies.

#### What are sanitation services?

Sustainable sanitation can be analysed in terms of a series of services that need to be provided alongside what has become known as the ‘sanitation value chain’, as shown in Figure 1.

Figure 1: The sanitation value chain



Source: (Trémolet S., 2011).

Trémolet, Evans and Schaub-Jones presented each step of the value chain and why they are important for the provision of sustainable sanitation. These steps are briefly set out below.

#### Demand promotion

Demand for sanitation is often low, for a variety of reasons, including the lack of information for households on the benefits of sanitation, the persistence of taboos which mean communities are not willing to change, and insufficient access to finance or affordability constraints<sup>2</sup>. As a result, fostering demand for sanitation can be seen as the first step of the chain of sanitation services. 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 mobilisation (often linked to the formation of village committees or community groups in urban areas) and community triggering.

<sup>2</sup> See Trémolet, S (2012) for more analysis on the drivers of demand for sanitation.

### Collection/access

Most importantly, human waste needs to be collected and removed from human contact. Collecting waste can be done through on-site sanitation solutions (whereby excreta are collected, stored and sometimes treated close to the toilet) and off-site systems, where excreta is removed from the plot, commonly via waterborne sewerage systems.

### Transport

When latrines fill up they need to be moved or emptied, while latrines connected to sewers will fail if the sewers they are connected to fail. If pits are not emptied and cannot be moved they cannot be used and households will revert to open defecation.

### Treatment

Treatment may take place either on-site (some on-site systems allow this, such as septic tanks) or off-site (when the waste has been collected via sewer networks or pit latrine emptiers) and transported to a sewage treatment plant.

### 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 waste 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 many countries where reaching the MDG target of access to safe and sustainable sanitation remains a distant prospect, emphasis is usually placed on providing basic sanitation facilities, ie on collecting human excreta. This is important, but sanitation solutions will only be sustainable if they include appropriate transport, treatment and disposal/re-use options as well, which means that all steps of the value chain would need to be adequately organised and financed so as to deliver the maximum health benefits as well as protection for the surrounding environment.

### What are the costs of providing sanitation services?

Providing sustainable sanitation services generates various costs, which can be broken down between hardware costs and software costs:

- **Hardware costs** are the costs relating to the 'hardware', ie the technical solutions to provide sanitation, such as a pit latrine, or a treatment or reuse facility. These costs can be broken down between the initial capital costs and ongoing operations and maintenance costs to ensure the sustainable use of the facilities.
- **Software costs** include the costs of 'soft' activities for creating demand, mobilising communities, capacity building, training and hygiene promotion. In addition, software costs include the costs of defining suitable institutional, policy and regulatory frameworks, monitoring and regulating the sector and managing investment programmes. Such costs typically include staff costs, procurement, monitoring and evaluation and general overheads. Where financial rewards are provided, but not linked to a particular investment (ie as the Nirmal Gram Puraskar awards in India), the cost of such rewards may also be counted as software costs.

### How should sanitation services be financed?

On-site sanitation is often viewed as a private service and is seen as the basic responsibility of the individuals. Yet sector professionals have long argued that public finance of sanitation is both needed and can be justified by its inherent externalities and persistent market failures<sup>3</sup>.

Sanitation is considered as a necessary and cost-effective public health intervention. Diarrhoea kills over 1.5 million children each year, and 88% of these deaths are attributed to faecal contamination from

3 (OECD, 2010)

inadequate sanitation, hygiene and water supply. The costs of these problems are high in economic and human terms. At a global level, the World Health Organisation (WHO) estimates the benefit-cost ratio of interventions to attain universal access to sanitation and water supply to be 4.3. For the sanitation component alone, this ratio is estimated at 5.5, which means that each dollar invested in sanitation could potentially generate USD 5.5 in economic benefits<sup>4</sup>.

Despite the significant economic losses attached to inadequate sanitation in developing countries, the policies to stimulate investment in sanitation have gone back and forth between different uses of public funding for sanitation. Some sector professionals have become sceptical of subsidy schemes for household sanitation, arguing that they can be inefficient and counter-productive when part of poorly-designed programmes. Advocates of ‘no-subsidy’ policies have emphasised the role of demand promotion through methods such as Community-led Total Sanitation (CLTS) and advised against combining demand promotion with hardware subsidies. Such approaches have shown limitations, however, in areas where own-investment may not be affordable or sufficient to facilitate a move up the sanitation ladder, particularly in urban environments. Some collective investments (such as simplified sewers, transfer stations or faecal sludge treatment plants) also call for substantial public funding. Many sanitation programmes now rely on a mix of public and private funding. Households still account for the majority of financing to the sector, combined with well-targeted public subsidies.

### **How can public funds be allocated to support the sanitation sector?**

Public funds played a critical role in the achievement of universal sanitation access in developed countries and have a significant role to play to improve households’ access to sanitation in developing countries. Such funds can be allocated to finance software activities as well as hardware activities (WSSCC, 2009). Software activities can include (but are not limited to) capacity building or training, promotion campaigns (often known as Information, Education and Communication or IEC), monitoring and evaluation, market research and financial management.

Public funds for hardware activities can include (but are not limited to):

- Direct subsidies, where payments are made directly to the households who will then be expected to invest in improved sanitation systems.
- Infrastructure subsidies or provision of latrines or latrine parts to households (usually with some cash/labour input from households).
- Connection subsidies where the cost of connecting is covered by transfer of public funds to utilities.
- Subsidies to small scale operators for training, business development services, product development, etc.
- Operational subsidies or the payment of money to service providers to offset some or all the costs of supplying a service.
- Output-based subsidies that are paid only after delivery of a service (eg working latrines being used, open defecation-free communities).
- Subsidised credit or subsidies and guarantees to micro-finance institutions who can lend the money to households at reduced interest rates.

### **How can the effectiveness of public financing for sanitation be assessed?**

The effectiveness of public finance to the sector can be assessed by a number of criteria. Our initial methodology identified five main criteria for evaluating the effectiveness of public financing for sanitation, as set out in Table 1. Out of these five potential criteria, the first three (comprehensiveness, equity and leveraging) were used for the analysis of the case studies. The other criteria (absorption and sustainability) were also deemed to be important but would require more information to be evaluated systematically

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4 (Hutton, 2012)

(we noted that ‘absorption’ was a key issue in the case of Bihar, limiting overall effectiveness). It was therefore not deemed feasible to evaluate public investment in sanitation based on the last two criteria in the context of the case studies. In the three case studies, the indicators were used as systematically as possible, provided the data enabled comparison based on these indicators.

Table 1: Potential criteria to evaluate public financing for sanitation

Criteria	Definition
Comprehensiveness	Is public financing comprehensive, ie are public funds allocated in a balanced manner so that all segments of the sanitation value chain function effectively?
Equity	Are public funds adequately targeted to reach poor and disadvantaged groups and reduce the gap in coverage between rich and poor?
Leveraging	Are public funds used in a way that effectively leverages other forms of finance, and in particular household financing? This is evaluated on the basis of two indicators: <ul style="list-style-type: none"> <li>• A leverage ratio: the ratio of private funds vs. public funds.</li> <li>• A value for money ratio: the number of people benefiting from sanitation for USD 1,000 of public funds spent.</li> </ul>
Absorption	Are public funds disbursed effectively, ie is the lag between funds being committed and actually disbursed kept to a minimum and is the discrepancy between the funds disbursed and the funds actually spent overall small?
Sustainability	Are public funds used in a financially and operationally sustainable way?

## 4 Summary of case study findings

This section provides an overview of each of the case studies, focusing on the financing of rural sanitation in Thailand and Bihar, India, and of urban sanitation in Dar es Salaam, Tanzania. For each case, we set out the case study background and the financing approach that was adopted. We then evaluate the effectiveness of public spending based on the effectiveness criteria defined in section two and extract key lessons for each specific case.

### 4.1 Rural sanitation in Thailand: significant public funds, effectively used

#### Overview

The case study takes a historical perspective on rural sanitation in Thailand, from the early 1960s until the 21st century, when Thailand achieved near-universal sanitation. Thailand has achieved remarkable success in increasing sanitation coverage in rural areas over the course of 40 years. In 1960, less than 1% of Thailand's rural population had access to basic sanitation, a figure which rose to 99.9% by 1999. Correspondingly, the morbidity rate due to diarrhoeal diseases sharply fell from 14,000 deaths in 1960 to under a 1000 in 1998. These dramatic results are the outcome of a concerted campaign by the Thai Government to expand sanitation coverage.

The story of rural sanitation in Thailand is now regarded as a model for many developing countries: it is therefore important to try and obtain a good understanding of how such success was achieved. However, such investigation was limited by the fact that numerous archives were destroyed once universal coverage had been achieved.

#### Case study background

##### Policy and institutional framework

Since 1960, the Thai Government has made sanitation policy a priority. From the very inception of sanitation programmes, the Government realised that a sustainable sanitation sector would need to rely on strong implementation capabilities at a local level, thorough monitoring and evaluation of progress, and active demand and supply promotion for the construction of toilets. It supported the training of health officers at all levels of Government to promote demand and sanitary craftsmanship to promote supply. A key feature of the Thai context is that this strategy relied on solidarity between the most privileged villages and those who lagged behind (as well as between rich and poor within a same village). This allowed technological cooperation between villages, from the training of sanitary craftsmen to the development of revolving funds.

The rural sanitation sector in Thailand is organised on a hierarchical basis, with the Ministry of Public Health represented at every level of Government. At the national level, it sets policies and the legislative framework, whilst providing technical and budgetary support to local agencies. Provincial agencies are involved in operational planning and evaluation of sanitation programmes, and local agencies, at district and sub-districts level, focus on conducting sanitation activities, relying on health officers and village volunteers.

##### Financing approach

The government's focus on building local capabilities materialised in various strategies, with a slightly different emphasis over time. Between 1960 and 1976, the government sought to empower communities, so that they would be able to receive technology and knowledge transfers from national government officials. This included training of local health officials in provincial and local governments and the training of health officers in villages.

Between 1977 and 2000, the development philosophy shifted to engaging communities through village representatives, promoting demand and supporting supply by training masons. Large amounts of public funds, averaging 50% of total public support, were directed to software support activities over the study

period, including for capacity building and training, monitoring and control, demand promotion activities, support to local artisans and support to cover administrative costs<sup>5</sup>. However, the ratio between software and hardware funding has evolved over time. Whereas initial emphasis was placed on software funds (which represented the vast majority of public funds during the 5<sup>th</sup> plan (1982-1986), this ratio then dropped to 50% and 20% during the 6<sup>th</sup> and 7<sup>th</sup> plans respectively (1987-1991 and 1992-1996). The later emphasis on hardware was also to help the most difficult to reach households access sanitation.

Sanitation hardware support was initially given to households through government subsidies, on the assumption that recipient households would then serve as models to the rest of the community. It rapidly became evident, however, that the latrines were not being sufficiently used nor maintained. The Ministry of Public Health then switched to a more demand-driven approach and promoted the creation of revolving funds at village level, as described in Box 3.

### Box 3: Experience with revolving funds for sanitation in rural Thailand

From 1980 onwards the Thai Government provided support and advice for villages to establish revolving funds that enabled households to finance sanitation improvement. This helped to ensure user commitment with a view to achieving value for money from limited resources. Administered by a local sanitation committee, these revolving funds provided loans to households for building latrines and tanks to store rainwater (as per the broad definition of sanitation by the Ministry of Public Health, which includes water supply and sanitation).

Rules for running the revolving funds, such as interest rates, size of loans and reimbursement policy, were set by the village fund committee without government supervision. Exceptions could be made for the poorest households who would often provide labour instead of reimbursement.

By and large, it is considered that revolving funds were successful at the beginning of the period, to jumpstart latrine construction. But as the Government's efforts were intensified under the '100% Latrine Coverage Campaign' and as economic growth and increased incomes facilitated investments by households, the rationale for such a mechanism faded away.

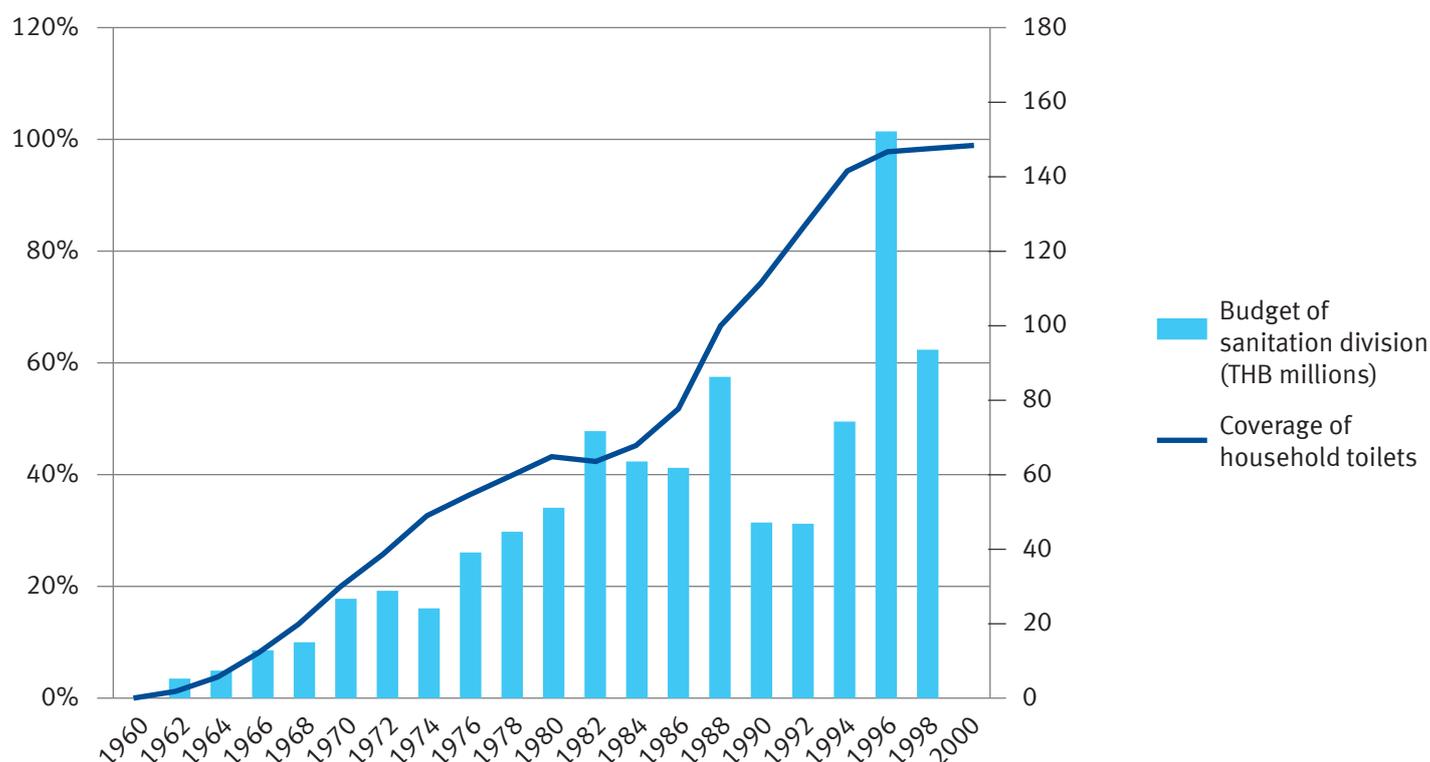
It is difficult to assess accurately the impact of these funds on sanitation coverage for two main reasons. First, they were part of a broader set of policies that have constantly been adapted to best support the construction of latrines. Secondly, decisions on the particular parameters of these funds were made at the local level with no control from the central Government.

### Outcomes

Sanitation coverage increased dramatically over the 40-year period, with a median growth rate in coverage of 15% per year between 1961 and 1987. This was the only period for which this assessment could be made based on available data. This enabled the country to reach near universal coverage by 1999, as shown in Figure 2. Key success factors included a strong political will and a clear institutional framework, together with public financing initially allocated to software spending and then increasingly devoted to latrine construction at the same time that capacities were being built. This success also materialised in the context of rapid economic growth, rising incomes and increased overall prosperity.

<sup>5</sup> This is based on interviews with former senior managers in the Department of Health.

Figure 2: Sanitation coverage in rural Thailand, 1960-2000, and corresponding public expenditure on sanitation (THB)



### Evaluating the effectiveness of public spending

#### Comprehensiveness

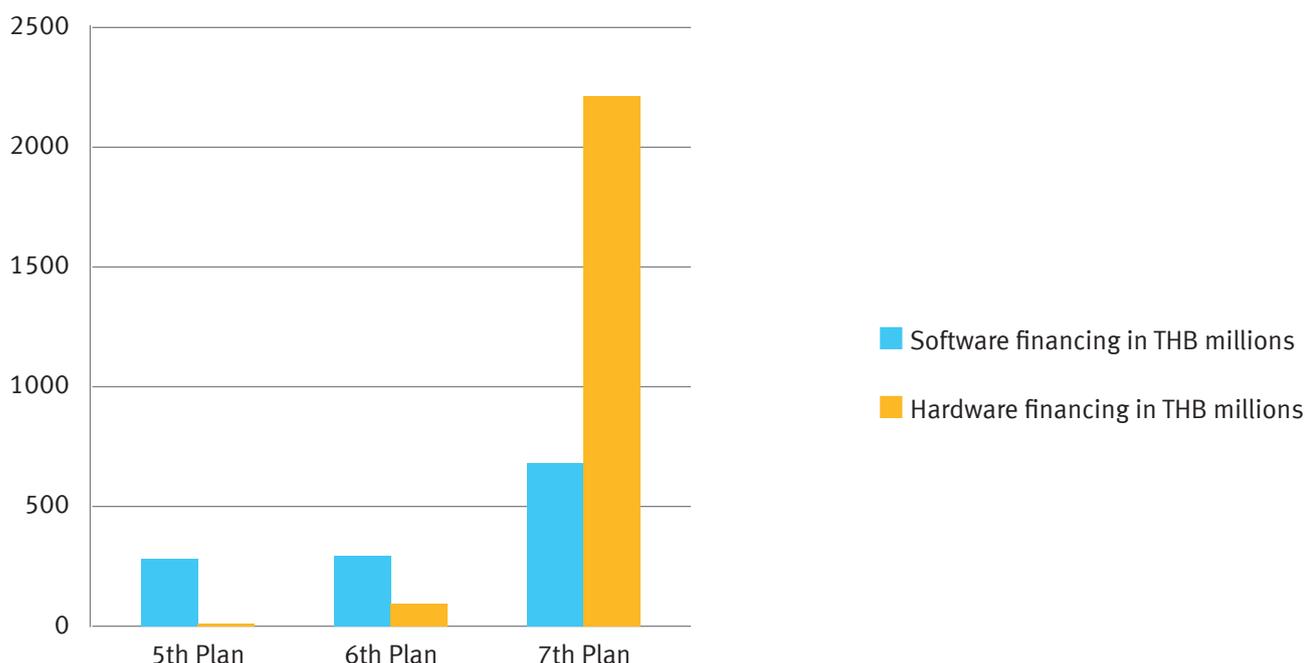
Public funds for hardware support were dedicated to the construction of latrines only, overlooking other parts of the value chain, such as emptying, treatment and reuse. For on-site sanitation in rural areas, treatment and reuse did not exist as the Government failed to convince the population to use sludge as a fertiliser. Latrines were mostly emptied in a nearby dump by the households themselves.

Under this criterion, however, it is interesting to examine how the mix and sequencing between hardware and software spending has evolved over time. Initial efforts on sanitation particularly emphasised the importance of software activities, which accounted for 40% and 20% of the Department of Health’s total budget in the 6<sup>th</sup> (1987-1991) and 7<sup>th</sup> (1992-1999) National Economic and Social Development Plans respectively.

During the 7<sup>th</sup> Plan, the government decided to channel additional funds to the villages through a ‘Sanitation Activity Package’<sup>6</sup>, over which village sanitation committees had full discretion for spending. During the 7<sup>th</sup> Plan, sanitation hardware jumped from 14% to 64% of the total budget, while water supply activities (including financing water jars and water quality monitoring) dropped from 43% to 11% of the total budget. Software financing made up only about 20% of total financing in the 7<sup>th</sup> Plan. This shift over time between software and hardware spending is reflected in Figure 3 below.

6 The ‘Sanitation Activity Package’ could include software funds, but no estimation of allocation can be made as the allocation decision is made locally. For this study we assumed all funds from this package were allocated to hardware support, as the 7<sup>th</sup> plan corresponded to the development of a revolving funds mechanism to provide a real boost to hardware financing.

Figure 3: Amounts of software vs hardware financing in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> National Economic and Development Plans, Thailand



Source: Budget of the Department of Health under the 5<sup>th</sup>, 6<sup>th</sup>, and 7<sup>th</sup> Plan, Ministry of Public Health

### Equity

The government elected not to adopt a pro-poor approach. On the contrary, the Department of Health focused its initial actions on ‘core villages’ that had been identified to have a strong implementation potential (for example because of the presence of well-trained local leaders, the mobilisation of additional financial resources or particularly active village committees).

For the implementation of the revolving fund system, borrowers with a high repayment potential were targeted first to receive funds from the demonstration budget. However, poorer households could also have access to revolving funds in the form of de facto grants (ie not reimburse the loan), or benefit from lower interest rates. They could also contribute towards its reimbursement through labour supplied to villagers with higher incomes.

The rationale behind this strategy was that the ‘solidarity mechanism’, well anchored in the Thai cultural psyche, would play an important role in diffusing knowledge and distributing resources to gradually expand progress to the entire rural population.

### Leveraging

Due to the lack of data on household investment (and limited data on public spending), the leverage ratio can only be calculated for a specific example. For instance, the seed capital invested by the Government in the revolving funds allowed financing for 10 latrines in a village of 250 households on average, ie latrines for 4% of households. Considering that only about 20% of the initial amount was revolved, this means that a very small percentage of latrines were financed through public funding in that way<sup>7</sup>. The example of Ayutthaya Province is particularly striking. The Government contributed an initial capital outlay to the revolving fund of THB 5,000, and half of this amount remained unspent at the end of the period. Given the average construction cost, the Government could have theoretically built only 25 latrines with public funds alone. Yet, 230 latrines were built, for an average expenditure of THB 46,000. The leverage ratio was therefore estimated at 17.4, ie for every THB 1 of public funds leveraged in THB 17.4 of private funds.

7 This estimation only takes public funding from the Department of Health into consideration.

## Lessons from Thailand

### Sanitation Policy: Key findings

**Strong political will and commitment to the sanitation sector were key factors enabling Thailand to reach full coverage within 40 years.** Thailand's success story has relied on strong political will, making sanitation a national policy as early as 1961 by integrating the sanitation programme into the First National Economic and Social Development Plan.

**Clearly defined institutional authority and roles enabled consistent policy implementation and ensured accountability for progress.** Thailand has implemented its sanitation programme through a single dedicated operational system within the Ministry of Public Health, the Department of Health and its decentralised satellites. Policy-makers were prepared to tailor their approach over time, adapting dynamically to new circumstances (such as rising incomes and sanitation coverage in rural areas) and incorporating new ideas (such as the revolving fund). In addition, the monitoring and evaluation system was particularly strong, in a decentralised but highly hierarchical system.

A bottom-up monthly reporting system was built at all levels of government. Health officers were instrumental at each level of the government in the implementation of sanitation policies, from translating policy into action plans (setting up sanitation committees, revolving funds, etc.) to training of health officers at lower levels of government and thoroughly reporting on progress.

**Additional public policy tools, such as enforcement, were used in conjunction with demand promotion and appear to have been effective.** For example, in 1989 the Ministry of Interior required all houses to have a sanitary toilet before a new house could be registered. This supported an increase in coverage at no additional cost to the general budget.

### Financing strategy: key findings

**Public financing was initially allocated predominantly to software spending,** amounting to the vast majority of the total budget for sanitation during the 5<sup>th</sup> plan and earmarked to capacity-building (for health officers, trainers, villagers) as well as research and development and supply and demand promotion. The value of such software spending has most likely been under-estimated as it was not possible to track all categories of software spending, and financial data from earlier periods has not been kept. However, such an emphasis on software appears to have been one of the key success factors for increasing coverage, as it allowed the central government to delegate successfully to local governments the implementation and follow-up of sanitation programmes. As capacity was being built, the need for software financing went down. For example, mobile units of central health officers supporting district health officers were dismantled as capacity was being built at village level.

**The sanitation financing strategy then shifted to provide additional funds for hardware, although the emphasis on software was maintained throughout.** A shift towards additional hardware financing may have partly been based on the realisation that coverage targets were not being met fast enough. The 'revolving funds' were used to provide seed financing to villages, which were to be spent on hardware for building demonstration latrines. This enabled leveraging of private funds, with leverage ratios as high as 17 in those cases where we could obtain actual data<sup>8</sup>. In practice, these revolving funds proved to be a flexible instrument, as each village was able to decide on the rules for using the funds and on targeting methods. As a result, the funds were not integrally revolved: some of the funds were provided as grants to users, whereas others were provided as loans. However, the fact that communities were free to tailor the revolving funds mechanism to local needs and context makes it difficult to draw general lessons on factors affecting their success.

<sup>8</sup> This is comparable to the leverage ratios observed in Vietnam in the Sanitation Revolving Fund programme in the Three Cities project, as reviewed in Trémolet, Kolsky and Perez (2010) Trémolet, Kolsky, & Perez (2010). This leverage ratio was by far the highest in the set of country experiences analysed in the WSP study, largely due to the fact that public funds were repeatedly revolved with minimum losses in terms of depletion of the revolving fund.

**The strategy for allocating hardware funds was deliberately not ‘pro-poor’.** The strategy chosen by the Government was to pick and focus on the low hanging fruits first, relying on the ‘demonstration effect’ that this would generate, with incentives to follow the leaders (within a village and from one village to the next). The Department of Health focused its initial actions on ‘core villages’, that had been identified to have a strong implementation potential (eg because of the presence of well-trained local leaders, the mobilisation of additional financial resources or particularly active village committees). For the implementation of the revolving fund system, borrowers with a recognised repayment potential were targeted first to receive funds from the demonstration budget.

During the 7<sup>th</sup> plan (starting in 1992), as coverage had already reached 80%, the Government decided to increase hardware subsidies through the provision of the ‘Sanitation Activity Package’, which villages used to reach the most ‘hard to reach’ segments of the population (see Box 4 for more detail). This proved instrumental in reaching close to 100% coverage by 1999.

#### Box 4: The Sanitation Activity Package in Thailand

The ‘Sanitation Activity Package’ consisted of seven activities, including water supply storage, excreta disposal, solid waste management, wastewater treatment, food sanitation, vector control and household sanitation. The concept behind the Sanitation Activity Package is that every village, and every household in that village, has different sanitation problems. For example, a household might already have a latrine but still lack water supply. The government allocated an overall budget to targeted villages to carry out sanitation activities. Village committees would then decide which activities to carry out from the Sanitation Activity Package. This approach aimed at addressing the problems which concerned villagers the most, as well as decentralising the administration of sanitation activities.

#### Remaining challenges

Once the coverage targets were reached, the government became much less involved in the rural sanitation sector, as it was assumed that ‘it would take care of itself’. Although increases in rural sanitation coverage have contributed to a massive decrease in mortality due to diarrhoea (from 14,000 deaths in 1960 to under 1,000 in 1998), the impact on morbidity has been much less conclusive. This may be partly due to the fact that there were no provisions for dealing with the accumulated waste in latrines, which rural dwellers commonly spread on nearby fields, although a wide range of factors can also account for high levels of morbidity from diarrhoea. Having reached near universal coverage, there is a strong case for the Thai Government to shift its attention to the sustainable management of the entire sanitation value chain, including in rural areas. In the last few years, the Thai Government has taken measures to tackle waste treatment and reuse through stricter regulation imposed on emptying septic tanks and investing in treatment plants.

### 4.2 Rural sanitation in Bihar: significant public funds, mixed results

#### Overview

The case study focuses on the implementation of the Total Sanitation Campaign (TSC) in landlocked Bihar, one of the poorest states in India and the 3<sup>rd</sup> largest in terms of population. The TSC was a comprehensive nationwide rural sanitation programme launched by the Government of India in 1999, covering villages in all states for 13 years. In April 2012, the TSC was renamed Nirmal Bharat Abhiyan (NBA). New guidelines were issued in July 2012 and provide for the allocation of public funds to sanitation activities and the allocation of hardware subsidies to households identified above and below the poverty line.

At the beginning of the TSC, rural sanitation coverage in Bihar was only 13.7% with 1.8 million households having access to latrines. In May 2010, sanitation coverage had risen to 26.6% but had failed the initial ambitious target of 78.2%. Although both the federal and state governments made sanitation a priority and allocated substantial funds to the sector, there was a gap in capacity at local government level to carry out demand promotion activities, and the delivery of subsidies was impeded by cumbersome administration and a lack of information. This undermined the effective use of public funds available for sanitation.

## Case study background

### Policy and institutional framework

The TSC was primarily funded by the Government of India, which also set out key policies. The TSC was designed to take care of both the demand and supply sides of rural sanitation: while Information Education and Communication (IEC) activities sought to generate demand by creating awareness, rural sanitation marts and production centres were supported to supply material for construction of individual household latrines. The policy also included hardware subsidies provided to households below the poverty line once the latrines had been constructed.

The TSC was implemented in each state by the Panchayati Raj Institutions (PRIs), a three-tier system of government that includes the district, the block, and the Gram Panchayats (GPs). These institutions, under the responsibility of the District Water and Sanitation Mission (DWSM), carried out software activities and supported the supply of material for construction of individual household latrines. Most responsibilities, including budgetary ones, lay in the hands of junior and senior engineers of the Public Health Engineering Department (PHED) who were not specifically trained to engage in sanitation promotion activities.

To add vigour to the TSC, the Government of India in 2003 an incentive scheme for fully sanitised and open defecation free Gram Panchayats, called the ‘Nirmal Gram Puraskar’ (NGP). The NGP provides one-off monetary rewards to GPs based on population criteria from the central government, which include achieving a 100% open defecation free status, and 100% sanitation coverage of individual households. GPs can use the cash incentive to improve and maintain sanitation facilities in their respective areas with a focus on solid and liquid waste disposal and maintenance of sanitation standards.

In the state of Bihar, two initiatives were launched to complement the reach of the TSC. The Mahadalit Vikas Mission was launched in 2007 to provide additional support to the lowest and poorest castes, and the Lohiya Swachata Yojana (LSY) was initiated in 2008 as a subsidy-driven programme for households above the poverty line.

The allocation of resources from the central government to the states is based upon both the efforts needed to reach the TSC targets (compared to the baseline survey) and the pace of expenditures by the districts. As per the TSC guidelines, the central funds are released to the districts in four instalments (30%, 30%, 30% and 10%). The first instalment is released immediately after approval of the project proposal by the National Scheme Sanctioning Committee. The State’s share is supposed to be released at least in the same proportion as the central share and at the same time. The next instalment is subject to a utilisation certificate, as proof that at least 60% of the total available funds under both central and state shares have been properly spent, which can be verified in the monthly reporting system.

In addition, NGP awards flow directly from the central government to the PRIs that have been selected. Between 2006 and 2010, 199 GPs had been awarded the NGP award in Bihar. However, at the time of the study, none of them had received the associated monetary award and the attribution of these awards has later been contested.

### Financing approach to the sector

The TSC is primarily focused on financing software activities, such as demand and supply promotion and capacity building, combined with hardware subsidies for building latrines. No public funding is allocated to other segments of the value chain, such as latrine emptying, which is considered to be the responsibility of households. Treatment and reuse activities are not carried out in rural areas and therefore do not receive any financing.

Software support activities carried out by PRIs and NGOs included IEC activities, support for the establishment of rural sanitary marts and production centres (outlets selling materials for sanitation facilities), start-up activities such as surveys to assess hygiene awareness and the preparation of the Project Implementation Plan, and covering administrative costs. In May 2010, software activities represented 8.8% of total disbursements for sanitation in Bihar, although the amounts that had been allocated were under-spent, particularly for software.

Hardware subsidies included funds allocated to the construction of latrines for those below the poverty line. According to TSC guidelines, government incentives to households below the poverty line were intended to cover 80% of the cost of building latrines (with central government and state government shares combined), the remainder being at the expense of households themselves. However, focus groups in the districts of Patna and Gaya indicated that government cost estimates were actually well below actual market prices, which meant that the household’s share of total expenditure was in fact higher than stipulated in government guidelines.

In addition, the state government established very strict requirements for latrines, which meant that households had to meet those requirements to qualify for receiving the hardware subsidy. While those requirements have evolved over time towards improved latrines, there was little room for user preference, as only one model of squatting plates and rural pans was allowed for latrine construction and the depth and width of pit were imposed by Government of India guidelines. This lack of flexibility was identified as a significant barrier to uptake.

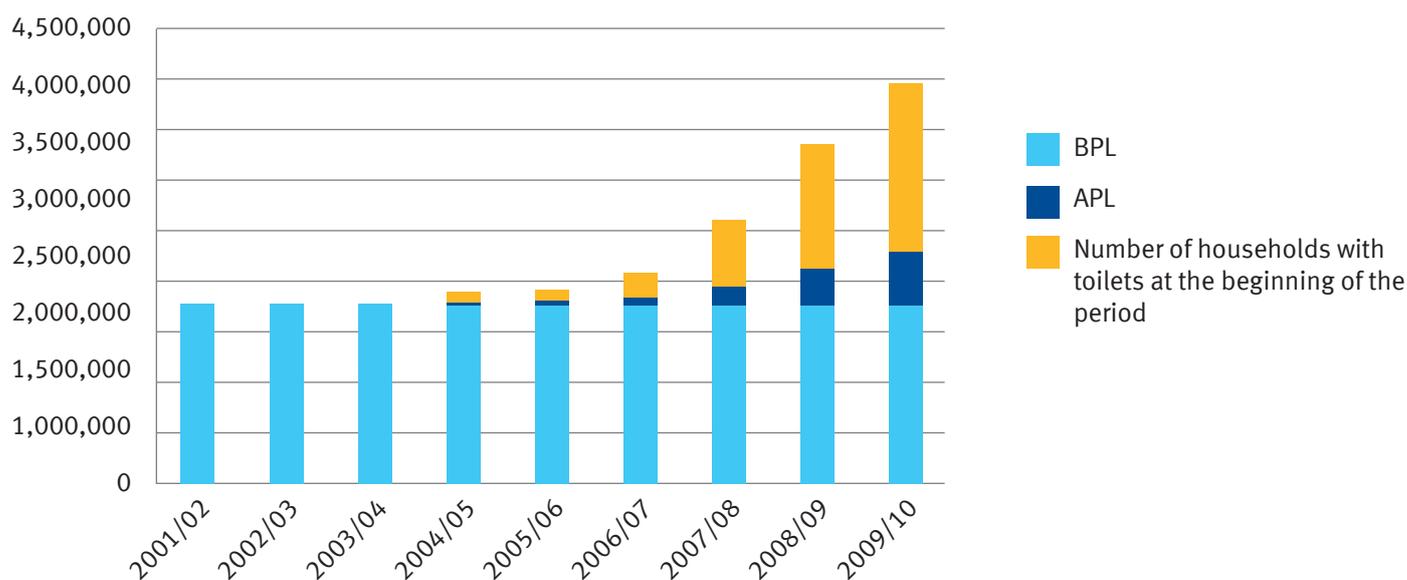
Hardware funds were released as ex-post subsidies, ie they were given to NGOs or households once the latrines had effectively been built. The number of latrines built over the four-year research period had doubled to reach 4 million in 2010. Hardware subsidies spent on households below the poverty line represented 91% of total financing for sanitation, but these amounts were also well below initial allocations.

This amount does not include incentives towards households above the poverty line: under the LSY programme, the government of Bihar provided an additional INR14.5 billion for latrine construction over the period 2006-12, ie INR2,000 (USD 42) for each family above the poverty line. This represents nearly five times the cumulative amount spent for households below the poverty line (INR 2.7 billion) under the TSC.

**Outcomes**

At the beginning of the study period, about 2 million households had a latrine in Bihar. In the following years, latrine construction grew at an average rate of 24% and the total number of latrines was close to 4 million in 2010. The number of latrines in Bihar has grown sharply since 2006/07 (see Figure 4).

Figure 4: Number of individual household latrines in Bihar



Source: DDWS website, Physical Progress Report, year-wise state level achievement

However, this achievement has to be seen in the light of two facts: first, the number of latrines constructed fell well below the TSC target of 11.7 million latrines to be built by 2012. Second, the number of latrines constructed does not reflect the number of latrines used, as surveys and informal interviews found that the usage rates could be as low as 10%<sup>9</sup>. Besides, progress for households above the poverty line has been very slow. The government thought that spending funds on software activities would be enough to trigger household demand. However, it has not been the case and the Government of Bihar launched the LSY campaign to subsidise latrine construction for families above the poverty line as well. This suggests that software activities alone may not be sufficient, even for households that are comparatively better-off.

## Evaluating the effectiveness of public spending in rural Bihar

### Comprehensiveness

In the context of the TSC, which was conducted in a rural environment, the main focus of sanitation service delivery was on collection, as pit emptying is not such a high priority and wastewater services are non-existent. A key step in the value chain here, however, includes the software activities (such as for demand promotion) that need to be carried out up-stream from collection in order for the latrines to be effectively used in a sustainable manner.

**As shown in Table 2, software activities only accounted for 9% of the total project outlay, while hardware activities, in particular latrine construction, accounted for 91%.** No funding was allocated to deal with residual waste downstream. These figures need to be treated with some caution, however. The amount of approved funds compared to what has actually been spent was 5.5 times higher for software activities and 5.2 times higher for hardware support.

Table 2: Cumulative sanitation expenditure in Bihar under the TSC, 1999 to 2010

Activities (Ratio: Government of India and government of Bihar beneficiaries)	Amount (in INR million)	% of total programme
<b>Expenditure on software activities</b>		
Start-up	63.5	1.5%
Administrative charges	60.9	1.5%
IEC	239.7	5.9%
<b>Total financing to software</b>	<b>364</b>	<b>9%</b>
<b>Expenditure on hardware (latrine construction)</b>		
Individual household latrines	2,791	68.9%
Sanitary complex	20	0.5%
Rural sanitary marts/production centres	34.8	0.86%
School and Anganwadi latrines	839	20.7%
<b>Total financing to hardware</b>	<b>3,685</b>	<b>91%</b>
<b>Total expenditures for sanitation in Bihar</b>	<b>4,049</b>	<b>100%</b>

Source: DDWS website, Financial Report, Cumulative Hardware and Software Expenditure Details, accessed on 25/05/2010

<sup>9</sup> This information comes from interviews with local NGOs, households and local governors.

**Public funds were not always used in the most efficient manner possible.** For instance, while the contribution to administrative charges included funds for monitoring, such monitoring was limited to construction rather than usage when, according to local experts, there were examples of usage rates as low as 10%. The actual impact of latrines built under the programme on health and hygiene improvements was therefore far lower than it could have been, suggesting that additional emphasis should have been placed on behaviour change.

### Equity

**The TSC was designed to target households below the poverty line with specific hardware subsidies.**

Although families above the poverty line could benefit from sanitation marketing activities under the TSC, the bulk of government financial support was for financing incentives for families living below the poverty line. In that sense, public funds from the TSC seem to be adequately targeted to reach the poor. In 2007, to strengthen pro-poor targeting, the government of Bihar decided to provide additional subsidies to the poorest and lowest caste (the Mahadalits), with an additional allocation of INR 300 (USD 6) per latrine constructed to cover their contributions. This represents a total earmarked amount of INR 150 million (USD 3.2 million).

**The LSY programme was initiated by the government of Bihar in 2008, based on the observation that latrine construction by families above the poverty line was lagging behind dampened pro-poor targeting of funds.**

This meant that the biggest share of state public funds allocated to the sector shifted to households above the poverty line. By the time of the study in 2010, households below the poverty line had received 88% of public expenditure (since the majority of the funds made available to households above the poverty line had not been disbursed by this stage), but the share of funds for households below the poverty line fell to only 16% of released funds following the start of the LSY programme. However, the overall increase in public funds in the new NBA programme should mean that the level of funds allocated to households below the poverty line is sustained.

### Leveraging

Estimates of the leverage ratio were based both on cost estimates in the TSC guidelines (in which users are supposed to contribute no more than a specific amount each year) and on actual market prices, given that users actually contributed more than the expected requirement. We found that the leverage ratio based on prices in TSC guidelines remained consistently low for households below the poverty line, averaging 0.2 over the study period (2006-2010). For households above the poverty line, this ratio rose from 0.9 in 2006/07 to 4.0 in 2008/09 and 3.6 in 2009/10. If estimated based on market prices, however, the leverage ratio for households below the poverty line rose from 0.62 in 2006/2010 to 1.33 in 2009/2010. For households above the poverty line this ratio rose from 1.32 in 2006/2007 to 7.11 in 2009/2010.

We can draw two main conclusions from these figures:

- The leverage ratio for households above the poverty line is much higher than for households below the poverty line, since there were no subsidies in the TSC for latrines in households above the poverty line<sup>10</sup>.
- The leverage ratio actually increases when one considers actual market prices, since the households had to invest more to comply with government requirements<sup>11</sup>.

<sup>10</sup> However, at the time of writing, the leverage ratio for households above the poverty line was about to decrease dramatically with the additional funding planned under the LSY. It should also decrease for households below the poverty line when the NGP funds awarded to GPs will effectively be disbursed.

<sup>11</sup> However, we note that the estimated leverage ratio is lower than the similar ratio estimated under the TSC in the State of Maharashtra (Trémolet, Kolsky and Perez, 2010), which found an average leverage ratio of 10, with the ratio going up to 30 for households above the poverty line in certain districts. Several factors may account for this difference: on the one hand, the WSP study calculated leverage based on actual investments made by households, which were higher for households above the poverty line. The number of households above the poverty line which had invested in building latrines was comparatively higher in Maharashtra, something that may partly be the result of a strong emphasis on community awards for becoming open defecation free (Maharashtra initiated what then became generalised as the NGP throughout India).

### Value for money (VfM) ratio

The ratio for the number of latrines built with INR 50,000 (approximately USD 1,000) of public finance for all households, decreased over time, as the technical specifications and costs of latrines increased<sup>12</sup>. The ratio was consistently higher for households above the poverty line than for those below, however, as households above the poverty line received no hardware subsidy and were expected to invest themselves in building a latrine until 2010.

Table 3: VfM ratio: number of latrines built with INR 50,000 (USD 1,000) of public spending

	2006/07	2007/08	2008/09	2009/10
<b>BPL VfM ratio</b>	55	36	26	22
<b>APL VfM ratio</b>	55	91	91	71
<b>Overall VfM ratio</b>	55	43	31	27

Source: Authors' estimations.

### Lessons from Bihar

#### Sanitation policy: key findings

The TSC is a comprehensive programme intended to cover both the demand and supply sides of rural sanitation and to finance both hardware and software activities. Although 2,500,000 latrines were constructed in Bihar under the TSC, its implementation faced several constraining factors and, as a result, sanitation coverage remained well behind initial targets of 11.7 million latrines to be built by 2012.

#### Absorption capacity

**Financial absorption has been a significant constraint**, with only 20% of the INR 20 million (USD 425,840) set aside for the TSC in Bihar effectively spent by mid-2010, bearing in mind that the TSC ended in 2012. Although the number of latrines in rural parts of the state has more than doubled since 2001, there remains a considerable access deficit, with more than two thirds of the rural population without access to an improved latrine in the state of Bihar in 2010.

#### Slow disbursement of funds can be attributed to a variety of factors

Most district engineers have no experience in allocating funds to software activities. They would benefit from initial training on demand responsive approaches and on collaborating with NGOs and community based organisations (CBOs), which would help them to allocate available funds to software activities. For example, whereas total software expenditure accounts for about 9% of the funds allocated to sanitation in Bihar, slightly under 15% has effectively been spent in this spending category (IEC activities). Funds that have been spent did not necessarily lead to results: there appeared to be considerable stocks of leaflets and communication material left over, which were not used to communicate critical messages. As a result, demand for latrines had not been sufficiently stimulated and there was no evidence that capacity to conduct demand promotion activities had been built.

Another factor leading to slow disbursement is the large number of NGOs active in the sanitation sector, often filling the gap left by local governments. In the district of Patna alone, there are 70 NGOs active in rural sanitation, which increases the length of the verification process for disbursement of subsidies, as there are numerous reimbursement applications for comparatively small amounts. This is compounded by the fact that the verification process is too centralised and limited to a small number of functionaries, who are usually unclear about what the local government will support and have an inherent reluctance against channelling funding to NGOs. To remedy this, some states like Tamil Nadu have decentralised the verification process, putting GPs or village level government representatives in charge of monitoring and evaluation.

<sup>12</sup> A comparable ratio estimated in *Financing on-site sanitation for the poor* (Trémolet, Kolsky, and Perez, 2010) was 50 on average in the state of Maharashtra.

**Other financial tools to stimulate demand, like the NGP awards, have been under-utilised in Bihar when compared to other states.** In Bihar, only a limited number of districts have been awarded the NGP award and delays were noted in transferring the awards to those who had obtained it whilst the number of open defecation free villages has been questioned. By contrast, in Maharashtra, for example, the NGP has provided added incentives for households above the poverty line to invest, since all households had to invest in building a latrine for the village to be eligible for the NGP award<sup>13</sup>. In Maharashtra, the NGP also allowed a change in mind-set on the public side, away from a focus on building latrines towards demand promotion. There is a strong case for encouraging the use of such financial tools to trigger community mobilisation to reach open defecation free status at village level, provided adequate performance verification mechanisms can be built into the overall process.

### Financing strategy: key lessons

**Where demand promotion is done, some good principles were in place in order to ensure better accountability for such funds, such as payment by performance.** However, there are limits to how much non-governmental service providers can be required to pre-finance the service they provide, especially when there are delays in transferring the funds due to the multiple procedural steps required in order to get the funds disbursed. As a result, several NGOs which were in charge of demand promotion and latrine building have decided to withdraw from the sanitation sector as it was taking too long for them to obtain reimbursement for their initial outlay.

**In addition, providing more flexibility to households as to the choice of latrines may help stimulate demand.** The government of Bihar has been gradually tightening requirements for the type of latrines to be constructed, which act as a pre-condition for receiving the subsidy. However, the cost of building such latrines has been under-estimated in the government guidelines and the actual market prices are between 30% and 100% higher than the cost estimated by the government. Given that the differential needs to be covered by households, this has probably dampened demand further (or led some households to skimp on quality in a way that might not be sustainable). Additional flexibility on the type of latrine built, with a fixed subsidy provided to cover the cost of a ‘minimum quality’ latrine and leaving households in charge of deciding which quality level to go for, based on what they can afford, may also contribute to boosting demand.

**Alternatively, the possibility of providing financing assistance (in the form of access to credit for example) to enable households above the poverty line to invest in building a latrine appears to have been insufficiently explored.** If it was established that households above the poverty line are not currently investing sufficiently because of difficulties in financing their share (which is the underlying assumption of the LSY), additional options to help them could have been contemplated to reduce the impact on public funds. This could include the creation of revolving funds (with seed money from the government only provided to finance a small number of demonstration latrines) or facilitating access to existing micro-finance institutions. The NBA has now provided new guidelines to establish revolving funds at district level. Revolving funds have proved effective in other parts of India, including in the State of Maharashtra, as reviewed in Trémolet, Kolsky, and Perez (2010) or in Thailand, as reviewed in a companion case study.

### Remaining challenges

**Sustainability issue: although latrine coverage has increased substantially in the past few years, there remains a considerable question mark as to the sustainability of these latrines.** Monitoring is focused on construction rather than on actual usage of the latrines. Anecdotal evidence collected in the villages, bolstered by a recent research on usage in NGP-awarded Panchayats (TARU, 2008), indicated that only women tend to use the latrines, whilst men and children continue to defecate in the open fields. Besides, public funding is exclusively focused on building new latrines, and no public funds are allocated for upgrading latrines or helping households to empty them hygienically once they fill up. As a result, there is a high risk that households go back to open defecation once the latrines fill up. Besides, there does not appear to be much analysis done about the health impact of householders emptying the content of

13 See Trémolet, Kolsky, and Perez (2010)

their latrines in a nearby field. Additional funding should be allocated to ensure continuous monitoring, perhaps with the release some of the ex-post subsidies in tranches based on verification of ongoing usage.

**Institutional weakness is a blockage in the delivery of software activities.** Under the TSC, capacity to promote demand has not been built at the PRI level. The new NBA programme tries to respond to this by providing more guidance on resources available to Communication and Capacity Development Units (CCDUS) and placing more people at the block and GP level with a mandate to lead software activities. However, there are still weak structures and support mechanisms within the system to maximise these people and utilise effectively this new institutional set-up. It therefore remains to be seen whether the NBA delivers a substantial shift in the pace of sanitation service delivery for the rural population in Bihar.

### 4.3 Urban sanitation in Dar es Salaam: limited funds, ineffectively used

#### Overview

The research was carried out in Dar es Salaam, Tanzania's major commercial city, with an estimated population of 4 million, growing at an average rate of 4.5%. Unplanned settlements make up to 80% of the city, where hazardous terrain and the density of the population have made infrastructure services difficult to provide. This is particularly true for sanitation: while construction of latrines is not an issue as most people in Dar es Salaam have access to latrines (99%, including 80% using a simple pit latrine), emptying services are not readily available. Only 10% of the population has access to a sewer network and emptying services are extremely limited. Consequently, there are frequent outbreaks of diarrhoeal diseases such as cholera and malaria.

The research found that the allocation of public finance for sanitation in Dar es Salaam is not effective. Only 10% of the population is connected to sewerage, whereas sewerage and sewage treatment received 99% of the public financing to the sector. On-site sanitation is seen as a private matter and benefits from scarce municipal and NGO funding, directed to limited software activities.

#### Case study background

##### Policy and institutional framework

Sanitation is treated as a cross-sectoral issue in Tanzania. There has been a lack of leadership and chronic under-funding. Two ministries share the responsibility for the sector: the Ministry of Water and Irrigation (MoWI) and the Ministry of Health and Social Welfare (MoHSW). They have signed a Memorandum of Understanding (MoU) to coordinate their actions. However, there is no single piece of legislation that guides the provision of environmental health services. The MoU has helped guide sector dialogue especially related to the National Sanitation Campaign, which was launched in August 2012 with USD 20 million in start-up funding from the African Development Bank (AfDB). For actual implementation of the campaign, the same four ministries have gone on to sign a Participation Agreement.

Service provision is the responsibility of the municipalities. In Dar Es Salaam, the Water and Sewerage Authority (DAWASA) is in charge of capital investments and rehabilitation, whereas the Water and Sewerage Corporation (DAWASCO) provides water supply and sanitation services throughout the city under a lease contract. However, municipalities retain responsibility for environmental health, and therefore for on-site sanitation services. Their responsibilities include sanitation and hygiene promotion, and supply support. In practice, municipalities struggle to perform their tasks and leave most responsibilities for on-site sanitation to households.

##### Financing approach to the sector

The Water Sector Development Programme (WSDP), a coordinated financing mechanism for the water and sanitation sector, was put in place in 2006, with 85% of funding coming from donors, either to a sector-based basket funding system or to earmarked projects. For the rural water supply and sanitation component of WSDP, which includes sanitation for Dar es Salaam, even though Dar es Salaam is not rural as such, the original allocation for sanitation and hygiene was approximately USD 20,000 per district per

year. Disbursement has been delayed and erratic, however. In addition, the MoHSW allocates about USD 1 per capita for sanitation through the Health Basket Fund.

For sewerage services, DAWASCO collects the revenues from tariffs and then pays a fixed lease fee to DAWASA. On average over the three year-research period (2006-2009), DAWASCO had collected from sewerage TZS 1,327 million (USD 0.9 million), which represented 7.5% of its total revenues from water and sewerage. The lease fee, intended to cover DAWASA's operating costs and service of the debt, amounted to TZS 100 million per month, but was not paid consistently. Capital investments were funded by donor partners (at 90%) and the government. A recent project was approved for USD 165 million to rehabilitate existing water supply and sanitation in Dar es Salaam between 2006 and 2010, out of which 20% was to be spent on sewerage and 10% on on-site sanitation.

For on-site sanitation, households are the main investors as latrines are seen as a private responsibility and municipalities have limited funding available, mostly to finance software activities, including demand promotion and inspections of public and household latrines. Besides, this funding is extremely fragmented and complicated by precise guidelines which are not often followed. Off-budget resources may also be available, eg WaterAid provided TZS 44 million (USD 26,700) in Temeke municipality.

### Outcomes

Although coverage is high in Dar es Salaam, with 99% of the population having access to sanitation, this figure hides huge disparities in quality. 80% of the population use basic latrines, which are probably sub-standard compared to international guidelines. Overall, limited public funding was allocated to sanitation during the study period. Given that 90% of the population does not have access to piped sewerage, funding allocated to sewerage and wastewater treatment appears disproportionately large when compared to the percentage of the population reached.

## Evaluating the effectiveness of public spending

### Comprehensiveness

**Public financing has been poorly allocated across the value chain.** The current percentages of faecal sludge being treated before release in the environment were 3% from sewers, 9% from septic tanks and 16% from pit latrines. The average volume of wastewater treated by DAWASCO over the three years of the study period was 10.5 million cubic meters. This accounts for 28% of the total faecal sludge produced, meaning that more than two thirds of faecal sludge remains in the environment untreated.

Public financing is largely concentrated on sewerage (whereas only 10% of the population is connected to the sewer network) and wastewater (when only 3% of the wastewater collected through the networks is treated through stabilisation ponds). Only 0.9% of public funding on capital investments goes to on-site sanitation services, while these are the sanitation solution for 83% of the population. Wealthier households, who have access to sewerage and treatment services, effectively benefit from 99.1% of public funds invested in sanitation infrastructure (see figure 5.1).

**There is little public finance for on-site sanitation software and no public financing allocated for on-site sanitation hardware solutions.** The Government of Tanzania and development partners have allocated some funding within WSDP to municipalities to finance software activities for on-site sanitation. However, this funding remains limited and did not come with prescriptive guidelines on how to spend the money until April 2010, when the Ministry of Water and Irrigation (MoWI) released and distributed guidelines countrywide. The funding in many cases is diverted to finance better access to water, however. Temeke, Ilala and Kinondoni each received TZS 2 million in 2007/08 and TZS 13 million in 2008/09 to finance sanitation marketing but the way in which these funds have actually been spent was not clear. There have also been operational subsidies of an estimated TZS 255 million for software support to on-site sanitation from the municipalities themselves, but this remains very low compared to the amounts spent on capital expenditure for sewerage. This amount has been calculated based on average public expenditures of Temeke municipality scaled up at the entire city.

**On-site sanitation services are not functioning adequately at present, which results in substantial costs in terms of public health and the environment.** Even though emptying latrines is considered a private matter, the implications of poor sanitation have a negative impact on a number of public goods, including health (through pollution of water sources or general uncleanliness of the environment), road safety and other environmental issues.

Most households lack sufficient financial resources to improve their basic latrines and empty them on a regular basis so that they can deliver ongoing services. This creates a number of problems. A large proportion of the basic latrines are of poor construction. Given the sandy nature of the soil, they are prone to collapsing, which makes them unusable. Given the inadequacy of emptying services, many households either need to move the latrine once it becomes full (something that requires space, which is at a high premium in dense urban settlements), or resort to other means for emptying them. It is estimated that 50% of the population use pit diversion and flooding to empty their latrines (Sugden, unpublished). Due to high water tables in many parts of the city, the latrines are often built above the ground. When the pit is full, one current practice is to wait for the rain and make a hole in the latrine so that the sludge can flood out of it, known as ‘vomiting’. Indeed, it appears that one of the greatest problems related to household sanitation is the lack of emptying services (HBS, 2007). Most importantly, unlined latrines can leak and contaminate groundwater resources (especially when water tables are high), which is a particular problem as 17% of the population use water from unprotected sources (HBS, 2007).

### Equity

For this criterion, we assessed whether the costs of accessing sanitation services weigh disproportionately on poor customers. In Tanzania, individuals are considered poor when their consumption is less than the ‘basic needs poverty line’ (Ministry of Finance and Economic Affairs, MoFEA, 2009)<sup>14</sup>. This indicator is based on the cost of a basket of food and non-food items, but excludes housing, health and education costs. According to this definition, 16.4% of Dar es Salaam’s population lives with less than TZS 14,000 (USD 9) a month per person<sup>15</sup>, which corresponds to TZS 672,000 (USD 454) for a household of four per year. The mean monthly per capita income in Dar es Salaam is TZS 108,053 (USD 73) (2007 figures, MoFEA), or TZS 5.2 million per household per year.

Table 4 below gives the average cost of different sanitation options, and shows them in terms of percentage of both the average annual income per household and the average annual income per poor household.

<sup>14</sup> Poverty lines are calculated on consumption per adult equivalent per 28 days.

<sup>15</sup> ‘Brief 4: An Analysis of Household Income and Expenditure in Tanzania’ *Poverty and Human Development Report*, MoFEA (2009)

Table 4: Comparative costs to households of alternative sanitation options, Dar es Salaam (2010)

	Initial costs (construction)	Annual running costs
<b>On-site sanitation</b>		= emptying
<b>Improved latrines with temporary superstructure</b>	550,000	54,000-100,000
As a % of average annual income	11%	1-2%
As a % of below poverty line annual income	82%	8-15%
<b>Improved latrines with permanent superstructure</b>	750,000	75,000
As a % of average annual income	14%	1-1.7%
As a % of below poverty line annual income	112%	9-13.4%
<b>Networked sanitation</b>		= monthly tariffs (2008/09)
Pipes extension	250,000	51,422
Connection charges	26,000	
As a % of average annual income	5%	1%
As a % of below poverty line annual income	41%	8%

Source: DAWASCO Accounting System, interviews<sup>16</sup>.

This table shows that accessing on-site sanitation solutions is actually more expensive than being connected to the network. While households who earn an average income spend about 5% on getting a sewer connection, households below the poverty line spend an average of 82% of their yearly income on building a basic latrine and 112% on building an improved latrine. This explains why there are comparatively few improved latrines. Running costs of on-site sanitation facilities are also much higher in terms of proportion of income and can represent up to 15% of a household below the poverty line's yearly income, giving many households no other option than to flush the latrine onto the street when the rains come.

### Leveraging

The study was not able to determine if public funds were able to leverage household investments as we were unable to track household expenditure on sanitation improvement products and services.

### Lessons from Dar es Salaam

#### Sanitation policy evaluation

**Overall, limited public funding was allocated to sanitation during the study period.** Given that 90% of the population does not have access to piped sewerage, funding allocated to sewerage and waste water treatment appears disproportionate when compared to the percentage of the population that needs to be reached.

**Given that on-site sanitation is a decentralised responsibility, there are multiple financing channels resulting in extremely fragmented sources of funding.** As a result, it was difficult to 'piece' the puzzle

<sup>16</sup> The capital and running costs for on-site sanitation solutions have been estimated based on interviews with local experts (see section 4.1.2). Capital costs for networked sanitation comprises of pipe extension costs and connection charges from DAWASCO. Running costs, ie sewerage tariffs, were derived from the total revenues billed from sewerage tariffs divided by the number of active sewerage connections.

together (we were able to do so only partially for Temeke municipality). The fact that there are multiple channels to transfer sanitation financing to Local Government Authorities (LGAs) makes it particularly difficult for them to handle these limited funds in a strategic and effective manner.

**There is no accompanying training or guidance from the central government on how to carry out software activities<sup>17</sup>.** As a result, the great majority of budgets made available for water and sanitation tend to be used for water interventions, which appear more straightforward to put in place and with clearer results. In addition, the budget spent on ‘software activities’ at municipal level is not clearly accounted for. When used for sanitation, public spending is not allocated in a results-oriented manner and there is no monitoring of results (municipalities were not able to provide information on the number of latrines built each year in their municipal territory).

**It appears paramount to make more strategic use of limited public funds going forward and to increase implementation capacity.** Activities that appear necessary include:

- Investing in capacity-building and training activities, so that staff at local government level are well-equipped to organise and supervise the delivery of software support.
- Providing support and supervision from the centre to develop sanitation activities (at present, many local governments are left to their own devices, having to ‘reinvent the wheel’ when deciding how to use funding allocated to sanitation).

#### Financing strategy: key lessons

**Public funding could be better targeted to address the entire spectrum of the value chain so that services alongside the whole chain can be provided effectively.** This includes the following activities:

- Support for the construction of improved latrines or upgrading of existing latrines.

Although basic sanitation coverage in Dar es Salaam is relatively high, with 70% having access to on-site sanitation, 13% to improved facilities (septic tanks) and 10% to sewers, access to improved sanitation, by international standards, is very low. This can be largely explained by the financial constraint faced by households to build improved latrines, which represents 112% of the annual income of a poor household in the city. The costs of upgrading existing latrines would be substantial but should not prove insurmountable, however. For Temeke, if we estimate that latrine improvement would require an average of TZS 100,000 per latrine rehabilitated, the total cost of improving existing latrines would amount to TZS 1,969 million, which can be compared to the TZS 67.7 million spent by the municipality of Temeke for sanitation in 2008/09 and TZS 6,723 million invested by DAWASA in waste water treatment facilities. Clearly, a shift in priority and a reallocation of a portion of the funds allocated to sewerage and wastewater treatment could go a long way towards improving the condition of existing pit latrines.

- Some form of hardware subsidy or facilitated access to financing may be needed in order to encourage the upgrading of existing pit latrines or construction of new latrines.

So far, the policy stance has been to provide no hardware subsidies at all, as latrine construction is assumed by the Government of Tanzania to be purely a household responsibility. This reflects influential international findings that subsidising household latrines does not lead to use or ongoing maintenance or replacement (WSSCC, 2009). However, this policy has limits, largely because the costs of building latrines fall disproportionately on poor households, whereas comparatively wealthier households can connect to the sewerage network more cheaply.

At present, the main policy tool used to encourage latrine upgrading and construction consists of latrine inspections, which in fact tend to happen in the event of a cholera epidemic rather than on a routine basis. In practice, however, inspectors have no motivation to enforce existing regulations. As one of them said,

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<sup>17</sup> However, in rural areas, there is a momentum for sanitation promotion through various approaches such as Total Sanitation and Sanitation Marketing (TSSM), Participatory Hygiene and Sanitation Transformation (PHAST) and PRA (Participatory Rural Appraisal).

“what is the point of fining people if they are too poor to do anything about it?” As a result, inspections and monitoring become relatively meaningless as there are no means of enforcement and no respect for enforcement measures.

To overcome such constraints, a series of financing instruments could be used to provide public funding in the most efficient way possible and leverage public investment. This could be done via:

- Support for the development of revolving funds to leverage limited public funding and encourage community participation and ownership. Such revolving funds (or other types of microfinance institutions) could provide loans to households willing to upgrade or construct new latrines. The forming of a savings and loans group at community level could improve the potential for repayment of such loans through solidarity and social awareness mechanisms.
- Output-based subsidies to entrepreneurs who build and maintain latrines (and potentially enter into a contract with the households to empty the latrines as well). Methods of delivery could include vouchers provided to households which they could use to reduce the costs of building a latrine (service providers would need to redeem such vouchers in order to obtain the subsidy).
- Conditional cash transfers to households based on latrine upgrading (if households do not upgrade their latrines and keep them clean, the conditional cash transfers stop and people can be fined)<sup>18</sup>.

### Remaining challenges

**The impact on public health and the environment resulting from such limited attention to sanitation issues is substantial, yet not fully quantified.** One of the most serious impacts is that of repeated cholera epidemics. Little public funding is dedicated to tackling the transport and treatment issue for on-site sanitation, with only limited spending for wastewater stabilisation ponds (which can be used for treating the content of pit latrines).

**Limited support to pit emptying services.** For example, there is no public spending on emptying latrines, although this is supposed to be a municipal responsibility according to the Local Government Act. Such services are currently provided privately but with no public financing or technical support, resulting in low service levels and high and unaffordable charges for households. Partly as a result, emptying services are rather ineffective and unaffordable. Tanker companies are basically unable to operate in 70% of the city, which is unplanned, and as such require more flexible solutions. Attempts at introducing technologies to empty sanitation facilities in this kind of context (such as with the use of ‘gulpers’, which are pumps mounted on motorbikes) have been made but have so far failed to scale-up, partly due to lack of management skills and access to finance on the part of the operators.

**Facilities for treatment of on-site sanitation sludge are grossly under-financed.** Whilst 93% of the population of Dar es Salaam have on-site sanitation, DAWASA’s investments for waste stabilisation ponds, funded by donor partners, amounted to only 15% in average of total investments over the study period. Public funds could also be allocated to this segment in a more significant manner, so as to relieve pressure on existing ponds, and reduce the distance that pit latrine emptiers need to travel to discharge the waste (and hence, reduce their costs, potentially improve their financial sustainability, and reduce costs for households).

**The role that DAWASA and DAWASCO could play in relation to on-site sanitation services may need to be revisited.** At present, there is a purely commercial relationship between latrine emptiers and DAWASCO when the former bring pit latrine waste to the waste stabilisation ponds. It appears that this commercial relationship has not always been an easy one, with disputes about rates. Involvement of local actors at all levels may be needed in order to improve the structure of the market for on-site sanitation.

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18 Conditional cash transfers (CCTs) have increasingly been used to transfer cash to poor families who commit to meet specific objectives, such as immunising 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 programmes first originated.

Finally, many other aspects of the effectiveness of public financing could be examined in more detail, including whether funds are adequately disbursed once allocated (an issue that has proved to be significant in India in the framework of the Total Sanitation Campaign for example) or whether the financing approach is sustainable and scalable.

## 5 Summary findings and overall lessons

This section draws out summary findings and key lessons from the study as a whole.

### 5.1 Summary findings

Table 5 summarises the achievements and the evaluation of the three very distinct case studies undertaken as part of this research.

Table 5: Summary comparison of case studies: Thailand, Bihar and Dar es Salaam

	Thailand	Bihar (TSC)	Dar es Salaam
<b>Outcomes</b>			
Improved coverage (%)	From 0 to 100% in 40 years.	Doubled in 10 years.	No change.
Impacts on public health and environment	Sharp reduction in diarrhoea.	Significant but not quantified.	Little impact on cholera outbreaks, contaminated groundwater.
<b>Public financing effectiveness</b>			
Comprehensiveness (balance and sequencing of investments)	Multi-pronged approach: demand promotion, supply-side activities, innovative financing (revolving funds) and targeted subsidies.	Multi-pronged approach: demand promotion and targeted subsidies for on-site sanitation.	Funding mostly for sewerage networks and sewage treatment. Lack of demand promotion. Lack of targeted subsidies for on-site sanitation.
Equity (reduction in coverage gap between rich and poor)	Focus on demonstration villages, not the poorest.	Pro-poor focus (subsidies for households below the poverty line) – although recent policy shift to include subsidies for those above the poverty line as well.	Regressive: focus on the most well-off (connected to sewerage). Lack of provision for urban poor.
Leveraging (mobilisation of private funds via public funding)	High	Limited	Not estimated

**The Thai case study stands out as a model of effective use of public funds to promote and support improvements in sanitation on a large scale.** Total coverage was achieved after 40 years of sustained public intervention, with a sharp reduction in mortality linked to diarrhoea. This occurred despite the fact that the country’s population more than doubled over the same period. This success was the result of a comprehensive programme that has provided sustained funding over a long period with careful sequencing of demand and supply side interventions and effective targeting of public subsidies to leverage private funding. Although not explicitly targeted at the poorest, Thai policies have reached

the most deprived by providing hardware subsidies when demand for improved sanitation had been established.

Such subsidies were first provided through revolving funds (applied in different ways, depending on local circumstances) and then through the provision of a ‘Sanitation Activity Package’, which consisted of mostly hardware funding for seven activities, including water supply storage, excreta disposal, solid waste management, wastewater treatment, food sanitation, vector control and household sanitation. Villages had flexibility for allocating those funds to the interventions or the recipients who needed them most. Such policies succeeded in leveraging substantial household investments in sanitation: the study estimated that each baht of public funds leveraged THB 17.4 of private funds from households.

The decade during which Thailand saw a surge of access to improved sanitation (from mid-1980s to mid-1990s) was a period of strong economic growth for the country, with an average rate of 8-9% growth per annum<sup>19</sup>. This is likely to have been a driving factor for sanitation improvements but it is important to note that other countries with similar growth rates have not achieved the same success. Equally important was the fact that a focus on sanitation was established at the highest level of government (through the King of Thailand) and was reflected at all levels of government, from the central government to the village or district officials, with the presence of informed and competent officers. The Thai Government was able to learn from previous results and to adapt the policy directions to changing circumstances, including a rapid coverage increase and rising prosperity.

**In Bihar, substantial public funding was allocated to sanitation under the Total Sanitation Campaign (TSC)**, with approximately INR 20 billion (USD 425.5 million) set aside for the TSC by 2006. This is equivalent to approximately USD 5 per rural habitant in Bihar (based on estimated 2006 population). The TSC achieved substantial results, as it supported the construction of 2.5 million latrines, of which one million were built by households below the poverty line. However, the results were not as high as expected and several areas of weakness in the allocation of public funds have been identified. However, only 20% of the amount initially allocated had been spent effectively by mid-2010, even though the TSC ended in 2012. Software budgets in particular were under-spent. Whereas software spending represented about 9% of funding allocated under the TSC, only 15% had been spent by mid-2010. As a result, although coverage did increase by 18% between 2006 and 2010, reaching 27.9% in mid-2010, it fell far short of the ambitious targets set by the TSC campaign, which was to achieve 78.2% coverage by that time.

Several factors, examined in the case study, can explain such low effectiveness in public spending, for example, the inability of staff at local government level to disburse funding for software. Under the TSC, sanitation policies aimed to provide subsidies to the poorest households, identified as being below the poverty line. However, short of a comprehensive programme addressing both the demand and supply side, the TSC failed to enshrine sustained behaviour change among households both below and above the poverty line. As a consequence, the leverage ratio (ie the amount of private investments generated through public spending) during the TSC remained persistently low for households below the poverty line while the ratio for households above the poverty line, at market prices, did not exceed 7.1. To put this figure into perspective, it must be compared to the leverage ratio reached in Thailand cited above (17.4). High leverage ratios could also be found in Vietnam during the Three Cities Sanitation Project, ranging from 13.4 to 25.3, as found in *Financing on-site sanitation for the poor* (Trémolet, Kolsky, and Perez, 2010) .

**In Dar es Salaam, the only case of urban sanitation reviewed in this series, limited public funding for urban sanitation has been made available, despite substantial budget being allocated to the water and sanitation sector as a whole.** In 2007, USD million 951 (USD 20.7 per capita) were provided under the Water Sector Development Programme (WSDP) for both water and sanitation components in urban and rural areas in Tanzania. However, the case study could reveal that only USD million 17.7 (or USD 0.34 per capita) had been spent, mostly on hardware activities, in Dar es Salaam on sanitation between 2009 and 2010.

<sup>19</sup> See [www.data.worldbank.org](http://www.data.worldbank.org)

In addition, the study reported a significant discrepancy between expenditure on on-site sanitation and expenditure on sewerage. Whilst only 10% of the population of Dar es Salaam is connected to sewerage networks, 99% of public funds were used to finance these networks and associated sewage treatment. While software activities are the only sanitation activities carried out by municipalities, the allocated budget appeared derisory in comparison to the scale of the sanitation challenge. In Temeke, one of Dar es Salaam's municipalities, municipal expenditure on sanitation only reached USD 152,000 (0.3% of the municipality's budget) between 2006 and 2009, equivalent to USD 0.16 per capita. Besides, most of this budget was absorbed by administrative costs rather than health promotion activities.

As a result of this concentration of public funds on sewerage network and the lack of funds made available for on-site sanitation activities, 70% of the city's population dispose of faecal sludge in the environment untreated, a practice that causes frequent cholera outbreaks in the city. The study found that building and maintaining on-site sanitation solutions is more expensive than being connected to the network, when those who are connected to the sewers live in the more well-off parts of the city. In addition, financing policies in Dar es Salaam proved regressive towards the urban poor: initial costs for the construction of improved latrines ranged from 11% to 14% of the average annual income (82% to 112% of income for those below poverty line) while initial costs for networked sanitation represented 5% of the annual average income (41% of below poverty line income).

## 5.2 Key overall lessons

In conclusion, we draw overall lessons for what governments can do to improve the effectiveness of public funding to sanitation and identify areas for future research.

### **What can governments do to improve the effectiveness of public spending to sanitation?**

**Allocate public funding to support development of underlying sector systems and processes: generating demand, supporting supply.** A key factor of the Thai story is its emphasis, from the very inception of sanitation programmes, on training and capacity building. Health officers in charge of implementing sanitation policies were trained and placed at all levels of government and in every village. With time, health officers were replaced by sanitation committees who carried out demand promotion activities in a way that was tailored to the village's need. To ensure supply, technical assistance was provided by the Ministry of Public Health to train artisans in building and marketing low-cost technologies and innovative partnerships were signed with sanitation hardware manufacturers (such as American Standard). In Bihar, the lack of appropriate training of officials in charge of sanitation, in particular the engineers responsible for budget allocation was evident and most probably explains the lack of funding for software support, a critical element of the sanitation value chain. The Thai case study is also an example of a rigorous monitoring and evaluation mechanism, which reported not only on latrines being built but also on their usage – unlike the monitoring system in place in Bihar, which placed a heavy emphasis on latrine construction.

**Ensure careful sequencing and appropriate balance between investments in software and hardware elements in the sanitation value chain.** The Thai Government invested heavily in software activities and provided hardware support only later on in its sanitation programmes, having built solid demand among households. In contrast, Bihar allocated over 90% of its sanitation budget to hardware subsidies as soon as the TSC was in place. This policy may explain why only 10% of the latrines that were built were actually used. In Dar es Salaam, hardware subsidies for on-site sanitation are non-existent as government policy places the responsibility for meeting hardware costs solely on households themselves. However, sanitation promotion activities amounted to 0.3% of Temeke municipality's budget, 90% of which was being absorbed by administrative costs. It seems a major shift in government policy regarding hardware subsidies is needed to meet the size of the sanitation challenge in Dar es Salaam. The cost of faecal sludge treatment, ie emptying or moving the latrines, which is required for 70% of Dar es Salaam's population, appears to be out of reach for most households, who end up flushing out the latrines on the street during the rainy season, a behaviour that has a significant impact on public health as the recurrent epidemics on cholera indicate.

**Adapt sanitation policies to address emerging challenges and ensure equity and sustainability.**

Thailand’s sanitation history makes the case for the ability to shift policy to adapt to circumstances. After demand had been established through software activities, and coverage had already reached 40%, the Thai Government policy shifted towards hardware subsidies, initially provided via revolving funds and then provided directly to the villages (as the Sanitation Activity Package) for them to allocate. This was combined with the launch of an honorary award in 1987, the ‘Golden Ring’, to incentivise provincial governors to compete to accomplish universal coverage in their area. This competition motivated governors to increase the budget for sanitation in their province and to mobilise additional resources from NGOs or private sources under their leadership. At that time, dedicated officers were assigned to design provincial plans and carefully monitor sanitation progress with a bottom-up approach. This evolving approach supported the achievement of full coverage in just under 40 years, in the context of solid economic growth.

In Dar es Salaam, the policy premise is that individual households are solely responsible for latrine construction and maintenance. However, hardware subsidies are clearly needed to support latrines upgrading and safe excreta treatment. These can take the form of infrastructure subsidies, where part of the cost of emptying full latrines are subsidised, and/or subsidies to small-scale operators, such as service providers for sludge management and transport of on-site sludge.

**Explore the potential of credit mechanisms to leverage household investment and enable cross subsidy at local level.** Hardware subsidies can also take the form of subsidised credit whereby public funding is directed to micro-finance institutions (MFIs) who then lend the money at low-interest rates to households for investment in sanitation. The Thai case study has brought to light the effectiveness of credit as a mechanism to leverage household investments. Part of the success of the revolving funds that were set up in villages in rural Thailand was that they were managed by local communities and could be tailored to local contexts. However, in some cases these functioned as mechanisms for allocating subsidised credit rather than as a revolving fund per se, which meant that the funds were not always revolved and the capital initially assigned was often quickly eroded.

Bihar’s GPs did attempt to work out support strategies for households who could not afford the upfront 20% payment required to obtain government ex-post subsidies for latrine construction. These strategies included procurement of material on credit and financial support from NGOs. But it turned out that many NGOs pulled out from the sanitation sector because of the large time lag between their expenses and actual reimbursement from local authorities. Micro-credit mechanisms can offer solutions only in the context of competent partners, together with good financial and administrative skills.

**Strengthen service providers and invest in rationalising management of the sanitation chain.** Thailand’s policy focus and clear hierarchical structure enabled a continuous focus on sanitation. In Bihar, NGOs are seen as key implementers but their financial situation was weakened by disbursement delays. In Dar es Salaam, informal service providers for sludge management and transport of on-site sludge receive no public support and have little influence over the Dar es Salaam Water and Sewerage Corporation (DAWASCO), the public operator of sewerage services in the city, to negotiate tipping charges and access conditions.

**Make sanitation a political priority and clearly define institutional responsibilities and accountability for progress.** Underpinning all these policies should be a strong will from governments to solve sanitation problems. In Thailand, sanitation policies were set by the Office of the Prime Minister, the Ministry of Health together with the Ministry of Interior to ensure thorough monitoring of the sanitation coverage. This commitment to improved access to sanitation, established at the highest level through the King of Thailand, was reflected at all levels of government, from central government to village or district officials with the presence of informed and competent officers. Such strong political will was almost absent in Dar es Salaam, whereas in Bihar, although the TSC provided substantial funding to solving sanitation issues, the government of Bihar failed to build sufficient capacity, relying on officers without the necessary knowledge, and did not set up thorough reviews of progress made.

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### **Future research needs: what else do we need to know in order to design such policies?**

**Financing to sanitation needs to be tracked in a more systematic manner.** Our present level of knowledge and understanding of financial flows to water and sanitation is very limited, due to the lack of reliable tracking systems. In comparison with the majority of countries, the information in Thailand and Bihar (in the context of the TSC) is fairly developed, but basic data were missing in order to draw definitive conclusions in terms of the relative effectiveness of alternative financing policies, such as on actual household spending or with respect to differences in public spending according to regions or types of villages. The situation in Dar es Salaam is more representative of a majority of countries (and cities within countries), where sanitation services come under the responsibility of local governments. In those cases, information tends to be very limited because it is difficult to obtain disaggregated data on municipal spending once funds have reached the level of municipal budgets.

Such a lack of information impedes the definition of effective public policies. By contrast, the health sector has developed much stronger financial tracking systems, leading to the preparation of National Health Accounts, which provide a sound basis for policy analysis and have helped the health sector in many countries to reallocate funds to where they are most needed. Based on these findings, WHO and UN-Water GLAAS released a Working Paper Tracking national financial flows into sanitation, hygiene and drinking water (Trémolet and Rama, 2012) in July 2012. This paper has provided the basis for the launch of the UN-Water GLAAS TrackFin initiative, which aims to define and test a globally accepted methodology to track financing to water, sanitation and hygiene at a national level, so as to improve our understanding of current expenditure in the sector and answer questions in terms of total expenditure or its allocation between services, type of expenditure or region. A guidance document has been developed that contains such proposed methodology and is being tested in three to four countries in 2013.

The methodology developed for the WaterAid study, and particularly as applied in the context of Dar es Salaam, provided an inspiration and a strong basis for the development of the TrackFin methodology, as it enabled defining an approach for measuring city-wide spending to sanitation coming from different sources and different financial channels (such as tariffs via the utility, public taxes via the municipal government or households' own expenditure). The WaterAid study also highlighted the need to evaluate financing flows against outcomes (in terms of increases in coverage or equity impacts) rather than in isolation.

It is hoped that once the UN-Water GLAAS TrackFin methodology is tested, improved and rolled-out, it will provide a sound basis for formulating sanitation policy decisions based more on evidence and less on first principles or ideology (particularly relative to how much households should pay for on-site sanitation).

**It is necessary to evaluate a larger number of public financing policies for sanitation, in a more systematic and more detailed manner.** Going forward, it will also be important to undertake additional research on the effectiveness of public finance for sanitation in a larger number of cases, even if such research is not conducted in the broader framework of the UN-Water GLAAS TrackFin initiative. This could entail conducting more such case studies at different geographical levels including tracking performance over time (as was done in Thailand) to assess the impact of shifts in public funding allocation and link that to impact. Researchers would need to track systematically where the funds are coming from (from which financial source and through which financing channel), and what they are being spent on (preferably by gathering cost data from service providers themselves).

Such assessments can be done with varying levels of rigour and research funding requirements. For example, relatively rapid assessments can be conducted to identify whether or not public authorities are delivering on their promises to increase funding to sanitation, by estimating the amounts of funding allocated. This type of research was conducted most recently by WaterAid in 2013. WSUP (Water and

Sanitation for the Urban Poor) has also initiated this type of research, to examine city-wide funding for sanitation in African cities and identify ways to increase such funding. In doing this, researchers could seek to apply the indicators of effectiveness used in the present study (comprehensiveness, equity and leveraging), with those that have been proposed but not used (such as absorption capacity and sustainability), or formulate additional criteria. Examining key barriers to absorption of funds (such as in the example of Bihar, where less than 20% of allocated funds had been spent just two years before the end of the TSC) would also be a key area for research.

In addition, it would also be important to conduct more detailed assessments (such as using randomised controlled trials) in order to evaluate over time or over different geographical areas the impact of differentiated financing strategies for sanitation.

**Finally, this research has pointed to the need for more detailed analysis of specific financing strategies that can be compared over a wide range of circumstances in order to assess their relevance and usefulness for the sanitation sector.** For example, in the case of Dar es Salaam, the very limited public funding for on-site sanitation combined with affordability constraints for households, means that it will be necessary to identify ways to help households invest in improved sanitation, particularly if the national policy targets are to be met. Until recently, microfinance has only been explored as a source of financing for sanitation to a limited extent. Recent research on the potential of microfinance to leverage household investment and support small-scale providers indicates that despite the challenges these financing channels could offer much-needed solutions to the lack of financial resources for households and entrepreneurs alike. Additional research is being conducted with support from WaterAid and SHARE on the use of microfinance in India as well as in Tanzania (where its use has remained so far limited).

## Annex 1: Summary of case studies

Key facts	Thailand – Rural sanitation
Study area	Country level
Study period	1960-1999
Population (total)	26.3 million in 1960 to 60.9 million in 2000.
Target groups	Rural population, starting with the most privileged who in turn could support those who lagged behind.
Coverage at the beginning of the period	6,513 (0.01% of the rural population)
Coverage at the end of the period	40,418,000 (99% of the rural population)
% annual increase over the study period	28% average growth over the entire period
Level of service	Mostly water-seal latrines, as promoted by the government, emptied manually by households.
Cost of service	1960s: 300; 70: 1,000 ; 80s: 2,500; 90s: 5,000 [nominal terms]
Per household average income (THB/month)	1960s: 728; 70s: 2,109; 80s: 5,096; 90s: 9,328 [in nominal terms]
Cost of service as % of yearly income	3.5 to 4.5%
Poverty threshold	N/A
Financing approach	
Main policies	Capacity building, solidarity, community empowerment, technology transfers, demand and supply promotion.
Source of funds	Government (Ministry of Public Health, Ministry of Interior) and households.
Software support	<ul style="list-style-type: none"> <li>• Activities include: capacity building and training, demand promotion by health officers and village volunteers, supply promotion through technical assistance, administrative support, monitoring and evaluation of programmes from bottom-up.</li> <li>• From 40% of total public funding under the 6<sup>th</sup> plan (1987-1991) to 20% under the 7<sup>th</sup> plan (1992-1996).</li> </ul>
Hardware support	<ul style="list-style-type: none"> <li>• 100% hardware subsidies were initially provided.</li> <li>• Starting in 1980, revolving funds established by the government at village level were the main tool for financing latrines. The initial capital outlay by the government was a demonstration budget to build 10 latrines in villages of 150-200 households.</li> <li>• Hardware support jumped from 14% in the 6<sup>th</sup> plan to 64% in the 7<sup>th</sup> plan.</li> </ul>

<b>Key facts</b>	<b>Thailand – Rural sanitation</b>
<b>Evaluation of effectiveness</b>	
Comprehensiveness	The main focus of sanitation services was on collection, as pits were often emptied in nearby dumps by households themselves, and waste water services were non-existent.
Equity	The government deliberately did not adopt a pro-poor approach, but rather focused its efforts on core villages with strong implementation potential. Only later would these villages transfer knowledge and funds to the poorest.
Leverage	<ul style="list-style-type: none"> <li>• Leverage ratio in Ayutthaya Province: 17.4</li> <li>• Value for Money ratio: for THB 1,000, three latrines built in 1960 and 60 in 1986.</li> </ul>
<b>Lessons learned</b>	
Key success factors	<ul style="list-style-type: none"> <li>• Capacity building: intensive training of project personnel and technical staff at local, regional and national levels.</li> <li>• Shift from an emphasis on software to hardware financing in order to reach the ‘hardest to reach’ once rural sanitation coverage had already reached 80%.</li> <li>• Social mobilisation and community health education conducted by mobile units and village volunteers.</li> <li>• Promotion of water-seal latrines, provision of supplies, equipment and transport, as well as government-allocated revolving funds for latrine construction.</li> <li>• Systematic qualitative and quantitative monitoring of progress and rewards for achievements.</li> <li>• Latrines as a residency requirement since 1987.</li> <li>• Research and development.</li> </ul>
Main challenges	<ul style="list-style-type: none"> <li>• Dealing with residual waste</li> </ul>

Key facts	Bihar, India – Total Sanitation Campaign
Study area	State level
Study period	2006-2010 with retrospective analysis over TSC period 1999 up to date
Population (rural only)	From 74.3 million in 2001 to 92 million in 2011 (census data).
Target groups	Households below the poverty line
Coverage at the beginning of the period	13.7% (1.9million households)
Coverage at the end of the period	27.9% (2.25 million households)
% increase over the study period	18%
Level of service	Strict requirements are a pre-condition for subsidies. They have evolved over time towards improved latrines: today, it is a two-pit latrine with chamber, five feet brick lining with door and roof.
Cost of service (INR)	<ul style="list-style-type: none"> <li>• Estimated costs considered in the TSC: 2006=800; 2007=1,500; 2008=2,200; 2009=2,500</li> <li>• Actual market prices: 2006: 1,200; 2007: 2,000; 2008: 3,000; 2009=5,000</li> </ul>
Per household monthly income (INR / month)	N/A
Poverty threshold (monthly income per household) (INR)	2,610
Financing approach	
Main policies	Total Sanitation Campaign (TSC) and in Bihar specifically LSY and Mahadalit Vikas.
Source of funds	The Government of India, the government of Bihar, households
Software support	<ul style="list-style-type: none"> <li>• Software supports include Information, Education and Communication (IEC), support for the rural sanitary marts and production centres, and associated start-up and administrative costs.</li> <li>• Software activities represent 8.8% of total financing for sanitation in Bihar with a cumulative expenditure of INR 355 million since the beginning of the TSC, ie USD 7.6 million. However, this represents only 14% of the total funds that had been allocated to the sector.</li> </ul>

<b>Key facts</b>	
<b>Bihar, India – Total Sanitation Campaign</b>	
Hardware support	<ul style="list-style-type: none"> <li>• It comes in the form of ex-post subsidies for latrines construction, provided that the technical requirements have been respected.</li> <li>• Funding comes for 60% from the Government of India, 20% from Bihar government and 20% from beneficiaries.</li> <li>• Total hardware support (public and private) within the TSC since 1999 amounts INR 2,791 million (USD 59.4 million). However, this represents only 19% of the total funds that had been allocated to the sector.</li> </ul>
<b>Evaluation of effectiveness</b>	
Comprehensiveness	Since 1999, software expenditures have made up 9% of the total project outlay and the remaining 91% has been devoted to subsidies for latrine construction. No public funding is spent on other parts of the value chain.
Equity	The TSC targets households below the poverty line specifically, making the approach pro-poor. In addition, the government of Bihar recently decided to provide additional funding to the lowest caste, the Mahadalits. However, a new programme by Government of Bihar will shift the focus to households above the poverty line to compensate for the slow progress in recent years, thereby blurring the poverty targeting principle at the heart of the TSC.
Leverage	<ul style="list-style-type: none"> <li>• Based on TSC guidelines = 0.2 for those below the poverty line and 2.8 for those above the poverty line (average over the four-year study period).</li> <li>• Based on market prices = 0.8 for those below the poverty line and 4.4 for those above the poverty line.</li> <li>• Value for money ratio: for USD 1000, 55 latrines constructed in 2006/07 to 27 in 2009/10.</li> </ul>
<b>Lessons learned</b>	
Key success factors	<ul style="list-style-type: none"> <li>• Availability of funds at national and state level.</li> <li>• Strong political framework, translated into hierarchical organisation within the State.</li> <li>• Improved latrines promoted.</li> </ul>
Main challenges	<ul style="list-style-type: none"> <li>• Absorption capacity, rather than financing availability, has been a constraining factor.</li> <li>• Slow disbursement of funds due to limited education and training on software at district level, heavy bureaucracy and a fragmented market of implementers (NGOs).</li> <li>• The sustainability of the latrines constructed remains questionable.</li> <li>• The TSC was planned to end in 2012.</li> <li>• Alternative financing tools have been underutilised (NGP awards) or unexplored (credit).</li> </ul>

Key facts	Dar es Salaam – Urban sanitation
Study area	Dar es Salaam, with a special focus on Temeke municipality.
Study period	2006 to 2010 3 years
Population	4 million in Dar es Salaam 920,000 in Temeke in 2006 with an annual growth rate of 4.6%.
Target groups	Public funding is not directed to the poor, but rather to those who are connected to a network.
Coverage at the beginning of the period	N/A
Coverage at the end of the period	<p>In 2008/09, coverage in Temeke (254,000 households) was 51%, as follows:</p> <ul style="list-style-type: none"> <li>• Flushed toilets: 5.8%</li> <li>• Traditional pit latrines: 45.2%, out of which 67% were actually functioning.</li> </ul>
% annual increase over the study period	N/A
Level of service	<ul style="list-style-type: none"> <li>• Collection: <ul style="list-style-type: none"> <li>Traditional pit latrine = 80%</li> <li>Flush toilets = 10%</li> <li>VIP latrines = 8%</li> </ul> </li> <li>• Emptying: Connected to sewerage network = 10% out of which 3% only is treated through stabilisation ponds while 7% is discharged into a sea outlet.</li> </ul>
Cost of service	<ul style="list-style-type: none"> <li>• On-site sanitation: the cost of constructing a sanitation facility depends on the materials used, but varies between USD 390 to USD 530.</li> <li>• Emptying services by ‘frogmen’ for basic latrines cost TZS 54,000 (USD 37) to TZS 200,000 (136 USD) a year and by tankers for improved latrines from TZS 60,000 (USD 41) to TZS 90,000 (USD 61).</li> <li>• Sewerage services: Pipe extension costs TZS 250,000 (USD 170) and connection charge TZS 26,000 (USD 18). Operating costs for a year are TZS 51,422 (USD 35).</li> </ul>
Per household average income (TZS/ month)	TZS 432,212 (USD 295)
Poverty threshold (TZS/month/ household)	TZS 56,000 (USD 38.2)
Financing approach	
Main policies	Sanitation is a cross-sectoral issue often related to water or health. On-site sanitation is viewed as a household responsibility and as such the limited public funding available is devoted to software activities only. Whilst network sanitation is mainly funded by the government and donors, it affects less than 10% of the population.

<b>Key facts</b>	
<b>Dar es Salaam – Urban sanitation</b>	
Source of funds	Ministry of Water and Irrigation, Ministry of Health and Social Welfare, Dar es Salaam, municipalities, households.
Software support	<ul style="list-style-type: none"> <li>• Software support includes hygiene promotion, demand promotion, project management and monitoring. Such activities are carried out by municipalities and NGOs, ie WaterAid or local organisations.</li> <li>• Total funds allocated by Temeke municipality to sanitation on average over the study period: TZS 85.1million, ie 0.3% of total budget of the municipality.</li> </ul>
Hardware support	<ul style="list-style-type: none"> <li>• On-site facilities are the responsibility of the households with no public funding available.</li> <li>• Network facilities are funded partly through tariff revenues to DAWASCO for their operation, and mostly by the government and donors for extension and rehabilitation of networks, including wastewater treatment services. Estimated investments for the three-year research period amount to TZS 29,430 million or USD 20million.</li> </ul>
<b>Evaluation of effectiveness</b>	
Comprehensiveness	<ul style="list-style-type: none"> <li>• Public financing has been poorly allocated across the value chain, with 99% of public funding allocated to 3% of the population benefiting from sewers and wastewater treatment.</li> <li>• For on-site sanitation, there is no funding for emptying services, which leads to substantial costs in terms of public health and the environment.</li> </ul>
Equity	<ul style="list-style-type: none"> <li>• Accessing on-site sanitation solutions is actually more expensive than being connected to the network.</li> <li>• The costs of accessing sanitation services weigh disproportionately on poor customers: construction of improved sanitation facilities is 82% of the poor's income, and 11% of the average income. The connection to networked sanitation would cost the poor 41% of their income while 5% of the average income.</li> </ul>
Leverage	N/A
<b>Lessons learned</b>	
Key success factors	<ul style="list-style-type: none"> <li>• Government and donors have committed to increase their focus on sanitation activities.</li> </ul>
Main challenges	<ul style="list-style-type: none"> <li>• Public financing has been poorly allocated across the value chain.</li> <li>• On-site sanitation services are not functioning adequately, which results in substantial costs in terms of public health and the environment.</li> <li>• Given that sanitation is a decentralised responsibility, sources of funding are extremely fragmented and do not include with training and guidance.</li> </ul>

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