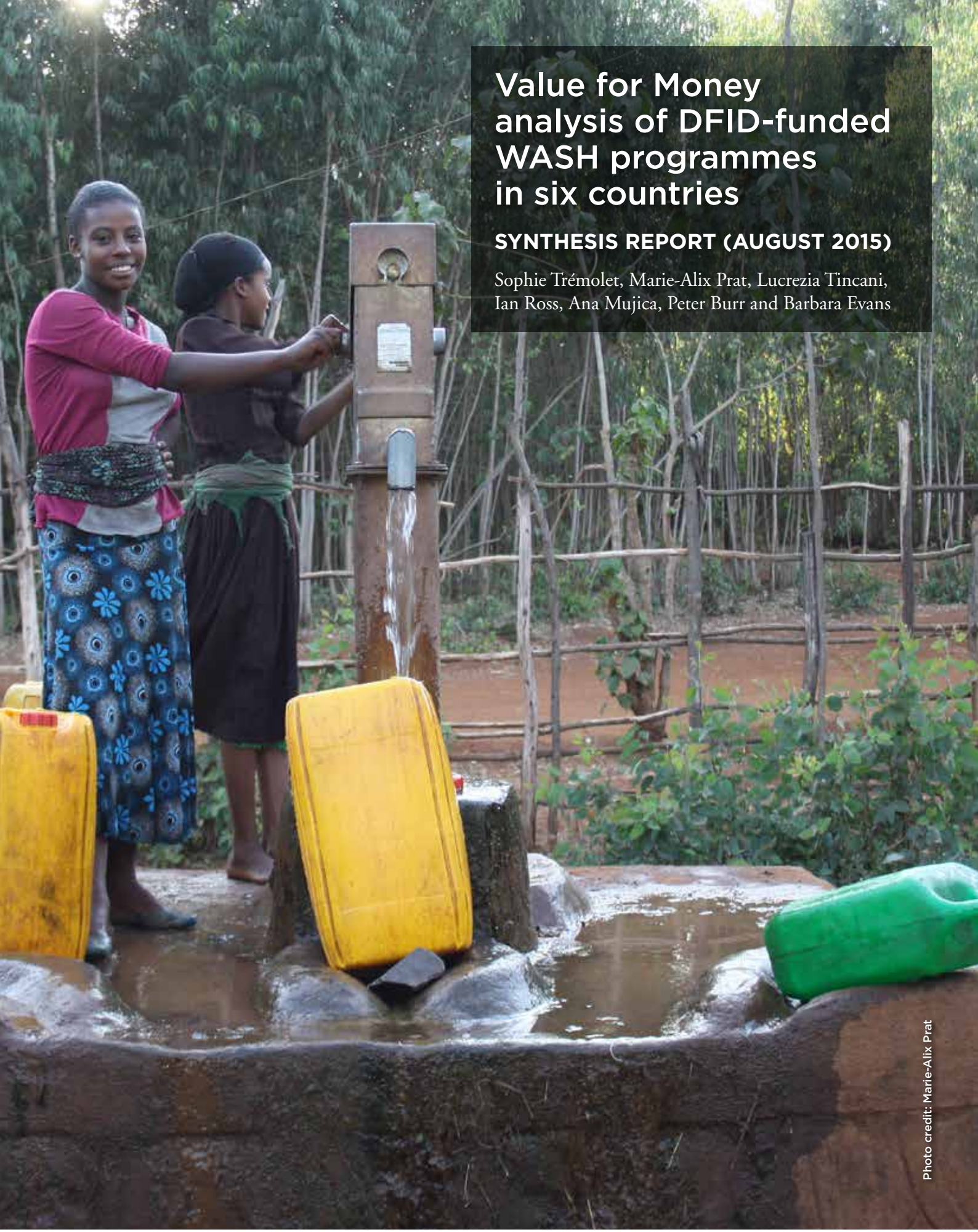

Value for Money analysis of DFID-funded WASH programmes in six countries

SYNTHESIS REPORT (AUGUST 2015)

Sophie Trémolet, Marie-Alix Prat, Lucrezia Tincani, Ian Ross, Ana Mujica, Peter Burr and Barbara Evans

Photo credit: Marie-Alix Prat

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VFM-WASH

Improving Value for Money and sustainability in WASH programmes

Abstract

This report presents summary findings from the Value for Money (VFM) analysis conducted for six DFID-funded programmes between September 2013 and April 2015. Based on these findings, the report formulates insights on how VFM analysis can be used to improve WASH programming. We identify challenges in doing such analysis and formulate recommendations to overcome these challenges to bring VFM analysis into the mainstream.

The VFM-WASH project

This report is an output of the VFM-WASH project, which stands for "Value for Money and Sustainability in WASH programmes". This was a two-year research project funded by DFID, conducting operational research into DFID's WASH programmes in six countries. A consortium of five organisations, led by OPM, has carried out the work. Research Partners are the University of Leeds, Trémolet Consulting, the London School of Hygiene and Tropical Medicine and Oxfam.

The project had two main objectives:

1. To identify how VFM and sustainability can be improved in DFID-funded WASH programmes through operational research in six countries (Bangladesh, Ethiopia, Mozambique, Nigeria, Pakistan and Zambia). In each of these countries, the project team conducted a VFM analysis of a DFID-funded WASH programme. Focus programmes were implemented by the country's government, by large organisations such as UNICEF or by small NGOs;
2. To assess the sustainability of rural WASH services in Africa and South Asia by carrying out nationally-representative household surveys in four countries (Bangladesh, Ethiopia, Mozambique and Pakistan), alongside gathering secondary data for a larger group of countries (e.g. existing surveys and Water Point Mapping initiatives).

See the project website for more information: http://vfm-wash.org

Acknowledgements

This analysis is based on work conducted between September 2013 and April 2015 by members of the VFM-WASH consortium. The research team included Sophie Trémolet and Marie-Alix Prat from Trémolet Consulting; Barbara Evans and Laura Bates from Leeds University; Ian Ross, Ana Mujica, Lucrezia Tincani and Peter Burr from OPM; Oliver Cumming, Jeroen Ensink, Adam Biran and Dr Joe Brown from LSHTM; Lara Sousa and Gaye Thompson from Nor Consult; and individual consultants including Dr Seifu Kebede, Dr Amal Halder of ICDDR-B; Yameen Memon, Dr Isaiah Oke and Dr Hikabasa Halwiindi.

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Table of Contents

List of Tables and Figures

List of Abbreviations

ARI	Acute respiratory infection
CATS	Community Approaches to Total Sanitation
CF	Common Fund
CHP	Community hygiene promoters
CLTS	Community-led total sanitation
DFID	UK Department for International Development
DNA	Direcção Nacional de Águas (National Water Directorate)
DPHE	Department of Public Health Engineering
FSM	Faecal sludge management
GIS	Geographic information system
HPBH	Handpump fitted boreholes
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
IDA	International Development Association
IPS	Indirect programme support
JMP	Joint Monitoring Programme
KAP	Knowledge, attitude and practice
LGA	Local Government Authority
M&E	Monitoring and evaluation
M2W	Mobile-to-web
MBH	Motorised boreholes
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MoLGH	Ministry of Local Government and Housing
MoFED	Ministry of Finance and Economic Development
NGO	Non-governmental organisation
NRWSSP	National Rural Water Supply and Sanitation Programme
O&M	Operation and maintenance
ODF	Open defecation free
PEC	Participação e Educação Comunitário (Community Participation and Education)
PRONASAR	Programa Nacional de Agua e Saneamento Rural (National Rural Water Supply and Sanitation Programme)
RPS	Rural piped schemes
S&H	Sanitation and hygiene

SHAWN	Sanitation, Hygiene & Water in Nigeria
SHEWA-B	Sanitation, Hygiene Education and Water Supply Programme in Bangladesh
SINAS	National Sector Information Management System
SLTS	School-led total sanitation
SSHE	School sanitation and hygiene education
SWSS	Small water supply systems
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
US$	United States dollars
VFM	Value for Money
VLOM	Village-level operation and maintenance
WASH	Water, sanitation and hygiene
WP	Water point
WSSP	Water Supply and Sanitation Programme
ZSHP	Zambia Sanitation and Hygiene Programme

1 Introduction

This synthesis report is one of the main outputs of the VFM-WASH project, which stands for "Value for Money and Sustainability in WASH programmes". Under this project, research activities were carried out in six countries where DFID has made significant investments in the WASH sector, including Bangladesh, Ethiopia, Mozambique, Nigeria, Pakistan and Zambia. VFM analysis was carried out in all six countries (what we refer to as "Objective 1") whereas surveys on the sustainability of WASH infrastructure at national level (referred to as "Objective 2") were completed in four of these countries (Bangladesh, Ethiopia, Mozambique and Pakistan).

This synthesis report presents the main findings from Objective 1 research, namely the VFM analysis of six DFID-funded WASH programmes.

1.1 What is Value for Money and Value for Money analysis?

The UK Department for International Development (DFID) defines Value for Money (VFM) as "maximising the impact of each pound spent to improve poor people's lives" (DFID, 2011). This echoes the UK National Audit Office's definition, which defines VFM as being "the optimal use of resources to achieve intended actual outcomes". A key element in both definitions is to make the best use of available resources to achieve sustainable development outcomes.

VFM can be measured on the basis of a set of standard indicators, which can help programme implementers (and their funders) assess whether or not their programmes are making the best use of available resources. Answering this question is not an easy task: it requires conducting a "VFM analysis", i.e. collecting and analysing data on the costs and results of the particular programme, interpreting the VFM indicators generated, and comparing them with those of other programmes. A qualitative assessment is needed to interpret the results from the VFM analysis, in order to better understand the context, the types of results and the processes by which these results were generated so as to be in a position to identify areas where changes in programme management could improve the overall performance of the programme.

A key objective of conducting a VFM analysis is to help managers improve programme performance. It can give programme managers useful metrics to quantify the effects of challenges they observe on the ground and identify the best interventions to address them, including by the reallocation of resources.

Conducting a VFM analysis is not necessarily about saving money and reducing unit costs: it is about maximising actual outcomes and impacts. Whilst the VFM of a programme could sometimes be improved by reducing the costs of certain inputs, greater and more sustainable actual outcomes can also be delivered by spending more on certain inputs.

VFM analysis should consider key contextual elements of the programme: it is essential to gather as much information as possible on the operating conditions of the programme, its operating modalities and approaches. VFM analysis should be considered as a tool to be added to the essential toolbox of programme managers and evaluators rather than being considered as a stand-alone piece of analysis that replaces other evaluation tools.

The output of a VFM analysis should therefore not be just a series of quantitative indicators: the exercise in itself (and the associated discipline of computing comparable metrics) must engage with programme stakeholders in order to deliver learning.

1.2 Research methodology

A research methodology was initially drafted and used to conduct the VFM analysis of programmes under review. It was further developed at the end of the research based on the experience of the team and reflected in a note entitled "How to do Value for Money analysis for WASH programmes" and available online at http://vfm-wash.org/category/publications.

In September 2013, the VFM-WASH project, jointly with DFID, identified focus countries and programmes interested to take part in the research, based on demand expressed by DFID country offices. The selection of programmes was designed to reflect a range of interventions across the WASH sector (covering water, sanitation and hygiene interventions at household level and in schools, mostly in development contexts but also to address humanitarian crises) and a spread of implementation arrangements (including through national programmes and government agencies, and international organisations such as UNICEF, and NGOs). Given the existing nature of DFID's WASH portfolio, the majority of the programmes under review are operating in rural areas, albeit some also operated in small towns.

The VFM analysis of DFID-funded programmes was carried out in a series of stages:

- From September 2013 to June 2014, the research team conducted country visits and gathered data on expenditure and results of programmes. It conducted interviews with programme staff and sector stakeholders to better understand the programmes, identify what data was available (and in what form), and collect relevant documentation and reports, including any programme evaluations.
- Interim reports based on preliminary results were presented to DFID and local partners between January and June 2014. These reports formulated recommendations to improve programme monitoring systems, particularly the tracking of inputs and results. They emphasised the need to strengthen tracking of outcomes over time, so as to provide a stronger basis for future VFM analysis. The reports also formulated programmatic recommendations for improving each programme's VFM. Given that the majority of the programmes under review were already completed or were well under way with established implementation arrangements, the capacity for these reports to make an impact on programme implementation modalities was limited. However, findings have influenced the design of future programmes, for example, in Bangladesh and indirectly in Ethiopia.
- From January to April 2015, the team conducted a second round of data collection in four countries to improve the level of detail of analysis, gather data for additional years or incorporate findings from Objective 2 surveys, particularly with respect to outcomes, given that outcome data was typically missing from standard monitoring systems. Additional research was conducted in Bangladesh, Ethiopia, Mozambique and Zambia.

  In all countries, comparator programmes were identified so as to be able to compare VFM indicators of DFID-funded programmes with those of similar programmes in the same country. Where those programmes were interested in taking part in the research, we collected similar data and applied the same methodology to compute VFM indicators. Data was collected from the UNICEF One Million Initiative (OMI) in Mozambique, Community-Led Accelerated WASH (COWASH) in Ethiopia and World Vision in Zambia.

1.3 Report structure

The present report is organised as follows:

- Section 2 briefly summarises the conceptual framework used to conduct the VFM analysis of WASH programmes in the VFM-WASH project;
- Section 3 provides an overview of the programmes analysed, based on a number of key descriptors (type of programme, location, years, budget, grant recipient, implementing partners etc.);
- Section 4 presents key results of the VFM analysis of the programmes under review by type of programme component (access to water, sanitation promotion, hygiene promotion, etc.). It draws out illustrative results based on the five key dimensions of VFM (economy, efficiency, cost-efficiency, effectiveness, cost-effectiveness);

- Section 5 reflects on the VFM-WASH project findings to extract key lessons on using VFM analysis to improve programme management. The main emphasis in terms of learning has been placed on how VFM analysis can be used at the level of specific programmes and later, once a substantial set of comparable data becomes available, to draw comparisons across programmes;
- Section 6 identifies the challenges that were met by the research team and formulates recommendations that aim to mainstream the use of VFM analysis in the WASH sector. They are targeted both at programme implementers (to help them improve data collection so as to facilitate VFM analysis) and at funders (to help promote a VFM culture within the sector).

In addition:

- Annex A includes a list of key references for this work.

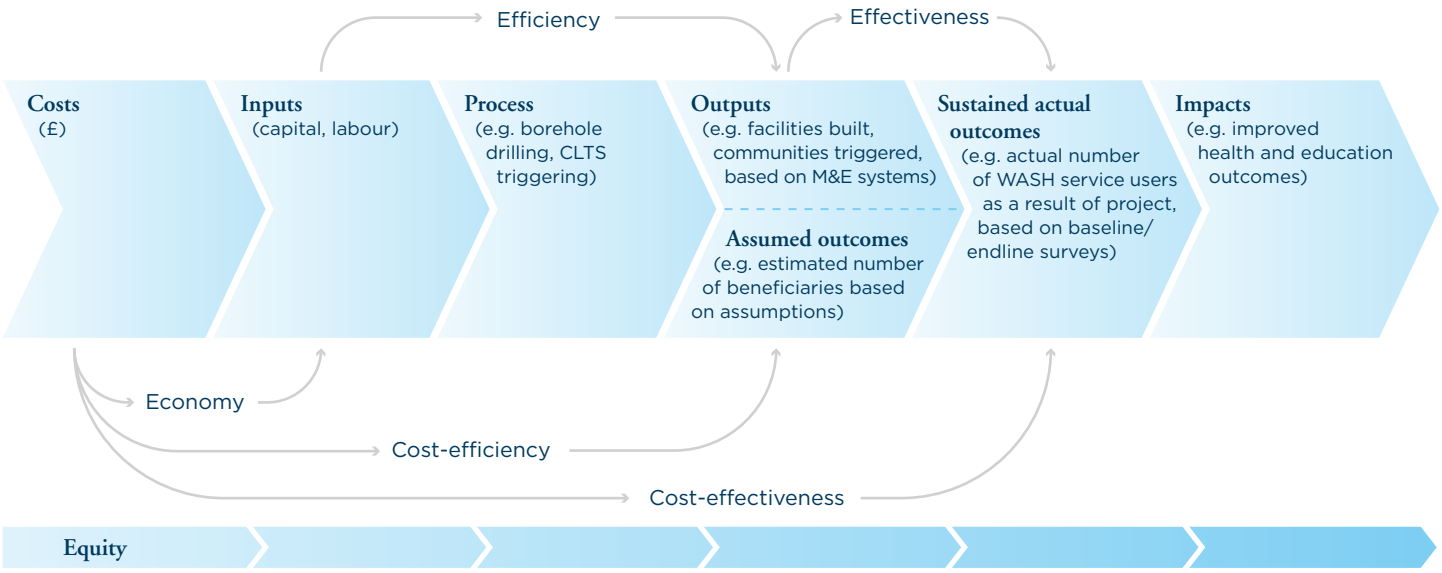
2 Framework for VFM analysis

The analysis follows the standard methodology set out in the note "How to do Value for Money analysis for WASH programmes" and available online at http://vfm-wash.org/category/publications.

2.1 Results chain and indicators

The VFM conceptual framework is based on a logical 'results chain', which explicitly sets out the results to be achieved by a given programme. Figure 1 below presents the main elements of this results chain and shows where the main dimensions of VFM can be measured.

Figure 1. The WASH results chain[1]



The results chain is composed of seven main elements:

1. **Costs** – the financial costs of inputs;
2. **Inputs** – the resources used, in terms of finance and staff time (capital and labour);
3. **Process** – the process by which inputs are transformed into results. Such processes can be the object of a programme evaluation (which would be useful as a source of qualitative assessment) but cannot be quantified through VFM analysis;

1 Based on a diagram from DFID's WASH portfolio review (2012), amended by authors based on experience in projects examined and on literature review of this work in practice.

4 **Outputs** – the direct deliverables of the programme (number of water and sanitation facilities built, number of activities implemented such as CLTS triggering, etc.);

5 **Assumed outcomes** – resulting from the outputs, e.g. the number of beneficiaries assumed to have gained access to WASH services as a result of the outputs of the programme's interventions. This can be based on existing standards and assumptions at country level, or based on lists of households;

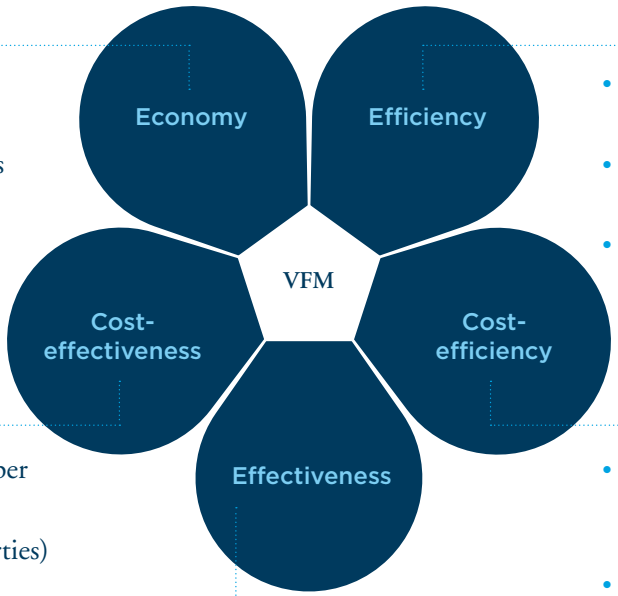
6 **Sustained actual outcomes** – i.e. the actual change in poor people's lives over time, such as the number of new people moving from using an unimproved water point to an improved one. The key difference with "assumed outcomes" is that "sustained actual outcomes" are measured based on household survey data before and after an intervention (e.g. 6, 12, 36 months after); i.e. based on the difference in key variables at baseline, endline and beyond. This captures the extent to which the outcomes have been achieved. Such data are only available if robust M&E and data collection frameworks are in place, which is seldom the case. Of the six programmes analysed by the VFM-WASH project, only the SHEWA-B project in Bangladesh had gathered data on actual outcomes that could be used for the VFM analysis. With more than one post-intervention survey, it would be possible to explore the extent to which outcomes have been sustained over time.

7 **Impacts** – the longer-term impact of the WASH programme, including the impact on health and education, e.g. reduced diarrhoea, increased school attendance, and on poverty reduction, which is the ultimate intended impact of DFID programming.

Figure 1 represents a chain of events through time, given that these different types of results would usually, but not always, take place sequentially. The causal links between these different types of results needs to be informed by evidence, however, as a sustained actual outcome (in terms of people actually using WASH services) or an impact in the programme area may be influenced by factors outside the programme.

Five key VFM dimensions can be analysed in the context of WASH programmes: economy, efficiency, cost-efficiency, effectiveness and cost-effectiveness. The analysis did not go beyond the outcome level as it was deemed too challenging to estimate the costs of reaching alternative impacts in the context of this project. Each of these dimensions is defined by a conceptual relationship between two of the elements in Figure 1, as shown by the arrows linking the different elements. Questions that need to be answered in order to characterise these five key dimensions are presented in Figure 2 below.

Figure 2. The five dimensions for assessing VFM of WASH programmes



- Unit costs of key inputs?
- Were inputs bought at the right quality and right price? Do costs match to budget and those of other organisations?
- Efficiency of procurement?

- How well have inputs been converted into outputs?
- Have planned outputs been achieved?
- If not, why not? What were key implementation challenges?

- What are the programme costs per actual beneficiary over time?
- What are overall costs (to all parties) per actual beneficiary?
- How cost-effective have been efforts to increase equity (e.g. reaching the poor)?

- How effective has the programme in converting outputs into sustained actual outcomes?
- Are the services from the programme sustainable over time?

- What are the costs per output (e.g. to build a water point, trigger one community)?
- What are equivalent costs per assumed beneficiary?
- How much funding was leveraged from other sources of finance?

Table 1. Definitions of the five dimensions for assessing VFM of WASH programmes

	Description	Examples of indicators
Economy	Economy relates to the price at which inputs are purchased (consultants, supply of goods, transport, training etc.). Assessing economy consists of evaluating whether the manager is buying inputs of the appropriate quality at the right price. Economy in procurement is important in WASH programmes where transport and goods can represent a high proportion of costs.	• Unit costs for key supplies • Staff costs for different staff categories
Efficiency	Efficiency relates to how well inputs are converted into a specific output, such as the construction of a water point, conducting a CLTS campaign, etc. The implementer exercises strong control over the quality and quantity of outputs that are produced.	% original targeted outputs achieved for budgeted amount % communities that have been declared ODF following CLTS 'triggering' Number of people living in communities that have been declared ODF following CLTS triggering
Effectiveness	Effectiveness relates to how well outputs from an intervention are converted into sustained actual outcomes. In contrast to outputs, the implementer does not exercise direct control over whether actual outcomes materialise and whether they can be sustained.	% of assumed outcomes translated into actual outcomes (i.e. assumed beneficiaries versus actual new users) % new users still using the service at a sustained service level after three years
Cost-efficiency	Cost-efficiency compares the costs of a WASH programme and the number of outputs and/or assumed outcomes reached. Cost efficiency would be expressed as cost per unit of output (or assumed outcome) generated.	Cost per output (cost per borehole, cost per CLTS triggering, etc.) Cost per assumed beneficiary (i.e. assumed outcome)
Cost-effectiveness	Cost-effectiveness is the cost of achieving intended programme actual outcomes (or impacts). This can be used to compare the costs of alternative ways of producing the same or similar outcomes.	Cost per actual beneficiary using sustainable WASH services (i.e. sustained actual outcome)

The main adjustments to the WASH results chain compared to the one that appeared in the DFID WASH portfolio review (2012) are as follows:

- **Distinguishing between assumed and actual outcomes:** Many organisations make assumptions about outcomes based on outputs. For example, they assume that a new borehole will serve 250 people. In practice, the new borehole might serve more or fewer people, depending on population density and how attractive the new facility is compared to the type of facility that people could access before. The distinction between assumed and actual outcomes was therefore introduced to reflect those factors. Actual outcomes can only be measured if robust M&E systems with ongoing data collection are in place. In particular, it is necessary to measure the number of new users who gain access to improved services that they did not have before. One way to express uncertainty resulting from a lack of data is to use ranges of estimates.
- **Taking sustainability and equity into consideration:** Sustainability and equity are considered as an additional layer of analysis that cuts across the main VFM dimensions. These can, however, be incorporated into a VFM analysis when enough data are available.

  The sustainability of programme results can be considered when measuring effectiveness and cost-effectiveness, as both are based on "sustained actual outcomes". Measuring sustained actual outcomes at different points in time will highlight the number of people who initially were using the WASH service (as measured through an endline survey after project completion), but later stopped using it for a variety of reasons (as measured by a second post-implementation survey some time later). The extent to which this captures longer-term sustainability depends on the timeframe for VFM analysis and on data availability. Ideally, such data would be gathered at least three years after the programme, to verify that results have effectively been sustained. However, the most likely scenario is that a VFM analysis will be done during the programme or shortly after it ends. This kind of VFM analysis cannot predict whether the service will be sustainable in the future, as this would depend on factors such as the extent and quality of associated software activities (capacity development/ training, etc.) and on ensuring that financing is available to undertake major repairs at a future date.

  Equity needs to be considered at several levels of the results chain, including at the level of inputs, outputs, outcomes and impacts. If sufficient data is available, this would mean conducting a standard VFM analysis for different groups. These groups can be defined in many ways, depending on how inequity manifests itself, i.e. through differences in income, gender or social groups (e.g. castes). In the present analysis, however, it was it was not possible to measure efficiency indicators across different social groups to consider equity as there was no sufficient data to do so.

  For example, at the level of outputs, an equity analysis would examine the extent to which the programme has targeted outputs to address priorities in terms of improving equity, such as reducing the urban/rural divide or reaching hard-to-reach areas. A thorough understanding of the challenges associated with reaching specific targeted groups is essential to enable appropriate analysis of VFM findings; costs may be higher if a programme specifically targets communities living in hard-to-reach areas but there may be very good reasons to spend more to address such inequities. In cost-efficiency terms, it might be more advantageous to work in these areas as existing levels of service would probably be lower and the number of beneficiaries per investment may therefore be higher.

2.2 Cost categories for VFM analysis

The VFM analysis included all expenditure that has contributed to achieving outputs and actual outcomes in a sustainable manner, including expenditure on relevant activities by actors outside the programme when they can be monetised (such as financial expenditure on staff costs, and contributions by governments or households).

It is more straightforward to assess the VFM of a donor programme based on programme costs alone, when these costs are allocated by programme components. From a donor's perspective, VFM analysis based on programme costs can be seen as more relevant, since it provides a direct assessment of the quantity of donor funds invested to achieve a given result.

However, in programmes that seek to leverage significant funding from other sources (including government funding and household contributions), these additional contributions need to be included in order to derive the total costs of achieving those results and to provide a basis for comparisons with other programmes.

Taking account of these other contributions also allows estimating a leverage ratio, the ratio of non-programme to programme costs (such as household contributions to programme costs). The leverage ratio can potentially be included in the VFM analysis as an indicator of cost-efficiency, as it measures the extent to which the programme has been able to leverage additional funding to achieve results.

In programme-level reports and section 4 below, we have clearly identified whether non-programme contributions were estimated and how they were included in the analysis.

For the purpose of the analysis, costs were categorised by types of inputs, distinguishing between hardware, direct software support and indirect programme support (IPS) costs. These cost categories are further defined in Table 2 below.

Table 2. Programme cost categories

Type of costs	Definitions
Direct hardware	Initial capital costs and associated construction costs to put new services in place. Hardware investments include activities such as drilling, installing pumps and pipe systems, building latrines, etc., the costs of equipment and labour costs, and the one-off associated 'software' costs for detailed design studies and construction supervision.
Direct software support	Direct support activities associated with community mobilisation related to the outputs: • CLTS campaigns; mobilisation, hygiene promotion • Support and training to service providers
Indirect programme support	Cost of planning and implementing the activities of the programme. This includes the salaries of experts and programme support staff, as well as consultancies contracts, M&E studies and audits, trainings of technicians and goods (IT, equipment, etc.). The costs of programme staff or consultants directly engaged with hardware installation or direct software support would be allocated in those categories. In some cases, this may mean estimating the proportion of staff time spent on such activities

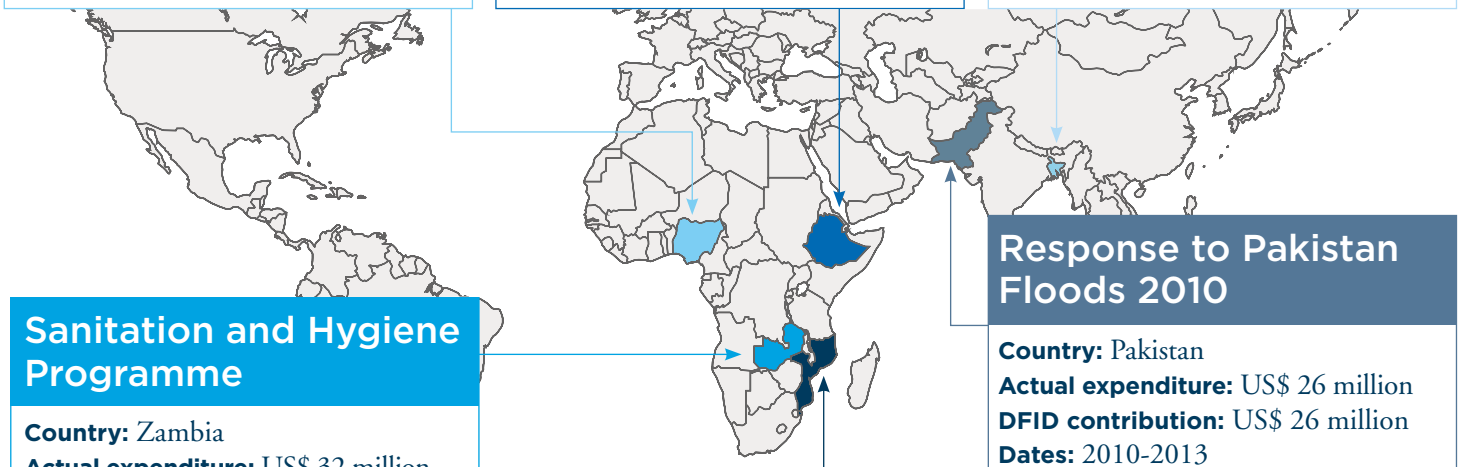
Source: Authors

3 Overview of programmes analysed

This section provides a brief overview of the programmes that have been analysed by the VFM-WASH project team, based on a number of key descriptors (type of programme, location, years, budget, grant recipient, implementing partners etc.).

A more detailed presentation of the results for each programme can be found in a series of briefs presenting summary findings from the analysis of each programme and in the full summary reports, all of which are available at www.vfm-wash.org. Figure 3 below maps the programme reviewed.

Figure 3. Overview of WASH programmes analysed [3]



SHAWN-I

Country: Nigeria
Actual expenditure: US$ 55.3 million
DFID contribution: US$ 45.7 million
Dates: 2012-2013
Scale: National – 4 states
Sector: Rural Water, Sanitation and Hygiene
Implementation: UNICEF

WSSP

Country: Ethiopia
Actual expenditure: US$ 198 million
DFID contribution: US$ 107 million
Dates: 2008-2013
Scale: National
Sector: Rural Water, Sanitation and Hygiene
Implementation: Gov. of Ethiopia

SHEWA-B

Country: Bangladesh
Actual expenditure: US$ 96 million
DFID contribution: US$ 72 million
Dates: 207-2013
Scale: National
Sector: Rural Water, Sanitation and Hygiene
Implementation: UNICEF

Sanitation and Hygiene Programme

Country: Zambia
Actual expenditure: US$ 32 million
DFID contribution: US$ 29 million
Dates: 2011-2016 (ongoing)
Scale: National
Sector: Rural Sanitation and Hygiene
Implementation: UNICEF

PRONASAR Common Fund

Country: Mozambique
Actual expenditure: US$ 65 million
DFID contribution: US$ 34 million
Dates: 2010-2015 (ongoing)
Scale: National – in 3 provinces
Sector: Rural Water and Sanitation
Implementation: Gov. of Mozambique (DNA)

Response to Pakistan Floods 2010

Country: Pakistan
Actual expenditure: US$ 26 million
DFID contribution: US$ 26 million
Dates: 2010-2013
Scale: National
Sector: Rural Water, Sanitation and Hygiene
Implementation: NGOs: Save the Children, Oxfam, Mercy Corps, Islamic Relief, Handicap International, CONCERN, CARE with local partners, RSPN

3.1 SHEWA-B – Bangladesh

Programme overview. The Sanitation, Hygiene Education and Water Supply in Bangladesh (SHEWA-B) programme was a collaboration between the Government of Bangladesh (GoB), DFID and UNICEF. It was implemented over six years from 2007 to 2013. Its goal was to reduce diarrhoeal disease and acute respiratory infection (the top two causes of post-natal under-five deaths

2 Funding figures represent actual expenditure for completed programmes and budgets in the case of ongoing programmes.

in Bangladesh. Thus SHEWA-B had a strong programmatic focus on sanitation and hygiene behaviour change. Additional components included the provision of arsenic-free drinking water, school WASH, support to national policy development, and strengthening sub-national planning processes and implementation capacity.[3] The programme targeted 60 rural upazilas (sub-districts) known to be at risk of arsenic contamination in groundwater and where poverty incidence was greater than 40%. It directly targeted 21.4 million people with hygiene promotion within the selected intervention areas, and indirectly targeted an additional 10 million people outside intervention areas, bringing the total number of targeted beneficiaries to 31.4 million.

The programme was implemented by UNICEF. Project support was channelled to GoB through the Department for Public Health Engineering (DPHE). Total programme expenditure was US$ 96 million, of which DFID contributed US$ 72 million, DPHE US$ 16.3 million in direct contributions plus US$ 2 million in staff costs, and UNICEF US$ 2.5 million. In addition, the programme leveraged US$ 66 million in household contributions.

The programme was implemented at a historic moment as Bangladesh moved from one phase of WASH development (increasing basic access) to another (improving levels of service, sustainability and equity). The programme was subject to an almost-unprecedented degree of monitoring and evaluation.[4] It included an impact evaluation conducted at the end of the programme in 2013, which included a detailed assessment of changes in hygiene behaviour in the programme areas.

Scope of the VFM analysis. The VFM analysis was carried out after the programme had formally ended in 2013 and covered the 6 years of implementation (2007-2013). The analysis was able to examine key cost-effectiveness indicators associated with implementation of SHEWA-B and use these to identify potential improvements in subsequent programming in rural water supply and sanitation in Bangladesh. Specifically the VFM team provided input to the design of a results framework for a new DFID-supported intervention implemented by UNICEF and the Government of Bangladesh.

3.2 WSSP – Ethiopia

Programme overview. The Water Supply and Sanitation Programme (WSSP) was a government-led programme to improve urban and rural WASH in Ethiopia. Phase 1 ran from 2004-2008 with US$ 116 million funding from the World Bank. Phase 2 was implemented between 2008 and 2013, funded by DFID with a contribution of US$ 107 million, through a trust fund arrangement with the World Bank. The latter provided an additional credit of US$ 80 million in 2010. Overall Phase 2 disbursed about US$ 198 million. In addition, the government contributed to staff and indirect programme support costs.

There were three components to WSSP, namely: i) Rural Water Supply and Sanitation, ii) Urban Water Supply and Sanitation and iii) Programme Support. The programme was designed to build the capacity of public and private stakeholders to plan, construct and maintain water supply and sanitation facilities. It aimed at building physical infrastructure such as hand-dug wells, boreholes, reticulated systems, and institutional and public latrines. The programme provided implementation support, including support for hygiene promotion. WSSP was operational in one third of woredas (districts) in Ethiopia, and provided access to improved water and sanitation to an estimated 5.1 million people in urban and rural areas.

The programme was implemented jointly by the Ministry of Water, Irrigation and Energy, the Ministry of Education and the Ministry of Health at national level and regional and woreda (i.e. district) governments at local level.

Scope of the VFM analysis. The VFM analysis was carried out after the programme had formally ended in 2013. It focused on the investments made under WSSP Phase 2 (i.e. between 2008 and 2013). It was not possible to separate DFID's specific contribution, because all funding was referred to as "IDA/DFID" and went through government systems to the woredas and towns.

3 VFM analysis of these components was conducted in the main report but results were not included in the synthesis as this was the only instance where this was done.

4 US$ 17 million was spent on a wide range of evaluation and monitoring studies

3.3 PRONASAR Common Fund (CF) – Mozambique

Programme overview. PRONASAR (National Water Supply and Sanitation Programme) is a government-led programme to improve rural WASH in Mozambique. This multi-annual multi-donor programme was established in 2009. Its initial objective was to provide access to improved water and sanitation facilities to 7.4 million rural inhabitants by 2015. The government of Mozambique (GoM) and development partners supported PRONASAR through two pillars. Pillar A supported specific programmes funded by different funders. Pillar B works through a Common Fund (CF) mechanism established in 2010 to pool funding from various donors.

The first phase of PRONASAR Common Fund was implemented by the government between January 2010 and March 2015. By the end of 2014, US$ 60.6 million had been disbursed by donors and the GoM to the PRONASAR CF from an initial budget of US$ 65 million. DFID was the main donor to the Common Fund contributing US$ 33.9 million.[5] In the first phase, the Common Fund aimed to improve the quality and increase the coverage and sustainability of WASH services by providing hardware and software support in 15 districts in three priority provinces (Maputo, Gaza and Zambezia) for the construction of water points, the construction and rehabilitation of small piped water schemes and sanitation promotion activities. The first phase of the programme aimed to improve access to water for 537,000 people and access to sanitation for 145,000 people. It also provided technical assistance and training in all of the other provinces. A second phase has been agreed in principle and planning is currently under way.

Scope of the VFM analysis. The VFM analysis was carried out while activities were still being implemented. It focused on investments made between 2011 and 2014 through the PRONASAR Common Fund (Pillar B). It was not possible to separate out DFID's specific contribution from other expenditure going through the Common Fund, as they are not separately tracked.

3.4 SHAWN – Nigeria

Programme overview. The Sanitation, Hygiene and Water in Nigeria (SHAWN) Programme is funded by DFID and implemented by UNICEF Nigeria. The first phase (referred to as SHAWN-I) ran from 2010 to 2013. It aimed to accelerate progress in latrine usage, adoption of improved handwashing practices and consumption of safe water for 2.3 million people. It had four main components: sanitation and hygiene promotion; water; deployment of resources at state and local government levels to enable scaling up state-wide access to WASH services; and capacity building of government staff. It initially covered 12 Local Government Authorities (LGAs), with eight more added in December 2011, making a total of 20 LGAs.

SHAWN-I disbursed about US$ 55.3 million between March 2010 and November 2013, of which US$ 45.7 million came from DFID. Co-funding came from UNICEF and the government of Nigeria. Programme funds were disbursed through UNICEF Nigeria but LGAs were in charge of implementation in an effort to increase the potential for sustainability and scale-up after the programme ends. The implementation of the second phase (referred as SHAWN-II) is currently under way (from August 2013 to November 2018) with a total budget of US$ 150 million).

Scope of the VFM analysis. The VFM analysis was carried out after the programme had formally ended in 2013. It covered the investments made during the whole duration of SHAWN-I (2010-2013) but it was not possible to track VFM variations between years. The VFM analysis focused on the first two components of the SHAWN-I programme: sanitation and hygiene on the one hand, and water on the other. The two other components were treated as indirect programme support.

5 Other contributors to the Common Fund have included the Government of Mozambique, the Dutch Government via its Embassy, the Swiss Agency for Development and Cooperation, UNICEF and the Austrian Development Agency.

3.5 Response to 2010 floods – Pakistan

Programme overview. In Pakistan, funding to address the humanitarian crisis following from the 2010 floods was analysed. Flooding started in July 2010 as a result of heavy monsoon rains in all four of the main provinces in Pakistan, and resulted in widespread inundation all along the main stem of the Indus River, and some of its tributaries. The floods affected more than 20 million people in an estimated 11,000 villages throughout Pakistan. Sindh province was hit especially hard.

DFID coordinated its WASH relief efforts by supporting nine different organisations that received a combined total of more than US$ 26 million to implement WASH emergency and recovery interventions in areas affected by floods. The type of intervention varied but included rehabilitation of water supply and sanitation infrastructure, provision of drinking water through tanker trucks and handpumps, construction of household and communal latrines, the distribution of hygiene kits and water treatment tablets, hygiene education and training of local staff.

Scope of the VFM analysis. The VFM analysis focused on activities undertaken between 2010 and 2012 in the Sindh province, which was a principal programme area for the DFID response. VFM data was collected and analysed for three NGOs active in the humanitarian response and working on WASH in Sindh, namely Care, Islamic Relief and Mercy Corps.

3.6 Zambia Sanitation and Hygiene Programme (ZSHP) – Zambia

Programme overview. The Zambia Sanitation and Hygiene Programme (ZSHP) is a programme funded by DFID and being implemented by UNICEF-Zambia between November 2011 and March 2016. It aims to accelerate progress in latrine use and improve handwashing practices by targeting 3 million people and 500,000 school children in 1,000 schools in 67 districts. The programme is a component of Zambia's National Rural Water Supply and Sanitation Programme (NRWSSP), and is complemented by additional investments in rural WASH by the Ministry of Local Government and Housing (MoLGH), the African Development Bank, and the Millennium Challenge Corporation, among other national and international organisations. The ZSHP is the largest programme of its kind in Zambia that focuses exclusively on rural sanitation and hygiene. The ZSHP encompasses several activities including (1) 'Community Approaches to Total Sanitation' (CATS), where community facilitators engage with people to end open defecation through sensitisation and collective action to build and use toilets; (2) institutional sanitation, through which appropriate sanitation facilities in schools are built, and a complementary hygiene promotion strategy and school-based management system are developed;[6] (3) a communication and hygiene promotion strategy, using both interpersonal communication and mass media; and (4) sanitation marketing.

The total programme budget is US$ 32 million, of which US$ 21 million have been spent up to the end of 2014. DFID is contributing a total of US$ 29 million over the life of the programme. For implementation, UNICEF has partnered with nine NGOs (Afya Mzuri, Akros, CIDRZ, Plan International, SNV, Varen, Village Water, WaterAid and World Vision), which act as facilitators at the district level.

Scope of the VFM analysis. The VFM analysis was carried out while the programme was still being implemented. It covers the period from 2012 to 2014 and focusses on CATS and institutional sanitation, as these are the main programme components.[7]

6 Sanitation facilities for schools are gender-segregated (with a ratio of 50 children per latrine) and have a handwashing facility nearby (with water and cleansing agents available) that allow more than one child to wash their hands at the same time. At least one sanitation facility is also equipped with hand bars for disabled children.

7 The institutional sanitation component also covers the first half of 2015.

4 Summary of key findings from the VFM analysis

This section presents key results of the VFM analysis of the programmes under review, presented by type of programme component (access to water, sanitation promotion, hygiene promotion, etc.). It draws out illustrative results based on the five key dimensions of VFM (economy, efficiency, cost-efficiency, effectiveness and cost-effectiveness).

The purpose of this section is to illustrate the type of information that has emerged from the analysis conducted during the project and to set out how such findings can be relevant for programme managers and funders. This section is based on detailed analysis done at country level, which has been captured in programme-level reports available at www.vfm-wash.org. Sections 4 and 5 go further in extracting learning points from the project, particularly in terms of how VFM analysis can support management decisions (Section 4) and what the implications are in terms of improving the functioning of monitoring systems (Section 5).

Results are presented here by main programmatic components (i.e. water, sanitation, hygiene promotion and WASH in schools) so as to facilitate understanding within a particular area of activity. However, there are important interactions between components in most programmes which also need to be taken into consideration when looking at the results and seeking to assess the VFM of an overall programme. Some expenditure, such as social mobilisation, often contributes to both water and sanitation and/or sanitation and hygiene components.

VFM indicators calculated for each programme are presented at the beginning of each section. They are not intended to be compared across countries for a number of reasons: they were calculated for different years, outputs may not be exactly identical and costs vary according to location and to the programme implementation status.[8] Such comparisons are more relevant when they are carried out within the same country (comparisons between programme modalities and implementers) or within the same programme across the years. However, international comparisons can be drawn in terms of efficiency, effectiveness or in terms of cost breakdown between international programmes. In order to allow comparability across countries, VFM indicators were calculated using the actual expenditure associated with each result in local currency. These figures were then converted into US$ using official exchange rates from the World Bank database.[9]

4.1 Water supply at household level

Five programmes conducted activities related to the provision of water supply at household level. By contrast, the ZSHP in Zambia focused exclusively on sanitation and hygiene.

These activities mostly consisted of constructing or rehabilitating water points, mainly in rural areas. PRONASAR CF in Mozambique also built small piped schemes in small towns and WSSP in Ethiopia built water supply systems in small, medium and large sized towns. In the majority of cases, the programmes funded public water points, except in the case of Bangladesh, where households also invested in private water supply solutions following social mobilisation activities funded by the programme.

Water services were provided through a variety of technological solutions, including:

- Springs and hand-dug wells,
- Shallow and deep tubewells or boreholes fitted with handpumps or motorised pumps, and

8 The summary tables of VFM indicators do not present the nuanced detail and analysis underlying these figures, for reasons of space. The detail can be seen in the full country reports which are available at www.vfm-wash.org. Variation in data availability and quality means that indicators are not usually directly comparable between countries.

9 For annual cost per result indicators, yearly exchange rates were used. For average cost per result indicators over several years, the average of annual exchange rates over the same years was used.

- Piped network systems (the latter are referred to as Small Water Supply Systems (SWSS) in Mozambique and rural piped schemes (RPS) in Ethiopia).

These investments were carried out in a range of hydrogeological contexts, including deep and shallow groundwater, and with a range of water quality constraints, including the presence of arsenic in groundwater supplies in Bangladesh.

Table 3 below presents in more detail the main characteristics of the water activities for each of the programmes under review.

Table 3. Water supply activities – programmes' characteristics

	Bangladesh	Ethiopia	Mozambique	Nigeria	Pakistan
	SHEWA-B	WSSP	PRONASAR CF	SHAWN-I	Response to 2010 Floods
Activities	• Social mobilisation and promotion of household investment in arsenic-safe water points • Construction and rehabilitation of public water points	• Construction of public water points in rural areas and support to urban water systems • Training of Woreda Water Teams etc.	• Construction of public water points • Construction and rehabilitation of small piped water schemes	• Construction and rehabilitation of public water points • Village-Level Operation and Maintenance system (VLOM)	• Construction of public water points • Water trucking to displaced peoples • Distribution of Aqua tabs
Type of water infrastructure constructed	• Public water points: mainly deep tubewells but also pond sand filters and piped systems • Private water points: mainly shallow tubewells	• A wide range of rural schemes (including few rural piped schemes) • Small-town water supply systems	• Public water points (mainly HPBH) • Piped SWSS with individual connections and public standpipes	Public water points –handpump fitted boreholes (HPBH) and motorised boreholes (MBH)	• Public water points – boreholes and handpumps
Average number of users per output constructed	• Deep tubewells 96 (assumed), 104 (actual) • Shallow tubewells 4.5 (assumed)	• Springs: 350 (assumed) • Hand-dug wells; 270 (assumed) • Shallow drilled wells: 500 (assumed)	• Water points: 300 (assumed) • SWSS: 6,173 (actual)	• Water points: 47-779 (assumed – derived based on the actual number of persons living in the community)	• Water points 81 – 96 (actual)
Hydrogeological context	• Groundwater and surface water abundant but arsenic contamination is a risk in shallow aquifers.	• Large variation, with groundwater occurrence extremely spatially variable and seasonal surface water flows	• Various, but mostly arid and high reliance on groundwater	• Variable groundwater depth and seasonal surface water flows	• Highly seasonal surface water flows; saline ground water in coastal areas
Implementer	• DPHE (public tubewells) • Local NGOs (social mobilisation)	• Regional and woreda (district) governments	• Provinces with districts	• UNICEF, private contractors, LGA WASH departments	• Care, Islamic Relief, Mercy Corps
Sources of funding*	• ***Programme, government (staff time) and households (direct investment)***	• ***Programme,*** government (staff time and IPS) and household contributions (in kind)	• ***Programme,*** government (staff time)	• ***Programme, government (counterpart funding),*** and household contributions	• ***Programme only***

* ***Bold highlights*** show expenditure that has been disaggregated and included in VFM analysis.

Table 4 below presents the main VFM indicators calculated for water supply activities.

Table 4. Summary of VFM indicators for water supply activities

	Bangladesh SHEWA-B	Ethiopia WSSP	Mozambique PRONASAR CF	Nigeria SHAWN-I	Pakistan Response to 2012 Floods
	2008-2014	2008-2013	2012-2014	2010-2013	2010-2011
Efficiency					
Water points constructed: actual vs targets	100%	100%	81%	–	96%–102%
Cost-efficiency					
Total cost per new public water point*	**US$ 1,223**	–	**US$ 23,755**	**US$ 7,989**	**US$ 184–601***
Hardware cost	US$ 993 (81%)	–	US $14,606 (61%)	US$ 5,264 (66%)	US$ 135–434 (~73%)
Software cost	US$ 230 (19%)	–	US$ 1,582 (7%)	US $58 (1%)	
Indirect programme support		–	US$ 7,567 (32%)	US$ 2,667 (33%)	US$ 49–168 (~17%)
Total cost per new private water point	**US$ 126**	–	–	–	–
Hardware cost	–	–	–	–	–
Software cost	US$ 108 (86%)	–	–	–	–
Indirect programme support	US$ 20 (14%)	–	–	–	–
Total cost per person who gained access to a new public water point (Programme cost only)	**US$ 21**	**US$ 27**	**US$ 79**	**US$31**	**US$ 4–6**
Hardware cost	US$ 16 (76%)	US$ 25 (93%)	US $49 (61%)	US$ 19 (62%)	US$ 3–4 (~73%)
Software cost	US$ 2 (10%)		US $5 (7%)		
Indirect programme support	US$ 3 (14%)	US$ 3 (7%)	US$ 25 (32%)	US$ 12 (38%)	US$ 2–3 (~17%)
Total cost per person who gained access to a new public water point (including household contribution)	**US$ 33**	–	–	–	–
Total cost per person who gained access to a new private arsenic- safe water point (programme cost only)	**US$ 29–136****	–	–	–	–
Total cost per person who gained access to a new private arsenic- safe water point (including household contribution)cost per person	**US$ 80–380****	–	–	–	–
Total cost per person who gained access to a new arsenic safe water point (both public and private, programme cost only)	**US$ 22–26****	–	–	–	–
Cost-effectiveness (actual average costs paid)					
Total cost per person who gained access to a water point (both public and private) and uses it (Programme cost only)	**US$ 27–32**	–	**US$ 132**	–	–
Hardware cost	US$ 15–18 (76%)		–		
Software cost	US$ 8–9 (12%)				
Indirect programme support	US$ 4–53 (12%)				

(*) The types of public water points varied widely, ranging from tubewells/boreholes in Mozambique and Nigeria and a range of technologies including a few piped schemes in Bangladesh and Ethiopia.

(**) Due to uncertainty about the prevalence of arsenic in private water points, the costs per person gaining access to arsenic-safe water can only be expressed as a range.

4.1.1 Economy

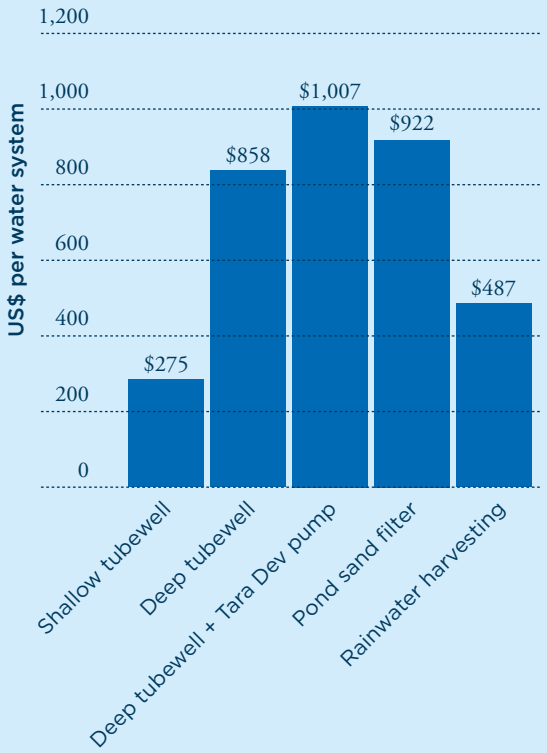
For water supply, "economy" assesses whether inputs, including physical supplies for water point construction (e.g. cement or handpumps) and staff inputs, were purchased at the appropriate quality and at the right price. However, only two programmes – both implemented by UNICEF – comprehensively monitored the costs of water construction contracts: namely SHAWN-I in Nigeria and SHEWA-B in Bangladesh, as outlined in Box 1 and Box 2 below. For the remaining three programmes, qualitative information was used to assess the economy dimension of VFM at the level of input costs. For example, in Ethiopia, we found that there was high inflation during the programme (23% on average annually), causing dramatic increases in construction and labour costs and requiring an additional IDA credit in 2010, but no qualitative data was available to assess the specific impact on programme costs.

Whilst installing a handpump-fitted borehole (HPBH) appears roughly twice as expensive in Nigeria than in Bangladesh, it is important to note that these figures are taken from different contexts. Handpumps are cheaper in Bangladesh as they are manufactured locally, whereas in most African countries they are imported.

Box 1. Cost of water point construction contracts in Bangladesh (SHEWA-B)

The cost of developing water points is strongly driven by external factors, relating to hydrological and hydrogeological conditions that affected the choice of the technology. In Bangladesh, contamination of shallow aquifers with arsenic is a major concern. The prolonged ingestion of arsenic, even in very small quantities, results in serious health outcomes ranging from skin lesions to cancers. The incidence of arsenic however is unpredictable and varies with time and hydrogeological factors. In some areas, arsenic-safe water can be reliably produced from deep aquifers. As shown in the figure on the right, the exploitation of deep aquifers is more expensive than for shallow aquifers due to the increased costs of drilling and more expensive pumps being needed to raise water to the surface. Cost also varies depending on geological conditions, which drive the costs of drilling. Where deep aquifers cannot be exploited, surface water systems must be used. In a small number of locations, small water networks using surface sources are the best option. This means that the unit capital costs of public water points vary widely.

Figure 4. Average unit capital costs of water points technologies: SHEWA-B Water Points[10]



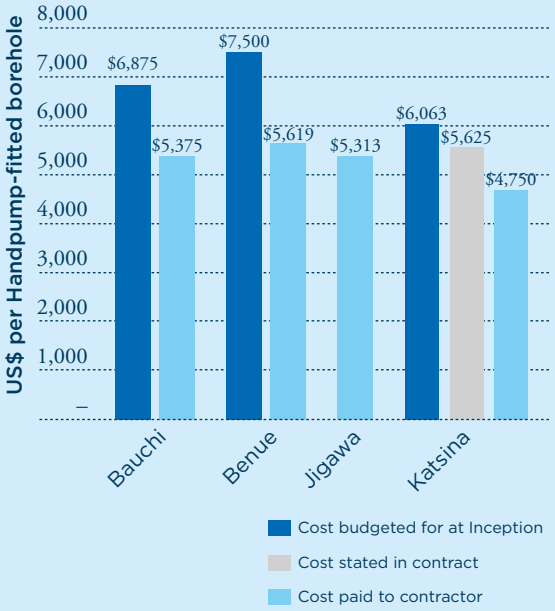
10 Data source: WaterAid/HDRC unit costs report was for the ASEH project (Advancing Sustainable Environmental Health), from 2003 to 2009. The average hardware costs of SHEWA-B water points per technology have been calculated by HDRC as part of the VFM study prepared for SHEWA-B. These data were assembled by assessing financial records.

Box 2. Costs of water point construction contracts in Nigeria (SHAWN-I)

SHAWN-I monitored the total costs of water point drilling based on construction contracts (but did not monitor the costs of specific inputs, such as cement, etc.).

The figure on the right shows that **actual costs were consistently lower than budgeted,** due to competition between multiple qualified contractors at bidding stage. In addition, costs stated in contracts were sometimes higher than those paid, because water points did not need to be drilled as deep as planned. Costs varied slightly between regions, due to differences in drilling depths, but they were still comparable to other organisations active in the water sector in Nigeria. WaterAid cited US$ 5,690 for hardware costs of HPBH construction, compared to US$ 5,264 for the average contractor under SHAWN (WaterAid, *personal communication*, January 2014).

Figure 5. Budgeted and actual costs for Handpump-fitted borehole (HPBH) construction for SHAWN-I – by regions



4.1.2 Efficiency and cost-efficiency

Efficiency. Assuming that plans and budgets have been appropriately drawn up (i.e. that they reflect realistic and sufficiently ambitious objectives) and expenditure is in line with budgets, meeting planned targets can be used as a proxy indicator of efficiency. In four out of five programmes with a water component, data on the number of water points planned and constructed was available. The realisation rate for water point construction ranged between 80% and 100%, with programmes in Ethiopia and Pakistan performing well (around 100%) and Mozambique less well (81%). Variations in achievement rates were affected by several factors:

- **Contracting and funding delays** – In Mozambique, disbursement of funds to PRONASAR CF has been unpredictable, slow and often late. This led to delays in the contracting of construction companies and thus in output realisation. In Nigeria, delays in contracting resulted from delays in securing government counterpart funding. In Ethiopia, implementers received budget allocations late from higher levels of administration (regions from MoFED and woredas from regions), which resulted in procurement delays and a mismatch between funding availability and appropriate timing for construction. Budgets were received just before the rainy season, when water points cannot be constructed.
- **Changes in pre-conditions for water provision** – In Nigeria, realisation rates for water point construction were initially low because water points could only be constructed in ODF villages (and achieving ODF status can take time). When this pre-condition was lifted half way through the programme, the number of water points constructed per year increased. Whereas no water points had been constructed prior to January 2012, 627 water points had been constructed by September 2012 and 3,808 by December 2013.
- **Technical drilling issues** – In Mozambique, the realisation rate for water points dropped to 73% in 2013 but improved over time (81% on average throughout the life of the programme). Technical difficulties were encountered with drilling, due to complex hydrogeological conditions, which required a change in technology.
- **Hydrological factors** – In Bangladesh, the main driver for efficiency was the extent to which new tubewells yielded water that met the required standards for arsenic contamination. In the case of public tubewells, the rate of arsenic contamination was low (0.3% of contaminated tubewells) in

part because public tubewells can be drilled to deeper depths where the aquifer is less affected by arsenic. There was some uncertainty about the prevalence of arsenic in private tubewells constructed by the programme, which means that efficiency rates could only be estimated within a range between lower- and upper-bound estimates for rates of arsenic using data on arsenic contamination from a survey in SHEWA-B communities (between 0.3% and 79%).

- **Other external factors** – In Mozambique, flooding of the Zambezi River and political turmoil in 2013 affected delivery of outputs. The realisation rate of water point construction dropped from 77% in 2012 to 72% in 2013, but then increased to 93% in 2014.

Cost-efficiency. The average total cost for providing access to a new public water point, over the life of each programme, ranged between US$ 4-6 per person in Pakistan to US$ 79 per person in Mozambique for a range of water point technologies and it averaged US$ 194 per person gaining access to a small piped scheme in Mozambique. These costs included the costs of construction contracts, supervision contracts, community mobilisation and indirect programme support (IPS). Yet, it is important to note that it was not possible to include all IPS costs for all programmes (in particular, it was difficult to precisely estimate the value of IPS costs borne by the government). Thus, IPS is likely to be under-estimated in Ethiopia and Mozambique, but to be overestimated in Nigeria. Values also include households' contributions for Bangladesh, but not for Nigeria, Mozambique and Ethiopia as the latter could not be estimated in those cases (often because in-kind or cash contributions recommended by the programmes could not be monitored and probably were not made in reality, or were only made to cover O&M costs, as in Ethiopia and Mozambique).

It is important to note that cost-efficiency indicators are not intended to be directly compared between programmes, as costs vary depending on the type of technology, hydrological and socio-political context, as explained in the section above on economy.

The cost per person who gained access to a new water point can greatly vary depending on the method used for evaluating the number of users per water point. It was only in Bangladesh and Pakistan that beneficiary numbers were based on household survey data from baseline and endline surveys, whereas in Ethiopia, Mozambique and Nigeria the number of users per water point was assumed based on infrastructure types or the number of people living in a service area. If assumptions regarding the number of beneficiaries per water point change, as happened in Mozambique and Nigeria during the life of the programmes under review, this can drastically improve or worsen the cost-efficiency per person over time, without any real change in actual service levels.

The cost-efficiency of building water points is affected by contracting conditions. In Nigeria, Ethiopia, Bangladesh and Mozambique a performance-based contract was used that specified that contractors were only paid when a tubewell/borehole yields water (i.e. the contractor hits the aquifer). This arrangement may have resulted in an efficient translation of inputs into outputs. However, the impact on cost of water points cannot be assessed as the additional expenditure for drilling unsuccessful tubewell/borehole would be borne by the contractors rather than the programme, but would likely result in higher prices per tubewell/borehole as contractors build in the risk. Alternatively, the contractor could be paid when the water point continues to yield water over time.

Collecting annual cost efficiency data for a specific programme allows monitoring of VFM trends overtime. It was only in Mozambique that sufficient data was available to estimate annual cost-efficiency indicators and therefore, track variations in cost-efficiency.[13] Here, we found that the cost per person decreased over time (see Box 3 over the page). These figures make a strong case for demonstrating the improvements of PRONASAR CF's performance over time.

11 This is because in Nigeria it was not possible to attribute general capacity building initiatives to specific components and therefore, to exclude IPS costs that should have been allocated to activities out of the scope of VFM analysis.

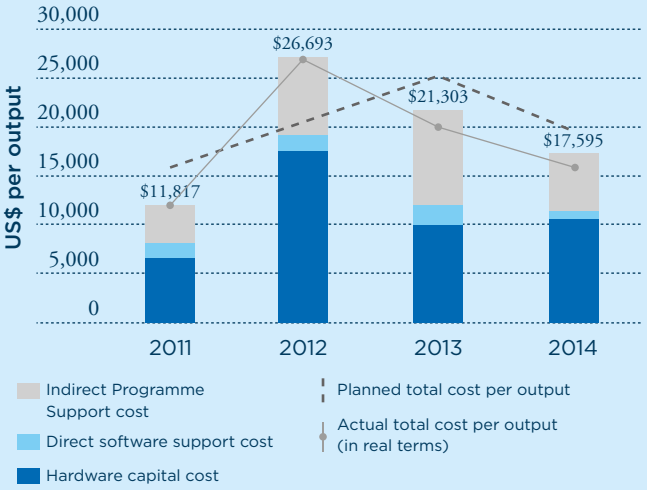
12 In Nigeria, households were required to match 3-5% of donor funding for hardware costs and were encouraged to put aside 2.5% of hardware costs as a fund for operation and maintenance (O&M) – though data was not available on how much of this was secured.

13 Annual data was also available for Ethiopia, but it was not possible to draw conclusions from it because the allocation of outputs to specific years was not accurate in the monitoring system. Costs in year t might have been related to outputs in year t+1, for example.

Box 3. Annual variations in cost per water point for PRONASAR CF – Mozambique

The analysis found that the average cost per water point constructed (estimated over a one-year period) decreased by 35% between 2012 and 2014, mainly due to a reduction in the cost of hardware.[14] This could be explained by improvements in procurement performance, a change in the characteristics of outputs (depth of boreholes) or by use of lower cost technology.

Figure 6. Cost per water point for PRONASAR CF



Source: Estimates by authors from PRONASAR PIA and Relatorio Balanço data for 2012 to 2014

4.1.3 Effectiveness and cost-effectiveness

Effectiveness and cost-effectiveness assess how water point construction translates into people having sustained access to water and actually using the water source. A key difference with measuring efficiency and cost-efficiency is that these indicators take account of the actual number of people using a facility, preferably after a few years of service, as opposed to an assumed number of people at the time of construction. However, getting these numbers requires having access to robust monitoring data. Only the SHEWA-B programme in Bangladesh collected data on the actual number of beneficiaries using water points at the end of the programme.

Effectiveness of water point construction can be affected by a number of factors:

- Water points continuing to function overtime, which depends on adequate maintenance (including spare part availability) and hydrological factors (affecting water availability and quality);
- Water points being effectively used by local users over time.

Effectiveness needs to be monitored in terms of marginal changes over baseline conditions. In Bangladesh, baseline water access in the programme intervention areas was high, so although new water points were built, this may not have resulted in people moving from using 'unimproved' to 'improved' sources. Instead, it may have improved service levels (e.g. by improving accessibility, reliability and predictability of access and reducing times for water collection) for households that were already using 'improved' sources (see Box 4 opposite).

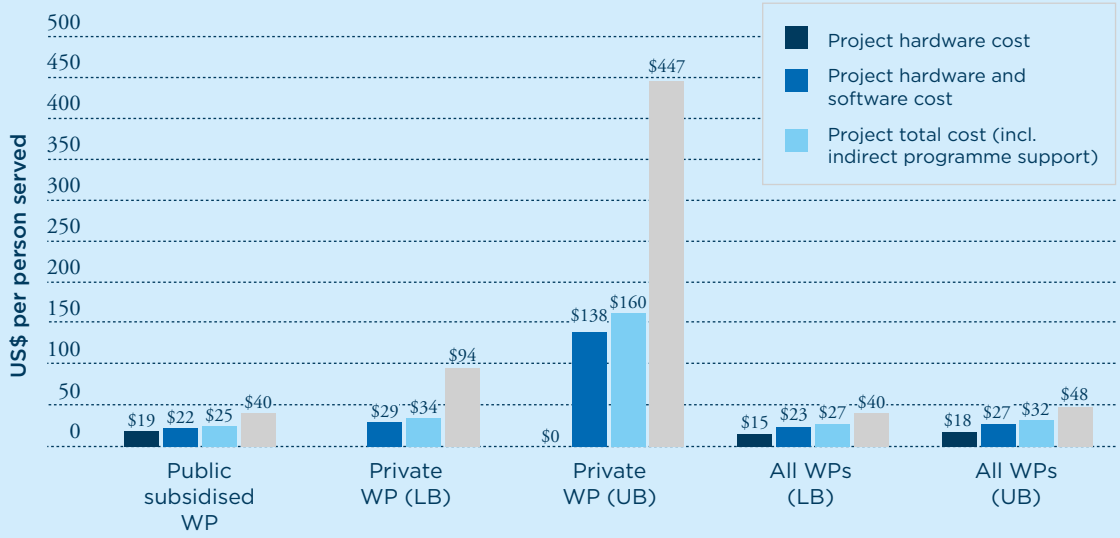
14 Data for 2011 was excluded from the calculation of the average cost per water point as the quality of output data was questionable

Box 4. Methodological challenges with estimating the effectiveness and cost-effectiveness of water interventions in SHEWA-B – Bangladesh

Medium-long term outcomes for water interventions in SHEWA-B are determined by a number of factors over the life cycle of the facilities. These include:

- **Water point functionality:** DPHE surveillance systems estimate that 85% of public deep tubewells remain in service after six years. To calculate cost effectiveness, it was assumed that private water points remained functional at the same rate as public water points.
- **Arsenic status of water points:** as mentioned above, public tubewells had a low rate of arsenic contamination (0.3% of contaminated tubewells), whereas there was no data on the prevalence of arsenic in private tubewells constructed by the programme (which was estimated between 0.3% and 79% based on secondary sources). Thus cost effectiveness for arsenic-safe water could be calculated for public water points, but had to be calculated as a range using lower- and upper-bound contamination estimates for private water points.
- **Reach of public water points:** DPHE assumes a household usage rate of 14 families for public water points. Anecdotal evidence suggests that public water points often serve fewer families due to processes of social exclusion and increased use of private tubewells. In fact, Objective 2 data from sustainability surveys suggested a slightly higher number of users of public water points than the baseline assumption; an average of 104 users which equates to 23 families.
- **Missing baseline data:** Finally, there was limited data available on the levels of access to drinking water before the programme began which means that it is difficult to identify specifically those people who gained access to higher levels of service as a result of the project. In the absence of detailed data, the best that can be said currently is that the number of people having access to more convenient and reliable sources and making use of those safer sources for drinking as a result of the SHEWA-B programme is uncertain. At a maximum it could be 1.2 million but in theory it could even be zero (if everyone had access to an arsenic-safe source before the project).
- Taking these uncertainties into account, the actual programme cost per person who gained access to a public water point and was using it at the end of the project is US$ 25. The programme cost per person who gained access to a private water point and was using it was estimated to lie between US$ 34 and US$ 160.

Figure 7. Cost-effectiveness – Cost per person who gained access to an arsenic-safe water point and uses it



Key: LB – lower-bound estimate assuming lower rates of arsenic contamination; UB – upper-bound estimate assuming higher rates of arsenic contamination;

In the absence of such programme-level data, cost-effectiveness could only be estimated based on complementary data. In Mozambique, results from the Objective 2 sustainability survey were used to assess the number of actual users per water point and their functionality as a basis for estimating the effectiveness and cost-effectiveness of water points constructed. Functionality of water points was estimated at 92% in the three CF provinces and the number of actual users per water point was estimated at 194 (as opposed to the assumed number of people served by the programme, which was initially set at 500 people per water point and later revised down to 300). Using these assumptions for PRONASAR CF, the cost per actual water point user was estimated at US$ 132, which is 56% higher than the cost per person based on programme assumptions about how many people would gain access to a new water point.

4.2 Sanitation

All of the six programmes reviewed included a sanitation component, yet data was only available for four countries (excluding Ethiopia and Pakistan).

All programmes in Sub-Saharan Africa included a CLTS component, with triggering activities conducted by NGOs with the objective of eliminating open defecation. Programmes in Zambia and Nigeria also included hygiene promotion activities. In addition, the Zambia programme funded sanitation marketing activities.

SHEWA-B in Bangladesh took a different approach. It primarily used local social mobilisation teams, Community Hygiene Promoters (CHPs), working with households and running tea and market sessions to promote household investment in hygienic latrines. The programme also provided a very small number of subsidies for ultra-poor households to build latrines. Most of the intervention areas had already been exposed to community-led total sanitation-type triggering and the rate of open defecation was already relatively low, so the programme focused on promoting the use of hygienic latrines rather than on eliminating open defecation.

Table 5 below presents the main characteristics of the sanitation activities for each programme in more detail.

Table 5. Sanitation activities – programmes' characteristics

	Bangladesh SHEWA-B	Mozambique PRONASAR CF	Nigeria SHAWN-I	Zambia ZSHP
Activities	• Social mobilisation for household investment in latrines • Minimal procurement of sanitation hardware for ultra-poor and hard-to-reach areas	• CLTS, including hygiene promotion • CLTS in schools	CLTS, including hygiene promotion	• CLTS in communities and legal enforcement of public health legislation • Development of national sanitation and hygiene policies & support to the National Rural Water Supply and Sanitation Programme • Sanitation marketing
Context	• High rates of prior exposure to CLTS or similar social mobilisation techniques • Rapidly declining rate of open defecation during the programme period • Availability of experienced masons and materials	• Low access to improved sanitation in target districts (2%–31%)	• Low access to improved sanitation in target states : 11%–41% (MICS 2011)	• Low access to improved sanitation in target districts (8% in 2013)
Type of sanitation facilities constructed	• Various pit latrines, most of which had permanent slabs and were 'improved'	• Traditional, traditional improved and improved latrines	• Unimproved and improved latrines at community-level	• Traditional improved and improved latrines at community-level
Implementer	• DPHE with local NGOs	• Provinces with districts	• UNICEF, partner NGOs, LGA WASH departments	• UNICEF, partner NGOs, District Councils
Sources of funding*	• **Programme** with co-funding from national sanitation subsidy programme and household contributions.	• **Programme (for CLTS campaigns)** • Households for latrine construction	• **Programme (UNICEF and government)** • Households for latrine construction	• **UNICEF Programme funds,** NGOs, government, and households (for the construction of sanitation facilities)

(*) expenditure included in VFM indicators is highlighted in bold

Table 6. Summary of VFM indicators for sanitation

	Bangladesh 2008-2014 SHEWA-B	Mozambique 2011-2014 PRONASAR CF	Nigeria 2010-2013 SHAWN-I	Zambia 2012-2014 ZSHP
Efficiency				
Communities triggered by CLTS: actual versus target	–	147%	–	–
Communities certified / verified as ODF: actual versus target	–	55%*	165%	108%
New latrines constructed : actual versus target	100%	175%	–	–
ODF conversion rate (number of ODF verified communities over the total number of communities that were triggered by CLTS)	–	10%–16%**	39%	22%
Cost-efficiency				
Cost per community triggered by CLTS	–	**US$ 4,035****	–	–
Hardware cost	–	–	–	–
Software cost	–	US$ 2,998** (74%)	US$ 1,338	–
Indirect programme support	–	US$ 1,037**(26%)	–	–
Cost per community certified / verified as ODF	–	**US$ 11,941****	**US$ 5,668**	**US$ 1,584**
Hardware cost	–	–	–	US$ 142 (9%)
Software cost		US$ 7,431** (62%)	US$ 2,732 (48%)	US$ 1,228 (78%)
Indirect programme support		US$ 4,510**(38%)	US$ 2,936 (52%)	US$ 215 (13%)
Cost per person living in a certified ODF community (programme only)	**US$ 37**[15]	–	**US$ 17**	–
Hardware cost	–	–	–	–
Software cost	–	–	US$ 5.5(32%)	–
Indirect programme support	–	–	US$ 11.6 (68%)	–
Cost per new sanitation facility construction (programme only)	**US$ 20**	–	–	–
Hardware cost (programme)	US$ 1 (3%)	–	–	–
Software cost (programme)	US$ 10 (52%)	–	–	–
Indirect programme support (programme)	US$ 9 (45%)	–	–	–
Cost per new sanitation facility construction (incl. programme and household contributions)	**US$ 68**	–	–	–
Household financial contribution (hardware)	US$ 48	–	–	–
Cost per person who gained access to a sanitation facility (programme only)	**US$ 4.5**	**US$ 14.0**	**US$ 10.6**	**US$ 3.4*****
Hardware cost (programme)	US$ 0.1 (2%)	–	–	US$ 0.3*** (9%)
Software cost	US$ 2.5 (56%)	US$ 10.4 (74%)	US$ 5.5 (52%)	US$ 2.6*** (78%)
Indirect programme support	US$ 1.9 (42%)	US$ 3.6 (26%)	US$ 5.1 (48%)	US$ 0.5*** (13%)
Total cost per person who gained access to a sanitation facility (incl. programme and household contributions)	US$ 15.4	US$ 14.7	No data	US$ 6.4–US$ 18.4***
Household financial contribution per person (hardware)	US$ 10.9	US$ 0.7	No data	US$ 5–US$ 13

15 In Bangladesh ODF certification was not part of the project. This number represents the people who moved to living in a community that was judged to be ODF at the endline evaluation.

Cost-effectiveness				
Cost per person who gained access to a sanitation facility and uses it	**US$ 6.9**	–	–	**US$ 4.1**
Hardware cost (programme)	US$ 0.2 (3%)			–
Software cost	US$ 3.5 (51%)			
Indirect programme support	US$3.2 (46%)	–	–	–
Total cost per person who gained access to a sanitation facility and uses it (incl. programme and household contributions)	**US$ 23.6**	–	–	–
Household financial contribution (hardware)	US$ 16.7	–	–	–

(*) data is only available for 2014 (**) data is only available for 2013 and 2014; (***) cost per person who gained access to a sanitation facility and also received hygiene promotion messages

4.2.1 Economy

Data on the cost of key inputs for sanitation was only available for the programmes implemented by UNICEF, based on the contracts for implementing NGOs. These included data on the cost of CLTS training per facilitator, cost of a triggering event per village and the cost of a latrine (if paid for by the programme).

In the case of Zambia, the cost for CLTS training was estimated at US$ 45 for a facilitator. The cost of a village triggering event ranged from US$ 81 to US$ 174 per village, as against US$ 1,338 in Nigeria, a cost that included three months of follow-up activities after the triggering event. In Mozambique, triggering costed an estimated US$ 2,998 per community but it was not possible to fully explain this variation (whether due to larger community sizes for example), as the actual number of people reached was not recorded and so it was not possible to estimate the triggering cost per person. Comparable data from other national initiatives was only available for Nigeria, where WaterAid cited US$ 1,138 per village for the direct cost of triggering; a slightly lower figure to SHAWN. However, WaterAid did not include IPS costs and SHAWN did. A national review of CLTS activities in 30 states of Nigeria cited a similar average figure of US$ 1,400 for direct costs.[16]

In the absence of comparators for the remaining countries, it was difficult to say whether economy was achieved. In Zambia, UNICEF confirmed that NGOs generally offered competitive market prices.

Cost variability was generally explained by geographical factors (e.g. triggering a hard-to-reach district as opposed to one that is closer to the capital city) and by differences in population size, i.e. in the definition of what is referred to as a "village" or a "community". A WASHCost study (2011) investigated cost drivers for community mobilisation through the "PEC Zonal" approach implemented in Mozambique.[17] Factors such as size of the district, district population, coverage rate and population density did not seem to have any influence on the cost of the PEC Zonal contract. Therefore, the study concluded that other aspects, such as contract specifications (type and quantity of desired transport equipment and other tools required for animators to conduct CLTS campaigns) could be stronger cost drivers and would need to be investigated further. UNICEF Nigeria felt that switching from village-level to ward-level triggering had generated economies of scale (given that a ward is larger than a village and therefore, fewer triggering events were needed to reach the same number of villages) and brought costs down, although they had no data to support this finding.

16 DFID 2011. Assessment of community-led total sanitation (CLTS) in Nigeria (drafted by UNICEF and WaterAid.

17 The "PEC-Zonal approach" consists of letting contracts to a local NGO for delivering community sensitisation services in a given district over the course of one year (renewable one year). These software support contracts implement jointly a variety of activities, including mobilising water point committees, conducting CLTS campaigns to promote sanitation and hygiene and strengthening spare parts providers.

4.2.2 Efficiency and cost-efficiency

Efficiency. For sanitation, efficiency can be assessed by examining how inputs (such as sanitation promotion activities) have resulted in outputs, such as the number of communities triggered through CLTS events and verified as having reached Open Defecation Free (ODF) status, the number of improved sanitation facilities built or the number of people who have gained access to improved sanitation.

In these studies efficiency measures were limited by the variable quality and availability of data on the number of communities triggered and verified as ODF, and on the number of latrines built. Challenges were met across all programmes, and particularly for government-implemented programmes: data was unavailable in Ethiopia and incomplete or unreliable in Mozambique. Extrapolations had to be made in Mozambique as detailed data was not available at the level of the districts where funding had been provided. This was also the case in Zambia, although the introduction of mobile-to-web (M2W) monitoring systems since 2014 is expected to improve data reliability and reduce data management costs.

As in the case of water programmes, efficiency of sanitation activities can be estimated by comparing planned versus actual achievements. Achievement data was incomplete but varied between 55% and 175% of what was planned depending on programmes and outputs. These indicators are imperfect as they assume that plans and budgets were set as realistic targets and that expenditure was in line with budgets, which is not always the case. For example, in Nigeria, significantly more ODF communities (certified and uncertified) were achieved than planned (165% achieved) but this was simply in line with the scope of SHAWN being increased from 12 to 20 LGAs in December 2011.

ODF conversion rates (i.e. the percentage of triggered communities through CLTS that are verified as ODF) are a good efficiency indicator for sanitation programmes. Such an indicator varied between 10% and 39% among the programmes studied. The ODF conversion rate tends to drop when considering the number of verified villages versus self-reported ODF villages. In Zambia, the ODF conversion rate based on the number of verified villages stood at 22% at the end of 2014, but this goes up to over 30% when using data on reported ODF villages. This is in line with DFID's expectations for a programme of this magnitude.[18] In Nigeria, the ODF conversion rate was high, with an average of 39% of triggered communities reaching certified ODF status and 55% when based on the number of self-reported ODF communities. In both programmes, there were efficiency losses due to delays in completing the full ODF certification and third-party verification procedures. This means that actual ODF conversion rates were probably underestimated.

ODF conversion rates also depend on the relative maturity of programmes, as they generally achieve a higher triggering/ODF rate the longer they have been implemented. In Mozambique, for instance, the ODF conversion rate based on certified communities was 10% in the second year of implementation, which is quite low compared to international standards, but increased to 16% in the third year. This increase could also be linked to an acceleration and improvement of ODF certification process. It also depends on starting conditions in the communities where triggering takes place. In Nigeria, where access to improved sanitation was initially between 11% and 41% (29% on average), the ODF conversion rate was higher than in Zambia and Mozambique, where access to sanitation was 8% and between 2% and 31% respectively before the start of the programmes.

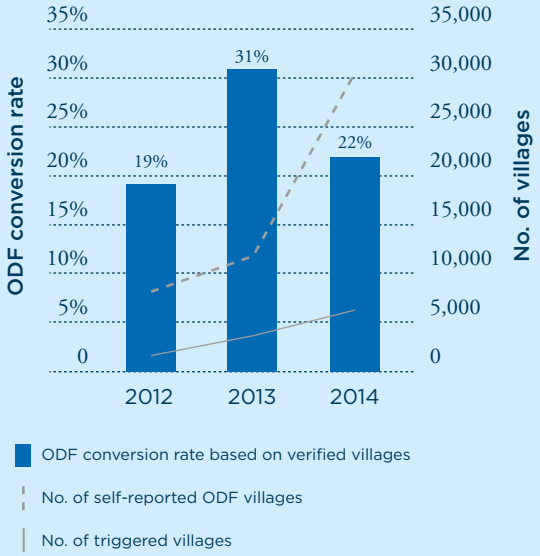
The design of CLTS campaign can also influence ODF conversion rates. In Zambia, as shown in Box 5 below, CLTS efficiency is impacted by post-triggering follow-up as well as systematic monitoring through mobile-to-web systems, both of which reduced the risk of slippage and increased stakeholder motivation.

Finally, the efficiency of CLTS campaigns is also explained by the quality of the triggering. In Mozambique, poor quality of PEC Zonal contractors might have reduced efficiency. These are mainly small local NGOs or social enterprises that may not be adequately trained.

18 2014 DFID Annual Review.

Box 5. Monitoring ODF conversion in the ZSHP in Zambia

In the ZSHP, the ODF conversion rate (i.e. proportion of villages triggered through the CATS component that have been verified as ODF) has increased between mid-2013 and the end of 2014, and is currently at around 22%. These improvements are related to a number of factors, including involving NGOs as facilitators at district level through the 2013 Scale-Up Strategy, increased monitoring efforts (e.g. provision of regular technical support and mobile-to-web systems), and post-triggering strengthening (e.g. having stakeholder meetings over the subsequent five months until full ODF is achieved, providing incentives to champions after successful ODF verification, and recognising and rewarding achievement).



Source: Authors based on UNICEF Progress Reports and DFID Annual Reviews."

Cost-efficiency. The cost per community verified as ODF varied between US$ 1,584 in Zambia and US$ 11,941 in Mozambique. Cost per person living in an ODF community ranged between US$ 17 in Nigeria and US$ 37 in Bangladesh, whereas the cost per person who had gained access to a sanitation facility ranged between US$ 3.4 in Zambia and US$ 14 in Mozambique. These costs are mostly made up of community mobilisation and indirect programme support. Yet, it is important to note that it was not possible to include all IPS costs for all programmes (including the portion borne by the government for all programmes). Direct hardware expenditure on sanitation only took place in Bangladesh where some ultra-poor households and hard-to-reach areas received subsidies for latrines – but this represented only 1% of the total expenditure on sanitation.

These ranges demonstrate that different levels of effort and expenditure are required depending on starting sanitation conditions and local context. In Bangladesh, there has been a decade-long push to reduce open defecation with the result that most communities have already been triggered at least once. The focus of SHEWA-B's interventions was therefore to support households to convert temporary or shared latrines into more permanent and private facilities. For that reason, the number of households who moved to a situation where they were living in an ODF environment as a result of the programme was relatively small (and the costs per person were therefore higher than in other countries). On the other hand, the cost per person gaining access to a latrine was low when compared to other programmes, as only a small amount of focused social intermediation was required to encourage household investment in new toilets.

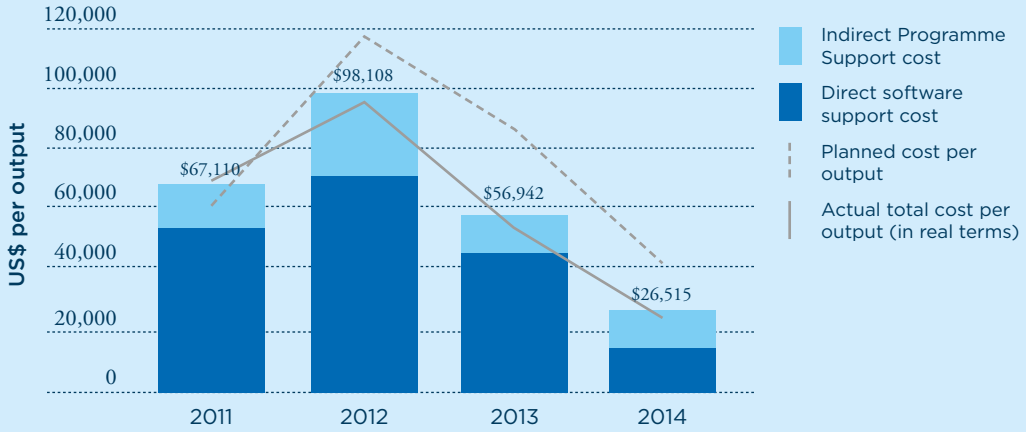
For the Mozambique and Zambia programmes, comparisons of cost-efficiency indicators across different years showed a significant decrease in the costs per CLTS campaign over time. In Mozambique, cost efficiency was also better than the national average and when compared to the UNICEF One Million Initiative Programme (See Box 6 on page 26).

Box 6. Cost efficiency of CLTS campaigns in Mozambique

In Mozambique, the cost per district that PRONASAR CF incurred when conducting a CLTS campaign roughly halved every year since 2012. The average cost of CLTS per district triggered was actually 18% less than what had been planned initially. This is likely to be explained by:

- The nature of sanitation promotion activities and the time at which they happen in the programme cycle (initial set-up costs for a programme lead to higher spending in initial years);
- An improvement in procurement performance and contract negotiation over time.

The cost of a PEC Zonal contract per district paid by PRONASAR CF was 40% lower than the national average estimated by WASHCost (WASHCost, 2011) (adjusted for 2013 prices). In addition, PRONASAR CF costs per triggered community and per community that achieved ODF status were 40% and 23% lower respectively than the costs incurred by the UNICEF One Million Initiative (adjusted to the same year). This might be partly explained by the fact that there were more IPS costs in the One Million Initiative (33% compared to 26% for PRONASAR). These comparisons need to be handled with caution, as the reliability of ODF figures might vary between programmes.

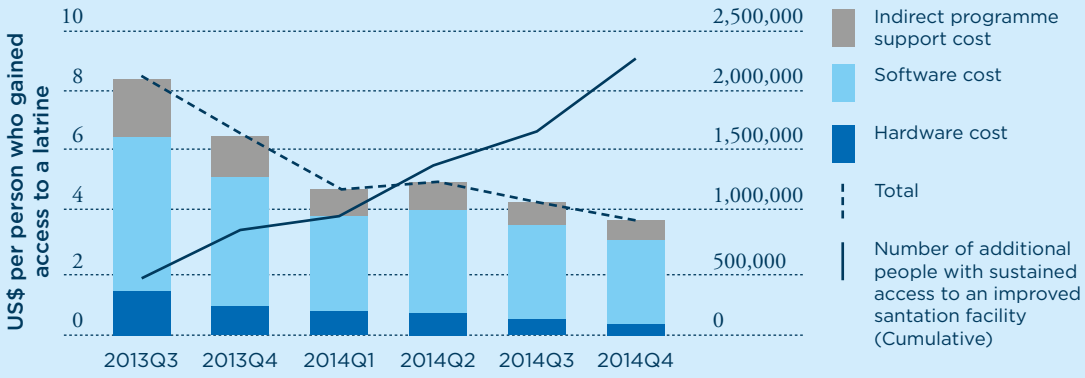


Source: Estimated by authors from PRONASAR PIA and Relatorio Balanço data for 2011-2014

Box 7. Cost efficiency of CLTS campaigns in Zambia

For the ZSHP in Zambia, the cost per person who gained access to a sanitation facility decreased by 58% between 2013 Q3 and 2014 Q4. This was explained by several programmatic changes, mainly the implementation of the Programme Improvement Plan and the Scale-Up Strategy in mid-2013, through which NGOs became partners and programme facilitators at the district level. Increased focus on monitoring via mobile-to-web systems and post-triggering activities also had a significant effect on cost-efficiency. Indeed, villages where mobile-to-web systems are used report a cost per person with access to improved sanitation and hygiene of US$ 2.40–2.60, approximately 24% lower than the average for the whole programme.

Cost per person who gained access to a latrine



Other factors related to implementation can influence cost efficiency of CLTS campaigns. In Nigeria, cost-efficiency was improved by a shift to 'ward-level triggering', where ward-level sensitisation meetings with local leaders ensured ward-level support and buy-in prior to village-level triggering events (wards are larger than villages in Nigeria). It was thought to be more efficient to hold these meetings jointly for all relevant representatives within a single ward in advance of the triggering events rather than to approach them separately on the day of village-level triggering.

Finally, it is important to take into account a programme's capacity to leverage household investments to build latrines, given that with a CLTS approach, households are expected to use their resources in cash and in-kind to build latrines. The SHEWA-B programme in Bangladesh was the most efficient at leveraging household investments. Programme expenditure of US$ 20 leveraged an additional US$ 48.50 of household investment for each latrine built. Comparator data from BRAC shows that total hardware cost per latrine was between US$ 41 and US$ 104, and it can be seen that leveraged investment for toilets built as a result of the SHEWA-B programme is at the lower end of this range. This demonstrates that households were choosing lower-cost options. In Mozambique, the average household contribution to build a traditional improved or improved latrine was estimated based on Objective 2 survey at US$ 3.6 in cash and US$ 14 in kind (labour and materials), against a US$ 14 contribution from the programme.

4.2.3 Effectiveness and cost-effectiveness

Effectiveness and cost-effectiveness assesses how well sanitation promotion and CLTS triggering activities have led to people having improved access to sanitation facilities and actually using these facilities over time. Data on effectiveness (and thus, on cost effectiveness) was only available in Bangladesh and Zambia.

In Zambia, the proportion of the population in target districts using improved sanitation and handwashing facilities significantly increased from a baseline of 8.3% in June 2013 to 25% in December 2013, and to 42% by December 2014. Based on cumulative programme costs up to December 2013, the total programme cost per user was estimated at US$ 4.10. This figure is higher than the US$ 2.96 that had been anticipated in the Business Case, but is expected to significantly decrease by the end of the programme in 2016. The cost per person using improved sanitation and hand-washing facilities is 20% higher than the cost per person who has gained access to a sanitation facility, which may be explained by the fact that some households stop using the facilities later down the line. Since 2013, increased attention on interpersonal communications and strengthening of follow up activities have played a key role in sustaining ODF status over time and minimising the risk of villages slipping back into open defecation. The involvement of local government staff was also key to sustaining sanitation promotion efforts.

In Bangladesh, programme monitoring suggests that 67% of latrines remained functional at the end of the programme (where a functional latrine was defined as being well-kept and in use). The cost per person using an improved sanitation facility is 53% higher than the cost per person gaining access to any kind of sanitation facility. Ongoing support for faecal sludge management is likely to lead to longer term usage of latrines and reduce rates of abandonment.

4.3 Hygiene promotion

Three of the six programmes reviewed included a hygiene promotion component that was monitored independently from activities dealing with access to sanitation, including Bangladesh, Zambia and Pakistan. The programme in Pakistan provided hygiene kits to beneficiaries in a context of humanitarian relief. The programmes in Bangladesh and Zambia conducted a mass media campaign to promote sanitation and hygiene. They also conducted social mobilisation in communities, whether as part of sanitation promotion activities (CLTS in Zambia) or independently as in Bangladesh. When hygiene and sanitation promotion activities were conducted and monitored together (as for social mobilisation in Zambia), the VFM of these activities was analysed in the "access to sanitation" section above – it was not possible to separate out the hygiene elements for a disaggregated analysis.

Table 7 below presents in more details the main characteristics of the hygiene promotion activities for each of these programmes.

Table 7. Hygiene promotion activities – programme characteristics

	Bangladesh	Pakistan	Zambia
	SHEWA-B	Response to 2010 Floods	ZSHP
Activities	• Hygiene promotion of safe sanitation and water messages through social intermediation • National mass media campaign	• Delivery of hygiene kits	• Interpersonal communication and mass media campaigns • Hygiene promotion as part of CLTS campaigns
Context (at baseline)	• High rates of access to water and sanitation • 47% of the population in project areas were able to state at least one key message from each of the water, sanitation and handwashing messages (2008)	• Emergency and early recovery context	• Low access to handwashing facilities near toilets (9% in 2013)
Type of hygiene facilities constructed	• Various	N/A	• Mainly tippy-taps in communities.
Implementers	• Households for hardware • Local NGOs with support from national NGOs	• NGOs (Care, Islamic Relief, Mercy Corps)	• UNICEF, partner NGOs, District Councils
Sources of funding *	• **Programme and government counterpart funding** (software and IPS), households for hardware	• **Programme**	• **UNICEF programme funds,** NGOs, GRZ, and households (for the construction of handwashing facilities)

(*) expenditure included in VFM indicators is highlighted in bold

Table 8 opposite presents a number of VFM indicators calculated for hygiene promotion activities. These indicators could only be estimated for Bangladesh, with some limited results for Pakistan.

Table 8. Summary of VFM indicators for hygiene promotion

	Bangladesh 2008-2014 SHEWA-B	Pakistan Response to 2010 floods	Zambia 2012-2014 ZSHP
Cost-efficiency			
Programme cost per person reached with hygiene promotion activities	**US$ 0.68**	–	**US$ 0.14**
Cost per person able to recall at least one sanitation and hygiene message	**US$ 1.3**	–	–
Programme cost per new person gaining access to a handwashing station at a convenient location for handwashing after defecation	**US$ 13**	–	–
Hardware cost	N/A	–	–
Software cost		–	–
Indirect programme support		–	–
Programme cost per hygiene kit delivered	–	**US$ 16–36**	–
Cost per person receiving a hygiene kit	–	**US$ 3.3–3.5**	–
Cost-effectiveness			
Cost per person observed handwashing with soap and water		–	–
Before food preparation	US$ 61	–	–
Before eating	US$ 36	–	–
After defecation	US$ 6	–	–
Cost per female caregiver observed handwashing with soap and water		–	–
Before food preparation	US$ 12	–	–
Before eating	US$ 25	–	–
After defecation	US$ 5	–	–

4.3.1 Economy

There was no data available for these programmes on the cost of key inputs for hygiene promotion (such as the costs of printing/distributing Behavioural Change Communication training materials, the cost per day of one village hygiene promoter, the cost of soap or of a hygiene kit distributed for humanitarian programmes).

4.3.2 Efficiency and cost-efficiency

Efficiency. Efficiency assesses how well the inputs, such as hygiene promotion activities at community-level and mass media campaigns, have resulted in people gaining access to handwashing facilities and washing hands at critical times.

In Zambia, based on DFID's recommendations to give more focus to this component in early 2014 (due to low rates of handwashing and sustained behaviour change), the national mass media campaign was revamped and intensified (in addition to social mobilisation activities already in place through CLTS). As a result, the number of people reached with hygiene promotion activities increased by 90%, from 3.3 million at the end of 2013 to 6.29 million by the end of 2014, exceeding the initial target of 4.65 million.

Hygiene interventions tend to have a range of targets at output and an assumed outcome level which makes direct comparisons or benchmarking challenging. In Bangladesh, for example, there are data on the presence of key infrastructure which could be used as a proxy for the output of the hygiene intervention, but they can be expressed using several different measures. The iccdr,b endline report provides detailed information on outputs in SHEWA-B intervention areas relating to the presence of key hygiene facilities. These compared the presence of key facilities at critical locations

as proxy indicators for hygiene behaviour between the baseline and the endline of the programme as follows:

- 3% increase, representing an additional 0.48 million people with facilities, soap/ash and water to wash their hands after defecation (not statistically significant);
- 7% increase, representing an additional 1.4 million people with water only to wash their hands after defecation (statistically significant);
- 5% increase, representing an additional 1.02 million people) with a WASH station in a convenient place after defecation (statistically significant).

Other outcomes in the endline report included the hygienic disposal of faeces by parents of 473,730 children under-5 and household drinking water for 3.12 million people stored in a covered container.

As for sanitation promotion, the quality of hygiene behaviour-change promotion depends on the availability and capacity of NGOs at district and local level. This depends on the ability of NGOs and support organisations to attract and retain high quality staff at the local level (through salaries partly) which in turn is driven by other development programmes ongoing in the programme area.

In Zambia and Bangladesh, the efficiency of hygiene promotion also depended on the balance between community-based social mobilisation and mass-media interventions and their relative efficiency at promoting hardware investments to support behaviour change. As the two interventions are designed to complement each other, it is not possible to disaggregate their effects and only the combined effect can be reported. Further complicating the situation, in Bangladesh, the endline study also looked at changes in adjacent areas which lay outside the programme area and in most cases found no significant difference between changes within and outside the project area. Interpreting this finding is difficult. It is probably due to the general trend of improving hygiene awareness across the country and the presence of significant large scale interventions in other districts not reached by SHEWA-B, delivered either by the Government of Bangladesh directly or through large scale NGO programmes such as BRAC. This means that it is challenging to estimate the marginal impact of the SHEWA-B programme and to compare it with programmes in other countries. It is clear that positive outcomes have been achieved in SHEWA-B areas, but those positive outcomes cannot with certainty be directly attributed to the programme.

Cost-efficiency. As mentioned above, cost-efficiency can be measured through several indicators according to the number of beneficiaries reached by the message or getting access to handwashing facilities. The cost per people receiving both social mobilisation and mass media messages promoting hygiene was US$ 0.68 in Bangladesh and US$ 0.14 in Zambia.

In Zambia, the intensification of the national mass media campaigns focusing on hand-washing at critical times, in addition to social mobilisation through CLTS, has enabled the programme to reach beneficiaries at an extra cost of US$ 0.09 per person since the beginning of 2014. This increase is mainly related to direct software costs, related to the new contract agreements with ZAMCOM and Barefeet, the communication companies hired for the mass media campaigns. Thus, the current programme cost per person reached with hygiene promotion activities stands at US$ 0.14, which is below DFID estimations of US$ 0.19.

The cost per person gaining access to a handwashing station including water and soap in an appropriate dispenser at a convenient location for handwashing after defecation was US$ 12 in Bangladesh. The cost per person of providing water (only) at a convenient location for handwashing after defecation was US$ 8. It was not possible to calculate the cost per person gaining access to a handwashing station only for Zambia, as those costs are combined with those of the CLTS triggering events.

In Pakistan the cost per person provided with a hygiene kit by different NGOs varied between US$ 2.44 and US$ 3.49, mostly due to the fact that hygiene kits simply contained different items.

4.3.3 Effectiveness and cost-effectiveness

Effectiveness of hygiene promotion assess how well hygiene promotion activities are converted into people having a sustained access to handwashing facilities and actually using the facilities after defecation. Data on effectiveness and thus cost effectiveness was only available for SHEWA-B in Bangladesh.

Observational techniques were used in SHEWA-B to estimate the numbers of people practising key behaviours at critical times (before food preparation, before eating, before feeding a child, after child defecation and after defecation). While significant improvements in these key indicators were observed over time within the SHEWA-B intervention area, there was no significant difference between the observed changes in the intervention areas when compared to the control areas. This also applied to the recall of mass media promotion messages in 2009 and 2012.

As stated above, it is challenging to estimate the marginal impact of the SHEWA-B programme and to compare it with programmes in other countries as the positive outcomes cannot be attributed to the programme with certainty. It is also important to note, however, that very few programmes include baseline and endline assessments of behaviour carried out with the same rigour as those which were carried out for the SHEWA-B programme. Similar problems of attribution are likely to apply to all the other programmes and projects which were studied but only in SHEWA-B, with its more rigorous evaluation studies, can this problem of attribution be identified.

The cost-effectiveness indicators (as shown in Table 8) show a range of values for changing hygiene behaviours, depending on the type of targeted hygiene behaviour (for example, handwashing with soap before food preparation, before eating or after defecation) and on the target audience for these messages. It was more cost-effective to target female caregivers, suggesting that they tended to respond better to hygiene messages.

4.4 WASH in Schools

Two of the six programmes reviewed included a specific component for increasing access to water and sanitation in schools, i.e. Zambia and Bangladesh.

In **Zambia,** the institutional sanitation component provided appropriate, gender-sensitive and child-friendly sanitation and handwashing facilities in primary schools, as well as demand-creation activities. In some schools, all facilities were paid for by ZSHP under the "Interim package", while for others, a "Low-cost package" was used, which is integrated to the sanitation marketing component and is thus able to offer similar standards with a lower cost design.

In **Bangladesh**, schools received either new or rehabilitated water points, toilet facilities or both from the programme.

Table 9. WASH in schools activities – key programme characteristics

	Bangladesh	Zambia
Activities	• School Sanitation and Hygiene Education packages delivered in schools • Construction or rehabilitation of latrines • Construction or rehabilitation of water points	• Construction of S&H facilities in schools • SLTS in schools • Development of national S&H policies & support to NRWSSP
Context	Primary and secondary schools	Primary schools
Type of sanitation facilities constructed	Shared latrines – separate for boys and girls. Onsite facilities.	Gender-segregated toilet facilities (50 children per latrine) with a nearby hand-washing facility, and a latrine equipped with bars for disabled children.
Implementers	DPHE and partner NGOs. Private contractors for construction.	UNICEF, partner NGOs, District Councils
Sources of funding *	**Programme funds**	**Programme funds, UNICEF (administration fee),** NGOs, GRZ, and communities (for the Low-Cost Package)

(*) expenditure included in VFM indicators is highlighted in bold.

Table 10. Summary of VFM indicators for WASH in schools

	Bangladesh 2008-2014 SHEWA-B	Zambia 2012-2014 ZSHP
Cost-efficiency		
Programme cost per pupil gaining access to sanitation and hygiene in school	–	**US$ 38.4**
Hardware cost	–	US$ 29.7 (77%)
Software cost	–	US$ 4.2 (11%)
Indirect programme support	–	US$ 5.5 (12%)
Cost per school-aged child gaining access to a clean functional latrine at school	**US$ 10.9**	–
Hardware cost	US$ 4.2 (37%)	–
Software cost	US$ 5.3 (50%)	–
Indirect programme support	US$ 1.4 (13%)	–
Cost per school-aged child gaining access to a safe water point at school	**US$ 38.7**	–
Hardware cost	US$ 14.9 (39%)	–
Software cost	US$ 18.7 (48%)	–
Indirect programme support	US$ 5.1 (13%)	–
Cost per school-aged child receiving School Sanitation and Hygiene Education messages	**US$ 7.7**	–
Hardware cost	US$ 2.9 (38%)	–
Software cost	US$ 3.8 (49%)	–
Indirect programme support	US$ 1.0 (13%)	–
Cost-effectiveness		
Cost per school-aged child retaining SSHE messages	**US$ 7.7**	–
Hardware cost	US$ 2.9 (38%)	–
Software cost	US$ 3.8 (49%)	–
Indirect programme support	US$ 1.0 (13%)	–
Cost per school-aged child observed to be using soap after defecation	**US$ 37**	–

4.4.1 Economy

In **Bangladesh,** the programme spent an average of US$ 714 per school on School Sanitation and Hygiene Education packages, which included the provision of teaching resources and the delivery of hygiene promotion activities in schools. Hardware was provided under separate contracts, for which detailed cost breakdowns were not available at the time of this analysis.

In **Zambia,** NGOs generally offered competitive prices, with cost variability explained by differences in geography (e.g. hard-to-reach districts or with poor soil conditions were more costly to serve). While costs varied between NGOs, direct comparisons were difficult as each NGO provided a slightly different set of activities. Nonetheless, some factors could be identified which affected variations in costs:

- **Quality of the output –** The unit cost of a school sanitation facility is US$ 925 for the Interim Package and US$ 424 for the Low-Cost Package,[19] which represents a significant reduction in monetary costs as compared to the original design (US$ 2,000 per latrine seat).

19 Under the Interim Package, all facilities were paid for by ZSHP. The Low-Cost Package is integrated to the a sanitation marketing programme involving local masons, maintaining the same standards of the Interim Package but offering cheaper designs.

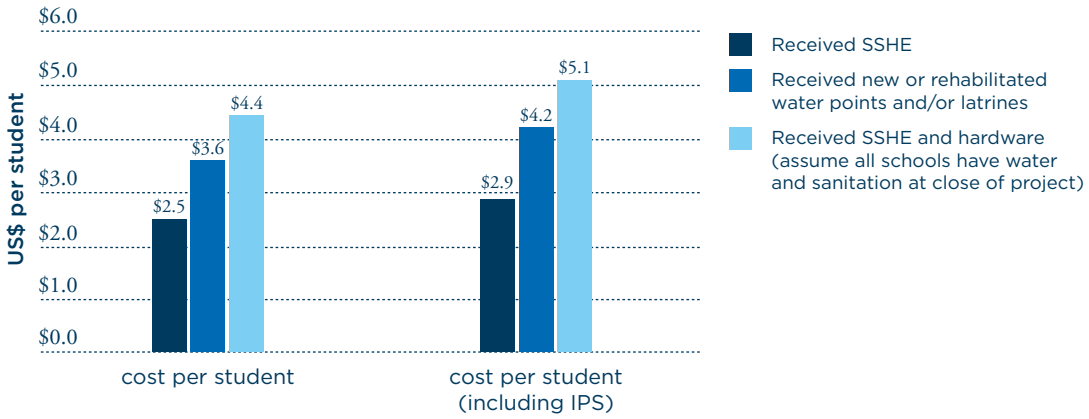
- **Intensity of activities –** the cost of training a community champion for CLTS is US$ 45, while training for school facilitators ranges between US$ 56 and US$ 179. This difference may be due to the fact that some school training activities were more extensive, covering more people per school. Similarly, the difference between the cost of a village triggering (US$ 81–174) and a school triggering (US$ 41–248) may also be due to a variation in the activities entailed.

4.4.2 Efficiency and cost-efficiency

Efficiency. The realisation rate of school water, sanitation and hygiene facilities, against planned targets, varied over time. The ZSHP School sanitation and hygiene component faced significant delays during the first 1.5 years of implementation, due to disagreements over technical design specifications between the Ministry of Education, Science, Vocational Training and Early Education and UNICEF. While only 15 schools had been reached in 2013 Q4, UNICEF and partners made considerable efforts to catch-up and had provided 153 schools with access to adequate sanitation and hygiene by February 2015.

Cost-efficiency. The cost of the "WASH in Schools" component of SHEWA-B varied from US$ 3 to US$ 39 per student, depending on whether schools received school sanitation and hygiene education packages alone or also benefited from hardware improvements (see Figure 8). For the ZSHP in Zambia, the programme cost per pupil gaining access to sanitation and hygiene in schools was US$ 38.4 over the lifetime of the programme. This indicator has been improving since mid-2014 due to a reduction in support costs, which became less significant once the start-up costs had been incurred. However, these figures for ZSHP need to be interpreted with caution. On one hand, while resources for some schools had already been committed, S&H facilities had not been fully constructed in all of them, which results in a lower number of schools and children accessing the facilities. On the other hand, although expenditure committed for both the Interim and the Low-Cost Packages has been included (as it is not possible to clearly disaggregate expenditure between them), only achievements through the Interim Package have been considered, with the exclusion of results through the Low-Cost Package (as its implementation fully began in 2015). Both of these issues lead to an over-estimation of the costs per school and child reached, and thus to an under-estimation of the cost-efficiency associated with this programme component.

Figure 8. Cost-efficiency indicator for WASH in Schools: US$ per school-age child



4.4.3 Effectiveness and cost-effectiveness

Cost effectiveness data was only available for Bangladesh. In SHEWA-B, cost-effectiveness was estimated at US$ 8 per child retaining SSHE messages, whereas the cost of ensuring the adoption of hygienic practices was estimated at US$ 37 per child (based on observing them using soap after defecation). This shows that achieving adoption of handwashing with soap is considerably more costly than achieving a change in knowledge, but it is most likely an investment worth making given the significant health impacts associated with handwashing with soap.

Cost effectiveness of WASH in schools is driven in part by the same drivers as for WASH for domestic use, that is, technical considerations such as depth (for groundwater supply) or the quality of water provided. At the same time, once actual behaviours are taken into consideration, the quality of the School Sanitation and Hygiene Education, or School-led Total Sanitation interventions will also have a strong impact on outcomes, particularly in terms of management of latrines (so that they remain clean, functional and accessible) and key hygiene behaviours. Drop-back rates in schools (i.e. where toilet or water points are provided but where usage is subsequently limited) may be driven in part by dimensions of the schools themselves: their size, the relative standing and security of teaching staff, and diversity within the school community. Strong female head teachers often play an important role as well, for example in maintaining a focus on accessibility to latrines and handwashing facilities for girls, particularly as they pass menarche.

5 How can VFM analysis be used to improve WASH programmes?

This section reflects on the VFM-WASH project's findings to extract key learning points on the use of VFM analysis to improve WASH programmes and their management. Given the limited size and geographical spread of the research sample (multiple programmes in six different country contexts), combined with the methodological challenges encountered for conducting the analysis (as presented in Section 6 below), it appears premature to draw broad conclusions from the VFM indicators that have been computed through the project.

The main emphasis therefore has been placed on identifying how VFM analysis can be used at the level of specific programmes. The usefulness of this type of analysis will increase once a larger number of programmes and funders starts to use it, preferably based on a common methodology, and therefore when a more substantial set of comparable data becomes available. For this reason, Section 6 formulates recommendations on how methodological challenges for conducting the VFM analysis of WASH programmes can be overcome and a "VFM culture" be created in the sector.

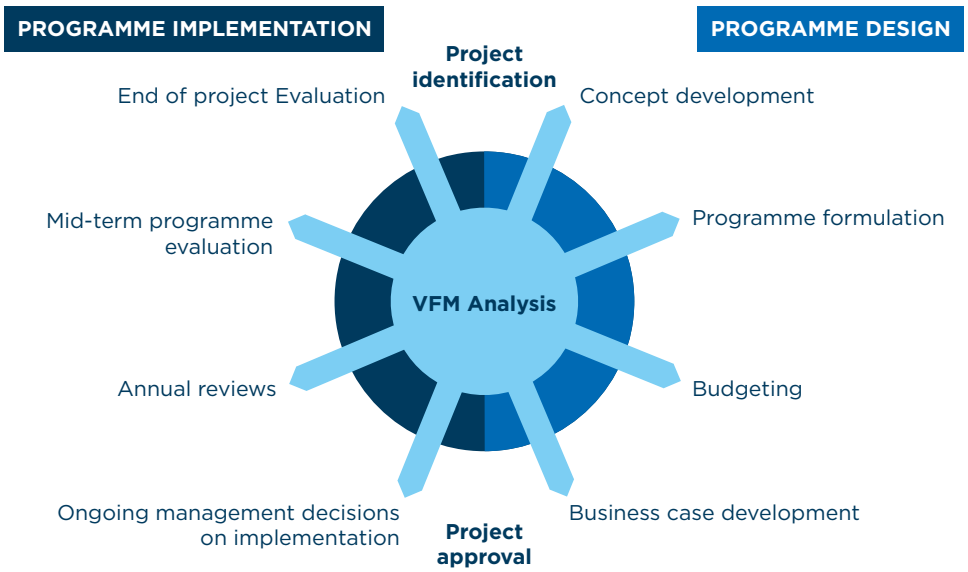
After identifying the various stages of the programme cycle at which VFM analysis can be used, this section explains why making sense of the results from VFM analysis for programme management requires a thorough understanding of relevant external and internal factors:

- External factors are defined as factors that are outside of programme managers' control, such as hydrogeological conditions, overall macro-economic conditions or external shocks during programme implementation (including natural events such as droughts or flooding). These factors are important as they influence the costs, efficiency and effectiveness of interventions;
- Internal factors are defined as areas over which managers can exert control and which need to be examined at all stages, so as to identify opportunities to improve the VFM of the programme.

5.1 Using VFM analysis throughout the programme cycle

VFM analysis is ultimately an analytical tool that can be used to reveal information about the way in which WASH programmes are delivering results. Programme managers can use VFM indicators to formulate informed choices to maximise the results generated from public funds invested in the WASH sector. This tool can be useful at various stages of programme design and implementation, including programme design, implementation and evaluation stages as shown in Figure 9 below.

Figure 9 – Where VFM analysis fits in the WASH programming cycle



At **programme design stage,** VFM analysis can be used:

- To inform decisions about the most effective and cost-effective approaches to achieve goals set for the intervention, including:
  - Implementation arrangements: should funds be allocated to the government through a national programme, to an international organisation that can then selects local implementers, or directly to implementing agents on the ground? For example, DFID in Mozambique was interested in a VFM analysis to help identify whether to continue contributing to a large government programme or to channel funding via UNICEF;
  - Optimal combination of programme interventions: for example, some programme may choose to only focus on hygiene and sanitation if these are deemed the most cost-effective interventions in the local context (as UNICEF chose to do in Zambia).
- To obtain benchmark reference points on costs of inputs and outputs for budgeting and planning;
- To help funders build the business case in order to justify spending allocations. However, it is very difficult to attribute impacts to specific WASH interventions, which means that cost-benefit analysis can only be based on findings from a limited set of research rather than from real-life programmes.

At **programme implementation stage,** VFM analysis can be a critical tool for the following:

- Better monitoring of programme implementation, making sense of data collected in real time (crucially, tracking how variations in inputs might give rise to variations in results) and identifying specific bottlenecks or capacity gaps which could be addressed to improve VFM in later stages of programme implementation. This obviously depends on information being available (see Section 6) but it can be done on an ongoing basis or through annual reviews, given that collecting and analysing the necessary information can be costly if no adequate tools are in place;
- Programme evaluation at mid-term or end of project. VFM analysis can identify strengths and weaknesses of various programme implementation models and provide a stronger analytical basis for recommending adjustments. Findings can also help with extracting lessons for the design of future programmes.

When using VFM reference data, it is essential to record at which point in the programme life-cycle VFM analysis was performed, as it is quite normal for programmes to incur higher costs and show lower efficiency during the start-up phase, as implementation arrangements can generate additional costs. As described below, it is also essential to take into account external and internal factors that affect VFM.

5.2 Taking account of external factors impacting VFM

External factors predominantly relate to the physical, social and economic characteristics of the intervention area and need to be understood from the moment of project conception and design. For example, hydrogeological conditions will determine the best way to develop water resources and provide water supplies and will therefore have a major impact on the economy and efficiency of water provision. Where groundwater tables are deep, rainwater is unreliable or water quality is very poor, simple low-cost technologies may not be appropriate. The location, spatial distribution and social heterogeneity of communities will influence the efficiency and effectiveness of different social mobilisation techniques and may influence decisions about how to deliver sanitation or hygiene promotion. Some "external shocks" (such as flooding events or macro-economic events) are more difficult to anticipate at programme design. However, programme designers should carry out a "risk analysis" in order to assess the likelihood of such events and their likely impact on VFM, adjusted by the probability of such events occurring.

Programme managers must understand external factors in order to place estimates of VFM indicators from elsewhere into context. For example, the cost of developing water supply services varies according to hydrogeology and this has a knock-on effect on economy, cost-efficiency and

cost-effectiveness. Comparing these indicators across locations with very different conditions therefore makes little sense. However, the efficiency and effectiveness of the water supply intervention should be independent of hydrogeology and be more strongly influenced by programmatic decisions about procurement for example; so those indicators can be compared across areas with different conditions.

Table 11 shows a selection of external factors that are impacting the VFM of the WASH programmes under review.

Table 11 Examples of external factors impacting the VFM of WASH programmes

VFM dimensions	External factors impacting VFM	Examples
Economy	**Hydrogeological conditions:** availability of water sources, depth to groundwater and quality of water influence choice about water production and distribution technologies and drive capital costs (particularly the cost of drilling for groundwater) and operational issues.	• **Bangladesh:** The risk of arsenic contamination in shallow aquifers means that more expensive deep tubewells or surface water systems are needed in some locations. • **Pakistan:** Water ponds constructed by Islamic Relief in areas with unconsolidated soils required more expensive groundworks. Unexpected variations in the groundwater table drove up tubewell/bore well drilling costs in the Mercy Corps programme. • In **Mozambique,** Technical difficulties encountered due to complex hydrogeological conditions led to a change in drilling technology.
	Location (e.g. distance to capital city) and pre-existing levels of development (access to basic services, infrastructure)	**Mozambique:** PRONASAR CF intervenes in very diverse geographical areas: Maputo province is very close to the capital city, but other targeted districts are much further way, increasing the costs of equipment and staff mobility. VFM indicators should preferably be tracked by region (or district) and the impact of such variations be explicitly taken into account.
	Pre-existing levels of social awareness and understanding of hygiene	**Bangladesh:** The high rate of exposure to CLTS results in high awareness of the risks associated with open defecation and a high rate of toilet use, meaning that CLTS-style triggering would have limited further impact. Designers of SHEWA-B chose instead to focus sanitation interventions on facilitating provision of permanent private toilets.
	Level of development of local markets for contractors and supply of equipment and spare parts	**Bangladesh:** A vibrant local market for manufacturing equipment for water and sanitation drives down costs. Where markets are less developed, additional emphasis would need to be placed on sanitation marketing.
	Economics (inflation, cost of living, cost of doing business etc.)	**Ethiopia:** Inflation caused large increases in costs of labour and materials during the programme, which meant that additional funding had to be requested later in the programme life. Such inflation could potentially have been anticipated to secure adequate funding from the start.
	Overall context: humanitarian crisis, political stability, natural disasters	**Pakistan:** Procurement by the NGO Care was affected by 'scarcity pricing' as suppliers sought to take advantage of the humanitarian crisis to apply higher prices.
Efficiency and Cost Efficiency	**Overall context:** humanitarian crisis, political stability, natural disasters	**Mozambique:** External factors in 2013 such as flooding in Zambezi and political turmoil can explain the decrease in the realisation rate of water points during that year. However, the realisation rate went back up after the flooding – which means that it is essential to assess the impact of these external factors separately from those linked to programme design.
Effectiveness and Cost-Effectiveness	• **Capacity of local staff** in programme areas, including the potential for local government to actively manage WASH programmes and budgets within the constraints of local government systems and processes	In **Bangladesh,** at mid-term review, poor retention and low capacity of local Community Health Promoters was identified as a factor limiting the sustainability of outcomes in target communities.

5.3 Taking account of internal factors impacting VFM

Programme managers need to focus on extracting learning from the internal factors that affect VFM analysis so as to inform programme design and implementation decisions. The table below shows examples of internal factors that are impacting the VFM of WASH programmes under review and that would likely need to be considered in other cases.

Table 12. Examples of internal factors impacting the VFM of WASH programmes

VFM dimensions	Internal factors impacting VFM	Examples
Economy	**Programme management:** Procurement efficiency and financial management efficiency will impact the costs of inputs	**Mozambique:** Weak procurement capacity and financial management in PRONASAR CF initially increased programme costs, negatively impacting economy. Improvements during the course of the programme means that the cost per water point and cost per CLTS campaigns now compare favourably with other WASH programmes in the country.
Efficiency and Cost Efficiency	**Choice of project components (i.e. water, sanitation and hygiene) and their combination**	**Bangladesh:** Combining investments in water, sanitation and hygiene promotion is likely to have improved cost-efficiency (and cost-effectiveness) as some costs were combined and multiple hygiene-related messages are likely to improve the impact on behavioural change. **Mozambique:** PEC Zonal promotion and education contracts perform social mobilisation activities both for construction of public water points and to conduct CLTS activities to encourage communities to adopt sanitation.
	Choice of programme implementation arrangements: which can be through governments, international organisations, supported by NGOs, community level facilitators etc.	**Zambia:** The involvement of local NGOs as CLTS facilitators at community level since March 2013 has increased cost efficiency. **Bangladesh:** In 2010, in response to reported patchy performance of Community Health Promoters, UNICEF appointed two apex NGOs (WaterAid and PLAN) to support the local NGO providers, train CHPs and promote standardised reporting. This increased IPS but had a positive impact on the performance of programme implementation. **Nigeria:** More communities achieved ODF status due to a shift from ward-level to village-level triggering.
	Funding arrangements, including the degree to which contributions from national and local governments as well as from households are leveraged. The quality of promotional work impacts on the extent to which households invest.	**Bangladesh:** The programme focused on demand-creation conducted by the Community Health Promoters and required households to cover most or all of the investment costs. This resulted in accelerated water point and latrine construction in households where there is high demand. Household investments in private water points and through their contributions to public water points from water user groups are estimated to total more than US$ 14.5 million.
	Contracting arrangements: Structure of contracts and incentives of local governments and contractors to perform	**Mozambique:** The absence of performance indicators and low accountability of province and district level staff and contractors reduced the efficiency of the programme.
	Quality of programme implementation: especially for behaviour-change interventions, this largely depends on the availability and capacity of NGOs at district and/or local level	**Mozambique:** Poor quality of PEC Zonal contractors might have reduced efficiency. These are mainly small local NGOs or social enterprises, which are sometimes inadequately trained. The capacity and retention of staff of local NGOs tends to vary, especially if salaries are low.

VFM dimensions	Internal factors impacting VFM	Examples
Effectiveness and Cost-Effectiveness	**Targeting of interventions:** the extent to which the programme effectively targets those who do not have access to services	**Bangladesh** has a pre-existing high access rate to water services. Therefore cost effectiveness was dependent on good targeting, to ensure that new users gain access to high–quality arsenic-free water, which was the focus of the intervention.
	Percentage of funding allocated to software, particularly to activities to change behaviour and encourage long-term use of services	**Nigeria:** The programme currently spends only an estimated 1% of its expenditure on WP expenditure on software (although this might be a slight under-estimate). This is low and is likely to affect the long term sustainability of WP functionality.
	Percentage of funding allocated to IPS: Improved real-time monitoring of the sustainability of outcomes can improve responsiveness, making it possible to make positive changes to the programme operation.	**Bangladesh:** The mid-term review identified weaknesses that resulted in changes in the content of hygiene promotion and social mobilisation and additional support arrangements to improve delivery. This was possible in part because of the high quality of monitoring data available from the various monitoring contracts funded by the project.

Decisions made during programme design have a high potential impact on VFM. Choices about what interventions to include in a project in order to achieve the ultimate impact goal (e.g. on health or poverty reduction), how these interventions are combined, what approaches will be used, how beneficiaries will be targeted and implementation arrangements all have an influence on programme efficiency and effectiveness. There are three main areas where programme designers need to formulate choices during programme design that ultimately impact on VFM:

- **Selecting programme components and activities:** Most WASH programmes are intended to achieve health impacts; impact is often expressed in terms of reduction in diarrhoeal disease. To achieve a reduction in diarrhoea, it is generally necessary to provide sustained access to adequate quantities of water, effect a change in sanitation behaviours so as to reduce human exposure to excreta and to ensure handwashing with soap at critical times. However, programmes which contain water, sanitation and hygiene components are complex and coordinating the interventions is challenging. At the same time, there is some evidence to suggest that targeting behaviour change on a very small number of key behaviours may be more effective than attempting to address a larger number. Thus, although they both have health improvements at the impact level of their results framework, SHEWA-B in Bangladesh aimed to influence outcomes for water supply, sanitation and hygiene as well as WASH in schools, while in Zambia the programme was more tightly focused on outcomes in sanitation and hygiene alone. Decisions on the choice of programme interventions are driven in part by external factors but also represent specific choices made at programme design. In the case of Zambia, the strong focus on sanitation may have resulted from an expectation that this would give greater efficiency (due to the add-on effects of building demand through CATS and supporting the supply of goods and services through sanitation marketing) and greater effectiveness by supporting a sustained change in sanitation practices. In SHEWA-B, the health impact was expected to extend beyond diarrhoeal diseases and include a reduction in ARIs and arsenic-related health effects. This may have resulted in higher costs as the programme included relatively expensive investments in water supplies.
- **Defining the most appropriate balance between software support and hardware investment:** The importance given to software activities is likely to affect cost-efficiency and cost-effectiveness. For the programmes studied, sanitation and hygiene components included mainly software costs, with the expectation that this would boost household demand, leading to household investments in sanitation or hygiene facilities. By contrast, water programme elements had much greater expenditure on hardware but even here the ratio of hardware to software expenditure varied greatly. In Nigeria, the ratio of expenditure on hardware to software was 99:1, although the software contribution in Nigeria was probably underestimated as it only included the training of local mechanics.[20] By contrast the water programmes in Bangladesh and Mozambique had a much lower hardware-to-

20 This was the only software cost that could be estimated.

software ratio of around 9:1. Social mobilisation included setting up water committees and sensitising communities for the physical maintenance and financial management of water points. Bangladesh included a strong health promotion dimension as community health promoters provided support and motivation to households to invest in private water supplies which were tested to ensure that they produced arsenic-safe water. Greater investments in software potentially drive up costs and could reduce VFM in the short-term, but the expectation is that they would eventually contribute to more sustained actual outcomes reflected in greater efficiency, effectiveness and cost-effectiveness. The lack of outcome data in the programmes under review means that it was not possible to confirm such an assumption.

- **Defining the most appropriate share of Indirect Programme Support costs.** IPS costs varied significantly between programmes. They represented between 9% (in Ethiopia) and 51% (in Nigeria) of total programme expenditure. Lower IPS yields lower total costs, which can be taken as an indicator of greater economy and efficiency – in Ethiopia, for example, IPS accounted for only 7% of programme costs, making the cost per person who gained access to water amongst the lowest. The cost per person was higher in Mozambique and in Nigeria, where IPS accounted for 32% and 38% of the cost per person who gained access to a new public water point respectively.[21] However, apparent efficiency might be misleading as a stronger focus on capacity-building may reinforce the ability to institutionalise the approach over the long-term and could yield lower costs over time. For example, in PRONASAR CF Mozambique, costs were initially high and efficiency was low as the programme implementation arrangements were being established. Low efficiency was also linked to delays in fund transfers from donors. However, the programme's VFM indicators subsequently improved to a point where the government-led programme now appears to yield good VFM when compared to other WASH projects in the country, such as the One Million initiative previously implemented by UNICEF.

  At programme design stage, it should be possible to ensure that IPS activities are focused on establishing strong programme management and oversight, with resulting positive effects on VFM over the longer-term. In five of the programmes analysed, IPS included the costs of building capacity, mostly for local governments. In Bangladesh, this capacity building component was separately identified as a component, which had the advantage of enabling planned outputs and outcomes to be tracked.

During programme implementation, other internal factors should be addressed to give managers greater control over decisions that may have an impact on VFM, such as for the procurement of goods and services, selection and training of staff, and levels of oversight and monitoring:

- **Strengthening procurement practices.** In Bangladesh and Mozambique, national and local government procurement processes were used to purchase some goods and services. These systems are often said to be non-transparent and may lead to price distortions. On the other hand, local government staff are often very experienced and able to manage procurement systems with which they are familiar, leading to efficiency gains. For example, in Bangladesh public procurement of drilling for deep tubewells remained on track throughout the project. Innovative contracts linking payment to verified results could potentially drive up efficiency and effectiveness but their impact in terms of improving VFM would need to be more thoroughly tracked. There was limited use of output-based contracts in the programmes that the VFM-WASH consortium analysed, with the exception of drilling contracts for tubewells/ boreholes.
- **Selection and training of implementers:** The quality of promotional work impacts on behaviour change and the extent to which households are willing to invest in new goods and services. The capacity and retention of staff of local NGOs varies, especially if salaries are low. Thus investing in training and support provided to local government and NGOs is important. For instance, in Bangladesh in 2010, in response to reported patchy performance of Community Health Promoters (CHPs), UNICEF appointed two experienced NGOs (WaterAid and PLAN) to support the local NGO providers, train CHPs and promote standardised reporting. This increased the cost of IPS but had a positive impact on performance.

21 It was not possible to include all IPS costs for all programmes (including the portion borne by the government for all programmes) in a consistent manner (see section 4.1.2). IPS is likely to be underestimated in Ethiopia, as it excludes government contribution at local levels, and slightly over-estimated in Nigeria

- **Monitoring outputs and outcomes.** Active monitoring of outputs and sustainable outcomes can be used to reveal unexpected changes or compare the quality of implementation in different parts of the programme. This can improve accountability and create performance incentives. In Zambia, a Performance Monitoring System was introduced in 2014 to track project performance at district, province and national levels, informing reporting by using mobile-to-web (M2W) technology. Primary data collected by Community Champions and Environmental Health Officers allowed monitoring systems to collect and analyse real-time data. The expansion of M2W monitoring combined with the introduction of NGOs as facilitators from mid-2013 led to cost-efficiency improvements during 2014. Programme cost per new person gaining access to improved sanitation or a hand-washing facility decreased from US$ 8.3 to US$3.4 between mid 2013 and the end of 2014. Using the mobile-to-web monitoring tool most likely allowed generating a number of efficiency gains, as summarised in Box 8 below. These estimates are provided only for reference; they were not calculated by the programme implementers and are not necessarily based on the same methodology.

Box 8. Cost efficiency of mobile-to-web monitoring tools – Example from Zambia

UNICEF Zambia estimated that the cost of implementing the CATS component in districts using M2W was 30% lower than in districts using paper-based surveillance tools (at a cost per new user of improved sanitation of US$ 1.65 compared to around US$ 2 to 2.5 per new user of improved sanitation for other implementing partners not using mobile-to-web). A number of efficiencies have been noticed when using the mobile-to-web monitoring tool:

- It substitutes hardware for Human Resources effort, both reducing data errors and increasing cost efficiency.
- It improves intervention uptake through (i) efficient targeted monitoring, (ii) an incentive-based system linked to the adequacy of reports and (iii) timely disbursement of output-based financial incentives to champions (around US$ 10 per verified ODF village).
- It reduces the need for managerial capacity for large-scale coverage: M2W allows one partner to manage interventions in up to 29 districts at the same time; comparatively, other partners can only manage 4 districts at the same time. The per-district management costs are therefore reduced by a factor of 7.
- Data can be used in a timely manner to provide more accurate and efficient support activities at district, ward and community level: the implementing stakeholders can select where to support and verify intervention progress based on data analysis.
- It provides clear, simple visualization of data that effectively mobilizes traditional chiefs to monitor villages' progress towards ODF status.

Source: UNICEF communication, "Overview of achievements and ways forward for the roll-out of the mobile-to-web monitoring framework. (2014, October 17)

6 Challenges and recommendations for VFM analysis

The VFM-WASH project team encountered a number of challenges in conducting VFM analysis, which would no doubt also be met by other organisations conducting a similar type of analysis to move beyond the current rather crude unit cost figures used in the sector.

Improved and more regular VFM analysis would allow programme managers to use this as a management tool, and potentially as an advocacy tool to demonstrate their performance and attract funding. This section formulates recommendations for programme implementers to improve data collection so as to facilitate VFM analysis, and for funders to promote and mainstream a VFM culture within the sector.

6.1 Challenges in doing VFM analysis

The VFM-WASH consortium members have met two types of challenges when conducting VFM analysis for this project, which can be roughly separated between "institutional and attitudinal" challenges and "data-related" challenges.

Institutional and attitudinal challenges made it quite difficult to get stakeholders, including programme implementers and funders, to engage with the analysis and fully support it. Stakeholders at country level were not familiar with the approach and had a limited understanding of it. This challenge was partly addressed by providing further information, based on the initial methodological note developed for the project. Despite this, some implementers had limited trust in the methodology's ability to yield meaningful results and a degree of distrust towards an approach that may introduce distortions; fearing an excessive focus on "counting taps and toilets" as opposed to measuring the value of investing in long-term capacity building of government institutions and local implementers.[22] All of these factors need to be duly recognised and the potential of VFM analysis to support programme management should not be over-emphasised: it is one tool amongst others and the results of a VFM analysis need to be combined with other types of analysis, particularly a qualitative analysis focusing on processes, in order to inform programme-level decisions.

Data-related challenges were met in all of the programmes under review. A summary of the main data-related challenges encountered is provided below:

- **Data on expenditure tend to be reported only by type of expenditure** (on capital goods, services, salaries etc.) rather than by type of activity (e.g. government expenditure). It was only possible to allocate the data to activities by making assumptions on what type of inputs were actually included in each category. As a result, inputs and outputs were not tracked in a consolidated manner, which meant that it was necessary to piece together the information manually.
  - In Nigeria, UNICEF reports expenditure under eight reporting categories, which are different from the ten reporting categories in the SHAWN budget. In order to allow the comparison between budgeted- and actual spending, these reporting categories need to be harmonised. In addition, in order to allow an analysis of the efficiency and effectiveness of specific outputs and outcomes, reporting categories need to be attributed to specific outputs and activities.
  - In Mozambique, expenditure recorded in financial reports using broad categories of expenses (staff, services, goods, construction etc.) had to be allocated to each component based on the level of government at which each contract was procured.

22 One potential additional factor can be an inherent reluctance to share data, for fear of not comparing favourably with other programmes in the same country or in other countries. This could be detected in isolated cases, but most organisations contacted were on the whole willing to share data and be transparent.

- **In the case of multi-donors programmes, input and output data for the programme were often tracked through a number of different systems and reported for different funders using different formats, which made VFM analysis more complex.**
  - In Bangladesh, input and output data for the programme were often tracked through a number of different systems and were not consolidated. Because the programme is primarily implemented by a government department much of the detailed financial information has to be extracted from governmental financial reporting systems. These are not particularly well designed for tracking expenditures against detailed programme components. UNICEF staff in Bangladesh reported that they had experienced challenges in reconciling financial data and output data.
  - In Mozambique, donor-driven reporting requirements were distorting the way in which the information was tracked and reported. The Annual Report ("Relatorio Balanço") only reported externally funded outputs of the Common Fund. By contrast, the reporting for the internally funded outputs was weak and could not be separated out from other sources of Pillar A funding. Thus, this study focused on the externally funded PRONASAR CF activities.[23]
- **Key data gaps regarding programme results constrained VFM analysis.** Variability in terms of result reporting between programmes, and within programmes (between implementing partners, regions, years) made it sometimes difficult to consistently apply the VFM methodology. Assumptions sometimes had to be made to fill the gaps when data was missing. For example:
  - In Mozambique, information about the number of latrines constructed as a result of programme intervention in the 15 districts targeted by the PRONASAR CF was not available at central level broken down by district: it was therefore not possible to separate out results between what the CF had achieved and what other programmes had done. Such breakdown could only be estimated from the number of latrines built in each province. This significantly reduced the level of accuracy of the VFM estimates.
  - In Zambia, although UNICEF consistently reported on assumed outcomes, there was generally very limited data for outputs, i.e. on the number of villages triggered or the number of training sessions, etc. Outputs were reported by NGOs as part of their contractual requirements, but this information was not collated in a consolidated manner, and different NGOs reported using different indicators. As a result, the analysis of efficiency and cost-efficiency was weak because it was necessary to make assumptions to fill in the gaps.
- **Few programmes had reliable data on actual outcomes of WASH investments.**
  - SHEWA-B in Bangladesh had the best outcome data. The national monitoring systems used by DPHE and other Government of Bangladesh agencies are not particularly strong and lack a focus on outcome monitoring. Recent efforts to improve and modernise surveillance of water points at DPHE are a significant step forward and will help improve the monitoring of outputs in future, provided that DPHE maintain funding of their new GIS team. UNICEF's support to DPHE in this regard has been critical in building capacity to track functionality and water quality performance of the thousands of public water points for which DPHE remains responsible. This may be particularly important in Bangladesh which faces the very specific challenge of arsenic contamination in groundwater. In SHEWA-B as a whole there was a strong commitment to monitoring. However, multiple monitoring processes resulted in some information overload, so that monitoring information was not always used as effectively as it might have been. This was particularly a problem for DPHE whose staff do not all have strong M&E or management capacity. The programme also showed a particularly strong commitment to evaluation. However, while there was a strong commitment to measuring outputs and hygiene outcomes and health impacts, there was little or no attention to measuring water and sanitation outcomes.
  - In Mozambique, information on outcomes was not available but may become available when SINAS (the National Water and Sanitation Information System that collects information on both the rural and urban water and sanitation sectors) becomes fully operational, and when data is regularly entered and made available. Since 2009, considerable investments have been made towards strengthening SINAS, but its implementation has been repeatedly delayed, partly due to a lack of funding for inputting data at district level.

23 except for small water piped schemes to which the Government of Mozambique was also contributing

- In Zambia, a mobile to web (M2W) data collection tool was developed, which collects indicators for S&H facilities usage. However, this data should be systematically tracked and reported in UNICEF progress reports.
- Data on outcomes and impacts were not available for SHAWN programme areas in Nigeria. An impact study was carried out in 2014 by a research team from the Royal Tropical Institute from Amsterdam. However this study covered a larger geographical area than the LGAs covered by SHAWN. As SHAWN programme areas could not be isolated in this study, the results of the impact evaluation could not be used to calculate cost-effectiveness for this VFM study.
- In Pakistan, data on sustained actual outcomes was very scarce. Indeed the only sources were limited KAP surveys conducted at the end of the intervention.
- With the exception of Bangladesh, none of the programmes had reliable baseline data on access to and use of water and sanitation services or key hygiene behaviours prior to project or programme implementation. Bangladesh was also the only programme whose monitoring and evaluation also tracked the baseline and end line status of neighbouring non-project areas, which enables some assessment of the specific impact of the programme. The consequent availability of detailed outcome-level data can result in an apparent lower level of performance of this project at the outcome level when compared to others where baseline and comparator information are not available. Because of this type of information asymmetry, the interpretation of outcome data and comparisons of cost-efficiency between programmes must always be done with care.

- **No programme collected indicators that allowed equity of inputs, outputs or outcomes to be monitored,** for example by assessing whether the programme provided delivered sustainable outcomes that benefited people who needed it most.
- **Some of the data gaps were filled using Objective 2 national survey results** (in Mozambique, Bangladesh and Ethiopia). This data is statistically significant at the national level but not for programme areas, so outcomes observed cannot be directly attributed to the programmes studied. Thus, the resulting analysis only provides an indication of the range of programme outcomes, and should be considered with care.

6.2 Recommendations for programme implementers

VFM analysis can support performance-based management by giving managers crucial quantitative metrics, backed by qualitative analysis. By comparing a poorly performing programme against a higher performing one with similar objectives and activities in the same country, a manager can identify key VFM drivers and areas in which the worse-performing programme could be improved.

Yet, as mentioned in Section 6.1 above, while all programmes were subject to monitoring and evaluation and financial reporting, data were not always available and were of variable quality. There could be conflicting or inconsistent data in different locations and methodologies for computing data were not always clear. This limited the ability to link expenditure to results and apply the VFM methodology as initially envisaged.

This section outlines specific recommendations that will help programme managers conduct more detailed VFM analysis as part of routine programme management activities, to support the formulation of programme management decisions. This will require programme management tools to be strengthened, in order to collect the right type of data, and to store and analyse it in a way that produces meaningful and useful results for programme managers.

6.2.1 Develop a clear logframe for monitoring results and use it consistently

Variability of reporting between programmes, and within programmes (between implementing partners, regions, years) made it difficult to apply the VFM methodology consistently.

Indicators should be clearly defined for all outputs, assumed outcomes and sustained actual outcomes (as defined in the VFM methodology), and should all be summarised in Annual Progress Reports. Moreover, expenditure also needs to be reported against the same activities and results as in the logframe. Where governmental expenditure-tracking systems are used, it would be necessary to introduce a programme-specific expenditure-tracking system to code expenditure as and when incurred and to allocate it to specific activities.

6.2.2 Develop a centrally managed tool to track inputs and outputs jointly

None of the programmes studied was jointly tracking data on results and expenditure. Whereas expenditure data was usually available, it was not broken down and recorded by activity and the timing of such expenditure as compared to the timing of results was also uncertain. As a result, considerable efforts were required to match them to manually piece together the information and conduct VFM analysis.

A common reporting framework needs to be created so that both expenditure and results can be recorded based on the activities and results set out in the logframe. A simple (Excel) tool can then be developed to track jointly inputs and results. This will allow value for money indicators to be estimated on a regular basis and help to identify where and when programmatic adjustments are needed.

A crucial piece of information for estimating VFM indicators relates to contracts let by the programme, their purpose, budgets and actual expenditures. In order to reconcile expenditure with outputs, financial reporting categories need to be connected to specific outputs. Recording expenditure by contract type would remove the need to interpret expenditure lines in financial reports (for example trying to understand what is actually covered by 'goods', 'services' or 'capital expenditure'). Tracking contract expenditure on a regular basis in a Management Information System would be a key element to managing spending more efficiently and would encourage future data collection for VFM analysis.

To track expenditure based on the type of contracts and activities procured, it is recommended to create activity codes and compile in a single management tool the contracts that are let out together with their disbursement plans. This tool can then be updated monthly with information on the actual disbursements made.

6.2.3 Strengthen the monitoring of sustained actual outcomes and their equity

Information on sustained actual outcomes was critically lacking in all programmes analysed by the VFM-WASH project with the notable exception of Bangladesh. This is problematic, as the emphasis on the sustainability of investments is only going to increase post-2015 with the planned adoption of the Sustainable Development Goals.

M&E systems should seek to collect data on the actual number of beneficiaries who gain access to water and sanitation during the programme but also the number of people over time who are still actively using the services implemented by the programme at the intended service level (at the outcome level).

More data also needs to be collected on the equity of outputs and outcomes achieved. None of the programmes collected indicators that allowed monitoring of equity, for example by assessing whether the programme provided delivered sustainable outcomes that benefited the people who need it most. Outcome data need to be monitored for different groups, to address potential areas of inequity such as by poverty level, gender, or social group (e.g. castes).

It is also essential that outcome data is made accessible and shared across sector actors at all levels of programme management. Conducting the VFM analysis on a routine basis and using it for management purposes would give a clear purpose and pathway for using outcome data and therefore provide a stronger incentive for collecting data on outcomes during programme

implementation but also in the future, measuring sustainable outcomes when the programmes have ended.

6.3 Recommendations for funders

The WASH sector requires a strategic change in culture: programme funders and implementers should start demanding more robust metrics for evaluating performance and supporting funding decisions, without losing sight of the other essential elements which cannot always be measured, such as the equity and cultural acceptability of programmes. The involvement of funders is essential to promote a VFM culture within the sector.

6.3.1 Request VFM analysis from programme implementers

As seen in Section 6.1 above, VFM analysis requires some degree of effort from implementers to adapt M&E and financial reporting systems, and develop ownership of the VFM methodology. Benefits are not always immediately visible. This can make it difficult for implementers to make the first step. When donors start requesting VFM analysis on a more regular and consistent basis, programme implementers will start adopting this as part of their standard "modus operandi" and will start seeing how to use the data to improve programme management. VFM analysis is most insightful when combined with a full evaluation at mid-term or the end of the programme, which means that a VFM analysis should be incorporated in standard Terms of Reference for this type of evaluation, with clear guidance for undertaking it.

Funders should also take a stronger interest in helping programme implementers formulate the VFM questions that matter and develop adequate and relevant M&E systems to help answer those questions. For example, we have found that none of the programmes analysed had sufficient M&E data to be able to track the equity dimension of VFM results. This would have required computing VFM indicators for different groups (classified by income or level of social exclusion), which in turn requires inputs and results for these groups to be tracked separately. As reducing inequities is likely to be a much more explicit concern in the post-2015 era, developing adequate systems to perform this type of VFM analysis will become critical.

6.3.2 Support the development of tools to facilitate VFM analysis

One factor limiting widespread use of VFM analysis is that many sector professionals are unfamiliar with the overall approach and specific concepts. Many sector professionals are unfamiliar with budget management and tracking, particularly for programmes that are managed through broader public management systems. To overcome these difficulties, funders should invest in the development of tools that can facilitate VFM analysis.

The "How to do VFM analysis for WASH programmes" publication developed as part of the VFM-WASH project provides a conceptual framework and steps for applying the methodology, and can be used as manual during training sessions. Given that the VFM analysis needs to be tailored to different programme logframes, we do not think that a universal tool for computing VFM indicators will be useful. However, for new programmes starting to develop their logframes, M&E and financial reporting, it could be useful to develop a standard spreadsheet (Excel) tool for tracking jointly expenditure, outputs and outcomes that could be used as a reference template.

Programme implementers need specific guidance on analysing the VFM of interventions where outputs and outcomes are less specific and harder to measure such as interventions to build capacity, or strengthen monitoring. The SHEWA-B project was stood out for in the fact that it identified this type of software activity as a specific component with its own outputs and outcomes. In other cases, these activities were treated as an overall investment and included in the IPS costs. In future, it would be important to think further on how these activities can best be incorporated into a VFM analysis, both to inform the management of these activities and to alleviate fears that a VFM approach could trigger a shift back to counting taps and toilets as opposed to focusing on longer

term sector support efforts. The methodology for estimating the VFM of more complex interventions, such as hygiene promotion, where a multiplicity of factors influence whether or not people adopt hygienic behaviours, should be further developed.

6.3.3 Support capacity building and information sharing on VFM analysis

Training and capacity building are required to disseminate the VFM analysis methodology among programme implementers, make the case for its usefulness and help them adapt and develop tools as set up in the section above.

To overcome fears about sharing information, it will be important to encourage organisations to first use VFM analysis as an internal management tool to track performance of their own programmes over time. As they become more familiar with the approach and confident about their results, they will become more willing to share information and learn from each other. The establishment of a community of practice and other types of information sharing arrangement will be essential for triggering exchanges between practitioners on problems, solutions and uses of VFM analysis.

Ultimately, the value of VFM analysis will increase when more data points become available, particularly for programmes implemented in the same country. Apart from the data points themselves, which can be difficult to interpret when context and causal links are challenging to understand, a narrative analysis is needed to describe how programme managers and funders are using results from previous VFM analysis or conducting VFM analysis for their own programmes. These narratives could discuss what VFM questions funders and programme managers have asked themselves, what they could (or could not) measure, what changes they made as a result of these findings and how these changes impacted VFM indicators. The present report goes some way towards this but a longer-term approach is needed to maximise learning, which would facilitate direct exchanges between programme implementers and funders through a community of practice and regular exchanges on VFM in WASH.

Funders have a key role to play in supporting these activities so as to support the development of a "VFM culture" in the sector. Lessons from other sectors that are at a more advanced stage of development in this area, such as the health sector, should also be drawn out with support from funders.

Annex A – Key references

A.1. Background documents on the concept of Value for Money and its application in the WASH sector

- DFID (2011) VFM approach
- DFID WASH portfolio review (2012)
- DFID's approach to VFM (DFID, 2011)
- ICAI (2011) ICAI's Approach to Effectiveness and Value for Money, Report 1
- Jackson P., (2012), Value for money and international development: Deconstructing myths to promote a more constructive discussion, http://www.oecd.org/dac/effectiveness/49652541.pdf
- National Audit Office, Analytical framework for assessing Value for Money, http://www.bond.org.uk/data/files/National_Audit_Office__Analytical_framework_for_assessing_Value_for_Money.pdf

A.2. VFM-WASH project reports

The methodology used for conducting the VFM analysis can be found in the guidance document produced for WASH sector practitioners:

- Prat M-A., Trémolet S., Ross I. (2015) How to do Value for Money analysis for water, sanitation and hygiene (WASH) programmes; Guidance note.

Sources and detailed references for data presented in this report can be found in the programme-level reports:

- Evans B., Bates L, Amal H., (2015), Analysing the Value for Money of SHEWA-B in Bangladesh.
- Mujica A., Brown J., Halwiindi H. (2015), Analysing the Value for Money of DFID's Sanitation and Hygiene Programme in Zambia.
- Prat M-A., Ross I., Kebede. S (2015), Analysing the Value for Money of Water Supply and Sanitation Programme (WSSP) in Ethiopia
- Prat M-A., Trémolet S., Sousa L., Thompson G. (2015), Analysing the Value for Money of PRONASAR Common Fund investments in Mozambique.
- Ross I., Ensink J., Memon Y. (2015), Analysing the Value for Money of DFID's contribution to the humanitarian WASH response to the 2010 Pakistan floods
- Tincani L., Biran A., Oke I. (2015), Analysing the Value for Money of DFID's SHAWN-I programme in Nigeria.

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