

Applying the life-cycle costs approach: Latrine costs in Burkina Faso

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Front page photo

Burkina's traditional brick-built latrine with mango trees in the back.
(picture made by the WASHCost team Burkina Faso)



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WASHCost is a five-year action research project investigating the costs of providing water, sanitation and hygiene services to rural and peri-urban communities in Burkina-Faso, Ghana, Mozambique and India (Andhra Pradesh). The objectives of collecting and disaggregating cost data over the full life-cycle of WASH services are to be able to analyse costs per type of infrastructure and by service level, and to better understand the cost drivers, so as to enable more cost effective and equitable service delivery. WASHCost is focused on exploring and sharing an understanding of the costs of sustainable services (see www.washcost.info).

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Acronyms

DGAEUE	<i>Direction Générale de l'Assainissement, des Eaux Usées et Excréta</i> [General Directorate for Sanitation, Wastewater and Human Excreta]
JMP	WHO/UNICEF Joint Monitoring Programme
MDG	Millennium Development Goals
NGO	Non-governmental organisation
ONEA	<i>Office national de l'eau et de l'assainissement</i> (National Agency for Water and Sanitation)
PCD-APEA	<i>Plan communal de développement d'approvisionnement en eau potable et en assainissement</i> [Communal Development Programme for Water Supply and Sanitation]
PN-AEPA	<i>Plan national d'approvisionnement en eau potable et en assainissement</i> [National Programme for Drinking Water Supply and Sanitation]
TPL	Traditional pit latrine
VIP	Ventilated improved pit latrine
WASH	Water, sanitation, and hygiene

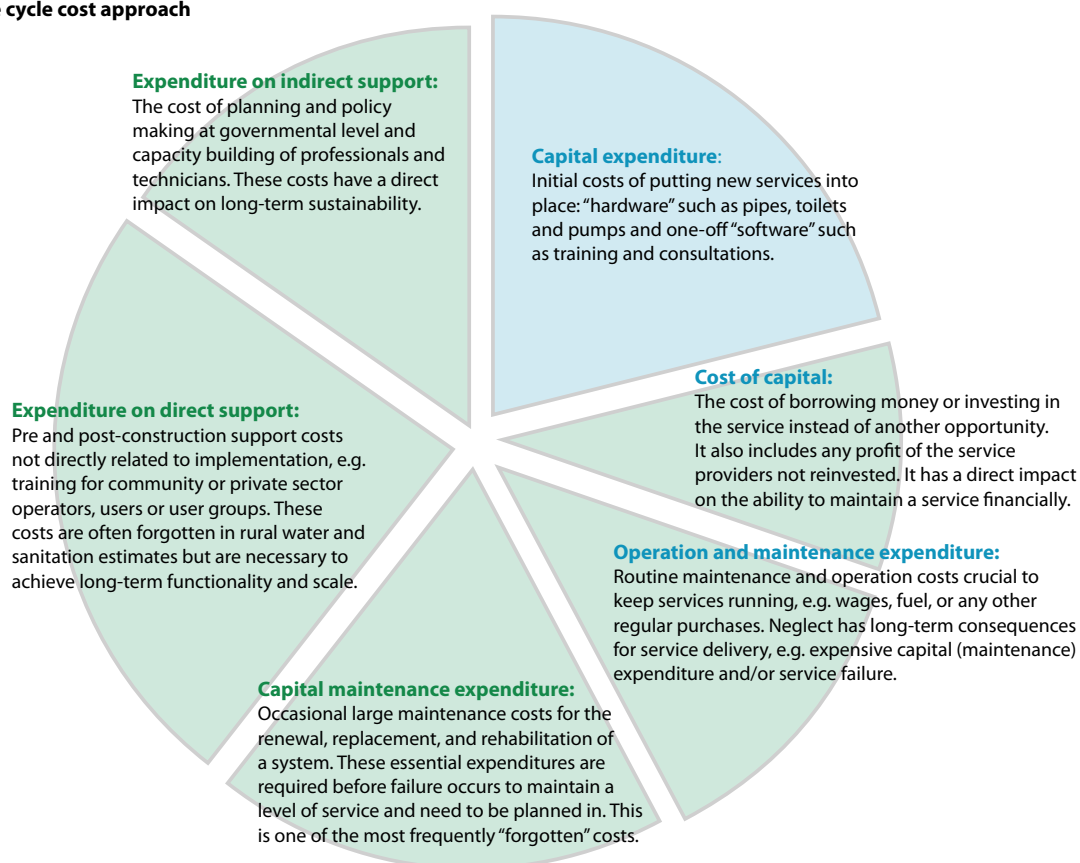
Burkina Faso is one of the poorest countries in the world, ranking 177 out of 182 countries on the UNDP's Human Development Index, and with a per capita GDP of US\$ 598 in 2010 (IMF, 2010). This sub-Saharan state has made considerable efforts in the past ten years to improve the access of its population to basic sanitation services. This resulted in 2008, in the setting up of the Direction Générale de l'Assainissement des Eaux Usées et Excréta (DGAEUE) [General directorate for waste water and excreta management], while in 2010, more than US\$ 341 million were allocated to the Plan national d'approvisionnement en eau potable et en assainissement (PN-AEPA), [National Programme for Water Supply and Sanitation 2010]¹.

However, Burkina Faso is still far from achieving its target to ensure that 55% of the population have improved national sanitation coverage by 2015. The Joint Monitoring Programme (JMP) estimates that in 2008, more than 75% of the population in rural areas practiced open defecation (WHO/UNICEF, 2010). More recently, a national survey conducted by DGAEUE showed that less than 10% of the urban population and less than 1% of the rural population had access to improved sanitation (DGAEUE, 2010). These findings highlight the huge efforts still required to achieve the 2015 sanitation target.

Life-cycle costs of sanitation services

The life-cycle costs approach advocates taking into account all the costs required for supplying sustainable and equitable WASH services to a specific population in a determined geographical area. These costs include the construction and maintenance of systems in the short and longer term, taking into account the need for hardware and software, costs of capital, source protection and the need for direct and indirect support (Graph 1). The life-cycle costs approach has been described in a Briefing Note which can be viewed online at www.washcost.info/page/1557 (Fonseca et al, 2010).

Graph 1: Life cycle cost approach



Source: WASHCost Ghana

¹ Funding as at 31 December 2010.

Quantifying the life-cycle costs of a latrine is only a first step in understanding the costs of a sanitation service. Sanitation is not just about latrine construction and has to be considered in the perspective of a service. A sanitation service should meet criteria of accessibility, use, reliability and environmental protection (Potter, Klutsé et al, 2011). Planning a sustainable sanitation service implies understanding all of the costs inherent to the service, of which latrine construction is just one component, i.e. capital expenditure. The latrine must also be maintained and rehabilitated to ensure that the service level remains the same as originally intended. Continuous appropriate use of latrines can be supported by regular education and awareness raising campaigns or by local monitoring and sanitation practice improvement programmes. But quantifying the costs of sanitation services is not an easy task. Currently, planning is done on the basis of unit investment costs. These include the costs of latrine construction and the costs of awareness raising and creating demand from communities. The reference costs used for planning do not take into account the other components of life-cycle costs taking place after latrine construction, such as operation and maintenance, rehabilitation, extension and support expenditures.

Costs incurred by households

The costs presented in this document are limited to **expenditures incurred by households for construction, operation and maintenance, and rehabilitation of their latrines**. They do not include funding from DGAUE, NGOs or Office national de l'eau et de l'assainissement (ONEA), [the National Agency for Water and Sanitation] to (entirely or partly) subsidise latrine construction and/or awareness raising programmes, nor funding from NGOs and ONEA to cover support costs to the target population beyond infrastructure implementation. In other words, **the life-cycle costs presented in this paper are the minimum costs of access to sanitation**. They are inevitably less than the life-cycle costs of a sustainable sanitation service.

Moreover, the unit cost calculated on the basis of household expenditures can by no means be considered as an estimate of the ideal standard cost of a latrine. There is no evidence that expenditure incurred by households is sufficient to cover all the costs they have to bear (maintenance and rehabilitation expenditures, all or part of capital/construction expenditure). In this paper **we present the real or observed costs, not the standard or 'ideal' costs**.

So what is the purpose of this study? Its purpose is to reveal expenditures borne by households which are largely unacknowledged or even unknown. Usually, the cost of building a latrine is taken as an adequate base to quantify the expenditure of access to sanitation. However, a national programme which aims to raise coverage from 10% to 55% in just a few years cannot disregard the expenditure households must meet in order to maintain service levels after the construction of new infrastructures. This is for two reasons:

- **Household expenditures on sanitation are necessary to maintain facilities provided** (by DGAUE, NGOs and ONEA). If households do not meet these expenditures, the investments made will not have the expected results. **Understanding and taking into account expenses borne by households helps to focus attention on access to sanitation for the poorest and on the mechanisms that are needed to ensure equitable access to this basic service.**
- Some of the expenditures borne by households are post-construction expenditures (maintenance and rehabilitation). The sanitation goals set by the PN-AEPA will require considerable scaling up in terms of facilities. In our view, going to scale cannot be implemented without reflecting on post-construction interventions or putting into place various systems and procedures, (such as those needed for construction and training). **To support the development of the sanitation sector, it is essential to understand the scale of the needs and the population still to be served.**

Main findings

The costs presented here were obtained from a sample of six villages and three urban sectors in three regions. Tables 1 and 2 present the main results from rural and urban areas for traditional pit latrines (TPLs) and ventilated improved pit latrines (VIP latrines).

Table 1: Costs of TPL per household per year in rural areas (US\$ 2010)²

	TPL			
	Investment	Maintenance	Rehabilitation	Total
Mean	5.9	8.5	3.9	14.7
Median	5.2	4.1	3.5	9.9
Standard deviation	3.8	13.3	2.8	14.8

Table 2: Costs of TPL and VIP latrines per household per year in urban areas (US\$ 2010)³

	TPL				VIP			
	Invest.	Maint.	Rehab.	Total	Invest.	Maint.	Rehab.	Total
Mean	23.1	26.8	9.2	51.9	52.6	24.8	1.1	78.4
Median	17.1	10.3	4.4	38.8	53.2	12.4	N/A	71.4
Standard deviation	18.6	38.9	13.0	38.9	9.8	35.0	N/A	37.5

Traditional pit latrines show wide cost variations according to the type of area: **a rural TPL costs US\$ 14.7 per year on average, which is 3.5 times as much as a TPL in urban areas. VIP latrines in urban areas cost on average 35% more than a TPL in the same type of area.**

A key finding was derived from disaggregating costs: **for a traditional pit latrine the annualised capital expenditure is generally lower than recurrent expenditures (maintenance and rehabilitation).** The cost of acquiring the latrine represents 42% of the total cost, compared to 58% for recurrent expenditures. In other words, over a life span of ten years, maintenance and replacement of a TPL costs more than the original capital investment in building it.

It is a different story with VIP latrines. **The annualised acquisition costs of this improved technology in urban areas are higher than the maintenance costs.** The initial investment costs represent 67% of total costs, twice as much as the subsequent maintenance and rehabilitation. Moreover, although capital expenditure for a VIP latrine is higher than for a TP latrine, the operation and maintenance costs are similar for both technologies.

For all technologies, the cost component that shows the biggest variation is maintenance expenditure. This can be explained by the differences in the spending capacity of households to cover post-construction expenditures. On average, switching from basic sanitation (TPL) to improved sanitation (VIP) leads to a doubling of annual sanitation costs for households, because of the greater capital investment required to achieve this improved sanitation.

² Costs originally calculated in local currency, converted to US\$ based on the 2010 average exchange rate of 0.00206 (source: <http://www.oanda.com/currency/average>)

³ *Ibid*

Life-cycle unit costs and estimates for meeting MDG sanitation targets

The goal of the PN-AEPA is to achieve a national household sanitation coverage rate of 55% by 2015. It also specifies that latrines should be of improved technology, hence it excludes traditional pit latrines. What would it cost to achieve 55% coverage on the sites surveyed by WASHCost?

Table 3 shows the number of latrines required on each site to meet the target of a 55% coverage. A total of 852 latrines would have to be built, but this number is an under-estimate, as existing latrines are included in the 55% coverage rate, even when these latrines are not of improved technology.

Table 3: Number of latrines required to meet MDGs on surveyed sites

Region	Sites	Population (2008)	Current number of latrines (all types)	Current coverage rate (%)	Number of latrines required to achieve MDGs
Nord	Ouahigouya, Secteur 1	7,418	994	< 95 %	0
	Aorema	4,096	40	10 %	185
	Margo	2,101	31	15 %	85
Hauts-Bassins	Houndé, Secteur 2	1,568	133	85 %	0
	Bouéré	7,299	32	5 %	369
	Dossi	3,688	18	5 %	185
Centre	Ouaga, Secteur 30	15,014	2,900	< 95 %	0
	Yagma	1,519	56	37 %	28
	Komsilga	1,704	98	58 %	0

On the base of a life-cycle unit cost of US\$ 78 per year for a VIP latrine (the mean figure in Table 2, above, it would cost approximately US\$ 67,000 per year to reach the target of 55% coverage. As this cost is calculated on the basis of actual household expenditure, it only covers annual expenses made by households, disregarding both external budget support for construction costs and household contributions in kind. Considering that the GDP per capita in Burkina Faso amounted to US\$ 598 in 2010 (IMF), the annual sanitation cost for a 10 person household (typical number of people for one latrine) would be equal to 1.3% of the average household income.

Assuming construction occurs in 2012, the total expenditures that have to be met by households would be US\$ 448,050 (Table 4), just to meet the sanitation target in these sites.

Table 4: Capital expenditure for a 55% coverage of surveyed sites

Construction year	2012
Number of latrines built	852
Unit investment costs per year, US\$	53
Total unit investment costs, US\$ (10 years)	526
Total investment costs US\$	448,050

From 2013 onwards, post-construction expenditures covering recurrent costs are estimated at US\$ 22,000 per year (Table 5).

Table 5: Recurrent costs required for a 55% coverage of surveyed sites

Period	2013 to 2015
Number of latrines built	852
Recurrent unit costs per year, US\$	26
Total recurrent costs, US\$	21,990

In other words, households that would be provided with a VIP latrine in 2012 would incur, in total, an expenditure of US\$ 515,000 by 2015, which corresponds to US\$ 600 per household over four years, or approximately US\$ 150 per year.

Despite efforts made by the sector and the government, providing sustainable sanitation services remains a huge challenge in Burkina Faso. This paper has highlighted the costs incurred by the population, per household, to acquire and operate a traditional latrine and/or a VIP latrine⁴. Next steps include looking at service levels and dialogue intensification with the national WASH stakeholders.

4 An extended version of the paper is available in French on WASHCost Website or through the authors.

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