

# Life-cycle costs approach for WASH services that last



## Life-cycle costs in Ghana

Briefing Note 3: Costs of rural and small town  
sanitation services

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**WASHCost project partners have developed a methodology for costing sustainable water, sanitation and hygiene (WASH) services by assessing life-cycle costs and comparing them against levels of service provided. The approach has been tested in Ghana, Burkina Faso, Mozambique and Andhra Pradesh (India) and Mozambique. The aim of the life-cycle costs approach is to catalyse learning to improve the quality, targeting and cost effectiveness of service delivery.**

In Ghana, Kwame Nkrumah University of Science and Technology (KNUST), International Water and Sanitation Centre (IRC), and Community Water and Sanitation Agency (CWSA) are using the WASHCost Life-Cycle Cost Approach to identify the true costs of providing sustainable Water, Sanitation and Hygiene costs in rural and peri-urban areas. This series of briefing notes has been developed to explain the methodology, share the findings, and draw out the implications for policy and practice in the Ghana's WASH sector.

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## Front page photo

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

# Life cycle costs in Ghana:

## Costs of rural and small town sanitation services

WASHCost Briefing note no. 3 presents findings on household sanitation technologies used in rural areas and the costs of accessing sanitation services based on these technologies, using the life cycle costing approach. The briefing note is based on a survey conducted by WASHCost Project in Ghana in three districts in Northern, Ashanti and Volta regions.

### Introduction

Access to sanitation in Ghana is low and progress to achieving the national sanitation target is off-track. According to data compiled by the WHO/UNICEF Joint Monitoring Program (JMP), Ghana has seven years to raise sanitation coverage from 18% to 61.5% in urban areas, and from 7% to 55% in rural areas. It should be noted that the JMP does not count 'shared toilet facilities' towards this achievement even if the technology used is otherwise acceptable. If shared facilities are counted, Ghana would still need to raise sanitation coverage from 40% to 55% in rural areas, although the MDG sanitation target would already have been achieved in urban areas.

A good understanding of the cost of providing sanitation services based on various technologies and corresponding hygiene education is important for planning, budgeting and implementation of sanitation services. However, the level of understanding of these costs in Ghana is limited. For example, it is not well known how much it costs to provide a toilet facility of a particular technology or how much it costs to maintain the facility to deliver a desired level of service.

This briefing note presents initial findings on the cost of providing sanitation services in rural areas and small towns using, primarily, Ventilated Improved Pit (VIP) latrine technology, which is the dominant technology in rural Ghana. The work is based on the results of a study in 31 rural communities and 4 small towns in Ashanti, Northern and Volta region (for more details of the study methodology see WASHCost Briefing Note No 1).

### Sanitation service costing framework

The framework for costing sanitation service delivery is based on the life cycle costing approach. Life-cycle costs (LCC) represent the aggregated costs of ensuring delivery of adequate, equitable and sustainable Water, Sanitation and Hygiene (WASH) services to a population in a specified area. The diagram shows the main cost components of service delivery – more detail can be found in WASHCost Briefing Note No. 1

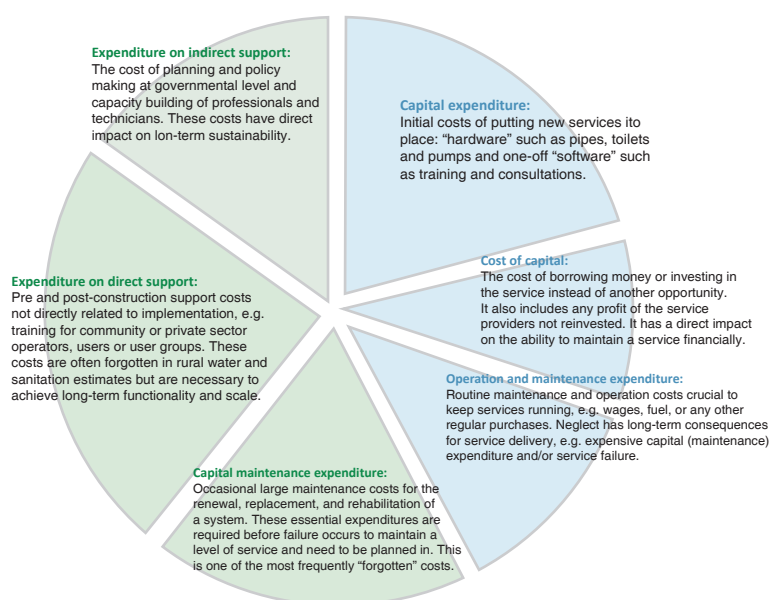


Figure 1: Main components of Life Cycle Costs for Sustainable Services

## Sanitation technologies being used

The survey covered a total of 1,273 households (1,032 in rural communities and 241 in small towns). In all, 346 household toilets were identified in rural and small towns representing 27% of all households having access to a type of household latrines. However, 13 of the household latrines were abandoned. The sanitation technologies found in the study were:

- Water Closet (WC)
- Ventilated Improved Pit (VIP) latrine: any latrine with a concrete slab and ventilation pipe.
- Kumasi Ventilated Improved Pit (KVIP) latrine: two pit (alternating) VIP
- Sanplat: any modern slab without vent pipe
- Traditional Pit Latrine (TPL): pit without modern slab or vent pipe.

Figure 2 shows the distribution of the different household sanitation technologies identified by the study in, respectively, rural communities and small towns.

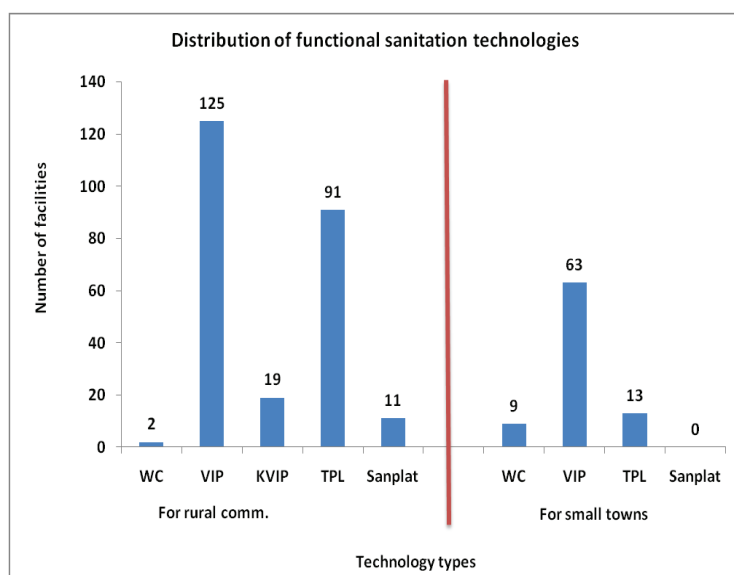


Figure 2: Sanitation technology types from the study areas

Of the 201 VIP latrines identified (rural and small towns), thirteen (13) had been abandoned: eleven in the rural communities and 2 in the small towns. The reasons for abandoning the latrines varied: 2 latrines in Abono community (near lake Bosomtwe) were abandoned in order to prevent them from polluting the nearby lake; 9 other latrines in rural areas in East Gonja district were abandoned due to flooding and caving-in of the sub-structure; 2 facilities in Kuntense (Bosomtwe district) were abandoned because the pits were full. Table 1 below presents access to household toilets by districts.

Table 1: Household toilets by districts based on household surveys in communities visited

District	Small towns					Rural					Total
	WC	VIP	KVIP	Sanplat	TPL	WC	VIP	KVIP	Sanplat	TPL	
Bosomtwe	8	60	0	0	3	1	109	1	0	11	193
East Gonja	0	3	0	0	2	0	9	0	0	1	15
Ketu South	1	2	0	0	8	1	18	18	11	79	138
<b>Total</b>	<b>9</b>	<b>65</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>2</b>	<b>136</b>	<b>19</b>	<b>11</b>	<b>91</b>	<b>346</b>

The age distribution of the sanitation technologies is presented in Figure 3. This data is presented only for those facilities where respondents were able to recall the year of construction. As can be seen, the number of facilities has generally increased over the years.

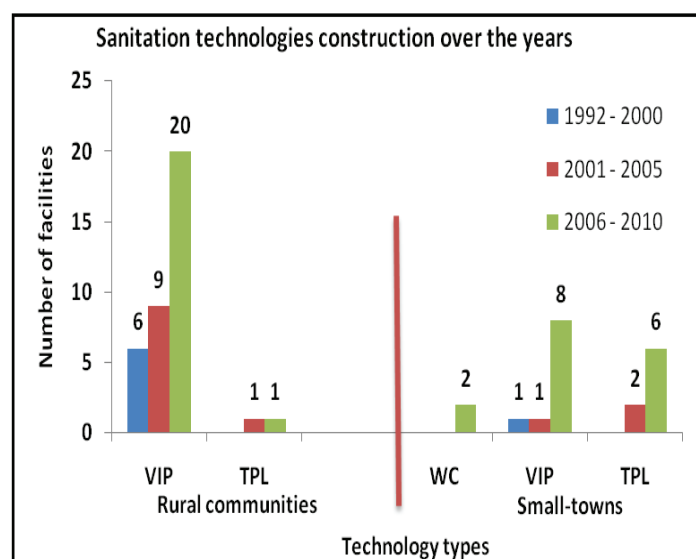


Figure 3: Distribution of sanitation technology construction over the years

### Cost of sanitation service based on VIP latrines in rural areas

Out of the 346 latrines identified (both functional and non functional), only 16 owners were able to remember (or prepared to share) the costs incurred in their construction. It is also important to underline that the costs reported were those that were, in the minds of the owners, specifically linked to the construction of their latrine. This does not therefore include locally sourced building materials, own labour, or indeed leftover building materials from the construction of the main dwelling. Yet all of these were used in abundance.

The cost to the household for having the latrine facility and using it was quantified by assessing both the capital investment for constructing the latrine and all the other costs incurred in using the latrine. The study revealed two main categories of users: households who provided the facilities entirely by themselves; and households who obtained subsidies in the form of materials as part of government supported projects.

### Capital investment

Although households were able to recall the amount of money that they invested in their latrines, it was not possible to ascertain the level of subsidy involved – due to lack of availability of data from the relevant projects. Thus, the capital cost of providing the household latrines presented is the cost to the household of having the latrines constructed, and excludes both own labour and any subsidy. Table 2 shows the capital investment costs incurred by households of constructing VIPs.

Table 2: Capital Investment Cost of rural sanitation facilities (VIP)

Basic Statistics	Subsidy based facilities (N=8) Cost in US\$		Non-subsidy based facilities (N=8) Cost in US\$	
	Cost per facility	Cost per capita	Cost per facility	Cost per capita
Average	107	27.9	115	32
Maximum	273	136	212	106
Minimum	18	2	43	2
Median	67	7	106	20
3 <sup>rd</sup> Quartile	135	20	149	34

### Operation and minor maintenance expenditure

The operational and minor maintenance expenditure, which is the cost of keeping the latrines clean and hygienic are shown in Table 3, and had a median value of US\$ 11 per facility per year (or US\$ 3 per person per year).

Table 3: Operation costs incurred by rural households (VIP)

Basic statistics N=41	Operation costs per year	
	Per facility	Per person
Maximum	53	42
Minimum	0	0
Average	19	6
Median	11	3
3 <sup>rd</sup> Quartile	30	4

All values to nearest US\$

### Capital maintenance expenditure

As understood by WASHCost, capital maintenance for household latrines essentially involves desludging of the latrines, or other major investments – such as repair of super-structure. None of the household latrines visited had ever been desludged nor had major maintenance taken place.

### Cost of sanitation technologies in the small towns

#### Capital investment costs

The capital investment costs of having household latrines in small towns are summarised in Table 4 for both VIP latrines and traditional pit latrines (costs of WC are impossible to disaggregate from the overall costs of house construction). In the case of the VIP latrines some of the households received subsidies in the form of cement, vent pipes slabs, money etc. However, as in rural areas it was not possible to identify the amount involved in these subsidies, so the capital investment captured in Table 4 is the amount of money spent by the household to construct the latrine. It shows that median household investment to construct latrines (VIPs and TPL) lies between US\$ 71 and US\$ 83 (US\$ 7-11 per person per year).

Table 4: Investment cost of small town sanitation facilities

Technology	Capital investment (in US\$)							
	Per facility				Per capita			
	Median	Max	Min	Average	Median	Max	Min	Average
VIP- subsidy (n=5)	<b>71</b>	261	42	101	<b>7</b>	65	2	19
VIP-no subsidy (n=4)	<b>83</b>	141	21	82	<b>9</b>	21	2	11
TPL – no subsidy (n=9)	<b>74</b>	141	0	76	<b>11</b>	41	0	16

### Operation and minor maintenance expenditure

As in rural areas, operation and maintenance expenditures for household latrines relate essentially to the costs of cleaning and disinfection. Table 5 shows that median household expenditure per facility on these activities ranges from US\$ 8-21 per year (US\$3-4 per person per year).

Table 5: Operational and maintenance cost of small towns' sanitation

Technology	Operational costs per year (in US\$)							
	Per facility				Per capita			
	Median	Max	Min	Average	Median	Max	Min	Average
WC, n=3	<b>21</b>	38	7	22	<b>4</b>	11	1	5
VIP, n=7	<b>8</b>	59	6	22	<b>4</b>	8	1	4
TPL, n=1	<b>17</b>				<b>3</b>			

### Capital maintenance

Similarly to the situation in the rural areas no expenditure was recorded on desludging or other forms of capital maintenance.

### Hygiene related costs

In addition to asking owners of latrines about the operational costs related to these, which primarily consist of detergent and other cleaning products, all respondents in Bosomtwe and Ketu South (n=1060) were asked about their household expenditure on soap (essentially all cleaning products).

Table 6 below shows the results, indicating a wide range of expenditure with a median around the regions of US\$ 17 per capita per year.

Table 6: Expenses on soap by districts based on household surveys (in 2010)

District	Small town, n=208				Rural areas, n=852			
	Cost in US\$ per capita/yr				Cost in US\$ per capita/yr			
	Average	Max	Min	Median	Average	Max	Min	Median
Bosomtwe	21	84	4	17	18	99	1	15
Ketu South	26	92	3	20	23	106	1	18
Overall	23	92	3	18	20	106	1	17

### Conclusions

- A large range of capital costs was identified for the provision of latrines (mainly VIPs) in small towns and rural areas. Median values for both rural and small-town facilities were in the region of 70US\$ per facility (7US\$/capita).
- Interestingly there was no significant difference in the investment made by families in areas where construction costs were subsidised, and those where they were not.
- With a median value of some 3-4US\$ per capita per year, operational expenditure on latrines (essentially the cost of cleaning the latrines) over two years is greater than the cost of constructing the latrines.
- With a median value of 17US\$ per person/year expenditure on soap for all hygienic related activities included (both in small towns and rural areas) is greater than the both the capital and operational costs of latrines.
- These findings are based on a limited survey that was also aimed at testing the methodology. There is therefore no claim that these findings are representative on a national level. Nevertheless, they can consider be considered to be broadly indicative of conditions found nationally.

## Recommendations for policy and practice

- The fact that annual expenditure on hygiene (soap) is, on average, so much larger than the per-capita costs of building VIP latrines would seem to give support to Government's decision to adopt CLTS (zero subsidy approach) to rural sanitation. So too does the finding that households with no subsidies spend similar amounts on developing their latrines as households that receive subsidies.
- Nevertheless, the range of household expenditure on sanitation and hygiene suggests that while the average Ghanaian can be expected to pay for their own facilities, special measures for the poorest will need to be maintained.
- For many, the capital costs of providing latrines while manageable in terms of an annual expenditure may be difficult to find as a lump sum. Therefore, zero-subsidy approaches need to be married with appropriate financing mechanisms.
- Especially in small-towns, where housing density precludes frequent creation of new latrines, the lack of desludging seems to present a potential threat in the future. This next step on the sanitation chain needs further investigation.
- The surveys reported here were hampered by lack of systematic availability of data on investments in sanitation – especially levels of subsidy for capital investment. A general recommendation across WASHCost is for strengthening of (financial) data management and a general commitment to freedom of access to information.



## WASHCost briefing note series

### Briefing notes relating to survey based work in Bosomtwe, Ketu South and East Gonja

**Briefing note 1:** Background and Methodology

**Briefing note 2:** Post-construction costs of water point-systems

**Briefing note 3:** Costs of rural and small town sanitation services

**Briefing note 4:** Access to services in rural areas and small towns

**Briefing note 5:** Access to sanitation services

**Briefing note 6:** Functionality of rural water point-systems

**Briefing note 7:** Poverty and access to services

**Briefing note 8:** Uses and sources of water in rural areas

### Briefing notes from desk or case study based work:

**Briefing note 9:** Case study of twelve small towns in the Central Region

**Briefing note 10:** Case study of Oyibi multi-village scheme

**Briefing note 11:** Cost drivers capital investment in small-town pipe schemes

**Briefing note 12:** Direct support costs to rural WASH service provision



Plate 1: A typical VIP latrine in a small town



Plate 2: Typical rural traditional pit latrines

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