

SUSTAINABLE SANITATION AND HYGIENE FOR ALL

HYGIENE EFFECTIVENESS AND COSTS IN SAMTSE DISTRICT, BHUTAN

BASELINE REPORT | JUNE 2014





This study is part of the second phase of the Sustainable Sanitation and Hygiene for All (SSH4A) programme, a four year rural sanitation and hygiene programme running from 2013 – 2017. Australian Aid has provided funds for two countries: Bhutan and Nepal to follow-up on phase one.

The SSH4A programme is carried out by the Public Health Engineering Division under the Ministry of Health in partnership with SNV Bhutan and IRC International Water and Sanitation Centre. Focus of the programme is on encouraging latrine use and handwashing while strengthening the enabling environment: supply chain, policy and regulations. In addition, this hygiene effectiveness study was undertaken in Bhutan. The aim of the Public Health Engineering Division is to promote sustainable sanitation and hygiene to bring about improved health and quality of life for Bhutan's rural population through access to sanitary toilet, hygienic use of toilet and adequate facilities for hand washing with soap.

For more information visit <http://www.health.gov.bt/>

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The report can be found on the on the Sustainable Sanitation and Hygiene for All (SSH4A) project pages at: <http://www.ircwash.org/projects/sustainable-sanitation-and-hygiene-all>

Other relevant **SSH4A** related documents, papers and reports can be found at:

<http://www.snv.org/theme/rural-water-sanitation-hygiene>

<http://www.ircwash.org/projects/sustainable-sanitation-and-hygiene-all>

Other relevant **Hygiene Promotion and Cost Effectiveness** related documents, papers and reports may be found at:

<http://www.ircwash.org/washcost>

This report contains updates from October 2016.

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INTRODUCTION

Hygiene Effectiveness Study

PHED, IRC and SNV, under the Sustainable Sanitation and Hygiene for All Programme (SSH4A), have designed a hygiene effectiveness study to assess whether the hygiene interventions in Bhutan are successful in encouraging safe hygiene practices and how much these cost. The methodology is applied and tested in Samtse district. The SSH4A programme is implemented over a four-year period across two districts. It began in Samtse in 2014 and was extended to Tashigang district in 2016. Why look at hygiene promotion cost effectiveness? Since hygiene, and more broadly behaviour change, is seen as a core component of the SSH4A programme, it seemed logical to take a deeper look into the hygiene activities, their costs and whether they are influencing behavioural change and thus resulting in better hygiene practices. We know that unless improved water and sanitation services are used and used hygienically, health and socio-economic benefits will not be realised. We don't know much about financial benchmarks for water and sanitation improvements, and even less so for hygiene improvements.

This study aims to guide the programme, offer improvements and support decisions on where to adapt or refine hygiene interventions and where best to allocate financial resources. It also aims to support decision makers at the Ministry of Health by providing a greater insight on current costs and effectiveness of behaviour change communication interventions. The hygiene cost effectiveness study began by collecting hygiene effectiveness data at household level as part of the baseline data collection exercise of the SSH4A programme in Samtse in June 2014. As much of the information needed to assess hygiene data was already provided by the existing baseline questions of the SSH4A programme, it was relatively inexpensive in both time and money. A number of additional questions specifically related to hygiene interventions and costs at household level were collected at the same time (see annex).

Location

Samtse Dzongkhag (district) is one of the twenty Dzongkhag's of Bhutan. The district is made up of 15 Gewogs (village clusters) which are sub-divided into around five to six Chiwogs per Gewog. The total number of Chiwogs in Samtse district is 77 and these are again sub-divided into villages.

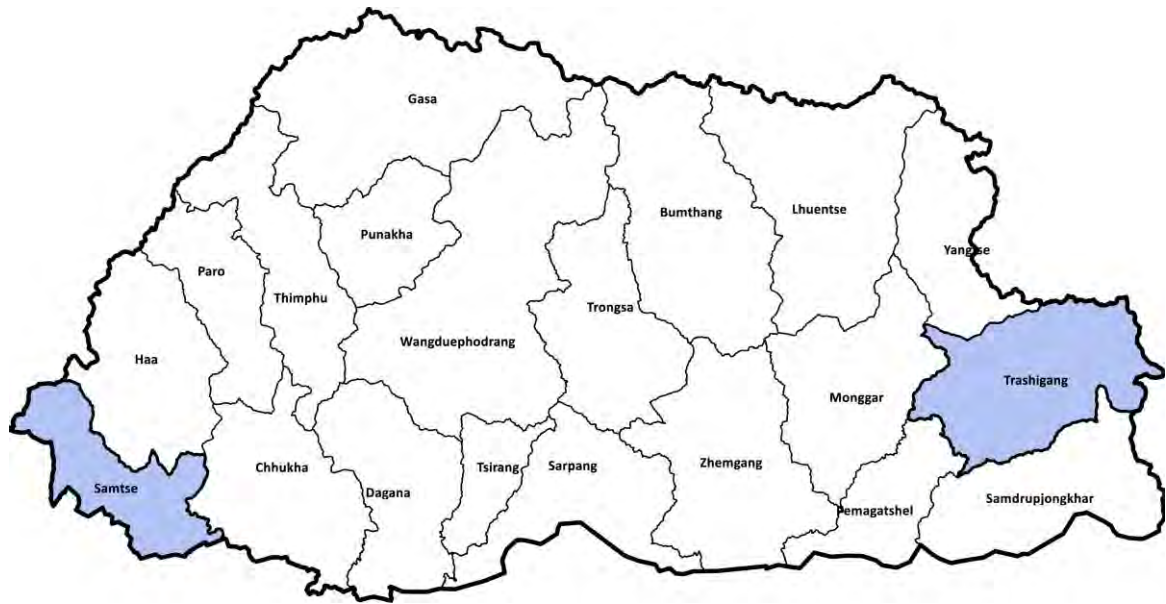


Fig. 1: Map showing the present RSAHP (Samtse) district and the next district (Trashigang)

Samtse is located in the south western region of Bhutan bordered by India and is the largest Dzongkhag with an approximate population of 60,000 people. At 47%, the district has one of the highest poverty rates in the country, and has the lowest improved sanitation coverage at 41% (BMIS¹ 2010). Although, progress since this date has been reflected in the baseline data indicating sanitation coverage is now 53% of which 75% of the population in Samtse has improved sanitation facilities (SNV, Baseline 2014). The region has two Drungkhags (sub-districts), Sibsoo and Dorokha, with diverse ethnic communities and there are four different languages.

¹ Bhutan Multi Index Survey

METHODOLOGY

Approach

To assess the cost-effectiveness of hygiene promotion interventions, you will have to:

- 1) **Determine hygiene practice levels** before and after the hygiene promotion intervention;
- 2) **Determine the total costs of the intervention** (households, implementers, government, etc.)
- 3) **Compare the costs of the intervention to the changes achieved** in the hygiene practice levels

These key steps are depicted in the following figure.

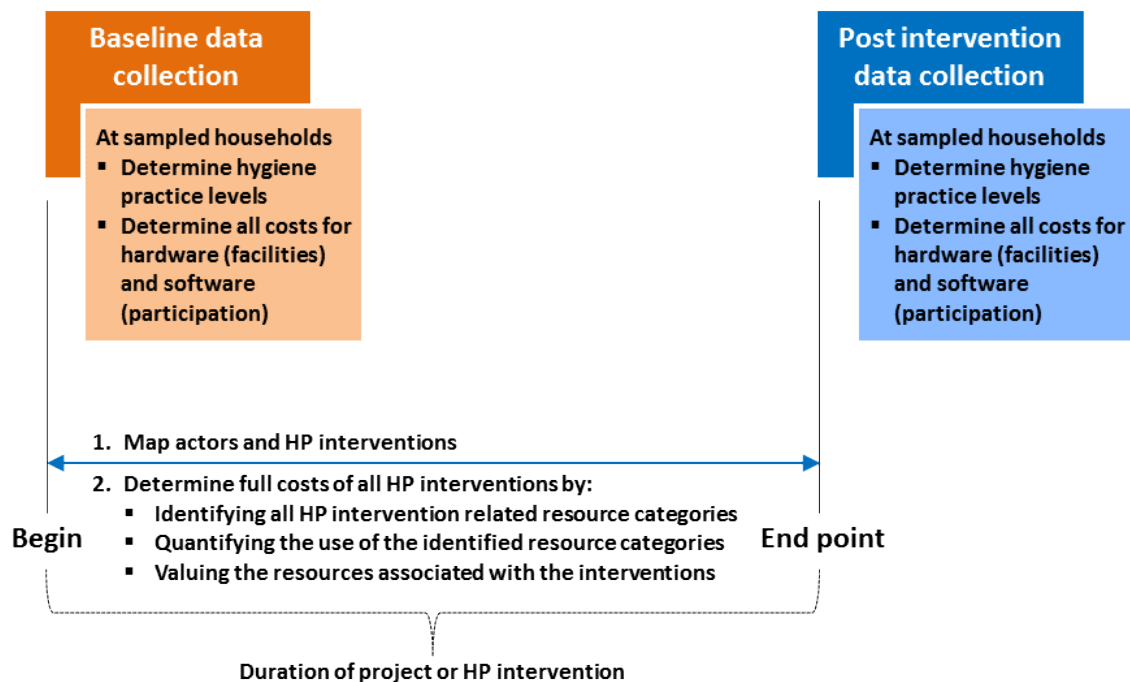


Fig.2: Key steps of the hygiene effectiveness and costing study

Hygiene practice levels are used to analyse and compare the costs and outcomes of a number of hygiene promotion interventions. For that purpose hygiene practice levels were developed for three key hygiene interventions related to water and sanitation: 1) sanitary toilet and use; 2) handwashing with soap; and 3) safe (drinking) water management.

The **costing analysis** must include the full costs associated with the hygiene promotion interventions:

- **At various stages:** before (start-up), during (implementation) and after (follow up and maintenance) completion of the intervention

- **By different stakeholders:** households, implementers, government (district and national)
- **For different types of costs:** financial costs (monetary investments) and economic costs (time spent)

Sampling

As explained above, the hygiene data was collected as part of the overall baseline for the SSH4A programme. The sample frame for the baseline study was agreed upon through the use of the Krejcie-Morgan table², whereby the required sample size for Samtse district was determined as 370 households, equal to 3% of the total rural target population. Due to the diversity within the district, the sampling methodology followed stratified proportional sampling.

5 of the 15 Gewogs in Samtse were chosen for data collection due to their diversity and were to represent all the strata in the Samtse region. As there is little expected variation between villages within a Gewog, the villages were selected via random sampling. The table below shows some more information on the selected Gewogs.

	Gewog	Sanitation coverage	Accessibility	# of Chiwog's
1	Dungtoe	2%	Difficult	5
2	Bara	37%	Far away	6
3	Sipsu	64%	Easy	5
4	Tading	15%	Reasonable	5
5	Lhareni	Unknown	Somewhat difficult	5

There is a large variation in size and sanitation coverage between the Gewogs, ranging from 2% to 64% coverage and from 285 to 921 HH.

Gewog	Total # of HH in Gewog	Sample size per Gewog		As % of total sample
		In # of HH	In %	
Dungtoe	285	33	11.6%	8.9%
Bara	653	76	11.6%	20.4%
Sipsu	921	107	11.6%	28.8%
Tading	824	95	11.6%	25.8%
Lhareni	514	59	11.6%	16.1%
	3,197	370	11.6%	100.0%

(IRC and SNV, 2014³)

² Krejcie, R.V. & Morgan, D.W. (1970). *Determining sample size for research activities*. Educational and Psychological Measurement, 30, 607-610

³ SNV Asia and IRC. *Baseline Preparations Workshop in Bhutan*. The Hague, The Netherlands: IRC and SNV, 2014. Web. 2 Aug. 2016.

Hygiene Interventions in Samtse

Before this project, there have been previous interventions by the district health sector, which consisted of monthly outreach clinics (ORCs) by health assistants based at the Gewog (sub district) and Chiwog level (village). These monthly visits focus mainly on immunisation, Out Patient checks, Antenatal Care, Postnatal care and advocacy on Sanitation and Hygiene. These outreach clinics will continue to go on irrespective of the project interventions.

Key Indicators

This hygiene promotion effectiveness study focuses on three key hygiene practices, these are:

1. Having a sanitary toilet, using it and keeping it clean
2. Hand-washing with soap at critical times (after defecation and before eating)
3. Having and using a safe drinking water-source, and the safe storage and management of drinking water at household level

The first two indicators are similar to the impact indicators of the SSH4A programme, whilst the third one was included upon a request by the Government of Bhutan, due to the importance of hygiene at the household level for safe drinking water. SNV and partners are not focusing hygiene interventions on safe drinking water management and are therefore not accountable for results in that area.

To assess the effectiveness of the hygiene promotion interventions, *Hygiene Practice Level Ladders* were developed. The ladders used in Bhutan have been adapted and developed from the IRC WASH COST programme⁴. The practice level ladder model is used to rank the households in the three key hygiene practices, so that any progression that has been made during an intervention can be seen easily. The practice levels stand at: Not Effective, Limited, Basic and Improved; whereby Not Effective indicates that the household's current hygiene practice is of a standard that offers no hygienic practice, through to Improved that indicates that the household has a high enough standard of hygienic practices that it causes very little threat to their health.

The hygiene practice ladders for the three key hygiene practices are shown in the table below.

⁴ McIntyre, Peter et al. *Priceless!*. The Hague: IRC, 2014. Print.

	Sanitary Toilet and Use	Hand-Washing and Soap	Safe Drinking Water Management
Improved	Household has own toilet <ul style="list-style-type: none"> that is used, maintained (cleanliness) separates users from faecal matter is accessible by all HH members, 	There is a hand-washing facility within 10m from toilet facility that; <ul style="list-style-type: none"> has water available have soap or substitute available, prevents contamination of the water by hands, HH members know two critical times for hand-washing (before eating and after defecation) 	Drinking water always comes from an improved source (piped or protected spring) and is; <ul style="list-style-type: none"> collected safely, stored safely, drawn in a safe manner, and water is treated
Basic	Household has own toilet or use shared toilet <ul style="list-style-type: none"> that is used as toilet, maintained (cleanliness) separates users from faecal matter But it is NOT accessible by all HH members 	There is a hand-washing facility within 10m from toilet facility that; <ul style="list-style-type: none"> has water available have soap or substitute available, does not prevent contamination of the water by hands, But HH members do NOT know two critical times for hand-washing (before eating and after defecation) 	Drinking water always comes from an improved source (piped or protected spring) and is; <ul style="list-style-type: none"> collected safely, stored safely, drawn in a safe manner, But not treated
Limited	Household has own toilet or use of shared toilet <ul style="list-style-type: none"> toilet is used as toilet but does NOT separate user from faecal matter 	There is a hand-washing facility within 10m from toilet facility that; <ul style="list-style-type: none"> has water, but does NOT have soap or substitute available, 	Drinking water sometimes comes from an improved source (piped or protected spring) <ul style="list-style-type: none"> but is not treated not collected safely, not stored safely, Not drawn in a safe manner
Not Effective	No toilet or toilet not used (HH practice open defecation)	There is no hand-washing facility within 10m from toilet facility OR Does not have water available (at present)	Drinking water comes from unimproved source; surface water OR unprotected spring OR unprotected dugwell

Table 1: Hygiene practice ladders used for the study

FINDINGS

Looking at the indicators at a glance we can see that for all three hygiene practices more than 50% of the households' have hygiene practices below the basic level.

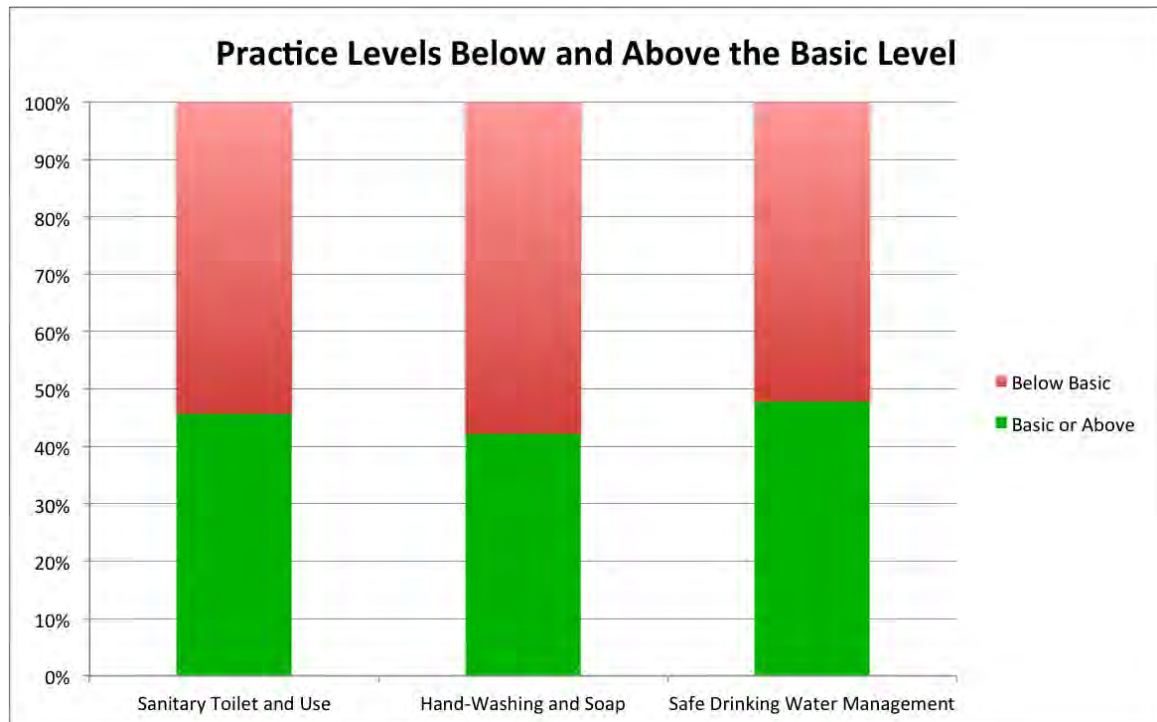


Fig.3: below and above basic hygiene practice level per indicator

The results above show how many households were deemed as having above or below the *basic* level for each hygiene practice. This can be summarised as follows:

54% of the households either:

- Do not own or use a toilet; or
- Have an unsanitary toilet that fails to separate the user from faecal matter

58% of the households either:

- Have no specific place to wash their hands within 10 metres from the toilet: or
- Households have a specific place for hand-washing, but there is no water and or no soap available

And finally, 52% of the households either:

- Use drinking water that comes from an unimproved source (surface water OR unprotected spring OR dug well); or
- Drinking water only sometimes comes from an improved source; or

- Drinking water comes from an improved source but is not collected and/or stored and/or drawn safely

The following section will look at each hygiene practice in more depth, exploring the main causes of these rather low (below basic) hygiene practice levels.

To put it all into perspective, 24% of all surveyed households (88) had scored below basic on all three hygiene practice ladders. The poorer households were doing the worst with 69.3% from the poorest and second wealth quintile (61) scoring below the basic level, versus 19.3% from the middle quintile and 11.4% from the 4th and richest quintile. This is captured in the following figure 4.

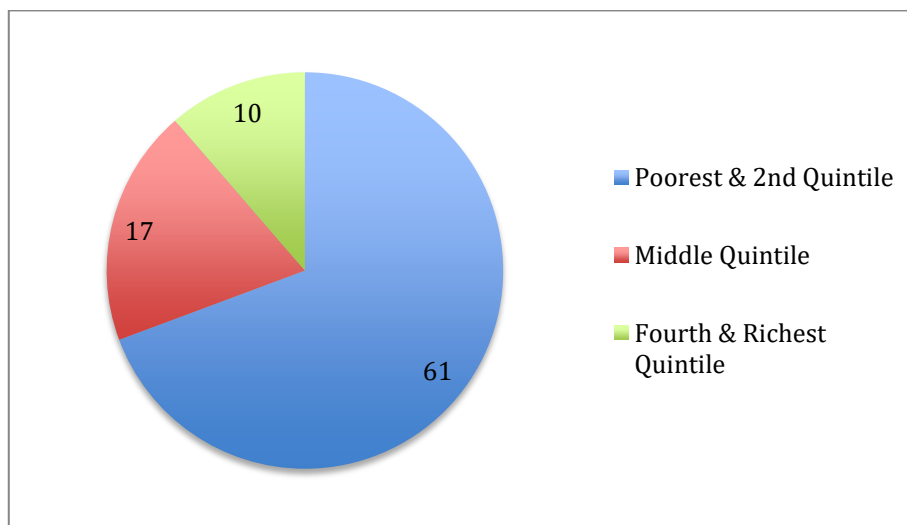


Fig. 4: Shows the proportion of HHs that scored below basic for all three indicators by wealth quintile

HYGIENE PRACTICE LADDER 1: SANITARY TOILET AND USE

For the toilet to be effective it must be in use, then for it to be classified as Basic or above it must separate the user from faecal material and be used by all members of the HH most times and finally to be Improved, the toilet must be hygienically clean, and used by all members of the HH at all times.

The data that is required to determine the hygiene practice levels were obtained from the standard baseline survey questionnaire developed for the SSH4A programme via the questions below:

- 1) Do the members of your household have a toilet?
- 2) Is the toilet in use, as a toilet?

'Not effective' is assigned if people do not have a toilet or if they have a toilet but it is not in use as toilet. If it is in use then we have assigned the practice as 'limited'.

- 3) What type of toilet is it? (ASK and OBSERVE)
- 4) Does the toilet have a pit? (ASK and OBSERVE)

- 5) Can rats reach the faeces in anyway?
- 6) Can flies reach the faeces in anyway?

If the toilet is separating human waste in such a way that people cannot get in contact with it, for example because people have a pour flush latrine, or a pit latrine with water seal, and rats and flies cannot get in contact with faeces, then we assign the level 'basic'. Otherwise the practice is assigned as 'limited' practice.

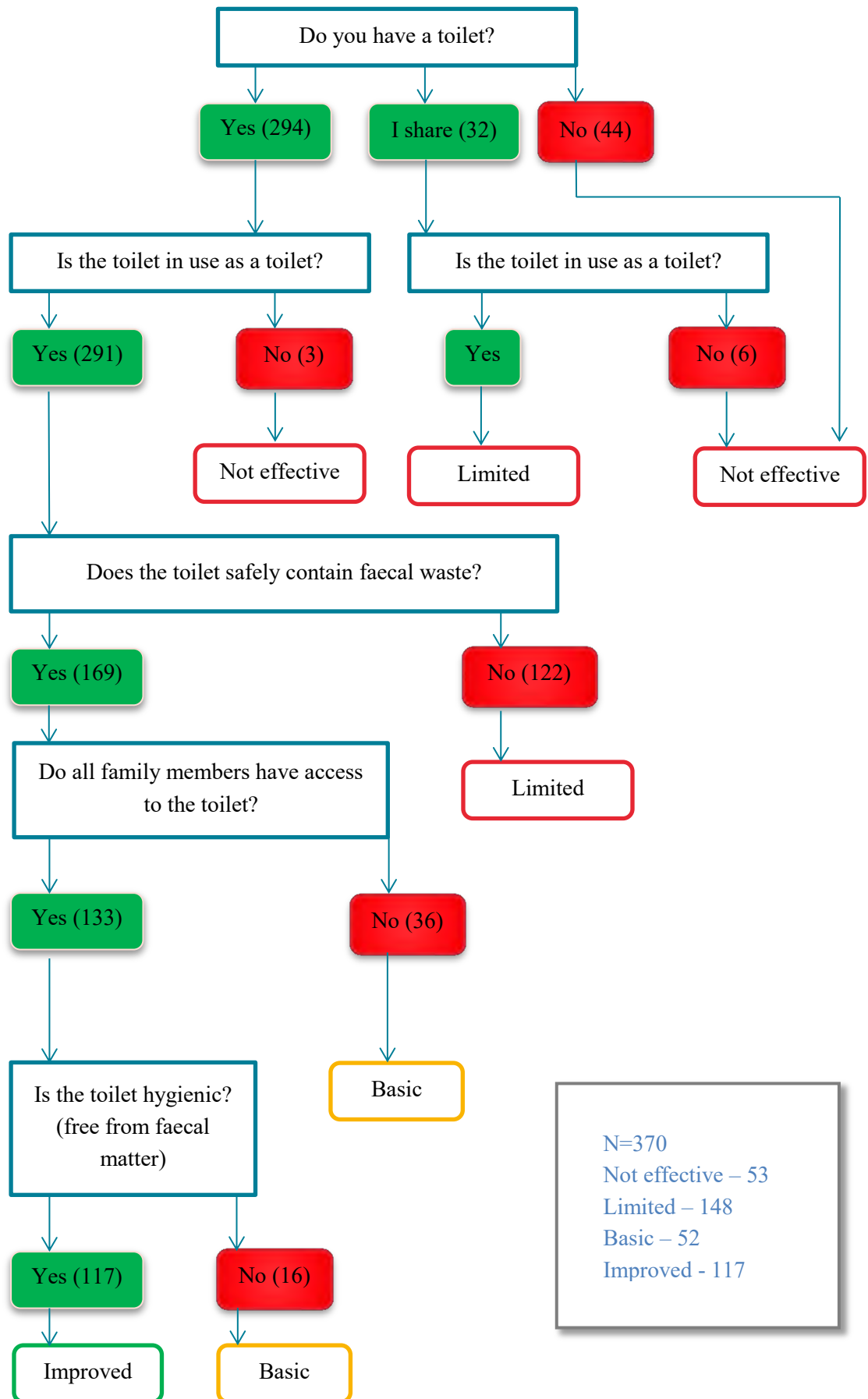
- 7) Is the toilet's location, considering distance, slope, time of day, etc., easily accessible for all?
- 8) How do you dispose of the stools of children <3years old?
- 9) Is the toilet free from faecal smears on pan, wall and floor?
- 10) Is the toilet pan free from used cleansing materials (paper, stones, sticks)?

Only if all these questions are answered positively, the practice is seen as 'improved'.

Of the sample of 370 households, 53 have unhygienic or not effective practices; 148 households have limited practices; 52 households have basic practices and 117 households have an improved level of practice of having a sanitary toilet and hygienic toilet use.

The process of assigning practice levels is indicated in the flow chart below. Hygiene interventions can focus on those areas where the biggest constraints or difficulties are found.

Fig. 5: Flowchart for sanitary toilet and toilet use practice levels



Results

The chart below displays the amount of households that were classified into the four practice levels by economic status. The wealth status of households was classified into five quintiles and these were then again grouped into three units, poorest & second, middle, and the fourth & richest. As the sample size of the poorest and richest wealth quintiles were too small to be represented separately, they were merged with the nearest wealth quintile.

The graph shows the 'spread' of households in the different practice levels by wealth quintile. The percentages show the amount of each quintile for each practice level, for example, showing that 55% of the fourth and richest quintile has an improved practice level for latrine use. This is half of all households that score improved. The results also show that 65% of all households without a toilet or who don't use a toilet are from the poorest and second poorest quintiles.

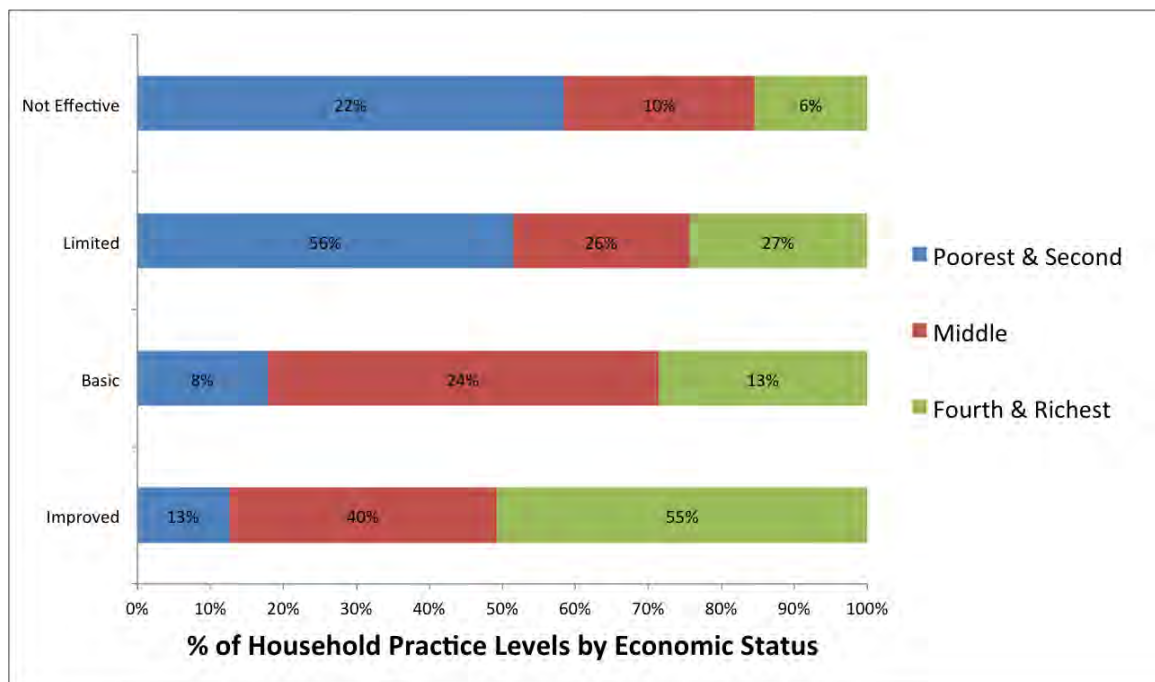


Fig. 6: Toilet and toilet use – per practice levels and wealth quintile

As we have seen in figure 3: 54% of all households score below basic for having and using a sanitary toilet. In figure 6 we see that within this group, the households with lower income have a lower level of hygiene practices than others: 78% of households in the two lowest quintiles have a practice level below basic. In contrast to this, only 36% of the middle quintile and 33% of fourth & richest have a practice level of below basic. This implies a correlation between a household's wealth status and their hygiene practices.

The barriers between preventing a household from achieving a basic level from a limited one are whether the toilet is being 'shared' (used by other households) or whether or not the toilet does provide adequate separation of the user from faecal material. From the analysis (as displayed in figure 5) we can see that the largest proportion (122 households) is due to an unsanitary toilet.

How to act upon these findings (points for discussion)

Limited hygiene practice for sanitation:

- ➔ To ensure that flies cannot access the faeces, interventions should focus on making sure that pits are fully closed, that the user interface is properly constructed (with either a pan with functioning water seal or a lid that fully covers the squatting hole), and on the importance of keeping the toilets clean.
- ➔ In the case of hanging toilets or toilets that have no slab, interventions may be more expensive and focus on upgrading or replacing toilets and could be named as a sanitation intervention rather than directly hygiene promotion. However, through effective hygiene promotion, one may be encouraged to allocate and spend time or money on obtaining hygienic facilities.

INDICATOR 2: HAND-WASHING

Almost 50% of all households had a 'not effective' hygiene practice level for hand washing. This means that they did not have a hand-washing station within 10m from the toilet or there was no water available at the time of testing. 82% of the 50% of households that had a hand washing station, that had running water and was within 10m from the toilet, also had soap present at the time of the survey. The majority of households either fell into the improved or not effective bracket, perhaps meaning that the greatest challenge was having a hand washing facility close to the toilet.

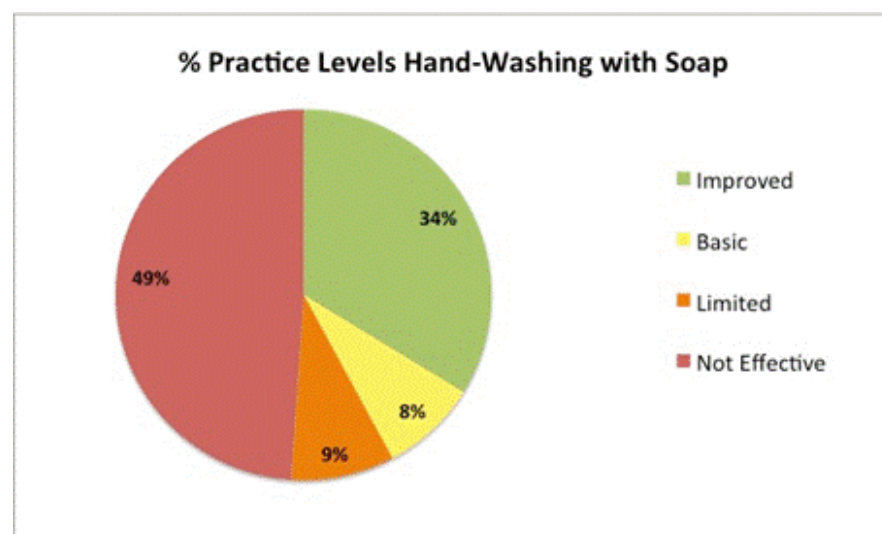


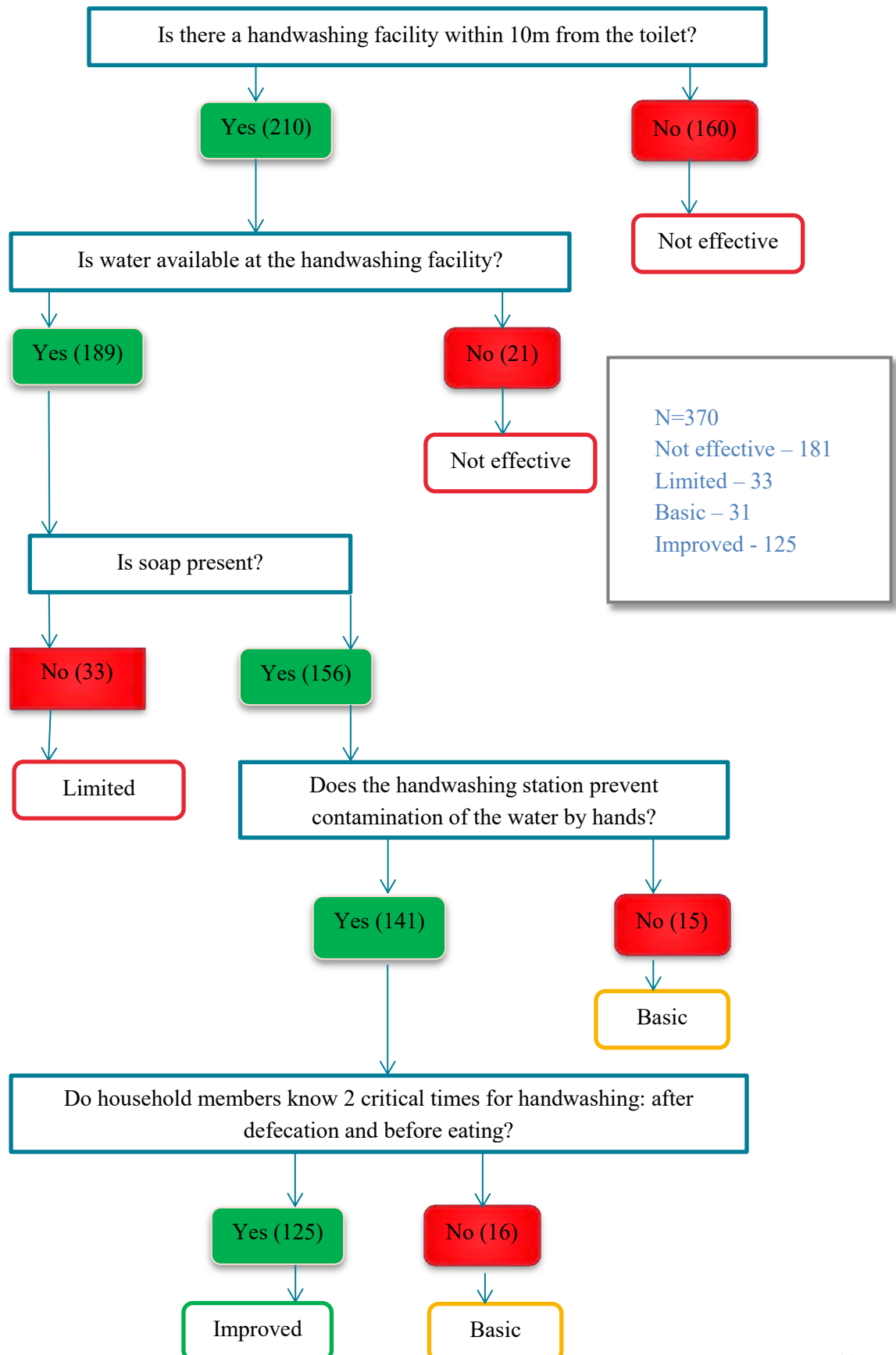
Figure 5: Pie chart showing proportion of HHs for each practice level

The data that is required to determine the hygiene practice levels were obtained via the questions below:

- 1) Is there a handwashing facility within 10m from the toilet?
- 2) Is water available at the handwashing facility?
- 3) Is soap present?
- 4) Does the handwashing station prevent contamination of the water by hands?
- 5) Do household members know 2 critical times for handwashing: after defecation and before eating?

As mentioned above a flowchart was used as a methodology to assign practice levels to households. Below shows the flowchart used for indicator 2 on hand washing with soap and the figures corresponding to the results from the baseline survey.

Fig. 6: Flowchart for hand washing and soap practice level



64% of the lowest quintile did not have access to water and when compared to just 29% of the highest quintile that didn't have access, it shows once again an inequitable imbalance across the different wealth quintiles (see also Appendix 2). There does not seem to be an imbalance when it comes to knowledge though: 82% of all households knew the two most critical times to wash their hands (before eating and after defecation).

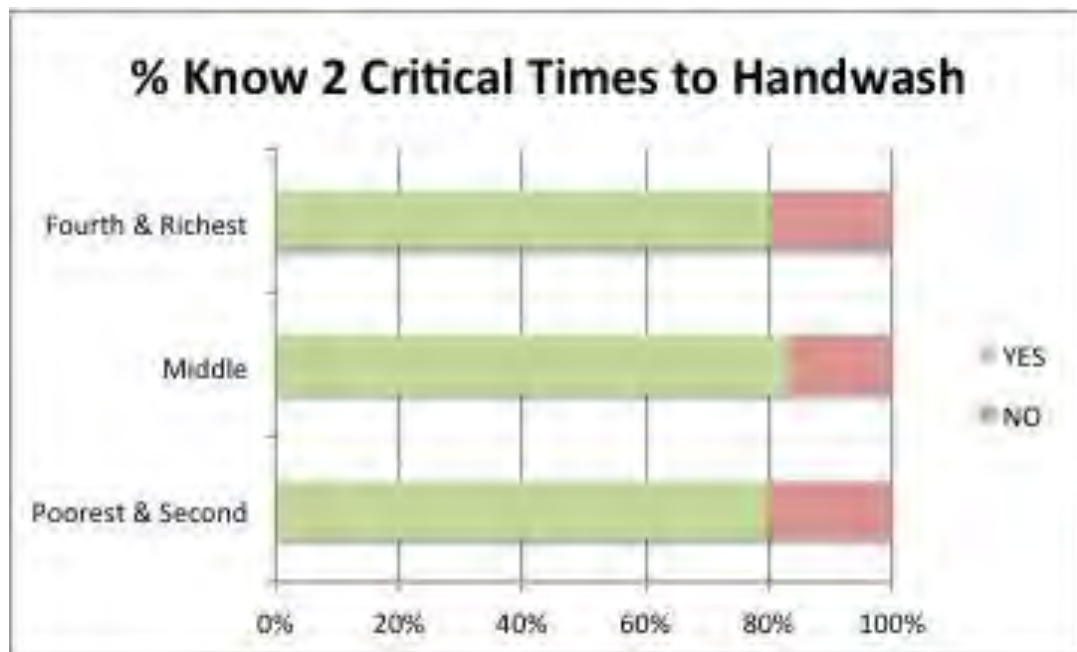


Figure 7: % of HH that know the two critical times to hand wash (by wealth quintile)

The above graph shows that there was no significant difference between wealth quintiles and knowledge of when the two most critical times are to hand wash.

How to act upon these findings (points for discussion)

- ➔ Whilst knowledge of hand washing at critical times is good, work still needs to be done on hand washing practice. Promotion will be done through the two day CDH workshop, follow-up household visits supported by communication materials developed based on affiliation, nurture and disgust.
- ➔ Focus should be on making it easy (easier) for households to wash hands. For example encourage them to invest in hand washing stations inside or near their toilets.

INDICATOR 3: SAFE WATER MANAGEMENT

The standard across Bhutan is to use a piped water source, mostly supplied by the Government of Bhutan. This indicator was added as request by the Government of Bhutan to give an idea of how drinking water is handled. The SSH4A programme has no scope for interventions on safe drinking water management.

From the findings we see that 52% of all households perform below basic practice level. Although most of the households (339 out of 370) do use an improved water source, that being piped water or a protected spring, one out of every five households do not either collect the water safely, store it safely, nor draw it safely.

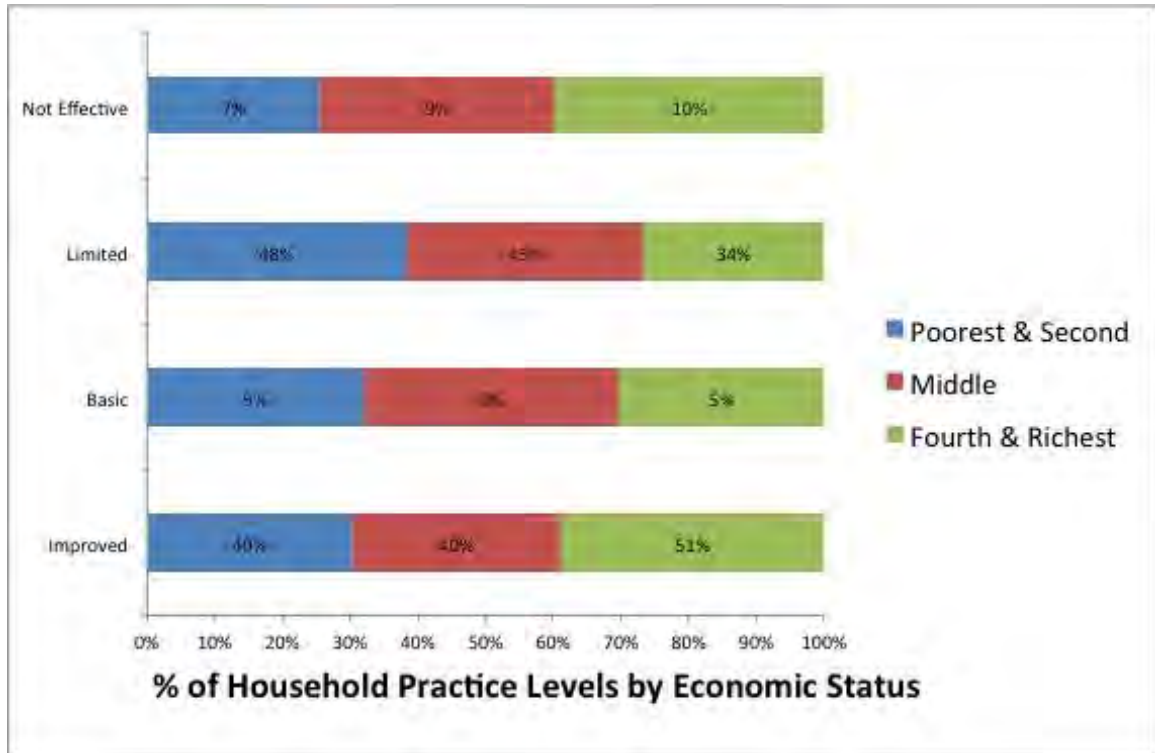


Figure 8: Safe water management practice levels by wealth quintile

Most households either fall into the practice level of *improved* or *limited*, and it appears that the greatest challenge is collecting water safely, as 115 (31%) households did not report doing this in a safe fashion, by collecting water by using open containers either all or some of the time. In addition to this 27% of households did not draw water in a safe method.

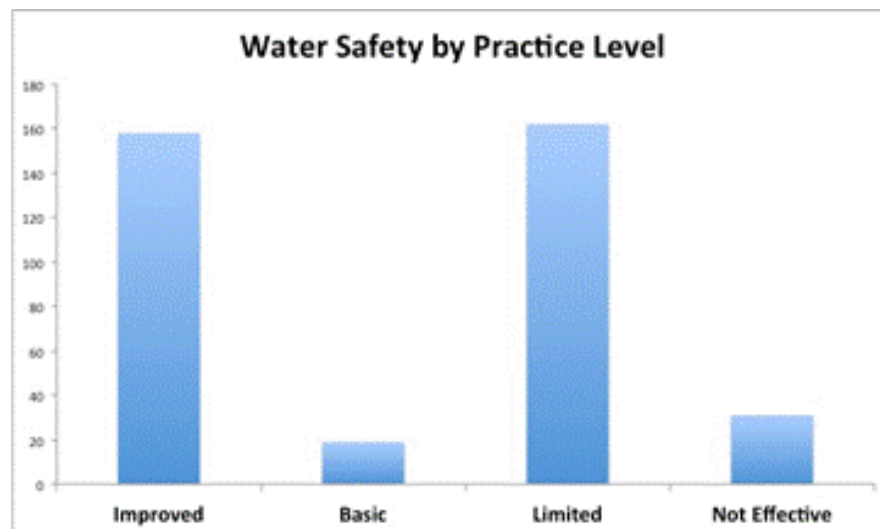
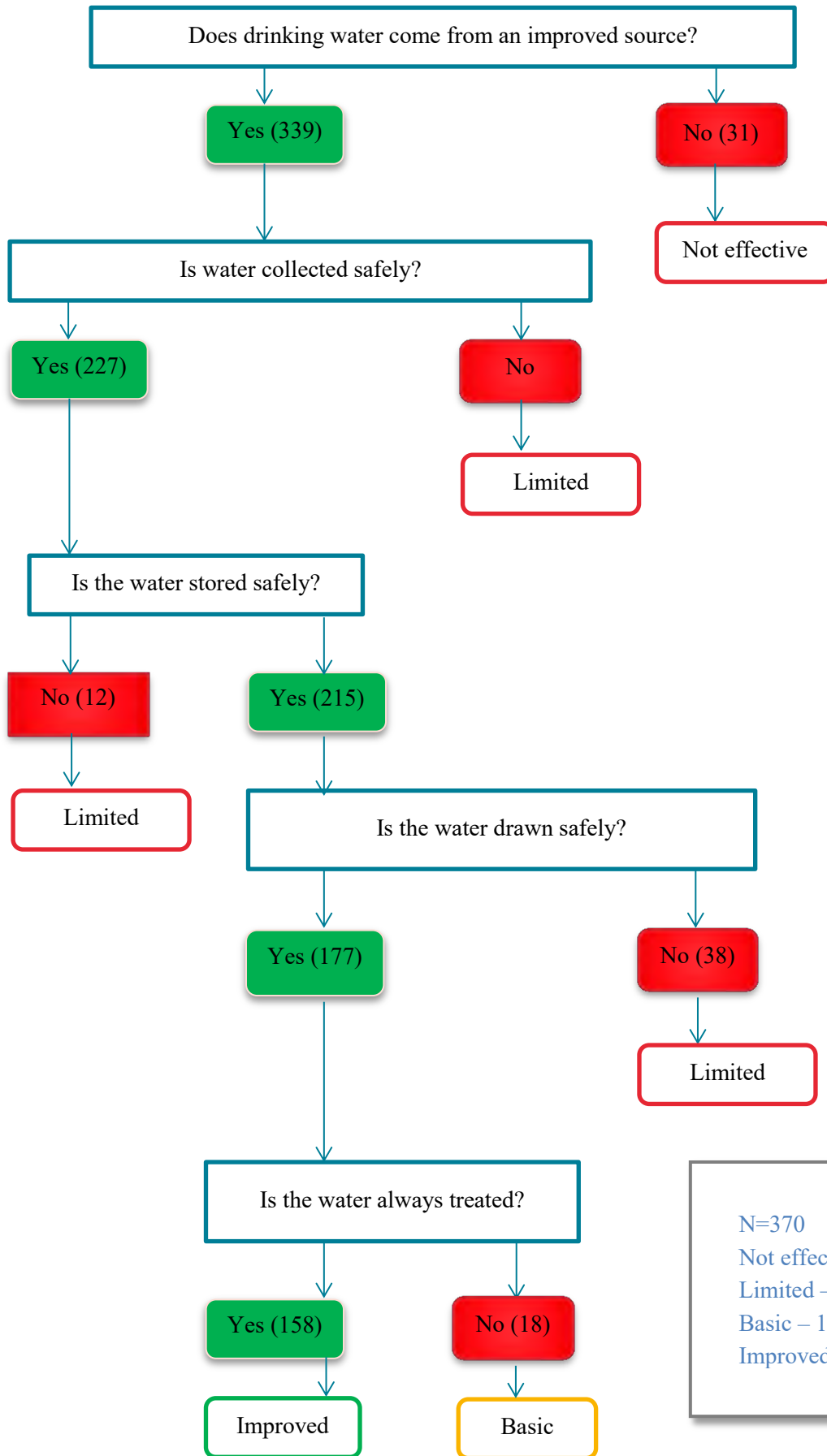


Figure 9: Safe water management practice levels bar chart



N=370
 Not effective – 31
 Limited – 162
 Basic – 19
 Improved - 158

How to act upon these findings - points for discussion

As 45% of households failed to collect, contain or draw water safely it is therefore important to address these issues.

- An intervention should stress the importance of using closed containers at all times to collect and store water, and show household members what a (safe) container can look like and ensure that they know how to seal or cover the containers correctly.
- In addition to this, as 97 HH (26%) did not draw water safely it is imperative to communicate the importance of not contaminating safe water by touching it with hands that are not washed; promotion will focus on using a dipper/ladle or tap to draw water.

HOUSEHOLD COSTS

The hygiene effectiveness study compares the hygiene practice levels against costs. During the baseline – specific cost data was collected from households.

Average Income

The average income in the Samtse region in 2012 was approximately 45,739.52 (nu) per year. This was calculated by looking at the Bhutan Living Standards Survey 2012, which gives information on average income by salary, agriculture and non-agricultural activities, whereby the following calculations were made:

The average HH income from a wage/salary: BNT 61,852 (59.9% of income source)

Average HH income from agriculture: BNT 16,020 (15.5% of income source)

Average HH income from non-agriculture activities: BNT 25,335 (24.5% of income source)⁵:

$$\begin{aligned} & (61,852 \times 0.599 = 3,704,934.8 \\ & \quad + \\ & \quad 16,020 \times 15.5 = 248,310 \\ & \quad + \\ & \quad 25,335 \times 24.5 = 620,707.5) \\ & = 4,573,952 \\ & /100 = 45,739.523 : \text{Average income} = \text{BNT } 45,739.52 \end{aligned}$$

By calculating the average earnings per year we have a relative benchmark to look at the household costs of hygiene practices.

Toilet Construction

294 Households have a toilet of which 220 contributed directly either in labour or by purchasing the materials. However, of those 220 almost 1 out of 3 indicate that they do not know the costs spent on materials (90 HH) and more than half (126 HH) indicate that they do not know how much was spent on labour. Of this, 69 HH had made a direct contribution to the cost of the

⁵ From using Bhutan Living Standards Survey 2012 Report the following statistics are given regarding the Samtse region online at [<http://passthrough.fw-notify.net/download/083272/http://adb.org/sites/default/files/pub/2013/bhutan-living-standards-survey-2012.pdf>] last accessed 23.06.2016.

construction of the toilet within the last 24-months. We felt that capturing cost data on toilet constructions that had taken place over 24-months ago would not be very reliable, as HHs are likely to have forgotten the true costs, and so here we have chosen to only use cost data from toilet constructions in the previous 24-months.

From the 69 HH that made a direct contribution to the cost of the toilet, 69 contributed to the cost of materials; average expenditure: 11,003 (nu) with a standard deviation of 14,571 meaning that the variation within this group was very large. The money spent ranged from 69 (nu) to 90,000 (nu), and the cost tended to vary due to the type of toilet chosen. See table below:

<u>Type of Toilet</u>	<u>Material cost (nu)</u>	<u>Labour cost (nu)</u>	<u>Average (nu)</u>	<u>Spread</u>
Pit latrine (without slab)	99-5000	0-4000	1939.50	1858.50
Pit latrine (with slab)	99-10,000	99-10,000	5799.30	9467.30
Flush/pour toilet	0-90,000	0-45,000	16,328.20	16,731.50

By looking at the average cost of a flush/pour toilet 16,328.20 it is evident that this is very costly to the people in the region as it equates to the over 1/3rd of the average (annual)income of an individual (35.7%), and a pit latrine with a slab 12.7%, perhaps implying that these are simply unaffordable.

Repairs

Only 13 of the 294 HH with a toilet reported that they had carried out repairs or improvements on their toilet in the past 12-months. This is too small a sample size to draw up any conclusions on the costs of repairs. Nevertheless, one may comment on the lack of repairs that took place; perhaps either meaning that repairing or improving toilets was not a high priority of the participants of this study, or it was simply not necessary. However, there is simply a lack of data captured to once again draw a conclusion, perhaps an additional question could be used for future studies: (ASK and OBSERVE) “Is the toilet in need of repairs or improvements?”; this could perhaps replace the current question of “Is the toilet functioning as intended?” From this information we can then see if toilets are in need of repairs but participants are not doing them, should this be the case, it would be important to encourage households to allocate money towards toilet repairs

Pit Emptying

Two households indicated that they had emptied their pit in the past two years, if we delve deeper into the details of the 292 HH who have not emptied their pit in the past 2 years we can see that; 31 HH have had their toilet for over 10 years and 43 HH have had their toilet for 5 to 10 years. Of these 74 HH, 14 had a septic tank (with/without soak pit), and 60 have a pit latrine (14 an off-set pit and 16 a direct pit and 1 where excrement runs off into an open drain). Considering the types of toilet and pits used one would assume that it is necessary to empty the pits more regularly.

How to act upon these findings - points for discussion

The data is not sufficient to be able to act upon these findings. The costs here show a lot of variation, and it appears that the way in which cost information was collected was not very reliable.

Hand Washing Facility

Whilst 173 HH mentioned they had spent money on a hand washing facility, almost half (84 HH) state that they didn't know how much, therefore reliability remains an issue here too. However, see the table below to view the cost data:

# HH	Range of money spent
51	1,000
28	1,000-5,000
7	5,000-10,000
3	10,000 and above
84	"Don't know" or blanks

"Looking into the costs of soap the findings show that 363 HH indicate they use soap. Of these, 166 households indicate they use detergent or a combination of soaps which are not likely to be used for handwashing so we did not take these into account. That leaves us with 198 HH indicating they use hand washing or bathing soap for hand washing.

Of these HH, 163 HH indicate they know the number of soaps they purchased last month:

HW/bathing soap	198
#HHs knowing #soaps purchased last month	163

Average spent on soap annually per household – 985.75 (nu)

Average #soap per month per household – 5.2 (289 HH) cost per month – 16.4 (nu) (289 HH)

Average annual cost per household: 985 (nu) (289 HH)

Water Management

The Government of Bhutan pays for the connection costs of water sources and this is reflected in the findings. The majority of the HH do not spend money on the water facility; 27 HH do. There are two main reasons why HHs pay for water, one is for the care taker; the other reason can be because households construct or invest on extra tap stands or tap points other than what the government has provided. Of these 27, 7 HH paid over 3000 (nu) see table below:

WATER			
	No/don't know	Yes	Total
Money spent on water facility	343	27	370

Connection costs	# HH
<1,500	10
1,500 to 3,000	9
3,000 to 10,000	6
10,000 and above	2
don't know/blanks	5
	27

Although there are no charges for water across the rural areas of Bhutan, households are asked to pay between Nu 100 – 200 per month for compensation of the caretaker of the water source, which appears to be representative in the data captured:

Costs p/m	#HH
<25	67
25 to 50	158
50 to 100	53
100 and above	5
blank	1
	284

Household costs are one element of the cost analysis. Other costs are born by government and implementing partners. These costs will be collected after the baseline to get an overview of the total costs related to hygiene interventions in Samtse and also to be able to indicate what it costs to get people move up the ladder to a higher hygiene practice level.

CONCLUSIONS AND RECOMMENDATIONS

This baseline report provides the information needed to make decisions on what aspects of hygiene promotion should be focused on as part of this intervention in the Samtse district. It highlights the hygiene practices which are lacking the most:

- Over 50% of households have a below basic practice level for all three hygiene practices
- Those in the higher wealth quintiles had better outcomes compared to the lower quintiles and an association can be seen between wealth and better hygiene practices
- The most challenging factors are:
 - Having a toilet that adequately separates the user from faecal material
 - Having a hand washing station within 10 metres from the toilet facility
 - Collecting, drawing and storing water safely

Intervention

The intervention will consist of 256 Community Development for Health (CDH) workshops attended by approximately 9000 households within the Samtse region. The PHED (Public Health Engineering Division) along with the District Health Officer, the gewog and sub district health officials organise the two-day workshop. The workshop will then be held in a place where it is convenient for the people of that particular cluster (ensuring that participants do not have to walk for hours to reach the venue).

In addition to this there will be follow-up household visits, sub-district / district reviews, and celebrations such as global hand washing day, world toilet day and sanitation fairs, which are mainly for advocacy/promotion. These are carried out by the health assistants, RSAHP implementers from PHED and SNV.

APPENDIX 1 – SURVEY QUESTIONS FOR HYGIENE PRACTICE LEVELS & COSTS

This list is a selection of questions and answers used for the hygiene and costing study. These were part of a larger survey for monitoring performance in Bhutan and Nepal. The questions on HES were only collected in Bhutan.

Toilet and toilet use					
SAN1. Do the members of your household have a toilet?					
	0 = No 1 = Shared 2= Yes				
SAN2. ASK and OBSERVE Question (containment: type of toilet)					
	0=hanging latrine 1=pit latrine without slab 2=pit latrine with slab 3=pit latrine with slab but no superstructure 4=flush / pour flush latrine				
SAN2A. Ask and OBSERVE Question (containment: dispose in open or pit, etc.)					
	0=street, pond, river, drain 1=(direct) pit 2= off-set pit 3=two sequential pits 4=septic tank (without soak pit) 5=water tight pit, septic tank				
SAN3. Can rats reach the faeces in any way?					
	0=yes 1=No 2=blanks				
SAN5 .OBSERVE- Does the toilet pan or slab allow flies to go in and out of the pit?					
	0=yes 1=No 2=blanks				
Is the toilet's location, considering					

distance, slope, time of day, etc., easily accessible for all?					
	0=No 1=Yes				
USAN1. Is the toilet in use, as a toilet?					
	0=No, no toilet, OD, under construction 1=Yes				
USAN4. Is the toilet free from faecal smears on pan, wall and floor?					
	0=No 1=Yes				
USAN5. Is the toilet pan free from used cleansing materials (paper, stones, sticks)?					
	0=No 1=Yes				
USAN9. How do you dispose of the stools of children under the age of 3 years old?					
	0=in open (river, jungle, open air) 1=in garbage 2=buried 3=gabrage, dogs 4=in toilet 5=NA (no child <3)				
Handwashing					
Only answer if you responded Yes, permission is given to Q12					
125. HW1. PLEASE MENTION ALL THE OCCASIONS WHEN IT IS IMPORTANT TO WASH YOUR HANDS?					
	Before eating_____				
	Before breast feeding or feeding a child_____				
	Before cooking or preparing food_____				
	After defecation_____				
	After cleaning a child that has defecated/ changing child's nappy_____				
	After cleaning toilet or potty_____				

	Don't know _____				
Only answer if you responded Use own household toilet to Q80					
126. HW2. Ask and observe question: IS THERE A PLACE FOR HAND WASHING WITHIN 10 METERS FROM THE TOILET?					
	Yes _____				
	Yes, but it is further away than 10 meters from the toilet _____				
	No _____				
Only answer if you responded Yes to Q126					
127. HW2A. CAN YOU SHOW IT TO ME PLEASE? Observe: what type of hand washing station is this?					
	Tippy tap _____				
	Open water bowl _____				
	Open water container / bucket with small cup _____				
	Open water container/bucket with ladle _____				
	Covered water container/bucket with ladle _____				
	Jerry can with tap _____				
	Tap with running water _____				
Only answer if you responded Yes to Q126					
128. HW3. Ask and observe question: IS THERE WATER AVAILABLE AT THE PLACE FOR HAND WASHING NEAR THE TOILET?					
	Water is available at this moment _____				
	Water is not available at this moment _____				
Only answer if you responded Yes to Q126					
129. HW4. Ask and observe question: IS THERE SOAP OR A SOAP SUBSTITUTE AVAILABLE AT THE PLACE FOR HAND WASHING NEAR THE TOILET?					
	No _____				

	Soap present at this moment_____				
	Ash present at this moment_____				
	Mud/ sand present at this moment_____				
Only answer if you responded Soap present at this moment Ash present at this moment Mud/ sand present at this moment to Q129					
130. HW5. Ask and observe question: DOES THE HAND WASHING STATION PREVENT CONTAMINATION OF THE WATER BY HANDS?					
	Yes_____				
	No_____				
Only answer if you responded Water is available at this moment to Q128					
131. HW6. Ask and observe question: IS THERE RUNNING WATER FROM A TAP?					
	Yes_____				
	No_____				
Only answer if you responded Yes, permission is given to Q12					
132. HW7. Ask and observe question: IS THERE A PLACE FOR HAND WASHING WITHIN 10 METERS FROM THE PLACE WHERE FOOD IS PREPARED?					
	Yes_____				
	Yes, but this is the same hand washing place as the one near the toilet_____				
	Yes, but it is further away than 10 meters from the kitchen_____				
	No, no specific place for hand washing_____				
Only answer if you responded Yes to Q132					
133. HW7A. CAN YOU SHOW IT TO ME PLEASE? Observe: what type of hand washing station this is?					
	Tippy tap_____				
	Open water bowl_____				
	Open water container/ bucket with small				

	cup_____				
	Open water container/bucket with ladle_____				
	Covered water container/bucket with ladle_____				
	Cover water container/bucket with tap_____				
	Jerry can with tap_____				
	Tap with running water_____				
Only answer if you responded Yes to Q132					
134. HW9. Ask and observe question: IS THERE SOAP OR A SOAP SUBSTITUTE AVAILABLE AT THE PLACE FOR HAND WASHING NEAR THE KITCHEN					
	No_____				
	Soap at this moment_____				
	Ash at this moment_____				
	Mud / sand at this moment_____				
Only answer if you responded Yes to Q132					
135. HW8. Ask and observe question: IS THERE WATER AVAILABLE AT THE PLACE FOR HAND WASHING NEAR THE KITCHEN?					
	Water is available at this moment_____				
	Water is not available at this moment_____				
Only answer if you responded Soap at this moment Ash at this moment Mud / sand at this moment to Q134					
136. HW10. Ask and observe question: DOES THE HAND WASHING STATION PREVENT CONTAMINATION OF THE WATER BY HANDS?					
	Yes_____				
	No_____				
Only answer if you responded Water is available at this moment to Q135					
137. HW11. Ask and observe question: IS THERE RUNNING					

WATER FROM A TAP?					
	Yes_____				
	No_____				
Only answer if you responded Yes, permission is given to Q12					
138. HW12. HAVE YOU SEEN/HEARD ANY PROMOTION ON GOOD HAND WASHING PRACTICE IN THE LAST 12 MONTHS? THROUGH WHICH SOURCE OR MEDIA?					
	No_____				
	Other Persons_____				
	School_____				
	Health Worker_____				
	Mass Media_____				
139. HW13. DO YOU KNOW THE NAME OF THE CAMPAIGN OR ORGANIZATION THAT ORGANIZED IT?					
	Don't know_____				
	Local government (Gewog)_____				
	Health_____				
	School_____				
	Media_____				
	NGOs_____				

Additional questions for hygiene practice levels and costing study					
Only answer if you responded Use own household toilet to Q80					
140. F1. How long have you had this toilet?					
	Up to two years_____				
	More than two and up to five years_____				
	More than five and up to ten years_____				
	More than ten years_____				
	Don't know_____				
Only answer if you responded Up to two years More than two and up to five years More than five and up to ten years More than ten years to Q140					
141. F2. Was there any direct contribution by the household for construction of this toilet (material and labour)					
	Yes_____				
	No_____				
	Don't know_____				
Only answer if you responded Yes to Q141					
142. F3. How much time was spent? (in days)					
	Up to 1 week (7 days)_____				
	Up to 1 month (30 days)_____				
	Up to 3 month (90 days)_____				
	More than 3 months_____				
	Don't know_____				
Only answer if you responded Use own household toilet to Q80					
143. F4. Do you know how much money was spent for construction of this toilet (initial construction costs)?					
	Yes_____				
	No_____				
Only answer if you responded Yes to Q143					
144. F4a. How much money was spent on direct cost for materials?	_____				
Only answer if you responded Use own household toilet to Q80					

145. F4b. How much money was spent on direct cost for labour?	_____				
Only answer if you responded Yes to Q143					
146. F5. How did you pay for this toilet?					
	Not paid_____				
	Paid by self_____				
	Paid by others_____				
	Loan and Instalments_____				
	Borrowing (friends)_____				
	Combination_____				
Don't know_____					
Only answer if you responded Up to two years More than two and up to five years More than five and up to ten years More than ten years to Q140					
147. F6. Did you carry out any repairs or improvements to your toilet in the last 12 months?					
	Yes_____				
	No_____				
	Don't know_____				
Only answer if you responded Yes to Q147					
148. F7. Is there any direct contribution by the household (material and labour)?					
	Yes_____				
	No_____				
	Don't know_____				
Only answer if you responded Yes to Q147					
149. F8. How much time was spent on repairing and or improving the toilet? (in days)					
	0 days_____				
	1-3 days_____				
	4-5 days_____				
	6 days and above_____				
	Don't know_____				
Only answer if you responded Yes to Q147					
150. F9. How much money was spent on repairing and or improving the toilet?	_____				
Only answer if you responded Up to two years More than two and up					

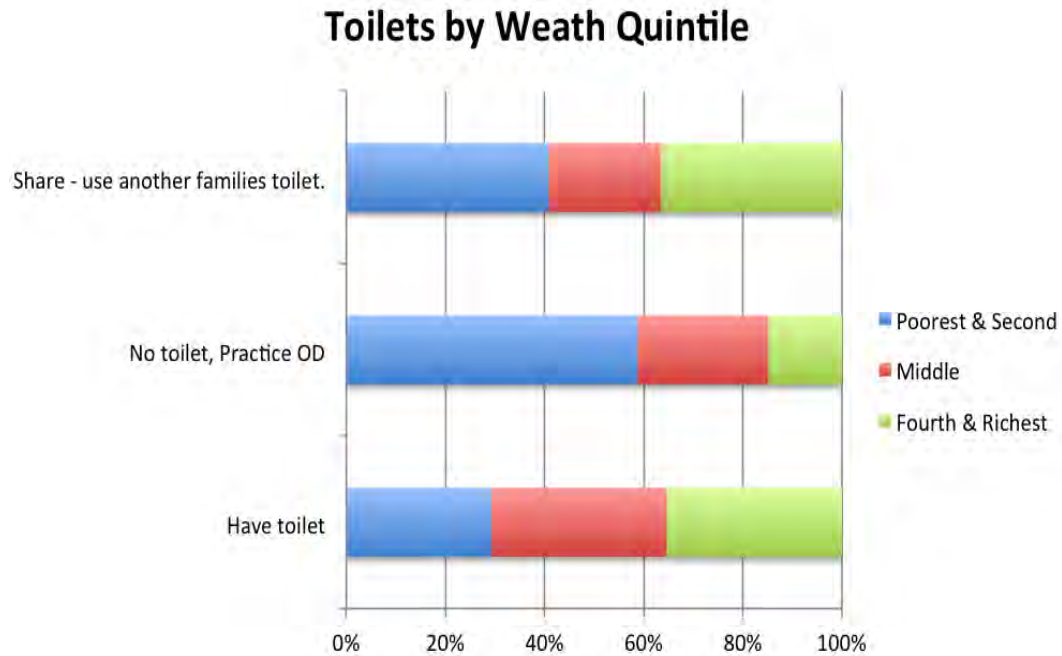
to five years More than five and up to ten years More than ten years to Q140				
151. F10. Was the pit emptied in the last two years?				
	Yes _____			
	No _____			
	Don't know _____			
Only answer if you responded Yes to Q151				
152. F11. How much money was spent to empty the pit?	_____			
153. H1. What is the main place you use to wash your hands?	No specific place for hand washing with soap _____			
	Open bowl or container that does not prevent contamination _____			
	Water container with tap, ladle or tippy tap that prevents contamination _____			
	Running water with soap _____			
154. H2. Did you spend money on the hand washing facility?	Yes _____			
	Nothing (used locally available materials) _____			
	Others paid for it _____			
	Don't know _____			
Only answer if you responded Yes to Q154				
155. H2a. How much money did you spend on the hand washing facility?	_____			
156. H3. What type of soap is used for hand washing?	No soap _____			
	Handwashing/bathing soap _____			
	Detergent _____			
157. H3a. Do you know the number of soaps purchased for hand washing last month?	Yes _____			
	Don't know _____			
Only answer if you responded Yes to Q157				
158. H4. Number of this type of soap purchased per month?	_____			
159. H5. How much does it cost each time you buy this soap (per soap)?	_____			
Safe drinking water management				
160. W1. Did you pay for				

connection or installation of the water source/system?	Yes _____				
	No _____				
	Don't know _____				
Only answer if you responded Yes to Q160					
161. W1a. How much did you pay for connection or installation of the water source/system?	_____				
162. W2. How long have you used this water source/system?	No tap _____				
	Less than 2 years _____				
	2 to 5 years _____				
	5 to 10 years _____				
	More than 10 years _____				
	Don't know _____				
163. W5. Do you pay for the water?	Yes _____				
	No _____				
	Don't know _____				
Only answer if you responded Yes to Q163					
164. W6. How much do you normally pay each month for the water that the household uses?	_____				
165. W7. How is drinking water collected?	Open container _____				
	Closed container _____				
	Tap, direct from tap _____				
166. W9. Do you treat your drinking water?	Yes, always _____				
	Yes, sometimes _____				
	No _____				
	Don't know _____				
Only answer if you responded Yes, sometimes to Q166					
167. W9a. If sometimes, specify, when?	_____				
168. W10. How do you treat your drinking water?	Boiling _____				
	Use chlorine _____				
	SODIS _____				
	Use (ceramic) filter _____				
	Don't know _____				
169. W8. Do you store drinking water in or near the house?	Yes _____				
	No _____				

	Don't know _____				
170. W11. How is (treated) drinking water stored? (observe)					
	Open container _____				
	Closed container _____				
	Don't know _____				
171. W12. How is stored drinking water consumed? (observe if there is a tap or dipper)					
	Tap _____				
	Tippy Tap _____				
	Dipper / ladle _____				
172. HP1. Has any household member(s) attended any hygiene promotion activities, what was the content of the hygiene promotion activities?	Don't know _____				
	Toilet construction _____				
	Toilet hygiene and use _____				
	Hand washing with soap _____				
	Safe drinking water handling _____				
Don't know _____					
Only answer if you responded Toilet construction Toilet hygiene and use Hand washing with soap to Q172					
173. HP2a. Who attended hygiene promotion activities					
	None _____				
	Male _____				
	Female _____				
	Don't know _____				
Only answer if you responded Male Female to Q173					
174. HP3b. Total number of hours (estimated) that the household members who attended hygiene promotion activities	_____				
Observations					

Appendix 2 – Selection of detailed figures

Appendix fig.1a,b,c. Practice levels by wealth quintile



Fig

1b Practice level by wealth quintile– Intervention 1 (Latrine use)

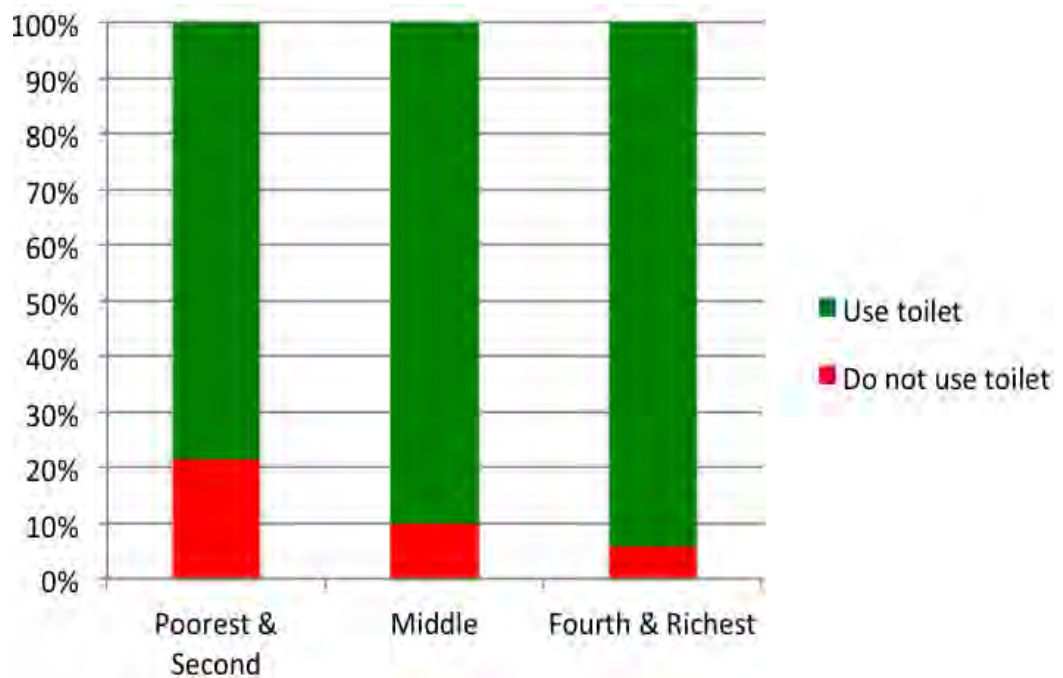
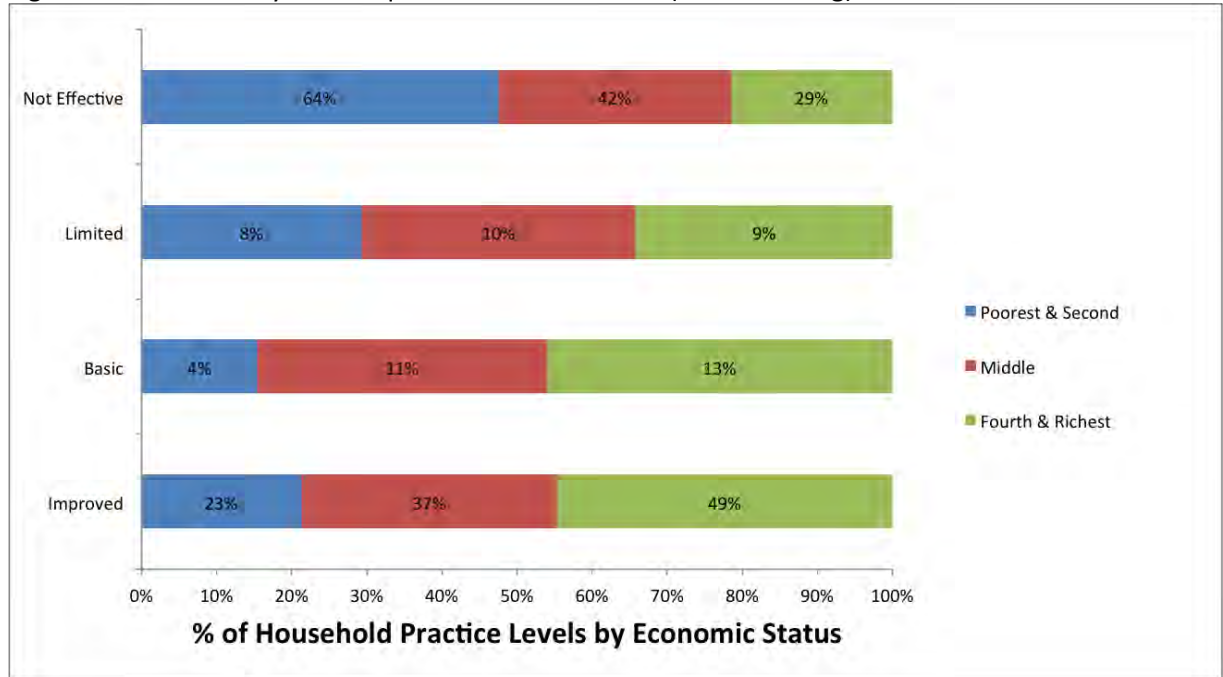


Fig.1c. Practice level by wealth quintile - Intervention 2 (Hand washing).



Appendix fig.2a and 2b. Details for unsafe containment

Fig.2a: Unsafe containment: rats can reach faeces (in # households)

Rats can Reach Faeces

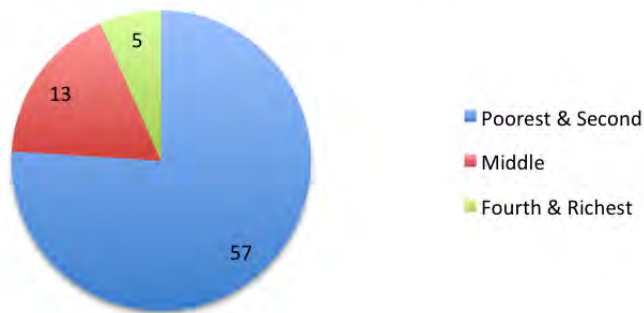
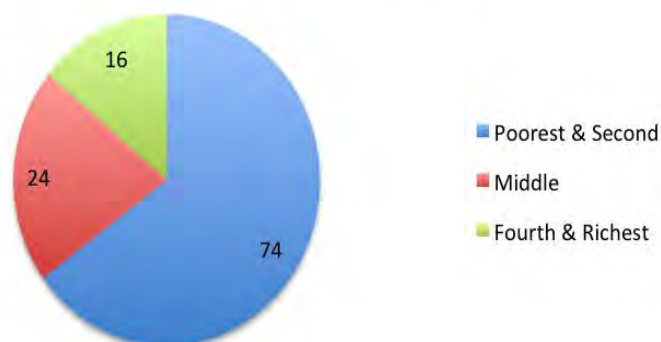


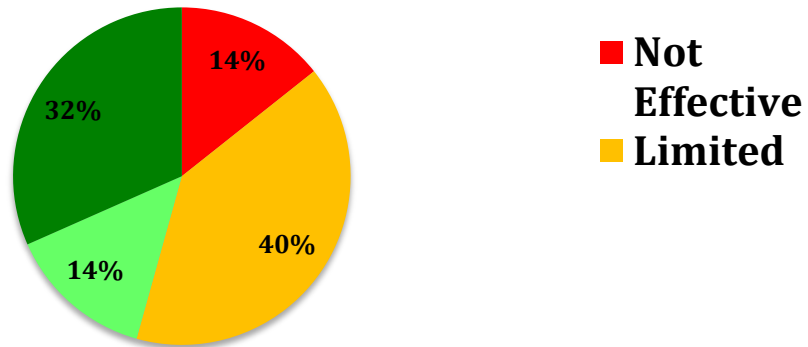
Fig.2b: Unsafe containment: flies can reach faeces (in # households)

Flies can Reach Faeces

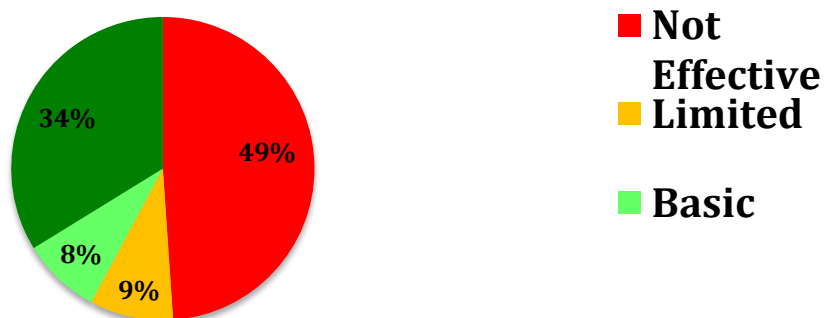


Appendix fig.3a,b and c. Percentage of households per practice levels for each indicator

Indicator 1 (Toilet): Practice Levels



Indicator 2 (Hand washing): Practice Levels



Indicator 3 (Water): Practice Levels

