



Assessment of hygiene interventions: cost-effectiveness study applied to Burkina Faso

Amélie Dubé and Mélanie Carrasco with Richard Bassono

IRC International Water and Sanitation Centre

March 2013 (Translated in April 2013)

Acknowledgements

The authors would like to thank the Hygiene team of the WASHCost project for the time they have spent commenting, revising and adding to the methodology used here. They are also grateful for information received and conversations with the SaniFaso team, in particular San Traoré from Eau Vive and Saidou Savadogo from WaterAid Burkina Faso. Finally, they would like to thank Dr Christelle Pezon for her comments on the content, and Anjani Abella for her work on co-ordinating the structure of the working paper.

This paper was originally written in French, and was translated by Angela Dickson.

Author contact details

Amélie Dubé: dube@irc.nl

Mélanie Carrasco: carrasco@irc.nl

Richard Bassono: bassono@irc.nl

Layout

Cristina Martinez

Photo credits:

Clay pot on foot and handwashing with soap - K Shordt, IRC; Drinking fountain and "World Toilet Cup" - K Bostoën, IRC; Recipient with blue cup - I Krukkert, IRC; Latrines in Komsilga, Burkina Faso, WASHCost team in Burkina Faso



Copyright © 2013 IRC International Water and Sanitation Centre
This work is licensed under a Creative Commons license.

The WASHCost project is a five-year action research project running from 2008 to 2012, the main aim of which is to quantify the life-cycle costs of providing water, sanitation and hygiene services (WASH) in urban and rural areas in Burkina Faso, Ghana, India (Andhra Pradesh) and Mozambique. The objectives of the collection and disaggregation of cost data over the full life-cycle of water, sanitation and hygiene (WASH) services are firstly to understand better what factors drive costs and secondly, through this understanding, to enable more cost effective and equitable service delivery (see www.washcost.info).

Table of Contents

Acknowledgements	2
Abbreviations	5
Executive summary	6
Introduction	7
1 Measuring and quantifying key hygiene behaviours: summary of conceptual and methodological choice	8
1.1. Assumptions and adjustments when measuring behaviour change.....	9
1.1.1 Indicator 1: faecal containment and latrine use.....	10
1.1.2 Indicator 2: handwashing with soap or substitute at critical times.....	12
1.1.3 Indicator 3: domestic water management from source to consumption.....	14
1.2 Assumptions and adjustments when capturing expenditure.....	16
1.2.1 Types of cost	16
1.2.2 Expenditure quantification	17
1.2.3 Allocation of value to expenditure.....	17
2 Application of the methodology in Burkina Faso	17
2.1 Hygiene intervention in the context of SaniFaso	17
2.2 Profile of survey sites	18
2.2.1 Ouahabou	19
2.2.2 Ladiana.....	19
2.3 Stages of the survey	20
2.3.1 Collection of behavioural data.....	20
2.3.2 Collection of cost data	21
3 Effectiveness and cost of the intervention in Ouahabou	22
3.1 Effectiveness of the intervention	22
3.1.1 Faecal containment and latrine use.....	22
3.1.2 Handwashing with soap at critical times.....	25
3.1.3 Domestic water management from source to consumption.....	27
3.2 Expenditure in Ouahabou	29
3.2.1 Costs of intervention	29
3.2.2 Household expenditure in Ouahabou.....	29
4 Effectiveness and cost of the intervention in Ladiana	31
4.1 Effectiveness of the intervention	31
4.1.1 Faecal containment and latrine use.....	31
4.1.2 Handwashing with soap at critical times.....	33
4.1.3 Domestic water management from source to consumption.....	35
4.2 Expenditure in Ladiana	37
4.2.1 Costs of intervention	37
4.2.2 Household costs	37
5 Conclusions and discussion	39
5.1 Main results	39
5.2 Limitations of this study	40
5.3 Next stages	41
References	43
Appendix 1 - Questionnaire	44
Appendix 2 - Summary of costs in US\$ for Ouahabou	47
Appendix 3 - Summary of costs in US\$ for Ladiana	48

List of tables

Table 1	Effectiveness ladder for behaviour change	9
Table 2	Cost components of hygiene promotion interventions (taken from Dubé et al., 2012).....	16
Table 3	Change in household size in Ouahabou (2011 - 2012)	19
Table 4	Change in household size in Ladiana (2011 - 2012)	20
Table 5	Number of households counted	21
Table 6	Intervention costs	22
Table 7	Household expenditure.....	22
Table 8	Intervention costs in Ouahabou.....	29
Table 9	Expenditure on latrines by households in Ouahabou	30
Table 10	Expenditure on handwashing by households in Ouahabou	30
Table 11	Intervention costs in Ladiana	37
Table 12	Expenditure on latrines by households in Ladiana.....	37
Table 13	Expenditure on handwashing by households in Ladiana.....	38
Table 14	Summary of behaviour changes at both sites	39

List of flowcharts

Flowchart 1	Indicator 1: faecal containment and latrine use.....	11
Flowchart 2	Indicator 2: handwashing with soap or substitute at critical times.....	13
Flowchart 3	Indicator 3: domestic water management from source to consumption.....	15
Flowchart 4	Distribution of households (reference situation/midway) with respect to indicator 1	24
Flowchart 5	Distribution of households (reference situation/midway) with respect to indicator 2	26
Flowchart 6	Distribution of households (reference situation/midway) with respect to indicator 3	28
Flowchart 7	Distribution of households (reference situation/ midway) with respect to indicator 1	32
Flowchart 8	Distribution of households (reference situation/midway) with respect to indicator 2	34
Flowchart 9	Distribution of households (reference situation/midway) with respect to indicator 3	36

List of figures

Figure 1	Map showing the two study sites.....	19
Figure 2	Stages of the survey	20

Abbreviations

CLTS	Community-Led Total Sanitation
F CFA	Franc of the African Financial Community (in French: <i>Franc de la Communauté Financière Africaine</i>)
GIZ	German Society for International Co-operation (in German: <i>Gesellschaft für Internationale Zusammenarbeit</i>)
IRC	International Water and Sanitation Centre
MDG	Millennium Development Goals
NA	Not available
NGO	Non-Governmental Organisation
PHAST	Participatory Hygiene and Sanitation Transformation
WASH	Water, Sanitation and Hygiene
WP	Working Paper

Executive summary

This working paper presents the results obtained in applying a methodology for assessing hygiene cost effectiveness in two sites in Burkina Faso: Ladiana and Ouahabou. The intervention examined here involves a combination of workshops held in villages, and household visits conducted. Effectiveness, as reflected in behaviour change, was measured using three indicators: 1. faecal containment and latrine use; 2. handwashing with soap at critical times; and 3. domestic water management from source to consumption. The cost of such an intervention and the expenditure incurred by households were calculated, and compared with the behaviour change observed. Using a survey administered to a total sample of 1,093 households that were beneficiaries of the SaniFaso programme between November 2011 and November 2012, the study enabled testing of the methodology as presented in Working Paper 7, and quantification of the effectiveness of the intervention.

Methodology: The methodology involved calculation of changes in facilities and behaviour at the household level. These changes were captured at two moments (before and after the intervention), using a survey in combination with observations. The data collected was processed using flowcharts that provided a logical framework for behaviours and associated facilities. The costs of the intervention were then assessed by enquiring among SaniFaso programme staff, while household expenditure data was provided by households themselves.

Results: The intervention was shown to have effected a slight but significant positive change in terms of faecal containment and latrine use in Ouahabou. In Ladiana, however, it was noted that some households were moving towards a "not effective" level of behaviour, which was difficult to explain.

There was, however, a clear change in effectiveness level for handwashing habits after defecation, and before eating in both villages. 18-20% of households in Ouahabou had adopted more effective behaviours. In Ladiana, however, a reduction in good habits was observed, leading to a lower level of effectiveness. Several factors can be invoked to explain this slide in behaviour in Ladiana, such as uneven working practices among hygiene workers, and a lack of social cohesion that seems to have limited the extent to which good practice can be spread.

In both villages, the use of drinking water had fallen back to "not effective" status, which can perhaps be explained by the lack of a "water" component in the SaniFaso programme.

Between December 2011 and November 2012, F CFA 1,823 per household in Ladiana and F CFA 516 per household in Ouahabou had been spent as part of SaniFaso. The higher cost in Ladiana is explained by its smaller population, which means that the intervention costs more per household. Given the low cost per household, it did not come as a surprise that the intervention has been of limited effectiveness. Nevertheless, as the intervention is not yet over, it is possible that other changes may be observed, that cannot be captured here.

The link between financial investment and increased effectiveness was strikingly obvious in the case of latrine use, and in the static or reduced effectiveness figures in the use of drinking water (no financial investment has been devoted to the water infrastructure aspect). This observation showed that interventions in combination with financial investment programmes have a greater chance of success.

Some limitations have been identified in the methodology. These include the logical sequences of behaviour, which need to be refined, and the levels of effectiveness, which need to offer a greater degree of detail. In addition, water use, such as for cooking or public latrines, are not considered here. Finally, this study captured a situation at a specific time, and therefore cannot be viewed as a situation that will necessarily continue. The study does not also claim to analyse the impact of changes on population health. Despite these limitations, the methodology was successful in identifying the strengths and weaknesses of hygiene interventions. It is hoped that those involved in WASH and in public health will refine their interventions using this methodology.

Introduction

This working paper presents the results obtained from the application of a methodology for assessing hygiene cost-effectiveness in two sites in Burkina Faso. This methodology was developed as part of the WASHCost project, and its purpose is to quantify and describe hygiene interventions carried out as part of WASH programmes. It is inspired by water and sanitation service ladders¹.

Hygiene is often assumed to be limited to handwashing, and is the intangible or "soft" aspect of drinking water and/or sanitation infrastructure programmes. It is true that hygiene should be considered separately from water and sanitation, because of the limited amount of infrastructure that is associated with it and because it is a cross-cutting issue: the promotion of good hygiene practice is often the sole province of professionals in public health, which as a field is closely linked to WASH.

The WASHCost hygiene team considered establishing the cost of a hygiene service versus the cost of an intervention². A hygiene service (or public health service) is not limited to WASH interventions; it also covers such things as HIV/ AIDS, mother and child health and anti-smoking campaigns. These are also hygiene interventions, but ones that are carried out by non-WASH stakeholders. For this reason, rather than assessing the cost of the service, which is beyond the scope of WASH issues, the approach that was developed assessed the cost of an intervention that aims to improve hygiene behaviour in the WASH sector.

"Hygiene promotion interventions are project cycle-based activities aimed at changing hygiene behaviours in targeted populations within a particular time frame. Hygiene promotion interventions in WASH typically aim to contribute to improved health. A range of approaches, methodologies and tools have been developed and used by the WASH sector to facilitate and support users to manage and use water and sanitation services more hygienically"³.

¹ See Moriarty P. et al., 2011. *Ladders for assessing and costing water service delivery*. (WASHCost Working Paper no. 2, 2nd edition) [online] The Hague: IRC International Water and Sanitation Centre (Published in November 2011). Available at: < <http://www.washcost.info/page/1764>> [retrieved 28 January 2013] and Potter A. et al., 2011a. *Assessing sanitation service levels*. (WASHCost Working Paper no. 3, 2nd edition) [online] July 2011. Available at: < <http://www.washcost.info/page/1934>> [retrieved 28 January 2013].

² See Potter A et al., 2011b, *Assessing hygiene cost-effectiveness* (WASHCost Working Paper no. 6) [online] The Hague: IRC International Water and Sanitation Centre (Published in December 2011). Available at: < <http://www.washcost.info/page/1933>> [retrieved 28 January 2013].

³ Ibid, page 5.

Approaching hygiene in the context of an intervention requires a new way of viewing sustainability. As an intervention is limited to operations in specific timeframes—over several months or years—the costs of an intervention primarily cover investment costs (physical and intangible), operational costs relating to the intervention, and support provided by local, regional and national health authorities. Unlike interventions involving tangible outputs, which give rise to operational and/ or maintenance costs over a period of up to 15 or 20 years, post-intervention costs for hygiene interventions are practically non-existent.

The WASHCost project provided the researchers with an opportunity to develop a methodology that aimed to analyse the cost effectiveness of a hygiene intervention. It also offered the possibility of testing this methodology in three of the four countries in which WASHCost intervention was taking place: Burkina Faso, Ghana and Mozambique.

This working paper presents the results of the methodology that has been developed and tested in the specific context of Burkina Faso. It benefits from being read in conjunction with Working Paper 6, *Assessing hygiene cost-effectiveness* (Potter, et al., 2011), which sets out the conceptual approach in some depth, and with Working Paper 7, *Assessing hygiene cost-effectiveness: a methodology*⁴ (Dubé, et al., 2012), which sets out the basic principles underlying the methodology. Following a summary of the main conceptual and methodological aspects of the study in part 1, this document examines the interventions that are being assessed and the contextual choices that have been made. In Burkina Faso, the study was carried out in two sites, in which the SaniFaso family sanitation programme operates. The results for these two sites are then given. In the final section, the limitations of the study are discussed, and next steps are described.

1 Measuring and quantifying key hygiene behaviours: summary of conceptual and methodological choices

This section summarises the main methodological and conceptual choices involved in this study. The working paper entitled *Assessing hygiene cost-effectiveness: a methodology* contains a comprehensive account, and can be referred to if more details are required⁵.

The methodology is outlined in two phases: first, effectiveness as measured by observed behaviour changes, and second, the associated expenditure incurred by those running the intervention and by households. This methodology has needed adjustment to reflect the reality on the ground and the limitations of the data. This section contains details of the methodological choices made when carrying out case studies in Burkina Faso.

Although the methodology was developed to assess behaviour change by comparing behaviour before an intervention with behaviour six months or one year after the end of that intervention—the reality on the ground is such that behaviour is assessed before the intervention and at the midpoint; in other words, nine months after the

⁴ This publication has yet to be published in French, but the main points are summarised in section 1.

⁵ Dubé A, et al., 2012. *Assessing hygiene cost-effectiveness: a methodology*. (WASHCost working paper no 7) [pdf] The Hague: IRC International Water and Sanitation Centre. Available at: <<http://www.washcost.info/page/2341>> [Accessed 28 January 2013].

intervention started. This did not pose as much a constraint as it first appeared, but it did limit the scope for drawing conclusions about behaviour changes; the findings of this study therefore only provide a portrait of households as they undergo change.

The chosen unit for analysis of behaviour change and the associated costs was the household rather than the individual. This choice is examined more closely in section 4 of this paper.

1.1. Assumptions and adjustments when measuring behaviour change

In summary, three key behaviours were observed for the purposes of this study:

- Faecal containment and latrine use;
- Handwashing with soap or substitute at critical times; and
- Domestic water management from source to consumption.

The effectiveness of the behaviour that was assessed is weighted on an effectiveness ladder, which was developed in publications WP6 (Potter, et al., 2011) and WP7 (Dubé, et al., 2012). The ladder comprises four steps: improved effectiveness, basic effectiveness, limited effectiveness and not effective.

Table 1 Effectiveness ladder for behaviour change

Levels of effectiveness/ key behaviours	Faecal containment and latrine use	Handwashing with soap (or substitute)	Domestic water management from source to consumption
Improved effectiveness	All household members use a latrine all the time The latrine used separates users from faecal waste	A handwashing facility is available Water for handwashing is not re-contaminated by handwashing Soap is available and used by household members for handwashing	Domestic water always comes from an improved source The collection and storage vessels are covered Water is drawn using a vessel or tap
Basic effectiveness	All or some household members use a latrine some or most of the time The latrine used separates users from faecal waste	All household members wash their hands at two critical times	Domestic water always comes from an improved source The collection and storage vessels are not covered AND/OR Water is not drawn using a vessel or tap
Limited effectiveness	The latrine does not provide adequate separation between users and faecal waste All or some household members use a latrine some or most of the time	Water for handwashing is not poured away after washing and is re-contaminated Soap is not available and/ or is not used by household members for handwashing Some household members wash their hands at least one of the two critical times	Drinking water does not always come from an improved source
Not effective	Open defecation	Handwashing station is not available and household members do not wash their hands.	Drinking water never comes from an improved source

In order to obtain an overall effectiveness level per household for each of the three indicators, the collected data was processed using a logical sequence of behaviour, and according to whether certain facilities were present.

For each behaviour, a flowchart was designed to show the logical sequence. These flowcharts were made into a table of calculations, which enabled a score to be allocated to each household. Comparison of the scores before and after the intervention enabled assessment of the changes that had taken place in each household, for each of the three key behaviours. Where possible, the data was compared with the researcher's observations. Observations took precedence over reported data.

1.1.1 Indicator 1: faecal containment and latrine use

Here, latrine use was assumed to reflect improved hygiene behaviour. This indicator has five sub-indicators, which are connected logically (Flowchart 1). The assumptions used and origin of the data are explained in the sub-indicators below.

Q1 - Does your household have a latrine?

This question is technical and not behavioural, and assumed that behaviour change is dependent on the presence of a latrine. In other words, a household cannot change its behaviour and use a latrine if a latrine is not available to the household. As part of the SaniFaso programme—the purpose of which is the construction of latrines—this question also enabled the assessment of a household's level of interest in having a latrine. It should be noted that the question did not take into account the financial resources available to the household. The data was a combination of collected data and observations.

Q2 - Does your household have access to a latrine in the compound?

Given the way of life in the rural areas studied, the presence of a latrine within a compound was also considered. Public latrines and use of these facilities were however excluded here. Using the information gained in questions 1 and 2, it was possible to establish the number of households that potentially have access to a latrine. The data used was a combination of collected data and observations.

Q3 - Which member(s) of your household use the latrine?

This question was processed as follows: Sum of latrine users in the household/ number of members in household. Responses were divided into three categories: (i) All household members state they use the latrine; (ii) Some household members state they use the latrine; (iii) No household members use the latrine. Data was based solely on responses of those being interviewed.

Here, household latrines and latrines in compounds were dealt with in the same way. The behaviour for analysis here was the use of a non-public latrine.

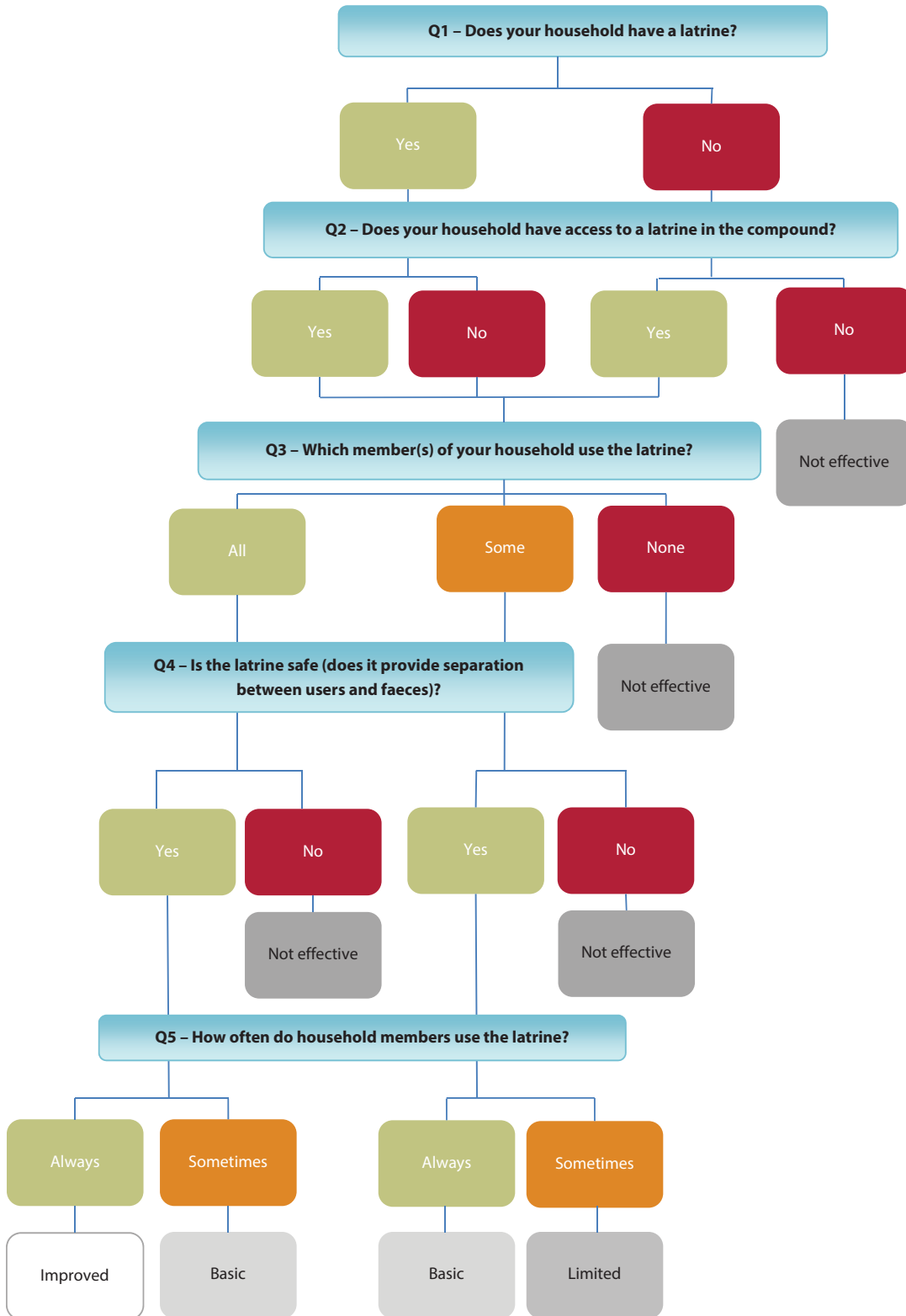
Q4 - Is the latrine safe (does it provide separation between users and faeces)?

The purpose here was to find out whether the latrine provides adequate safe separation between user and faeces. The answer was extrapolated from the type of technology used. A latrine known as "traditional" was not considered to provide safe separation.

Q5 - How often do household members use the latrine?

Frequency of use was considered to determine whether the latrine is used under all circumstances or only occasionally, when members are near the home. Ideally, this question was meant to capture time of use: Do users prefer to wait when the latrine is in use, or do they relieve themselves elsewhere? Do they use the latrine only at night, or at any time? Frequency of use was calculated using the number of places in which household members state they defecate: a household in which members state they only use the latrine was considered to have a higher level of effectiveness, than a household that practised open defecation.

Flowchart 1 Indicator 1: faecal containment and latrine use



1.1.2 Indicator 2: handwashing with soap or substitute at critical times

For this indicator, the availability of handwashing facilities and soap was assumed to be a necessary condition for improved hygiene behaviour. This indicator has five sub-indicators, which are connected logically (Flowchart 2). The assumptions and provenance of the data are explained below for each sub-indicator:

Q7 - Is there a handwashing facility that is accessible to users?

This first question aimed to find out whether the household had any type of facility for handwashing: a tap, a container with or without tap, or a plastic kettle. The reported data was compared with observations made.

Q8 - Is water used for handwashing poured away and not reused?

A facility with a tap or a pouring spout was assumed to mean that water contamination can be avoided once the water has been used for handwashing. On the contrary, the use of buckets in which many hands were dipped was considered to be more risky. This question enabled the classification of facilities used by the household for handwashing.

Q9 - Is there enough water for handwashing?

Water availability data was not collected as part of the surveys, and this was assessed using the facility available and handwashing behaviours: if water was not reused, this indicated that water was available in sufficient quantity, and conversely if water used for handwashing was reused, this indicated lack of water.

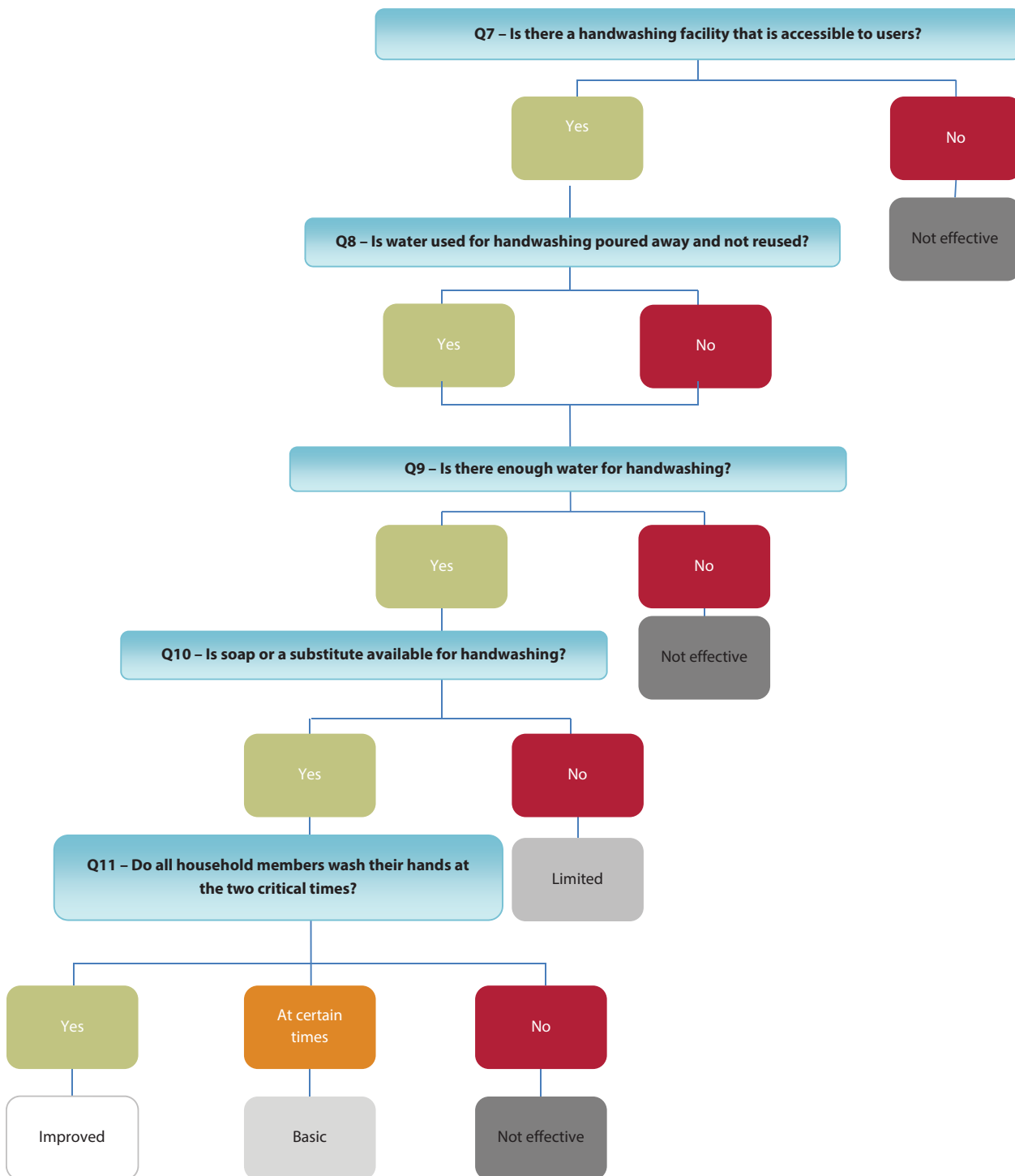
Q10 - Is soap or a substitute available for handwashing?

As responses to this question, when posed directly, were found to generally be highly biased, the question was not put directly to the subject. Initially, the researcher asked if the household bought soap, and later what the soap was being used for. Purchase of soap was also verified by checking for the presence of soap in the household. Responses showed that the same soap was often used for washing up (after defecation), and washing household members' bodies. It should be noted that this soap was counted separate from washing detergent (e.g., OMO)—this generally used for clothes washing.

Q11 - Do all household members wash their hands at both critical times?

Similar to the previous question, this was not put directly to the household. Households stated when members wash their hands; no specific responses were suggested. From the responses, information on handwashing after defecation and before eating was isolated for men, women and children. The data collected enabled processing by profile (men, women, and children). Responses were grouped as follows: (i) handwashing occurs at both critical times; (ii) at either of the two critical times; (iii) at neither of the critical times.

Flowchart 2 Indicator 2: handwashing with soap or substitute at critical times



1.1.3 Indicator 3: domestic water management from source to consumption

Similar to indicators 1 (faecal containment and latrine use) and 2 (handwashing with soap at critical times), indicator 3 relied on the accessibility of either: i) an improved (or formal) water source such as a borehole, a small piped water scheme or other community system, or ii) a suitable method for treating drinking water. Flowchart 3 provides the logical sequence, using the assumptions and processes specific to each sub-indicator.

Q12 - How often does the household use an improved drinking water source?

Water from an improved source (borehole, small piped water scheme) was assumed to be generally potable, unlike water from traditional sources (ponds, rivers, unprotected dug wells, etc.). Households that treated water with bleach or by boiling were also included in this category.

Q13 - Is water fetched appropriately?

Given that containers were generally used to fetch water at formal water-gathering points (in other words, cans and closed barrels), the following assumption was used: if water is taken from an improved source, it is gathered in a safe and hygienic way. While the assumption was debatable, it did point to a relationship between choice of source and water gathering in the cause-effect chain (flowchart).

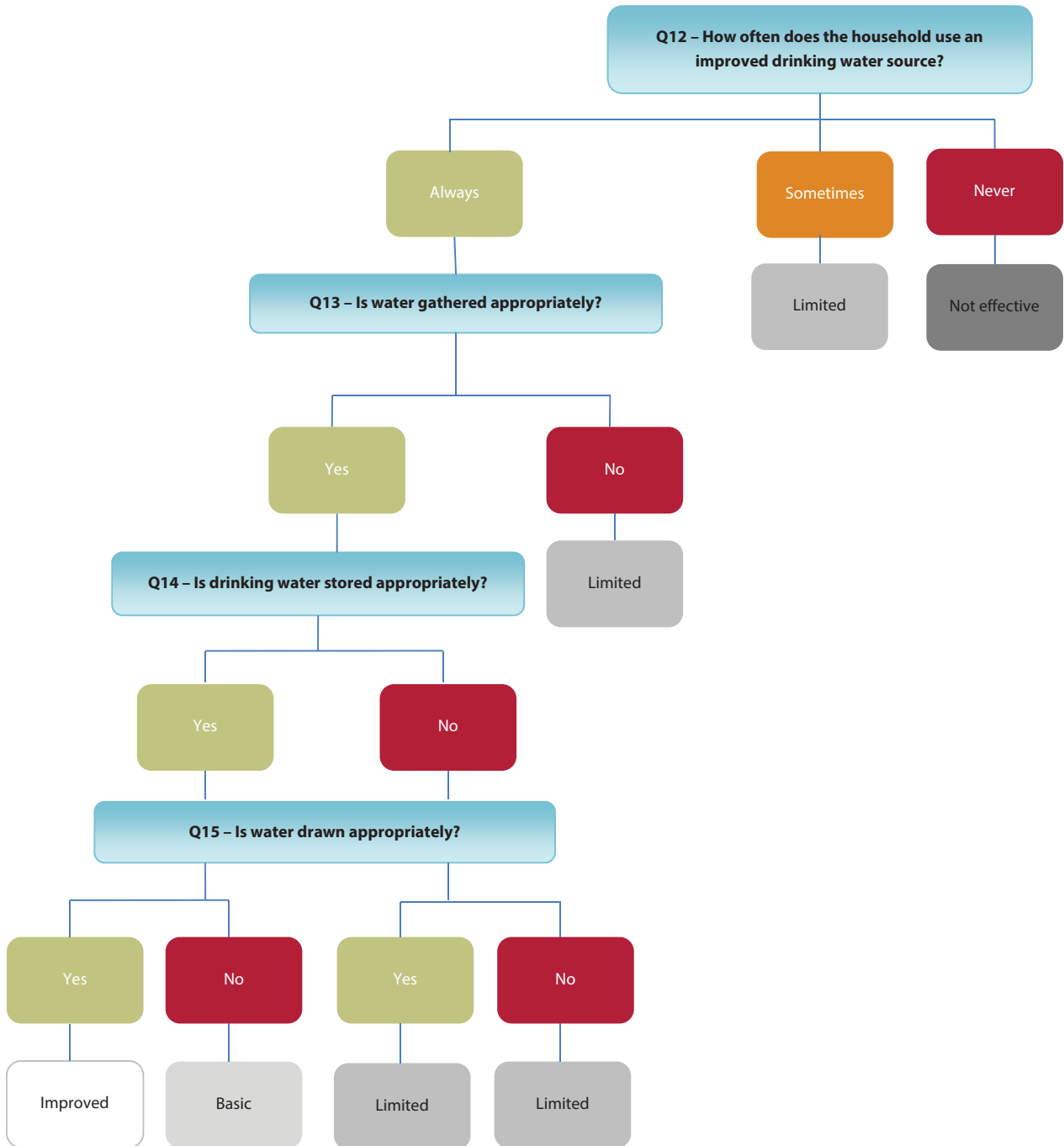
Q14 - Is drinking water stored appropriately?

Here "appropriately" referred to the use of lids or caps on containers for drinking water, limiting contact between water and potential contaminants. Responses were a combination of reported data and observations.

Q15 - Is water drawn appropriately?

If the container was accompanied by a ladle, tap or cup, water was considered to be drawn appropriately. If no such instrument was found to be near the container, the opposite was assumed.

Flowchart 3 **Indicator 3: domestic water management from source to consumption**



1.2 Assumptions and adjustments when capturing expenditure

Expenditure refers to the total resources needed to carry out a hygiene intervention. Behaviour change is assumed to cost, both for the household and for the contractor, or the authorities responsible for hygiene. All costs were captured using a three-pronged approach⁶:

1.2.1 Types of cost

In the context of the WASHCost project, the costs of water and sanitation services were categorised. These categories were applied to hygiene interventions. The types of costs collected during the WASHCost study included capital expenditure and maintenance costs, particularly those incurred by households. In the Burkina Faso case study, the cost of capital or expenditure on direct support was excluded.

Table 2 Cost components of hygiene promotion interventions (taken from Dubé et al., 2012)

	Implementer costs	Household costs
CapEx Hardware (CapExH) The capital invested in constructing fixed assets such as handwashing facilities	Material required for the intervention (promotion materials, materials for participatory work, etc.)	Hygiene goods required for hygiene behaviour change, e.g., handwashing facilities, water storage vessels, latrines, etc.
Capital Expenditure Software (CapExS) One-off work with stakeholders prior to implementation	Intervention preparation costs (defining approach, training trainers, etc.)	Costs for hygiene behaviour change: household investment of time and money in participation in campaigns for handwashing, safe sanitation for all, etc.
Costs of Capital (CoC)	Costs of interest payments: World Bank loans and other loans	Costs of interest payments: personal or group loans, for e.g., household latrines and other microfinance schemes related to access to sanitation
Operating Expenditure (OpEx)	Costs of monitoring and overhead; such as support staff salaries, office rent, maintenance of vehicles and IT systems, etc.	Costs of hygienic behaviour, e.g., use of water and soap; time spent on hygiene-related activities, e.g., cleaning toilets, fetching extra water required for hygiene purposes, etc.
Capital maintenance expenditure (CapManEx) Expenditure on asset renewal, replacement and rehabilitation	Replacement costs of hygiene goods at intervention level (i.e., replacing handwashing facilities, latrines, etc.)	Replacement costs of hygiene goods at household level (i.e., replacing handwashing facilities, latrine superstructure, etc.)
Expenditure on direct support (ExpDS) Post-construction support activities for local-level stakeholders, users or user groups	Costs of supporting community-based organisations at local level: WASH committees, sanitation and hygiene groups, etc. This cost component also includes subsidies to households for WASH facilities	Not applicable

⁶ Drummond, et al. (2005: pp. 89-90).

1.2.2 Expenditure quantification

With the type of expenditure identified, data was collected via key informants. Data about implementation was drawn from additional financial and maintenance reports; information about household expenditure came from the households that were surveyed.

1.2.3 Allocation of value to expenditure

The resources used can be financial (money), but also economic (unpaid time/ volunteering, locally available materials, etc.). In order to obtain the total cost of the intervention, economic costs were translated into financial costs. In this study however, economic costs were not assessed in the surveys, and are therefore not taken into account.

Collected cost data was then entered into a database and processed in various ways, the main way being updating—in other words, indexing prices to 2011 levels to enable comparison.

Recurrent expenditure by households was given for two points (before and after the intervention) and was calculated per month and per household. Capital expenditure on latrines was considered separately—these seen as one-off items of expenditure incurred between 1970 and 2012.

It should be noted, however, that the intervention had not been entirely finalised at the time of the survey, so expenditure data is given up to November 2012. Further details are provided in section 2.3.2.

2 Application of the methodology in Burkina Faso

In Burkina Faso, the hygiene interventions studied were carried out as part of the SaniFaso programme—a four-year family sanitation programme running from 2010-2014. The main aim of SaniFaso is to help to improve population health by preventing diseases that are caused by poor hygiene, and to help in achieving the MDGs related to sanitation in these locations.

The programme's main activity is the construction of 16,000 latrines. It should be noted that SaniFaso is not directly involved in improving the availability of drinking water or handwashing facilities. Nevertheless, the hygiene promotion aspect of the programme involved direct contact with households and awareness-raising sessions on the three key themes of good hygiene behaviour, as mentioned in the previous section.

The programme was established by a consortium involving five partners: the NGO Eau Vive, the project lead with the NGOs WaterAid and Helvetas, GIZ water and sanitation programme, and IRC International Water and Sanitation Centre. The programme is focused on three regions, encompassing a total of 12 districts. Local implementation is the responsibility of Eau Vive, jointly with GIZ; and of WaterAid and Helvetas.

2.1 Hygiene intervention in the context of SaniFaso

The type of intervention SaniFaso uses is two-fold: first, a home visit to each household in the area in question; second, local activity sessions to spread clear, simple and achievable messages about hygiene and sanitation, and in particular the construction, use and maintenance of family latrines.

Home visits: applying the PHAST approach

The purpose of the PHAST approach is to improve hygiene behaviour in order to promote a reduction in diarrhoea morbidity and to encourage communities to take responsibility for water and sanitation services⁷. The method relies on workers who can bring this information to a wide audience (hygiene workers) and with the use of images.

The image material depicts practices linked to:

- food and drinking water hygiene;
- hygiene at home;
- healthy disposal of excreta; and
- use and maintenance of latrines.

In the context of SaniFaso, an adapted version of PHAST is used; while it provides information about all behaviours linked to water and sanitation, it primarily seeks to promote the adoption of latrines by programme beneficiaries.

Home visits are carried out by volunteer hygiene workers. There are two such workers per village, and they receive three days of training, as well as a manual and all necessary materials. The intervention starts with an introduction to the village authorities, and continues with home visits. Hygiene workers spend an average of two hours per household.

Local activities: adapting the CLTS approach

Activity sessions are inspired by CLTS, and include:

- The "walk of shame", which identifies the main defecation sites in the village.
- The "calculation of shit", which shows how much human waste is produced by the villagers.
- The "social map", which puts down on paper the current situation in the village, so that it can be compared with the improved situation.

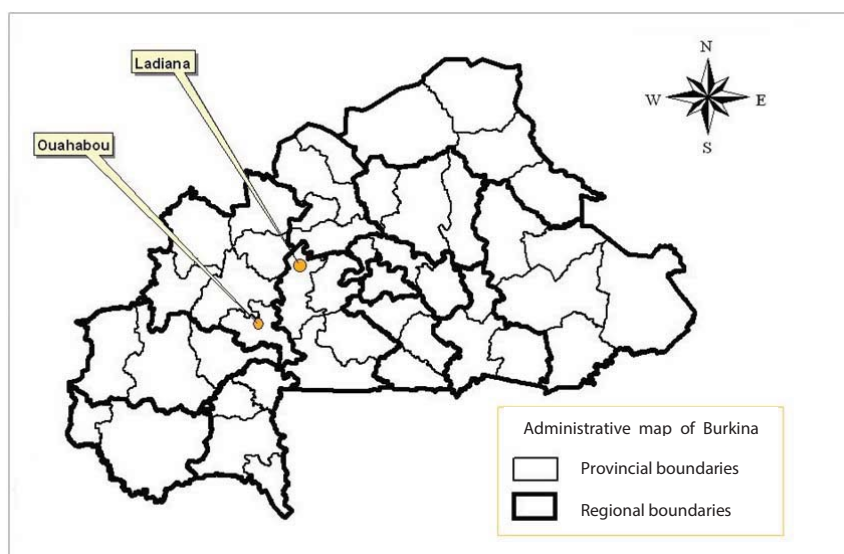
It differs from the original approach, however, in that subsidised households are identified at these meetings. This approach seeks to motivate households to adopt latrine use, and subsidises those households that are identified as being the poorest. Activities are led by local health workers. They last half a day per activity. The combination of local activities and home visits is spread over a period of a few weeks to several months, depending on the size of the village, and the arrangements for hygiene workers in each village.

2.2 Profile of survey sites

The methodology used by this study was tested in two villages: Ouahabou and Ladiana. As part of monitoring SaniFaso's impact, five control villages were chosen. These villages were chosen based on a combination of factors: distance, accessibility, size and ethnic profile. The two villages studied here were subjected to analysis at the midpoint and end of the SaniFaso programme.

In the context of SaniFaso, municipality and region responsibility was shared between partners: interventions in Ouahabou were led by Eau Vive, while interventions in Ladiana were led by WaterAid.

⁷ For further information about the PHAST approach, see the World Bank website: < <http://water.worldbank.org/shw-resource-guide/promotion/hygiene-promotion-approaches/phast> > [Accessed 28 January 2013].

Figure 1 Map showing the two study sites

2.2.1 Ouahabou

Ouahabou is home to approximately 6,000 people, and is part of the Boromo urban area, capital of Bale province. This province is part of the Boucle du Mouhoun region in the west of Burkina Faso. Ouahabou is around 220 km from Ouagadougou on Burkina Faso's Route Nationale no. 1. The main ethnic groups represented are Bwaba, Gurunsi and Mossi, and the main religion is Islam. In this area, cotton is grown and produced.

Table 3 Change in household size in Ouahabou (2011 - 2012)

	Average number of women aged 18 and over/ household	Average number of men aged 18 and over/ household	Average number of children aged under 18/ household	Average number of people/ household
November 2011	1.61	1.42	3.64	6.67
November 2012	1.57	1.46	3.17	6.20

In Ouahabou, households have an average size of six people, with similar numbers of men and women, and an average of three children aged under 18. The slight reduction in household numbers between November 2011 and November 2012 can be explained by population movements.

2.2.2 Ladiana

Ladiana is in the Dydin rural community, in Sanguié province. Ladiana has around 2,700 inhabitants and is in the Centre-West region in the west of Burkina Faso. It is 160 km from Ouagadougou. The main ethnic group is Gurunsi, and the most commonly practised religion is animism. It is in an agricultural area, and the people practise subsistence farming.

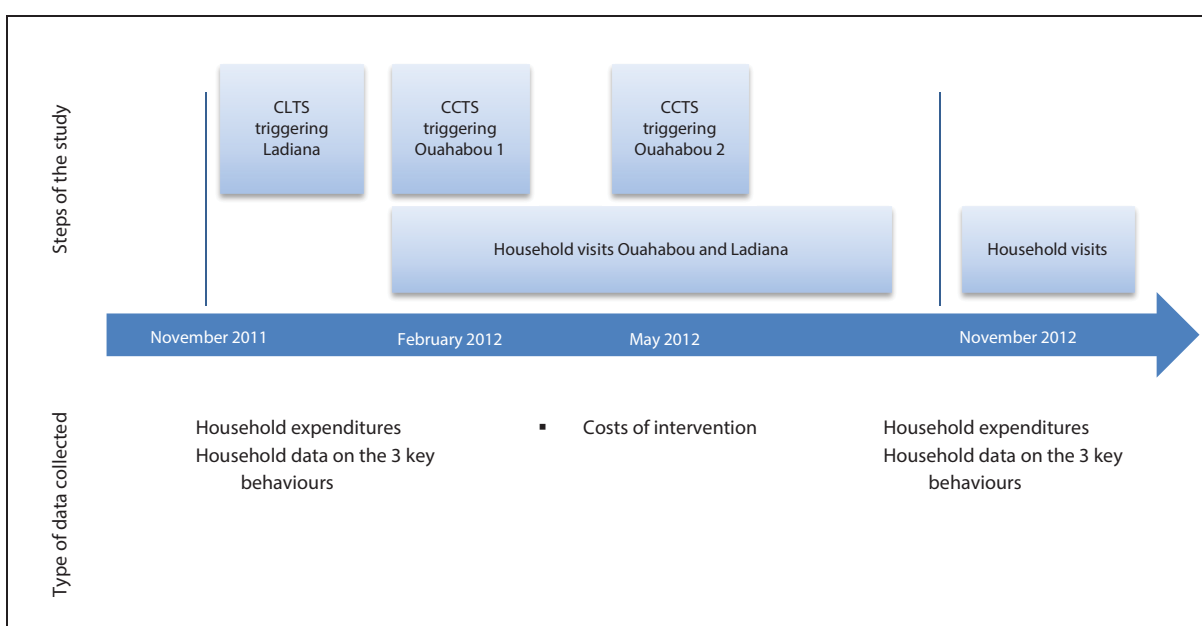
Households in Ladiana are larger than in Ouahabou: households have an average of eight members, of whom two are women, one is a man and five are children. As in Ouahabou, the slight reduction in household numbers between November 2011 and November 2012 can be explained by population movements.

Table 4 Change in household size in Ladiana (2011 - 2012)

	Average number of women aged 18 and over/ household	Average number of men aged 18 and over/ household	Average number of children aged under 18/ household	Average number of people/ household
November 2011	2.37	1.18	5.28	8.82
November 2012	2.11	1.06	5.33	8.51

2.3 Stages of the survey

Figure 2 illustrates the various stages involved in the study, and the type of information collected at each stage.

Figure 2 Stages of the survey

2.3.1 Collection of behavioural data

A census was taken of the population of both villages. Census taking meant that the current situation and ongoing change in a village level was captured. The same questionnaire was administered before and after the intervention. It consisted of a series of questions about the household composition, household defecation habits, handwashing habits, water collection and storage habits, and questions about expenditure incurred by the household. The questionnaire was complemented by a series of observations concerning the facility that was available in the household, and the condition it was in. The questionnaire is provided in Appendix 1.

The advantage of the census method is that it offers a full picture of behaviour on the village scale. Results cannot, however, be extrapolated to other villages, provinces or regions. The methodology tested here consists of two case studies.

Table 5 shows the number of households questioned in the two surveys, and the sample that was used for analysis. Some households had left the villages and others had been formed, so it was not possible to report behaviour before and after the intervention for all households. The households that were not counted twice were therefore excluded.

Table 5 Number of households counted

Village	No. of households counted		No. of households used in study
	Reference study	Follow-up study	
Ouahabou	934	957	822
Ladiana	308	318	271

The questionnaire was administered face to face by a researcher from the region, interviewing an adult household member. On average, the researcher spent 45 minutes with each household. It should be noted that in rural areas, the concept of household may be biased, as families generally live together in compounds. The way in which the compound functions is controlled in part by the compound head, who is generally an older person. Within a compound, however, there are smaller family units. In order to identify these smaller households, the following question was put: "who shares your cooking pot?".

The reference survey took place in November 2011. Data cleaning, processing and analysing were carried out between December 2011 and June 2012.

The intervention, which was led by Eau Vive and WaterAid in their respective area designation, started between December 2011 and February 2012. Two village workshops were held in Ouahabou, and just one in Ladiana; and some households had already taken part in a hygiene awareness-raising programme: in Ouahabou, approximately 40% of households were visited. In Ladiana, as of 30 November, 159 households (59% of all households) had been visited. The midway survey took place at the end of October 2012, ten months after the intervention began. The data collection phase lasted for two weeks in Ouahabou, and one week in Ladiana. Around ten researchers supported the study, in total, and a supervisor each per zone.

2.3.2 Collection of cost data

As costs incurred by those implementing the intervention and by households were not collected by the same organisation, they are presented separately below.

Costs of intervention

Data concerning the costs of the intervention were collected from the SaniFaso co-ordinator in November 2012. These costs are estimates per village and of programme expenditure that is specifically dedicated to the hygiene intervention described above. There are obvious limitations to these estimates, and given the time taken to process financial data in this programme, the actual costs were not available at this stage.

The costs of the intervention should not be confused with the costs of the programme. The costs focused on here are those that have been specifically linked to the hygiene intervention, as defined above. The activities involved in the intervention are as follows:

- Activity 1: Identification of hygiene workers
- Activity 2: Creation of communication tools
- Activity 3: Training of hygiene worker trainers
- Activity 4: Training of hygiene workers
- Activity 5: Local intervention involving hygiene workers
- Activity 6: Supervision of hygiene workers
- Activity 7: Local activities

Activity 1 started in November 2011, and activities 5, 6 and 7 are expected to continue into 2013. In the context of this study, intervention costs covered the period between 1 November 2011 and 30 November 2012. As the intervention is taking place over a limited time (a matter of months), the costs associated with it were limited to capital expenditure and current operating costs. The costs of the intervention fell into two categories: capital expenditure and operating costs.

Table 6 Intervention costs

Components of costs	Description, examples
Capital Expenditure Software (CapExS)	Costs of training, per diem and other expenses associated with training, creation of training materials
Capital Expenditure Hardware (CapExH)	Training materials (printing, kits)
Recurrent expenditure	Salaries (in kind or in currency), travel expenses incurred when carrying out the intervention

Recurrent expenditure was presented for each month for the duration of the intervention, in others words from 1 February to 31 November 2012 for Ouahabou, and from 1 December 2011 to 31 November 2012 for Ladiana. Capital expenditure was given an absolute value, as it was only incurred once. All intervention costs were presented in the form of an average cost per household.

Household expenditure

Household expenditure data was collected when administering the behavioural questionnaire, i.e., before and after the intervention. These consisted of the expenditure incurred by households in terms of major maintenance of latrines and soap purchases. In other words, these were considered as financial costs, while other types of economic cost such as time spent in village information sessions were not considered. Unfortunately, it was not possible to collect data on expenditure on water from improved sources (e.g., boreholes), which has limited the scope of the survey.

Table 7 Household expenditure

Components of costs	Description, examples
Capital Expenditure Hardware (CapExH)	Materials to build a latrine
Recurrent expenditure	Latrine maintenance costs, soap purchase
Renovation costs	Cost of emptying and major repairs to latrines

It should be noted that these costs do not include subsidies provided for latrine construction, even though such costs are considered to be capital expenditure. As these sums are difficult to assess, they were not incorporated into this study.

3 Effectiveness and cost of the intervention in Ouahabou

As a reminder: the intervention is still taking place in Ouahabou, and hygiene workers still need to visit 60% of households. However, two local activity sessions took place between the reference and follow-up studies. The effectiveness of the intervention is given for each indicator.

3.1 Effectiveness of the intervention

3.1.1 Faecal containment and latrine use

Interesting changes in this indicator have been incorporated since the start of the intervention in February 2012. Changes in absolute value are reflected in flowchart 4. There was an observed growth in the number of households that have a latrine, and an inversely proportional reduction in households who use a latrine in a compound. This represented households that were using latrines in compounds but decided to acquire their own latrine, perhaps indicating that access to a latrine is a good way to become acquainted with them, and thereafter possibly invest in

one. The 391 households that do not have a latrine or access to one were registered as not (yet) prepared neither interested in building a latrine.

At the time of the study, a 9% increase in the number of households (228 rising to 266 households) in which all members use a latrine was observed. Fewer households now have only some members who use a latrine: either all members use it, or none do. Eight latrines are no longer used; in most cases, the pits are full and have not been emptied. Latrine maintenance is thus directly linked to use: owning a latrine that is not fit to use affects users' behaviour.

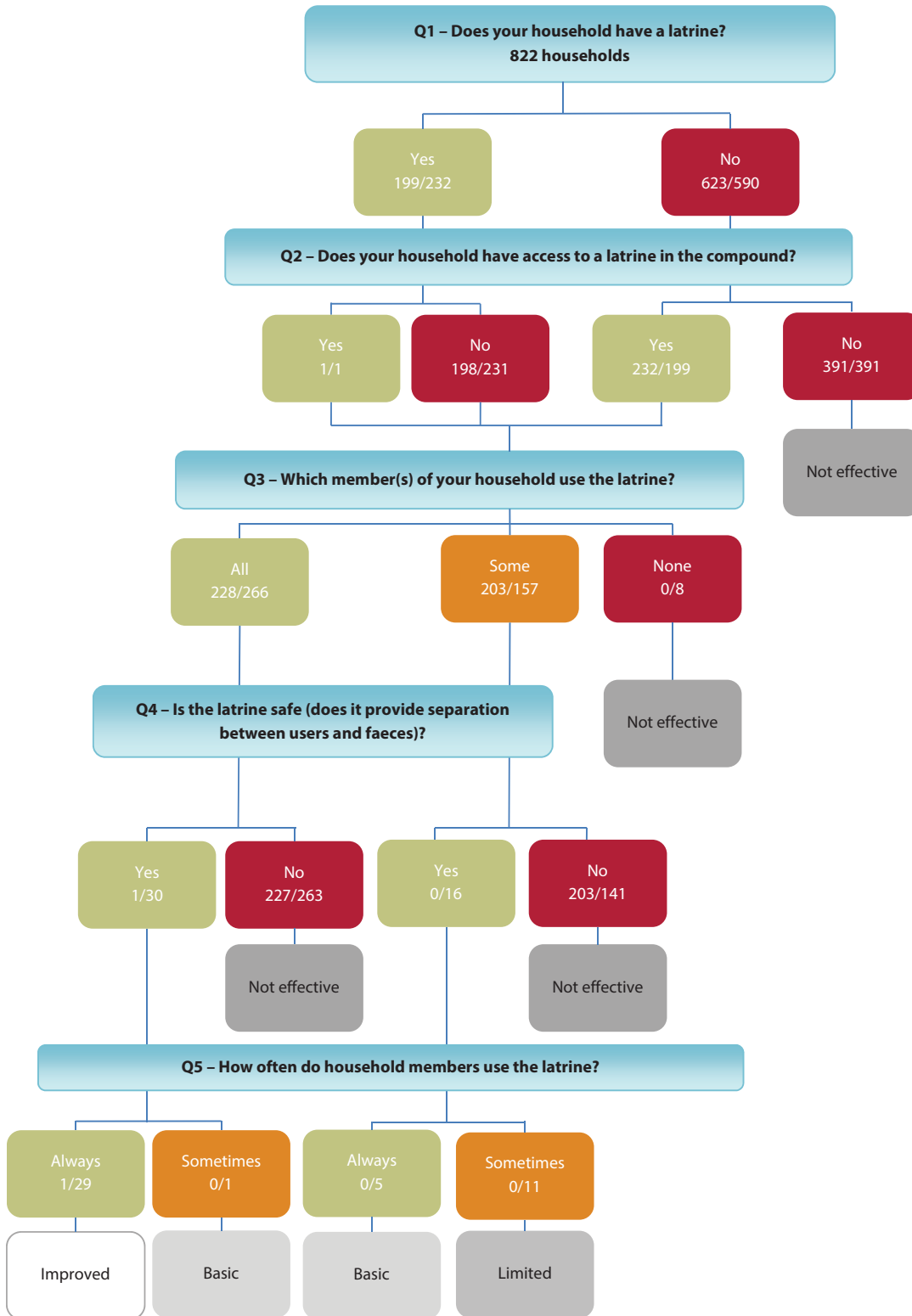
Safety, which in here is represented by adequate separation between users and faeces, is another indicator that can explain user behaviour. It is assumed that traditional latrines—which are not required to conform to standards—can take a diverse range of forms, and that as a result they cannot be confirmed to be safe. For this reason, the change that has been observed stems from SanPlat latrines built as part of the SaniFaso programme. In reality, however, a traditional latrine can indeed be safe if it is well built and maintained; as such, this reveals that the sampling methodology introduces a bias.

Among households that have/ use a latrine that uses so-called "improved" technology and in which all members use the latrine, there has been a sizeable increase in the numbers of households that use their latrine exclusively, and that have abandoned open defecation near their home. During the reference survey, only one household was found to be using a latrine exclusively. One year later, this number had increased to 29. As an absolute value however, this number is still considered low, and only represents 3% of the village.

Overall, it was noted that some households have drawn real benefits from the hygiene intervention: 46 households have left the "not effective" category and moved into the "limited effectiveness" (11), "basic effectiveness" (6) or "improved effectiveness" (29) categories. The vast majority of households, however, have not moved into a higher effectiveness category.

Nevertheless, it is important to note changes in indicators: since the reference survey, the number of households that have or use a latrine has increased, but a large number of households have equipment that is not safe. This raises the question of whether the purpose of such programmes is to change behaviour by promoting installation of a latrine (of any type) or to see every household equipped with a latrine that meets all standard quality criteria.

Flowchart 4 Distribution of households (reference situation/midway) with respect to indicator 1



3.1.2 Handwashing with soap at critical times

The results for the "handwashing with soap at critical times" indicator were found to be significant and surprising. First, it should be noted that the questions in flowchart 5 are ordered in such a way that the number of families is reduced for each subsequent question. In reality, all questions for this indicator were put to all households; the comments therefore refer to answers given for the whole sample.

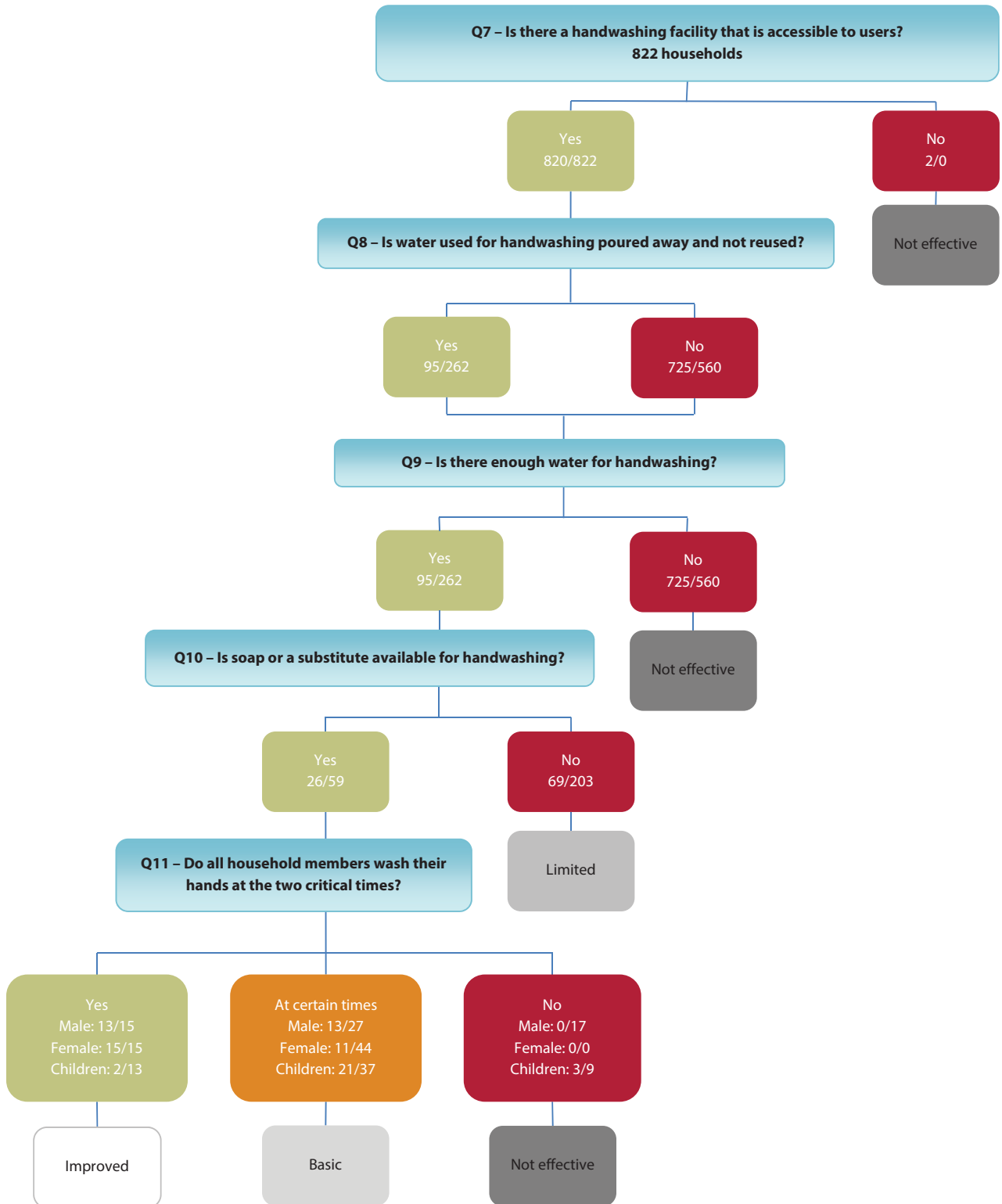
In Ouahabou, all households were found to have a handwashing facility that is accessible to users (e.g., tap, container with/ without tap): the two households that did not have handwashing facility purchased such facility after the awareness sessions. As the initial hypothesis was that the availability of a facility determines hygiene behaviour, it can be assumed that handwashing is commonly practiced in Ouahabou households. Here, therefore, it was pointless to pose a question on whether households were washing their hands or not; rather, there was more significance in finding out the effectiveness of the practice. The following questions were posed to refine the effectiveness criterion.

On the basis of observations by researchers, the study showed that just 12% of households had a facility that ensured that water was not re-contaminated after it was used for handwashing (for example, use of a clay pot or plastic kettle to pour the water). This figure rose significantly, to 20%, at the midway evaluation survey. This result was positive but modest, and can be explained by two factors: first, the SaniFaso hygiene programme was not accompanied by a campaign to distribute improved water containers. This means that even once they were made aware of the problem, households did not necessarily change their container, either because this was not a priority for expenditure, or because an improved container (plastic kettle, clay pot with tap) was not available. Second, in a context in which water is a precious resource, failure to reuse water to wash hands can be seen as a waste, and hence the majority of households reuse water despite awareness-raising efforts. It can thus be seen that non-reuse of water for handwashing and the availability of water for handwashing are closely linked. On these questions alone, 68% of households fell into the "not effective" category.

The question about soap use (question 10) was answered using local observations. It was found that there was a 5% reduction in the number of households using soap or a substitute for handwashing between the reference and midway surveys. With the whole sample considered, this figure fell to 2% (from 23% to 21% of households). This is not in itself a significant fall, but it does imply that there has been no clear improvement in practice relating to soap use following the initial visits.

Handwashing at critical times focused on two moments in particular: after defecation and before eating. Responses were collected separately from men, women and children. The results for the three groups were very different. For men, the figure for handwashing at "neither of the two critical times" increased by 29% (22% for the whole sample), while for children, handwashing at "both critical times" increased very significantly, from 4% to 52% (+ 48%), if the whole sample of 822 households is considered. For women, the results were more modest, with a slight loss from "at both critical times" in favour of "at least one of the critical times". At the second survey, 25% of women stated that they washed their hands at both critical times, and nearly 75% at least one of the two critical times. A result that was consistent between the surveys was that 0% of women state that they wash their hands at neither of the two critical times, which is considered good news.

Flowchart 5 Distribution of households (reference situation/midway) with respect to indicator 2



The marked differences between men, women and children can be explained in various ways. First, the good results for children can be explained by the fact that additional hygiene promotion programmes may have been carried out in schools or by teachers; this survey was limited to conversing with household members, so this criterion was not measured. It is also generally accepted that children are more inclined than adults to adopt new practices. The good overall score for women (no woman stated that she washed her hands at neither of the critical times) showed that there is generally greater interest among women to adopt issues of hygiene, as they are the main focus in the family for hygiene and meal preparation. However, it was surprising to note a fall in effectiveness, with a decrease in handwashing "at both critical times" in favour of "one of the two critical times". For men, the situation has also regressed, but in favour of the category "neither of the two critical times"; this meant that some households have moved into the "not effective" category. This change in practice was difficult to explain.

Finally for this indicator, and despite seeing a slight improvement in practice overall, the vast majority of households have remained in the "not effective" category, which is primarily attributable to the sub-indicators concerning reuse of water for handwashing. The rate fell from 88-89% to 68-70%, and varied by gender. This reduction meant an increase in those in the "limited effectiveness" category. The higher categories "basic effectiveness" and "improved effectiveness" saw no change, and remained static at around 2% and 1% respectively.

3.1.3 Domestic water management from source to consumption

Very little change was observed in behaviour linked to storage of domestic water (Flowchart 6). Water sources used for drinking did not vary significantly: more than half of families stated that they used an improved water supply and around 1/3 never used one; with this category seeing a 6% increase.

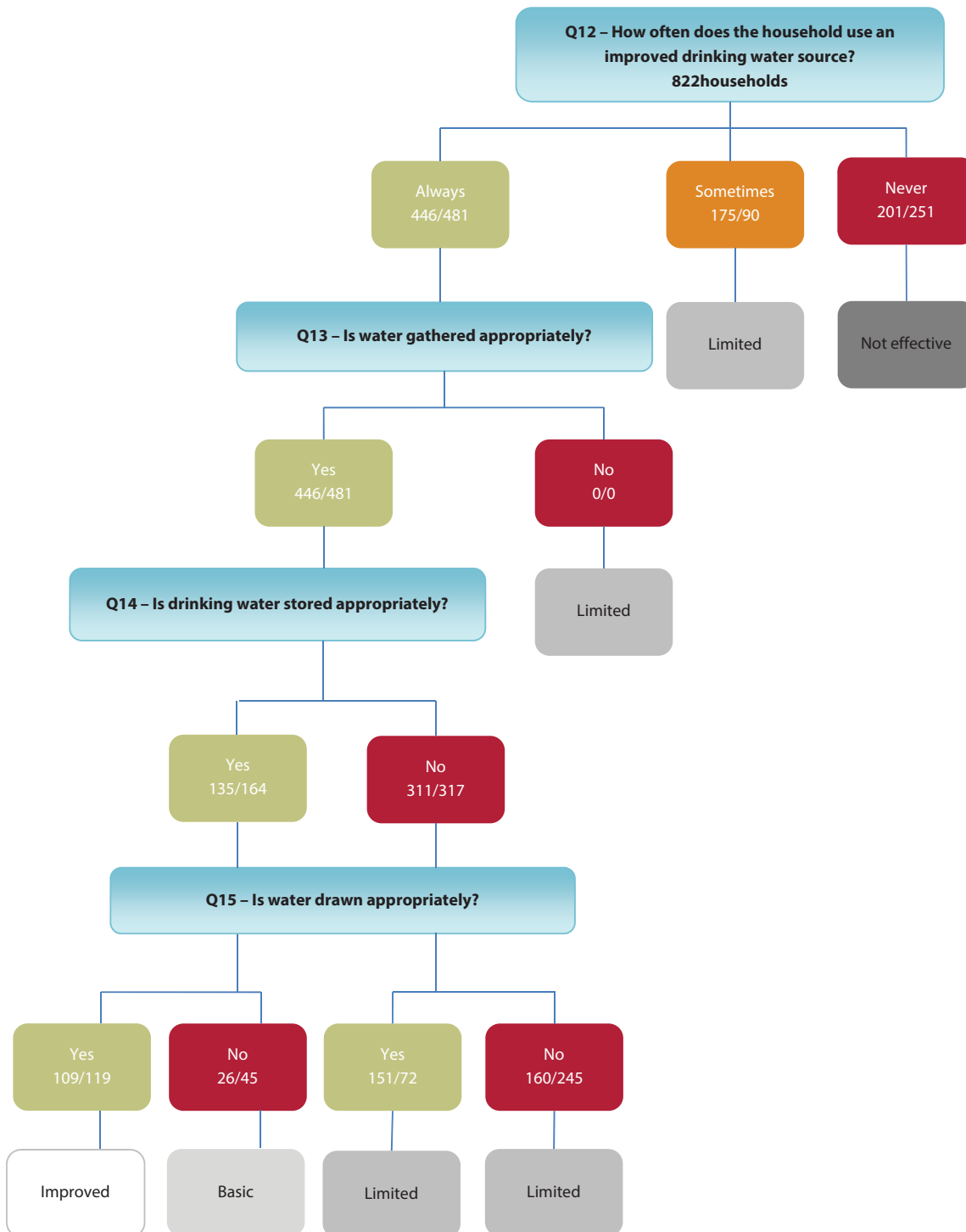
Variation in water gathering was explained by the source of the water supply. For the purpose of this study, water drawn from an improved source is considered to have been drawn appropriately, as this is assumed to minimise potential contamination. For households that only used improved sources for drinking water, no significant variation in storage was observed. Only 4% more households now use closed containers that protect the water from external contamination.

Of the 260 households that drew water using a ladle, cup or tap at the reference survey, only 191 had continued this behaviour one year later. This 19% reduction is greater than those seen previously, and is difficult to explain in this context.

A majority of households in Ouahabou were found to be at the "limited effectiveness" level. 10% of households that were initially in the "limited effectiveness" category at the reference study now fall into the lower category of "not effective". Overall, 3% of households have climbed the effectiveness ladder, and 6% have moved down the effectiveness categories.

Although the SaniFaso hygiene intervention includes a component on water storage, the programme did not finance drinking water infrastructure. An intervention to raise awareness about water storage, without a corresponding intervention involving work to support the adoption of this behaviour change, has shown to have little chance of significantly influencing the target households. Nevertheless, it was legitimate to ask what drives households to adopt less effective behaviours. By way of reminder: the surveys began in October/ November, which is the end of the rainy season. The rains were heavy in 2012, which could explain why a larger number of households used traditional unimproved water sources. If this is indeed the case, it can be concluded that behaviour change in the area of drinking water is highly contingent, and can alter in either direction, depending on access to alternative sources.

Flowchart 6 Distribution of households (reference situation/midway) with respect to indicator 3



3.2 Expenditure in Ouahabou

Expenditure is given in F CFA, but is also provided in US\$ in Appendix 2 of this document.

3.2.1 Costs of intervention

In Ouahabou, the intervention began in February 2012 and is due to end in late 2013. Two local activity sessions have taken place since February, and approximately 40% of households have been visited by hygiene workers, at a rate of eight households per week (four per hygiene worker). The recurrent expenditure involved in this intervention was calculated for the period between February and November 2012.

Table 8 Intervention costs in Ouahabou

Components of costs	Cost for village (F CFA)	Cost per household (F CFA)
Capital expenditure (software) (CapExS)	124,000	151
Capital expenditure (hardware) (CapExH)	22,400	27
Recurrent expenditure (OpEx)/month*	27,760	34
Total expenditure	Cost for village (F CFA)	Cost per household (F CFA)
Cost of intervention for "hygiene" components*	424,000	516

* For the period 1 February to 30 November 2012

It was unsurprising that capital expenditure (software) is five times greater than capital expenditure (hardware). The creation of materials for training and for the intervention, training given to healthcare workers and village hygiene workers involve much greater cost than printing awareness-raising materials for hygiene workers.

However, the greatest expenditure was found to be in recurrent expenditure, i.e., salaries and per diems associated with fieldwork. Two thirds of expenditure on the intervention was recurrent, representing F CFA 27,760 per month over a period of ten months. This was not surprising considering the limited duration of the intervention: in Ouahabou, the intervention was planned to last a year and a half, and once setup and training costs had been accounted for, only salaries, per diems and fuel expenses were to remain.

Between the start of the intervention and November 2012, costs incurred as part of hygiene activities totalled F CFA 424,000 in Ouahabou, which amounts to F CFA 516 per household. As a reminder: these costs were calculated on the basis of the sample used, and not the total number of households in the village; these are estimated, and not observed.

3.2.2 Household expenditure in Ouahabou

The capital expenditure on latrines presented here exclusively reflects expenditure incurred by households, and did not take into account any subsidies received as part of SaniFaso or previous programmes. Since the intervention started, 37 latrines have been abandoned by households and 69 new latrines have been constructed, 23 of which are SanPlat improved latrines.

Table 9 Expenditure on latrines by households in Ouahabou

Ouahabou	Before start of intervention (November 2011)	After start of intervention (between November 2011 and 2012)
No. of latrines in Ouahabou	197	223
Mean capital expenditure/ latrine (F CFA 2011)	27,702	23,269
No. of households that have taken action to maintain their latrines	56	24
Recurrent expenditure/ month (F CFA 2011)	510	381
Profile of latrines built between November 2011 and November 2012		
No. of new latrines	NA	69
Mean capital expenditure for new latrine (F CFA 2011)	NA	11,596
Recurrent expenditure on new latrines/ month (F CFA 2011)	NA	202

Despite the increase in the number of latrines in Ouahabou since the start of the intervention, it was noted that mean expenditure decreased by around F CFA 4,000 per latrine. There are two possible explanations for this observation. The first is that SaniFaso partially subsidised some of the latrines, which reduced the proportion of expenditure incurred by households; this could explain the mean capital expenditure on new latrines of F CFA 11,596. Second, SaniFaso also runs a supply system for construction materials; this means that some materials can be obtained at a lower cost.

Around one quarter of households that own latrines incurred expenditure in 2011, relating to emptying, repair to superstructure, pit enlargement, etc. This expenditure was on average F CFA 510/ month, or a total of F CFA 6,120 per year. Just like capital expenditure, maintenance expenditure reduced slightly once the intervention started. When monthly recurrent expenditure on new latrines was considered separately, it was seen that recurrent expenditure varied by up to 100%. Obviously, a new latrine requires fewer repairs than a latrine that has been used for years. These costs should be monitored over the medium term in order to determine at what point they become higher.

Table 10 Expenditure on handwashing by households in Ouahabou

Ouahabou	Before start of intervention (November 2011)	After start of intervention (between November 2011 and 2012)
No. of households that buy soap and wash hands	193	171
Mean monthly cost of soap per household (in F CFA)	2,107	2,270
Mean monthly cost of soap per household that does not have a latrine (in F CFA)	1,649	1,901
Mean monthly cost of soap per household that has a latrine (in F CFA)	2,490	2,604

The vast majority of households in Ouahabou bought soap on a regular basis. Soap is found to be used for handwashing, but also for washing up, for washing the body, or even for laundry. For the purpose of this study, these values excluded the purchase of laundry detergents such as OMO. However, this proportion falls sharply if households that buy soap and state that they wash their hands are considered separately (Table 10). Here, mean costs were only calculated for households that stated that they use soap for handwashing. Expenditure does not change greatly after the intervention, with an increase of F CFA 163 per month.

However, the number of households in which members washed their hands fell by 3%. As discussed in section 3.1.2., some households have changed their behaviour and no longer used soap for handwashing. Not discounting the possibility that this may be a data collection error, it is also possible that some households bought more or less soap for economic reasons.

Households with latrines in which members wash their hands spend considerably more (50%) on soap. It is possible that these households have more resources, which enabled them to buy and maintain a latrine and to purchase the soap needed. It could also be that these households are better informed of the importance of hygienic behaviours—in other words using a latrine and washing hands—and therefore choose to acquire the necessary tools. An in-depth study of the motivations that drive households is therefore necessary before the reasons for this variation can be explored further.

Whatever the outcome, it is useful to note that households spend much more on soap than on latrine maintenance (for households that have a latrine). Although soap was found to not be exclusively used for handwashing, results showed that households are prepared to spend a certain sum on soap, as they recognise its importance. This raises the possibility that the recurrent expenditure associated with latrine maintenance—which is currently very low—could increase without causing households undue financial stress.

4 Effectiveness and cost of the intervention in Ladiana

As a reminder: the intervention is still ongoing in Ladiana. Hygiene workers still need to visit 40% of households. The effectiveness of the intervention is given for each indicator.

4.1 Effectiveness of the intervention

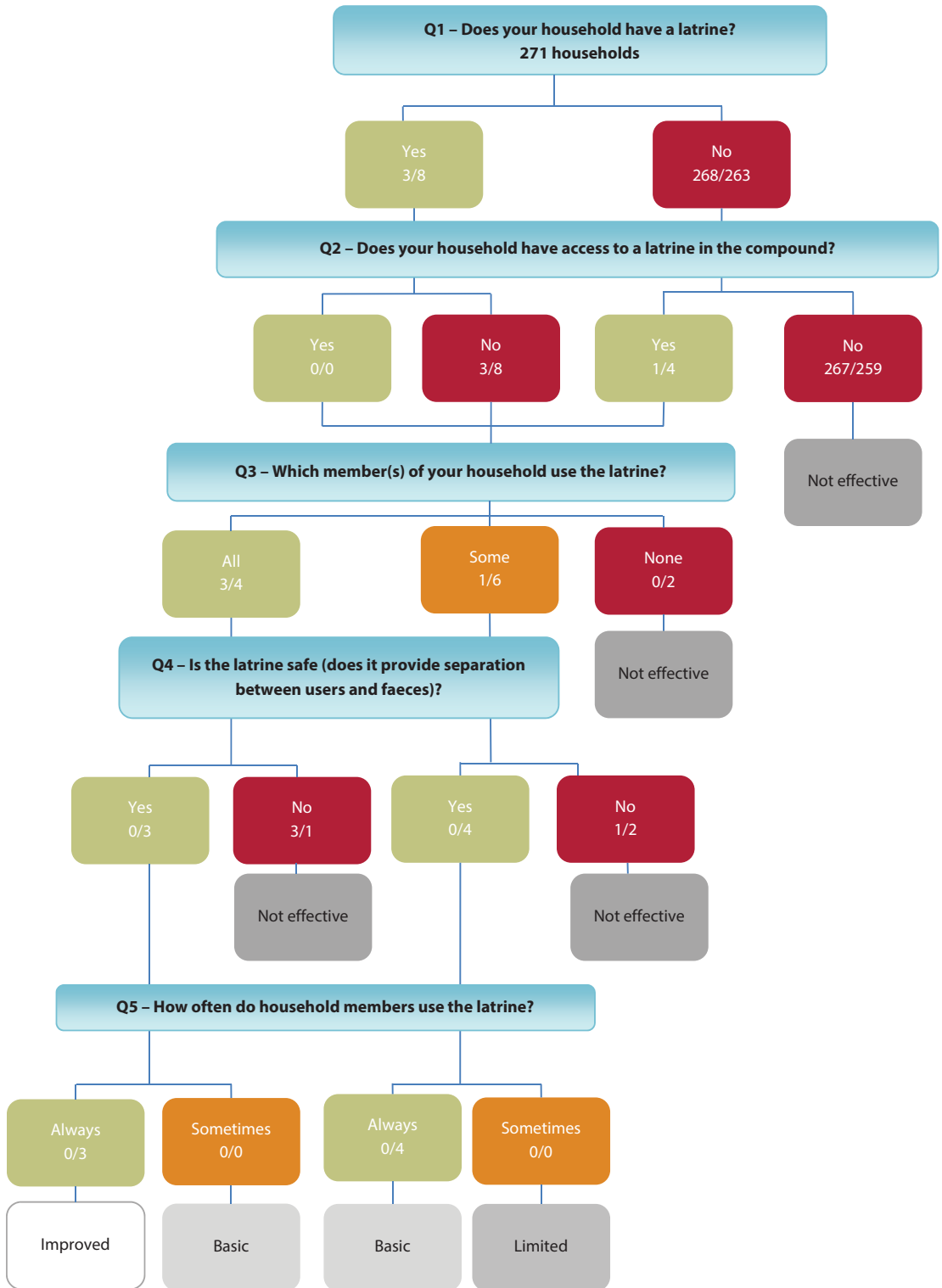
4.1.1 Faecal containment and latrine use

The intervention in Ladiana has not been clearly shown to be effective in terms of latrine use. Of the 271 households in the village, the vast majority was found to not own a latrine: of the 268 households interviewed in the reference survey, 263 found themselves in the same situation a year later. A similar observation was made on the accessibility of shared latrines (in a compound).

For the few households in Ladiana that do have a latrine, an increase was observed in three identified categories: i) households that have a latrine that is not used; ii) households that have a latrine but in which only some members use it; and iii) households that have a latrine that is used by all members.

The households that used a latrine at the time of the follow-up survey use SanPlat latrines. Six of the eight latrines built since November 2011 are SanPlat latrines. Seven of the ten households that used a latrine as of November 2012 used an improved latrine. These same seven households are the ones that routinely use their latrine, at least when they are near the home.

Flowchart 7 Distribution of households (reference situation/ midway) with respect to indicator 1



4.1.2 Handwashing with soap at critical times

In Ladiana, there was no improvement in level of effectiveness for the handwashing criterion following the initial awareness sessions. Indeed, the level of effectiveness fell overall.

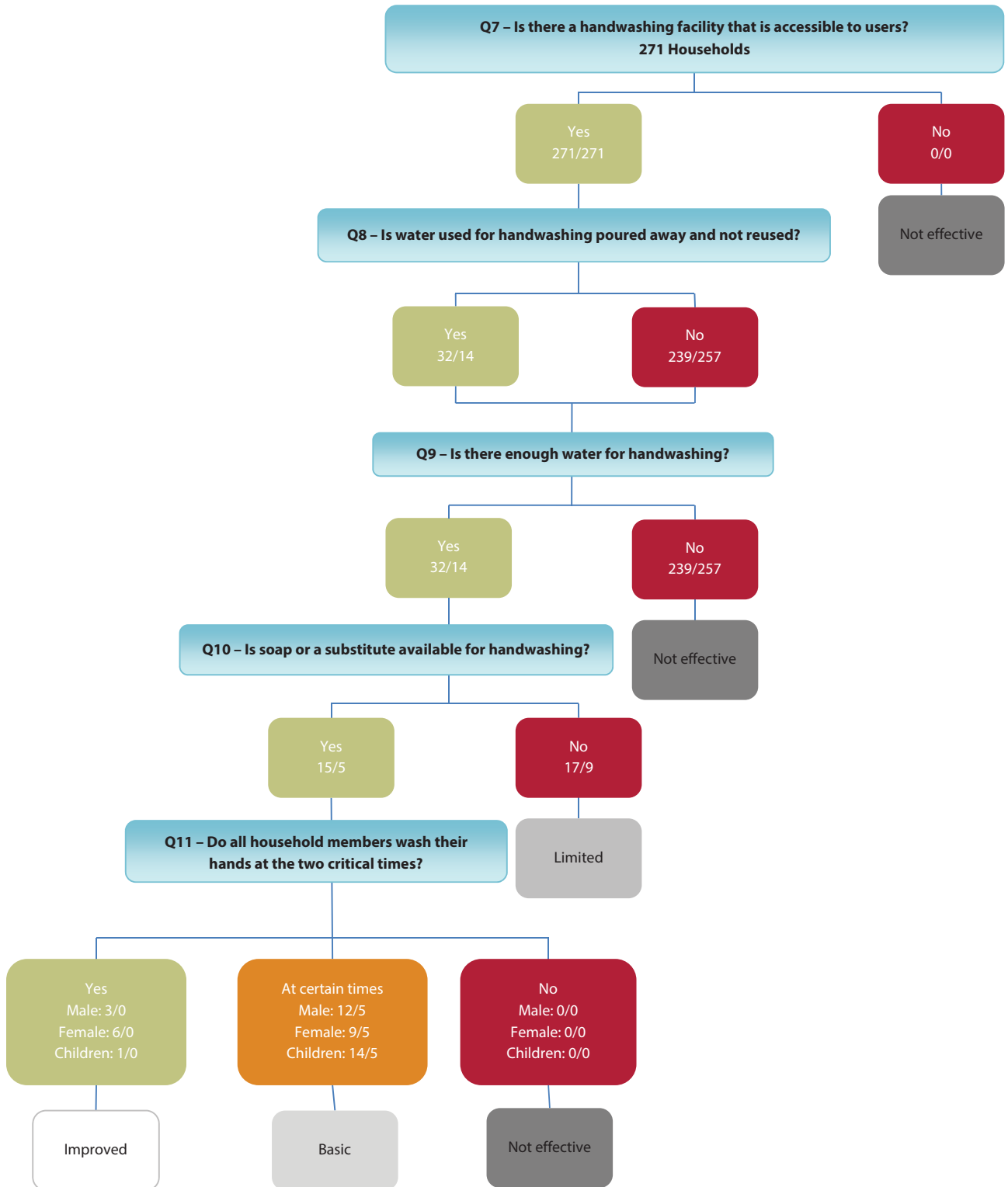
In the initial survey, 100% of households had a handwashing facility that was available to users. Questions about handwashing therefore only examined the level of effectiveness of handwashing. In the logical sequence of questions as shown in flowchart 8, questions 8 and 9 (the responses to which are linked, and therefore identical) are the questions at which most households (95%) fell into the "not effective" category. 257 households (compared with 239 initially, a 7% increase) reuse water for handwashing. This poor practice can be directly correlated with the quantity of water that is available: if water is scarce, households may be inclined not to waste water, despite the advice they have received in the awareness sessions. The downward trend is nonetheless difficult to explain, and can be attributed to the fact that 40% of households had not yet been visited by hygiene workers at the time of the midway survey.

Just like in Ouahabou, an 11% reduction in soap use was observed for the remaining households. For the whole population of Ladiana this reduction was 15%, which is a small but significant decrease. This reduction in household soap purchasing is difficult to explain.

Finally, handwashing at critical times is understood to focus on two moments in particular: after defecation and before eating. Responses were collected separately for men, women and children. The sample size for each of these groups was limited (15 households in the initial survey and 5 in the midway survey), so it is important to look at these results with a critical eye. The trend was the same for men, women and children: no family fell into the category "neither of the two critical times", but there was a reduction in those in the category "at both critical times" with a corresponding increase in the category "at one of the two critical times" (100% of households, regardless of respondent, in the midway survey), which means that these families are moved from the "improved effectiveness" category into the "basic effectiveness" category. In comparing this trend with the results seen for all 271 households, it can be seen that this trend is reflected more widely—with a reduction in "improved effectiveness" and a corresponding increase in "basic effectiveness"—except for children who display the opposite trend; with 62% moving from "washing at one of the two critical times" into "washing at both critical times", i.e., 173 households compared with four in the initial survey. The study only looked at activities in compounds and not in schools, but it is possible that activities in school could have had an effect on the result. It is also generally accepted that children are more inclined than adults to adopt new behaviours.

A reduction in effectiveness towards the lowest levels was found to be the general trend for indicator 2, with 95% of households (a 7% increase) falling into the "not effective" category. The "basic" and "limited" categories accounted for 2% and 3% of households respectively. None of the households interviewed in the midway survey was in the "improved effectiveness" category, while at the time of the initial survey 1-2% of households were found to be in this category.

Flowchart 8 Distribution of households (reference situation/midway) with respect to indicator 2



4.1.3 Domestic water management from source to consumption

In Ladiana, very little change was observed in behaviour linked to storage of domestic water. 11% of households that stated that they used an improved water source (exclusively or some of the time) at the time of the reference survey have abandoned this type of water source one year later, despite the hygiene intervention.

Variations in water gathering are explained by the source of the water supply; water drawn from an improved source is considered to have been drawn appropriately, minimising potential contamination.

For households that only used improved sources for drinking water, no significant variation in storage was found. A reduction of just 3% was observed in households using closed containers that protect water from external contaminants.

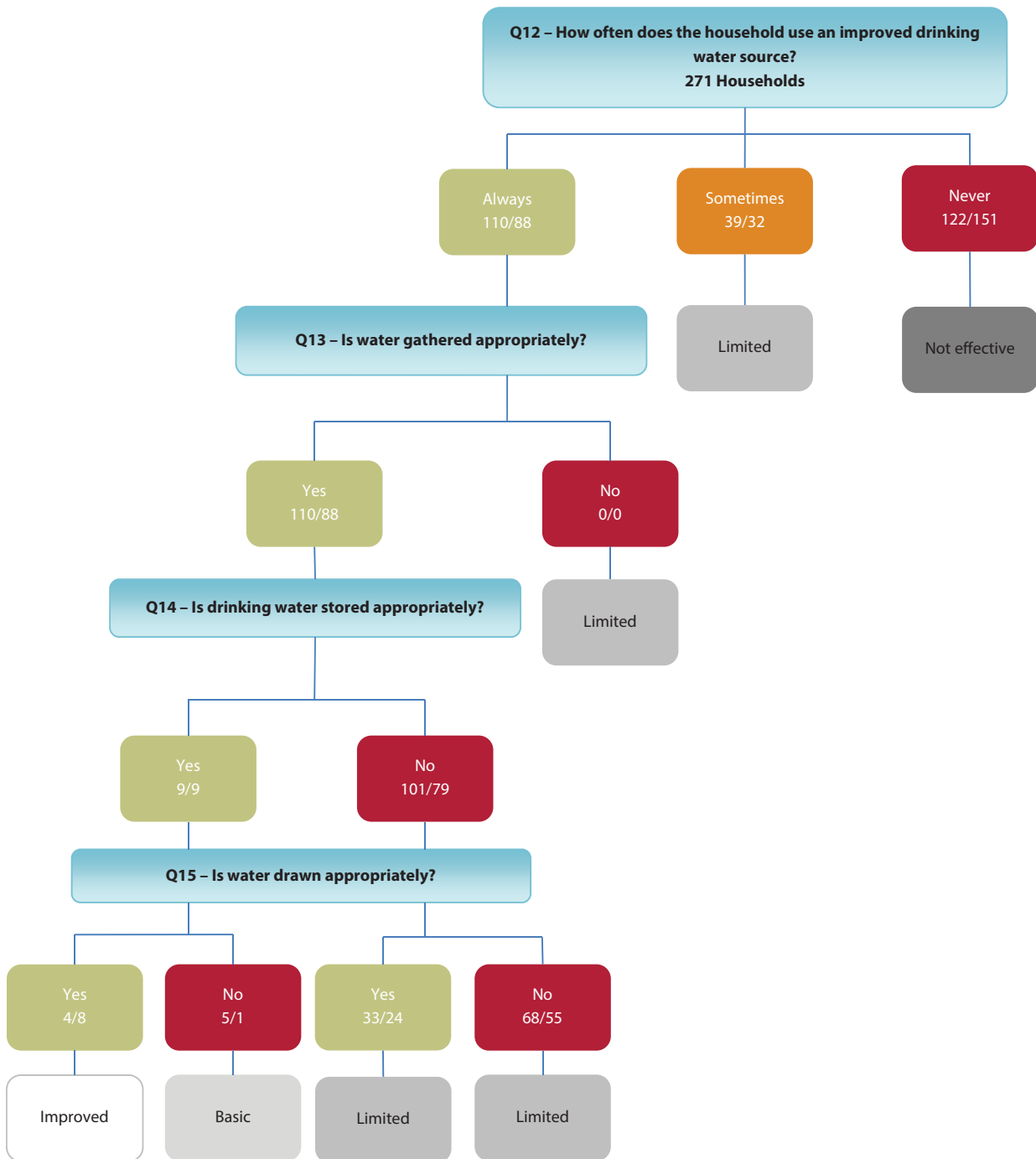
Finally, of the 37 households that drew water using a ladle, cup or tap at the reference survey, only 32 had continued this behaviour one year later.

The majority of households in Ladiana do not seem to have been affected by this intervention, which means that its effectiveness is debatable. At the time of the reference survey, the majority of households were in the "limited effectiveness" category. A year later, a similar majority are found in the lowest category. The "basic effectiveness" and "improved effectiveness" levels saw no significant variation.

These results are difficult to explain in this context: what drives households to adopt behaviours that are less effective? The surveys began in October/ November, which is the end of the rainy season. The rains were heavy in 2012, which could explain why a larger number of households used unimproved water sources. As such, gains achieved from behaviour change concerning drinking water can have easily been lost if access is opened up to alternative sources that are less safe, but free of charge.

In addition, although the SaniFaso hygiene intervention included a component on water storage, the programme did not finance drinking water infrastructure or the distribution of containers to families. An intervention to raise awareness about water storage, without a corresponding intervention involving work to support the adoption of this behaviour change, has shown to have little chance of significantly influencing the target households.

Flowchart 9 Distribution of households (reference situation/midway) with respect to indicator 3



4.2 Expenditure in Ladiana

Expenditure is given in F CFA, but is also given in US\$ in Appendix 3 of this document.

4.2.1 Costs of intervention

In Ladiana, the intervention began in December 2011 and is due to end in late 2013. A local activity session took place in December, and approximately 60% of households have been visited by hygiene workers, at a rate of eight households per week (4 per hygiene worker).

Table 11 Intervention costs in Ladiana

Components of costs	Cost for village (F CFA)	Cost per household (F CFA)
Capital expenditure (software) (CapExS)	194,000	716
Capital expenditure (hardware) (CapExH)	22,400	83
Recurrent expenditure (OpEx)/month*	27,760	102
Total expenditure	Cost for village (F CFA)	Cost per household (F CFA)
Cost of intervention for "hygiene" components	549,520	2,023

* Covering January 2011 - December 2012

As is the case in Ouahabou, "soft" capital expenditure in Ladiana was observed to be several times higher than "hardware" capital expenditure. The creation of materials for training and for the intervention, training given to healthcare workers and village hygiene workers involve much greater cost than printing awareness-raising materials for hygiene workers. The main difference between costs in Ouahabou and costs in Ladiana is found in the higher travel costs incurred for training in Ladiana. Similarly, the greatest expenditure is recurrent expenditure, i.e., salaries and per diems associated with local operations. Two thirds of expenditure on the intervention is recurrent expenditure, which represents F CFA 27,760 per month over a period of 12 months (two months more than in Ouahabou). This is not surprising, considering the limited duration of the intervention: in Ladiana, the intervention was planned to last until June 2013, and once setup and training costs have been accounted for, only salaries, per diems and fuel expenses were to remain. Between 1 December 2011 and 30 November 2012, it cost F CFA 549,520 in Ladiana, which was F CFA 2,023 per household, to achieve the change in effectiveness outlined above.

4.2.2 Household costs

The capital expenditure on latrines presented here exclusively reflects expenditure incurred by households, and does not take into account any subsidies received as part of SaniFaso or similar programmes. Since the intervention started, two latrines have been abandoned by households and five new latrines have been constructed, all of which are SanPlat latrines.

Table 12 Expenditure on latrines by households in Ladiana

Ladiana	Before start of intervention (February 2012)	After start of intervention (between November 2011 and 2012)
No. of latrines	3	6
Mean capital expenditure/latrine	17,583	6,065
No. of households that have taken action to maintain their latrines	1	2
Mean expenditure F CFA/ month	0	377
Profile of latrines built since February 2012		
No. of new latrines	NA	5
Mean capital expenditure for new latrine (F CFA 2011)	NA	2,580
Mean expenditure on new latrines F CFA/ month	NA	166

It is still the case that few households have latrines in Ladiana. Interestingly, since the intervention started, it was observed that the mean investment per latrine has fallen by around half. There are two possible explanations for this observation. The first is that SaniFaso partially subsidises some latrines, this subsidy arrangement may have reduced the proportion of expenditure incurred by households, which could possibly explain the very low mean capital expenditure on new latrines of F CFA 2,580. Second, SaniFaso also runs a supply system for construction materials, which means that some materials can be obtained at a lower cost.

With the notable exception of one household, households in Ladiana do not spend money to maintain their latrines. This does not mean that they do not maintain their latrines, but that they incur no direct expenditure for their maintenance (they may just use a broom, for example). Just like capital expenditure, maintenance expenditure reduced slightly once the intervention starts. By considering recurrent expenditure relating to new latrines separately, it was seen that recurrent expenditure per month doubled between the initial and final surveys. Obviously, a new latrine requires fewer repairs than a latrine that has been used for years. These costs should be monitored over the medium term in order to determine at what point they become higher.

Table 13 Expenditure on handwashing by households in Ladiana

Ladiana	Before start of intervention (February 2012)	After start of intervention (between November 2011 and 2012)
No. of households that buy soap and wash hands	90	50
Mean monthly cost of soap per household (in F CFA)	1,556	1,287
Mean monthly cost of soap per household that does not have a latrine (in F CFA)	1,247	1,292
Mean monthly cost of soap per household that has a latrine (in F CFA)	1,079	1,000

The vast majority of households in Ladiana bought soap on a regular basis. Soap was used for handwashing, but also for washing up, for washing the body or even for laundry. Here, mean costs were only calculated for households that state that they use soap for handwashing. The purchase of laundry detergents such as OMO was excluded. Expenditure by households fell by an average of F CFA 269/ month. As seen in section 4.1.2., some households have changed their behaviour and no longer use soap for handwashing. Although this may be a data collection error, it is also possible that some households bought less soap for economic reasons.

Unlike in Ouahabou, Ladiana households with latrines in which members wash their hands spend slightly less on soap. The very small size of the sample means that this result is difficult to interpret. Just one household with a latrine stated that members washed their hands at the time of the follow-up survey. An in-depth study of the motivations that drive households is necessary in order to explore the reasons behind this variation.

Whatever the outcome, it is useful to note that households spend much more on soap than on latrine maintenance (for households that have a latrine). Although soap is not exclusively used for handwashing, this result shows that households are prepared to spend a certain sum on soap, as they can see its importance. This raises the possibility that the recurrent expenditure associated with latrine maintenance— which is currently very low—could increase without causing households undue financial stress.

5 Conclusions and discussion

5.1 Main results

Despite the fact that the methodology and intervention were the same, the two villages saw markedly different results in terms of effectiveness.

For indicator 1, significant behaviour change was observed in Ouahabou, but not in Ladiana. For indicator 2, however, there was a clear change in effectiveness in both villages, but in different directions: in Ouahabou, 18-20% of households moved up at least one effectiveness rung (one rung for 16% of households, two rungs for 2-4%, and three rungs for 0-1%). In Ladiana, however, there was a significant shift of households into lower categories. Finally, the drinking water indicator (indicator 3) saw similar results for both villages, with a trend towards the "not effective" category.

Table 14 Summary of behaviour changes at both sites

		Ouahabou					Ladiana				
		Ind 1	Ind 2			Ind 3	Ind 1	Ind 2			Ind 3
			H	F	E			H	F	E	
Efficacy	improved	+3%	0%	0%	+1%	+1%	+1%	-1%	-2%	0%	+1%
	basic	+1%	+2%	+4%	+2%	+2%	+1%	-3%	-1%	-3%	-1%
	limited	+1%	+16%	+16%	+16%	-10%	0%	-3%	-3%	-3%	-11%
	Not effective	-5%	-18%	-20%	-20%	+6%	-3%	+7%	+7%	+7%	+11%
Cost	External	Intervention	F CFA 424,000 F CFA 516 per household				F CFA 549,520 F CFA 2,023 per household				
	Households		<i>Before intervention</i>		<i>After intervention</i>		<i>Before intervention</i>		<i>After intervention</i>		
		Latrines	F CFA 510/latrine Not available		F CFA 381/latrine F CFA 11,596/latrine		Not available Not available		F CFA 377/latrine F CFA 2,580/latrine		
		Handwashing	F CFA 2,107/month		F CFA 2,270/month		F CFA 1,556/month		F CFA 1,287/month		

Various explanations can be invoked to explain the fall in results for indicators 2 and 3: first, the midway survey was administered on all households, even though only half of them had taken part in hygiene awareness activities when the second survey took place. It should also be noted that SaniFaso has no specific drinking water management programme, and that a significant increase in effectiveness for this indicator (3) would have been surprising.

The disparities between the two villages may have also stemmed from the community approach that has been promoted in the SaniFaso programme: a volunteer-led intervention, based on contact with local populations, involving identical training but with not necessarily the same results locally. There may have also been an element of the "snowball effect": households who have yet to be visited by hygiene workers may have replicated these new behaviours; this seems to have been the case in Ouahabou.

A further observation, which is particularly marked in Ouahabou, was the link between behaviour change and financial investment. A number of latrines have been built, and the greatest variation was seen for the indicator linked to this construction. No financial investment in handwashing and access to improved water sources was made as part of SaniFaso, which as of date, is the only intervention that is underway in the two villages studied here. Even though a significant impact on effectiveness in handwashing was seen in Ouahabou, it is still legitimate to ask whether financial investment may be required if a positive effect on drinking water management and storage is to be achieved.

In total, F CFA 2,023 per household in Ladiana and F CFA 516 per household in Ouahabou were invested between November 2011 and November 2012 as part of the SaniFaso programme. The higher cost in Ladiana is explained by its smaller population, which means that the intervention costs more per household. Given the low cost per household, it is not surprising that the intervention has been of limited effectiveness.

The link between financial investment and increased effectiveness was strikingly obvious in the case of latrine use, and in the static or reduced effectiveness figures in the use of drinking water (no financial investment has been devoted to the water infrastructure aspect). This observation showed that interventions in combination with financial investment programmes have a greater chance of success. It might be expected therefore that a lack of financial investment would lead to failure to move up the effectiveness levels; a fall down the effectiveness levels, however, is difficult to explain, and one may assume that external factors that have not been captured by this study have influenced the outcome. Nevertheless, as the intervention is not yet over, it is possible that other changes may be observed that have not been captured in this paper.

5.2 Limitations of this study

Several limitations need to be mentioned here. These are of two types: limitations related to the available data, which had an effect on the results for both villages, and more general limitations relating to the methodology and the basic assumptions made.

In terms of the study looking at the SaniFaso intervention in both villages, the following limitations were noted:

- Indicator 1 on faecal containment and latrine use is currently stated on a household scale. Although a household picture can show some detail, it cannot separate out various user profiles (men, women, young girls, etc.) who may have very different reasons for (and fears about) using a latrine. The choice of measuring effectiveness on a household scale is also linked to the available resources: surveying every user would take far more time and resources.
- The profile of users who wash their hands at critical times proved much easier to identify. However, other sub-indicators, particularly use of soap, are collected on a household scale. A bias may have crept in here.
- Indicator 3, about the management of drinking water, could also have been extended to the use of water for cooking. This is often the same water, i.e., water gathered at the same time, but only a specific survey question about this would enable assessment of behaviour change in the use of cooking water. In addition, indicator 3 is based on the assumption that water from an improved source is potable, while in reality this is not always the case.
- Household costs are limited to financial expenditure, and do not take into account sums spent on accessing water from an improved source. Similarly, intervention costs do not take into account expenditure on support by public health authorities that are involved in the promotion of hygienic behaviour. The costs given here are therefore the minimum costs for a hygiene intervention.

More generally, the methodology has certain limitations that should be considered when using it in future:

- A limitation of the measurement of effectiveness is that behaviours and use of facilities are linked in a logical sequence, which does not allow systematic consideration of intermediate changes. For example, a household that uses a ladle to gather drinking water (Q15) but which does not store that water appropriately (Q14) will be classified as "limited effectiveness", while the risk for hygiene is not the same as that incurred by a household

that sometimes uses an improved water source. In other words, some households that display partially effective behaviours are currently classified by the flowchart among those that display no effective behaviours. These flowcharts, particularly those that examine handwashing, should be refined in order to capture these detailed differences in behaviour.

- The assumptions concern the relationship between facilities and behaviour. The general assumption is that behaviour is dependent on the facility that is available. So the presence of a latrine is a necessary condition for hygienic use of a latrine. Similarly, handwashing is dependent on use of a facility with running water, and drinking water is dependent on access to (formal) improved water sources. This approach, however, rules out other scenarios that could be considered to be hygienic behaviour: for example, an individual might prefer to bury his/ her faeces rather than use a latrine. In addition, traditional water sources that produce potable water (wells, for example) are ruled out here.
- It should also be noted that public latrines were not included in this study. The basic assumption is that someone who does not own a latrine or use one in a compound would probably resort to open defecation; however, even though public latrines are not in themselves considered to represent an improved sanitation service⁸ (they often do not meet safety and accessibility standards) they do reflect hygienic behaviour, and are an alternative to open defecation that should not be overlooked. This could be a subject for a separate study.
- These three indicators are "snapshots" of behaviour at a particular moment; in their current form, though, they do not enable assessment of how well facilities and behaviours are sustained over time. A latrine that is not maintained or that is overused may deter potential users, and may encourage them to resort to open defecation as a default behaviour. Similarly, if improved water sources are insufficient in number, or if the drinking water supply is poor and unreliable, this can also lead households to use traditional water sources.
- This study did not capture information about where handwashing water comes from. In addition, indicators 2 and 3 would have been improved if a link could be shown between water used for handwashing and drinking water.
- The ladder that was used is limited to having four rungs, which may be reductive, particularly if we seek to incorporate the considerations outlined above. Refining effectiveness levels and/ or reviewing the logical sequences used would lead to more complex flowcharts; but these would be a better reflection of reality.
- Finally, focusing on the intervention, which is a one-off activity, means that the sustainability of the intervention's impact cannot be considered or quantified. Repeating data collection throughout the study would provide a longer-term view of adoption, change and maintenance of behaviours, as well as of the costs involved.

5.3 Next stages

This study has enabled local application of this methodology for assessing the cost effectiveness of an intervention, as developed in WASHCost Working Paper 7. The flowcharts presented in this methodology have been adapted to the specific context of Burkina Faso, but it is clear that further refinement is required, particularly in the light of the limitations identified above. The next step is therefore to refine the methodology, which will need to be used in other projects.

The advantage of this methodology is found in its broad scope of operation, and the fact that it has been tested in three different African countries simultaneously: Burkina Faso, Mozambique and Ghana. To further expand the research, a comparison of results between these countries will be done on two levels: technical results on the one hand, and the methodology on the other. In terms of technical results, the effectiveness of the various interventions and the costs for those running the intervention and for households will be compared. A comparison will be made

⁸ According to the definition drawn up by the World Health Organization and UNICEF Joint Monitoring Programme, 2012.

of methodological limitations and the problems encountered in each country: what changes have been made to the flowcharts in each country? Why? To what extent is this linked to the overall methodology, and to what extent to the specific context of each site? If these comparisons show excessive diversity of results or that too many changes are needed, it will be necessary to consider refining the methodology specifically for each country.

Finally, these results should be shared with the sector, so that other organisations and institutions can test the methodology in their own areas. Feedback involving a larger sample, even an entire country, would bring more significant results. In addition to the publication of this present study, these results will be presented at international events. Feedback and comments from hygiene specialists will be highly useful, and will certainly be incorporated when a second version of the methodology is developed.

Measuring the effectiveness and cost of hygiene interventions is not easy: not only because hygiene interventions often do not use tangible resources, which can be difficult to separate from interventions on water and/ or sanitation, but also because it is difficult to isolate the proportion of expenditure that is linked to hygiene. In the present methodology great efforts have been made to clearly identify what an intervention is, what it costs and the behaviours it measures, and the limitations that have been encountered. It does not claim to be able to foresee the effect of behaviour on health, or to act as a complement to measures of the mortality cost of poor health, such as the disability-adjusted life year index or DALY⁹.

It nonetheless remains important to refine this methodology in order to achieve a better understanding of the cost and effectiveness of current and future interventions, with the aim of maximising the use of resources and behaviour change, and also assisting national, local and project-scale decision making. Finally, the purpose of this methodology is to create a link between the public health and WASH sectors, which will lead to improved collaboration between the two sectors, each of which has everything to gain from such an outcome.

⁹ See the World Health Organization's website for further information about DALY.

References

- Drummond, M., Sculpher, M., Torrance, G., O'Brien, B. and Stoddart, G., 2005. *Methods for the Economic Evaluation of Health Care Programmes*. Oxford: Oxford University Press.
- Dubé, A., Burr, P., Potter, A. and van de Reep, M., 2012. *Assessing hygiene cost-effectiveness: a methodology*. (WASHCost Working Paper 7) [pdf] The Hague : IRC International Water and Sanitation Centre. Available at: <<http://www.washcost.info/page/2341>> [Accessed 18 January 2013].
- Moriarty, P., Batchelor, C., Fonseca, C., Klutse, A., Naafs, A., Nyarko, K., Pezon, C., Potter, A., Reddy, R. and Snehalatha, M., 2011. *Echelle d'évaluation du cout et de la qualité des services d'eau potable*. (WASHCost Document de travail N°2, Seconde édition) [pdf] The Hague : IRC International Water and Sanitation Centre. Available at: <<http://www.washcost.info/page/1293>> [Accessed 18 January 2013].
- Potter, A., van de Reep, M., Burr, P., Dubé, A. with Krukkert, I., 2011. *Evaluer le rapport coût-efficacité des interventions d'hygiène*. (WASHCost Document de travail N°6) [pdf] The Hague : IRC International Water and Sanitation Centre. Available at: <<http://www.washcost.info/page/1933>> [Accessed 18 January 2013].
- Potter, A. with Klutse, A., Snehalatha, M., Batchelor, C., Uandela, A., Naafs, A., Fonseca, C. et Moriarty, P., 2011. *L'évaluation des niveaux de service d'assainissement*. (WASHCost Document de travail N°3, Seconde édition) [pdf] The Hague : IRC International Water and Sanitation Centre. Available at: <<http://www.washcost.info/page/1293>> [Accessed 18 January 2013].
- WHO - World Health Organization et UNICEF - United Nations Children's Fund, 2012. *Progress on Drinking Water and Sanitation, 2012 Update*. (Joint Monitoring Programme for Water Supply and Sanitation, JMP). [pdf] New York: UNICEF and Geneva: WHO. Available at: <http://whqlibdoc.who.int/publications/2012/9789280646320_eng_full_text.pdf> [Accessed 18 January 2013].

Appendix 1 - Questionnaire

NB: sections A and C, which are not reproduced here, involve identification of the site and investigator.

C. COMPOSITION OF HOUSEHOLD						
C0	The questionnaire is administered to:	<input type="checkbox"/> A woman <input type="checkbox"/> A man				
C1	How old are you?	<input type="checkbox"/> years old				
C2	How many people, in total, live in this household? <i>Write down the total number of household members</i>	<input type="checkbox"/> People				
C3	How many adults are there in your household? <i>Write the number of men and women</i>	<input type="checkbox"/> 1. Men <input type="checkbox"/> 2. Women				
C4	How many boys live in this household?	<input type="checkbox"/> 1. Boys less than 2 years old <input type="checkbox"/> 2. Boys 2-5 years old <input type="checkbox"/> 3. Boys 6-12 years old <input type="checkbox"/> 4. Boys more than 12 years old <input type="checkbox"/> 5. None				
C5	How many girls live in this household?	<input type="checkbox"/> 1. Girls less than 2 years old <input type="checkbox"/> 2. Girls 2-5 years old <input type="checkbox"/> 3. Girls 6-12 years old <input type="checkbox"/> 4. Girls more than 12 years old <input type="checkbox"/> 5. None				
D. SANITATION						
D1	Do you have a latrine?	<input type="checkbox"/> yes <input type="checkbox"/> no				
D2	What type of latrine do you have? <i>State number of latrines in each category</i>	<input type="checkbox"/> traditional latrine <input type="checkbox"/> SanPlat latrine <input type="checkbox"/> VIP latrine <input type="checkbox"/> EcoSan latrine <input type="checkbox"/> other, give details _____				
D3	Where do the household members defecate? <i>Several possible responses</i>	Adult males over 18	Adult females over 18	Children 2-5 years	Children 6-12 years	Adolescents 12-18 years
1	Your latrine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Latrine in compound	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Latrine elsewhere (at school, at the market, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	In the bush	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Other (give details _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Do not know/refuse to answer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D4	Where do you dispose of the waste produced by your children aged under 2 years?	<input type="checkbox"/> 1. In the latrine <input type="checkbox"/> 2. In the yard <input type="checkbox"/> 3. With other waste in the yard <input type="checkbox"/> 4. you bury it <input type="checkbox"/> 5. On the street, in the river, etc. <input type="checkbox"/> 6. Other, give details _____ <input type="checkbox"/> 7. Do not know				
If the household has no latrine, go to question D11						
D5	Is your latrine used by people who are not members of your household?	<input type="checkbox"/> Yes <input type="checkbox"/> No				
D6	How many people use this latrine?	<input type="checkbox"/> people				
D7	For how long have you had this latrine? <i>Write the number of years or months</i>	<input type="checkbox"/> Years <input type="checkbox"/> Months				
D8	How much did the materials to build this latrine cost? <i>A combination of A and B is possible. For A. Please circle where the money came from (it is possible to choose both responses)</i>	<input type="checkbox"/> A. <input type="checkbox"/> F CFA Source: Subsidy/Paid by households <input type="checkbox"/> B. Free local materials <input type="checkbox"/> C. Do not know				
D9	How much did the labour needed to build this latrine (builder, employees) cost? <i>A combination of A, B and C is possible.</i>	<input type="checkbox"/> A. <input type="checkbox"/> F CFA <input type="checkbox"/> B. Work done free of charge <input type="checkbox"/> C. Work done by the household <input type="checkbox"/> D. Do not know				
D10	Has your household had any of the following expenses over the past year? <i>Multiple responses are possible. In each case, specify the amount spent</i>	<input type="checkbox"/> A. Repair to slab: <input type="checkbox"/> F CFA <input type="checkbox"/> B. Repair to superstructure: <input type="checkbox"/> F CFA <input type="checkbox"/> C. Enlargement of pit: <input type="checkbox"/> F CFA <input type="checkbox"/> D. Emptying latrine: <input type="checkbox"/> F CFA <input type="checkbox"/> E. Other, _____: <input type="checkbox"/> F CFA				
D11	If someone showed you how to build a latrine, would you be interested in having one?	<input type="checkbox"/> yes <input type="checkbox"/> no				

D12	If yes, how much would you be prepared to invest in a latrine?	[] F CFA				
E. Water management						
E1	Where do you get the water you use for drinking, cooking and washing? <i>Give references for the dry season.</i>	Drinking	Cooking (preparation and washing up)	Washing (body and laundry)		
1	Drinking fountain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2	Borehole (hand pump)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3	Borehole distribution system with public standposts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4	Unprotected dug well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5	Ponds, stagnant water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6	Rivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7	Rainwater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8	Other source, give details _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
E2	If answers are given to lines 4, 5, 6, 7 or 8 Do you treat the water you get?	[] yes [] no				
If yes, go to E3 - If no, go to question E5						
E3	What do you use treated water for? <i>Several possible responses</i>	<input type="checkbox"/>	A. Drinking			
		<input type="checkbox"/>	B. Cooking			
		<input type="checkbox"/>	C. Other, give details _____/			
		<input type="checkbox"/>	D. Do not know			
E4	How do you treat the water? <i>Several possible responses</i>	<input type="checkbox"/>	A. Boil it			
		<input type="checkbox"/>	B. Bleach			
		<input type="checkbox"/>	C. Filter			
		<input type="checkbox"/>	D. Other, give details _____/			
		<input type="checkbox"/>	E. Do not know			
E5	Do you pay for drinking water?	[] yes [] no				
E6	How do you store your water?	<input type="checkbox"/>	1. Container with lid			
		<input type="checkbox"/>	2. Container with no lid			
		<input type="checkbox"/>	3. Other, give details _____			
		<input type="checkbox"/>	4. Do not know			
E7	For what purposes do you store water? Several possible responses	<input type="checkbox"/>	A. Drinking			
		<input type="checkbox"/>	B. Cooking			
		<input type="checkbox"/>	C. Washing			
		<input type="checkbox"/>	D. Washing clothes			
		<input type="checkbox"/>	F. Other, give details.....			
		<input type="checkbox"/>	G. Do not know			
F. Handwashing						
F1	Who in your household washes their hands, and when? Do not read the answers, let the subject respond. Several possible options.	Men	Women	Children 2-5 years	Children 6-12 years	Adolescents > 12 years
A	Before defecating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	After defecating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	After cleaning baby's bottom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D	Before eating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E	After eating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F	Before feeding children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G	After touching animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	Before handling food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I	Before praying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J	Other, give details	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F2	How do you wash your hands?	<input type="checkbox"/>	1. Hands dipped in a dish or bucket			
		<input type="checkbox"/>	2. Kettle (with no bucket)			
		<input type="checkbox"/>	3. Kettle (with bucket)			
		<input type="checkbox"/>	4. Clay pot with tap			
		<input type="checkbox"/>	5. Other, specify			
F3	Have you used soap during the past week? If no, go to question F7	<input type="checkbox"/>	1. Yes			
		<input type="checkbox"/>	2. No			
F4	For what purpose do you use soap? Several possible responses	<input type="checkbox"/>	A. Washing clothes			
		<input type="checkbox"/>	B. Washing self			
		<input type="checkbox"/>	C. Washing hands			
		<input type="checkbox"/>	D. Washing up			
		<input type="checkbox"/>	E. Other, give details			
F5	How often do you buy soap/detergent?	[] Number of soap purchases per month				
		[] Number of OMO (detergent) purchases/month				

F6	How much do you pay for soap/detergent (on average)?		[] F CFA for soap [] F CFA for OMO (detergent)
F7	Have you taken part in a hygiene promotion activity over the past year?	<input type="checkbox"/>	1. Yes, _____ times
		<input type="checkbox"/>	2. No
		<input type="checkbox"/>	3. Do not know
F8	Has another member of your household taken part in a hygiene promotion activity over the past year?	<input type="checkbox"/>	1. Yes, _____ times
		<input type="checkbox"/>	2. No
		<input type="checkbox"/>	3. Do not know
F9	How much time did you (or the other member of your household) spend on this promotion activity?	[] people and [] hours	

OBSERVATIONS (to be filled in by researcher):

G. Observation of yard and inhabitants			
G1	In the yard, is/are there:	<input type="checkbox"/>	1. animals
		<input type="checkbox"/>	2. waste on the ground
		<input type="checkbox"/>	3. faecal waste on the ground
		<input type="checkbox"/>	4. discharge of waste water (from washing up etc.)
		<input type="checkbox"/>	5. drying clothes
		<input type="checkbox"/>	6. dirty washing up
G2	Overall, is the yard clean?	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No
H. Presence of water and soap			
H1	Is there any water stored in the household at the moment?	<input type="checkbox"/>	1. Yes, in a container with a lid
		<input type="checkbox"/>	2. Yes, in a container with no lid
		<input type="checkbox"/>	3. Yes, give details
		<input type="checkbox"/>	4. No
H2	Is any soap present?	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No
H3	Is there anything that can draw water from the container, if the container has no tap?	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No
I. Observation of latrine			
I2	If there is a latrine on site, what type of latrine is it? <i>If the household has no latrine, the questionnaire ends here.</i>	<input type="checkbox"/>	1. VIP latrine
		<input type="checkbox"/>	2. Traditional latrine
		<input type="checkbox"/>	3. EcoSan
		<input type="checkbox"/>	4. SanPlat latrine
		<input type="checkbox"/>	5. Other, give details.....
I3	Is there water available for hand washing near the latrine?	<input type="checkbox"/>	1. Yes, in a container that is closed or has a tap
		<input type="checkbox"/>	2. Yes, in an open container
		<input type="checkbox"/>	3. Yes, other: give details
		<input type="checkbox"/>	4. No
I4	Is there soap near the latrine?	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No
I5	Is the latrine used?	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No
I6	Is the latrine clean (with no trace or residue, with a kettle for anal washing, etc.)	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No
I7	Are there insects in the latrine (flies, cockroaches etc.)?	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No
I8	Is there a mop or are there other tools to clean the latrine?	<input type="checkbox"/>	1. Yes
		<input type="checkbox"/>	2. No

Thank the respondent for his/her time.

Appendix 2 - Summary of costs in US\$ for Ouahabou

The exchange rate used is the mean rate for 2011, a rate of 1 CFA Franc = 0.00212 US\$ (Source: www.oanda.com)

Costs of intervention:		
Components of costs	Cost for village (US\$)	Cost per household (US\$)
Capital expenditure (software) (CapExS)	263.25	0.32
Capital expenditure (hardware) (CapExH)	47.56	0.06
Recurrent expenditure (OpEx)/month	58.93	0.07
Total expenditure	Cost for village (US\$)	Cost per household (US\$)
Cost of intervention for "hygiene" components	900.15	1.10
Cost of latrines:		
	Before start of intervention	After start of intervention
Number of latrines	197	223
Mean capital expenditure/latrine (US\$)	58.81	49.40
Number of households that have taken action to maintain their latrines	56	24
Recurrent expenditure/month (US\$)	1.08	0.81
Profile of latrines built since February 2012		
Number of new latrines	NA	69
Mean CapEx new latrine (2011) (US\$)	NA	24.62
Recurrent expenditure on new latrines/month (US\$)	NA	0.43
Cost of handwashing:		
	Before start of intervention	After start of intervention
Number of households that buy soap and wash hands	193	171
Mean monthly cost of soap per household (in US\$)	4.47	4.82
Mean monthly cost of soap per household that does not have a latrine (in US\$)	3.50	4.04
Mean monthly cost of soap per household that has a latrine (in US\$)	5.29	5.53

Appendix 3 - Summary of costs in US\$ for Ladiana

The exchange rate used is the mean rate for 2011, a rate of 1 CFA Franc = 0.00212 US\$ (Source: www.oanda.com)

Costs of intervention:		
Components of costs	Cost for village (US\$)	Cost per household (US\$)
Capital expenditure (software) (CapExS)	411.86	1.52
Capital expenditure (hardware) (CapExH)	47.56	0.18
Recurrent expenditure (OpEx)/month	58.93	0.22
Total expenditure	Cost for village (US\$)	Cost per household (US\$)
Cost of intervention for "hygiene" components	1,048.76	3.87
Cost of latrines:		
	Before start of intervention	After start of intervention
Number of latrines	3	6
Mean capital expenditure/latrine (US\$)	37.33	12.88
Number of households that have taken action to maintain their latrines	1	2
Recurrent expenditure/month (US\$)	0	0.80
Profile of latrines built since February 2012		
Number of new latrines	NA	5
Mean CapEx new latrine (2011) (US\$)	NA	5.48
Recurrent expenditure on new latrines/month (US\$)	NA	0.35
Cost of handwashing:		
	Before start of Intervention	After start of intervention
Number of households that buy soap and wash hands	90	50
Mean monthly cost of soap per household (in US\$)	3.30	2.73
Mean monthly cost of soap per household that does not have a latrine (in US\$)	2.65	2.74
Mean monthly cost of soap per household that has a latrine (in US\$)	2.29	2.12

