Research-inspired Policy and Practice Learning in Ethiopia and the Nile region

Technical issues of Sanitation and Hygiene in Mirab Abaya and Alaba

A case study report from the Southern Nations Region ('SNNPR') of Ethiopia

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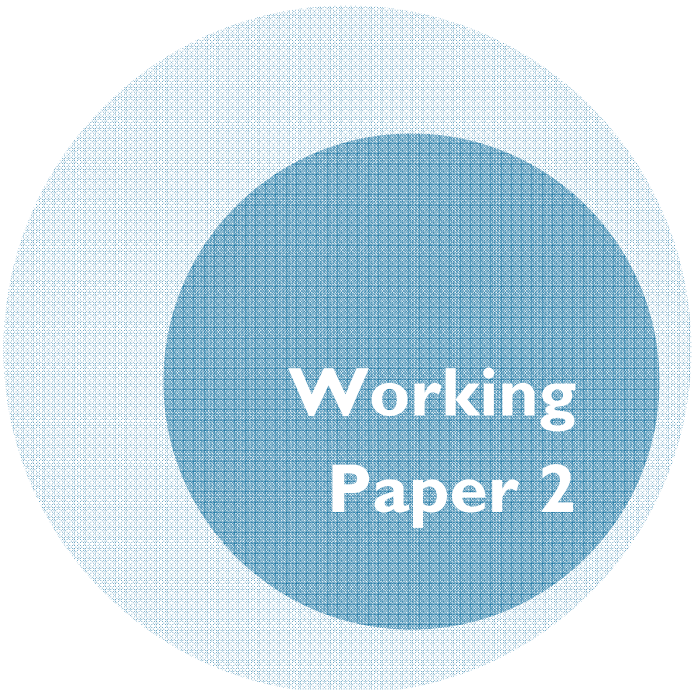
March 2008



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Acknowledgements and disclaimer

The principal researcher/investigator for this study was Worku Tefera (BSc, MPH), with co-investigators being Tizita Mulugeta and Alemayehu Haddis.

I would like to thank the Bureau of Health of the Southern Nations region (SNNPR) for allowing us to carry out this case study and helping in facilitating the research from the onset of site selection and reviewing the plan up to the implementation and reporting. My thanks also go to the two woreda health offices and zonal health desk of Gamo Gofa in facilitating the field research and household survey.

Our gratitude goes to all staff of the RiPPLE facilitating offices at national, regional, and woreda level, particularly Tamene Chaka and Desta Dimtse, by supporting us in our research through many ways, including the financial and logistical aspects.

We are grateful to instructors and students of Hawassa University, Department of Environmental health, who have put their unreserved efforts during data collection; especially Mr. Dejene Hailu who helped in the design of the questionnaire for the technical issues. All study participants are acknowledged for giving their time.

I am indebted also to the RiPPLE international staff, Peter Newborne (ODI) and Jo Smet (IRC), who assisted in developing the research plan, and provided technical inputs as well as overall coordination of the case study.

Finally, those individuals and organizations not mentioned above, but who have lent their hands to the successful completion of this study, are acknowledged as well.

Responsibility for the opinions presented in this report rests exclusively with the author and should not be attributed to the regional Bureau of Health, the regional government of SNNPR or any of other persons consulted or named above.

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List of Acronyms and of Amharic Names

ADB	African Development Bank
Alaba	A special *woreda* in SNNPR, one of the study *woredas*
AWD	Acute Watery Diarrhea
BoE/BoH	Bureau of Education/Bureau of Health
BoWR	Bureau of Water Resources
Cell	government, sub-*Kebele* level structures encompassing 20 households, used to mobilize community resources and communicate government messages
CHP	Community Health Promoter
DA	Extension Development Agent
DFID	UK Department for International Development
E.C.	Ethiopian Calendar
ESHE	'Essential Services for Health in Ethiopia'
FGD	Focus Group Discussion
GoFDRE	Government of Federal Democratic Republic of Ethiopia
HEP	'Health Extension Package' or 'Health Extension Program'
HEW	Health Extension Worker
HH	Households
HWF	Hand Washing Facilities
Kebele	Lowest level of government administrative structures
KI	Key informants
MDGs	Millennium Development Goals
Mierab Abaya	A *woreda* in Gamo Gofa zone of SNNPR
MoARD	Ministry of Agriculture and Rural Development
PHAST	'Participatory Hygiene and Sanitation Transformation'
S&H	Sanitation and hygiene
SNNPR	Southern Nations Nationalities and Peoples Region
SSA	Sub-Saharan Africa
TPL	Traditional Pit Latrine
WaSH	Water Sanitation and Hygiene
WaSh Cos	Water Sanitation and Hygiene Committees
WB WSG	World Bank Woreda Support Group
WHO	World Health Organization
Woreda	District, an intermediate level of government administrative structure
WSS	Water Supply and Sanitation

Zone	Government administrative structure between Region and *Woreda*

Executive Summary

In most developing countries, especially in Sub-Saharan Africa (SSA) the causes of more than 80% of the diseases are due to inadequate and unsafe water supply, and improper disposal of waste. This has been exacerbated by a focus by government departments and non-governmental organisations (NGOs) on financing programmes that were aimed at the development of water schemes and other health interventions. However, such programmes paid insufficient attention to Sanitation and Hygiene (S&H). Consequently, improvements in S&H lagged behind. For instance, Ethiopia registered a less than 1% increment in sanitation coverage per annum over a considerable period of time. To draw attention the problem of S&H, the UN, in its Millennium Development Goals (MDG), set a target that centred on improving sanitation. One of the aims of Goal 7 of the MDGs was to halve the proportion of people without access to improved drinking water and sanitation.

It is within this context, that the Bureau of Health (BoH) of the Southern Nations Nationalities and Peoples Region (SNNPR) reviewed the prevailing health problems of the region. In its review, the BoH identified S&H problems as the main, and neglected, causes of morbidity in SNNPR. In view of this, the BoH in 2003 (i.e.1996 E.C.) sought to improve the S&H situation of the SNNPR, by designing and implementing a policy that was broadly aimed at health issues, with S&H constituting a key component. The broad health strategy that was implemented comprised of eight different programme packages.

The BoH produced ignition documents for the respective packages so as to enable stakeholders – mainly community members, Health Workers, and political appointees – to participate in mass mobilisation and community discussions surrounding health. The S&H policy was aimed at providing broad-based, high impact-oriented and low-cost solutions, through targeting households with public health intervention.

Given the implementation of the S&H policy in SNNPR, this paper reviews the progress made to date. This study examines the effects of the post-2003 (1996 E.C.) S&H policy that was implemented by BoH, in SNNPR, with the view to draw lessons that could inform similar policies in other regions of Ethiopia and beyond. Central to this analysis, is an examination of socio-cultural, technical and policy/institutional issues surrounding the S&H policy. This study was conducted in Mirab Abaya woreda and Alaba special woreda and employed both quantitative and qualitative research methods. A survey of 396 households using a structured questionnaire constituted the quantitative component, while focus group discussions (FGDs) and key informant (KI) interviews, using a semi-structured interview techniques, formed the qualitative component. In addition, direct observation of hygiene behaviour of household members was also employed in this study, as were secondary data sources were also used from relevant offices.

Findings from this study indicated that there was a radical change in the construction of latrines in the past 3 years in the case study areas. Half of the constructed latrines were built during the last three years; while more than 57% of the currently available latrines were built during the 2006/7 period (i.e. 1999 E.C). Almost all latrines found, were Traditional Pit Latrines (TPLs). Community Health Promoters (CHP), Health Extension Workers (HEW), *Kebele* council were the main sources of information regarding latrine construction. The aforementioned were also instrumental change agents in the realisation of the post-2003 (1996 E.C.) BoH policy in SNNPR. Hence, BoH was successful in raising the awareness among people about S&H, and in significant increases in the

number of latrines constructed. With regards to the latter, almost all households in Mirab Abaya, and two-thirds in Alaba, had constructed a latrine. The higher coverage of latrines in Mirab Abaya (94.1%) as compared to that of Alaba (69%) might be due to the fact that the dwellers in the former group were more literate than the latter. Despite the higher achievement in coverage, only 11% of those latrines were actually offered sufficient privacy to users.

Latrine use was claimed to be close to 100% among those who possessed latrines. In some age groups, such as elderly people utilisation was lower. A remarkable finding from the FGD was that urination outside the latrine is a very common and accepted practice, even among women.

Whilst women contributed considerably during the construction of latrines, the main responsibility lay with male household heads. However, the responsibility for preparing hand washing facilities (HWFs) was solely the domain of women. Although women contributed significantly in the construction of latrines, and in providing hand washing facilities, they faced cultural barriers when sharing the latrines with their in-laws. In short, the local culture dictated that women were barred from using the same latrine with their in-laws.

Furthermore, the study also found out that there were technical factors that hindered households from using pit latrines. Of significance to note is that most pit latrines collapsed due to the loose nature of the soil in both case study area, termites destroying wood that was used to construct the floor and other structures. The latter was common in Alaba. With reference to Mirab Abaya, flooding also resulted in the collapsing of pit latrines. Technical problems were compounded by a lack of construction materials – mainly wood – and high water table, which led to the overflowing of pit latrines during the rainy season as well as to foul swell and fly breeding. Partly as a result of the aforementioned factors, some households dropped off from the good S&H ladder, and returned, temporarily, to open defecation.

Water consumption rate in the two woredas of Alaba and Mirab Abaya was found to be very low (7 lcd), compared with the national rural average (12 lcd), WHO Water Quality Guidelines (20 lcd) and Sphere (15 lcd). As a result, this study notes that the use of unprotected hand-dug wells (in Mirab Abaya) and rivers and ponds (in Alaba) was significant and posed a potential health risk (like AWD, giardiasis and amoebiasis).

Important to note is that, water was transported (from source to home) mainly with jerry cans. At home, drinking water was stored in uncovered containers. Safe water handling was poor, and likely to result in contamination. For instance, it was observed that dippers and jugs used in drawing water were placed anywhere. Some households indicated that they pour water directly from jerry cans into water storage containers without washing the latter. A combination of these factors can be stated to lead to increased ill-health.

The availability and usage of HWFs was reportedly very high (>80%). About three-quarters of respondents knew the objective of hand washing in terms of health. However, the actual behaviour and practice of using proper hand washing was not so striking. Several households reported that young boys and girls do not wash their hands regularly. This was partly because most HWF were located in the house, and not near the latrine. There was poor practice of washing hands after visiting latrines, and use of soaps during hand washing was not customary. The main reasons for not washing hands with detergent were due to a lack of in-depth knowledge regarding the use of soap during hand washing after using the latrine. Another reason for the limited use of soap during hand washing was that most people could not afford to buy soap.

Taking account of the above, the study argues that, intensive health education is required to change people's behaviour on hand washing. Collective behavioural change using some triggering factors like 'shame' seemed more influential than focusing on individual behavioural change. Safe water storage and handling practices should be promoted along with proper hand washing practices. There is a need to come up with locally viable and appropriate technologies to improve S&H issues related to the traditional pit latrine.

In conclusion, SNNPR BoH post-2003 (1996 E.C) policy on S&H was very successful in increasing latrine coverage, and this could be replicated elsewhere in Ethiopia and beyond. However to achieve sustainable S&H conditions, and behavioural change, some areas need attention and further support. These include latrine technology options and construction materials, positioning of latrines, HWFs, hand washing with soap, and safe water handling.

1 Hypothesis, Research Objectives and Questions

1.1 Research area

Examining technical factors and how they worked for (or against) the success of the S&H strategy in SNNPR.

1.2 Research hypothesis

The S&H improvement approach applied by the Regional Health Bureau in SNNPR since 2003 (1996 E.C) aimed at broad-based, high impact oriented and low-cost, and targeted at households, has potential, in both policy and practice, for scaling-up of S&H access. The S&H policy contributes to the achievement of Universal Action Plan (UAP) on sanitation in Ethiopia, as well as, a portal for learning.

Box 1.1: Operational Definition of S&H

Sanitation	**Hygiene**
Safe collection, storage, treatment and disposal/re-use/recycling of human excreta (faeces and urine)	• Safe water storage • Safe hand washing practices

Source: Evans (2005)[1]

1.3 Research objectives[2]

- To assess the conditions and factors contributing to, or hindering, the success of the approach of the Regional Bureau of Health of SNNPR in improving household S&H practices in rural communities;
- To learn from the contributing (and hindering) conditions and factors for most promising practices potentially to be scaled up/ out in the SNNPR; and
- To share these assessments/ research findings with other regions and the federal level in Ethiopia, and more widely in the Nile region.

1.4 Objectives of this particular study

- To determine the increase in coverage of household S&H facilities since the 2003 (1996 E.C) campaign[3];
- To assess physical, environmental and technical factors that affect the construction and use of S&H facilities: i.e. the technical factors, which have helped/enabled, or hindered, households from succeeding a step-up the S&H ladder;

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[1] Evans (2005): In 'Peter Newborne and Katharina Welle. Sanitation and Hygiene: Knocking on new doors'. ODI Briefing Paper No. 13; Issued on Dec 2006

[2] Reference is made to the Evolving Motivation Diagram – see Appendix 3.

[3] WSP, SNNPR BoH. From Burdon to Communal Responsibility: A Sanitation Success Story from Southern Region in Ethiopia. Field Note. Sanitation and Hygiene Series. Jan 2007.

- To assess the physical, environmental and technical factors that help the households to sustain their S&H facilities and their changed behaviour;
- To learn about good technical aspects useful for scaling-up S&H in the SNNPR region and other regions of Ethiopia.

1.5 Research questions of this particular study

- Is there a difference in S&H facilities coverage between the current status and the time of the SNNPR sanitation 'movement' in 2003 (1996 E.C) and in between (time trend of coverage)? What types of S&H facilities are being used? Were these of the type proposed in the BoH campaign?
- What technical factors helped, or hindered, the households in the study communities to start the improvement in construction of sanitation facilities and hygiene conditions (see the 'Trigger' and 'Action' phase in the Framework of Analysis attached)? What was the division of roles and tasks within the households regarding construction of S&H facilities?
- What is the level of satisfaction (e.g. in terms of convenience, effect) in using the facilities (i.e. the 'Result' phase in the Framework of Analysis)?
- What technical problems or weaknesses hindered the households in the community to step up the sanitation ladder? And, what technical solutions or 'means' are there to correct the problems observed?
- What are the future plans regarding all three concerned household S&H facilities (the 'Response' phase, and beyond it, in the Framework of Analysis)? Is there still contact/support/advice coming from the BoH on S&H facilities?
- How has the technology helped (or not, as the case may be) the household to move up the Sanitation & Hygiene ladder? How or why – because of technical, or physical and environmental factors – have users allowed her/him to slip back down the S&H ladder?

2 Context of the study

2.1 Research districts

2.1.1 Alaba special woreda

The centre of the district, Alaba Kulito, is 90 km SW of Awassa, capital city of SNNPR (Reference map on Appendix 5) [4]. With a total land area of 973.76km^2 and an altitude range of 1554-2149m above sea level, most of the population in the woreda are found above 1800m above sea level. The topography ranges from flat (61.3%), rolling (21.3%) and hilly (17.4%) terrain. The climatic zone of the *woreda* consists of mainly mid-land (*'Weinadega')* and low-land (*'Kola')*, which accounts for 86% and 14% respectively, according to the *Woreda* Agriculture and Rural Development Office. The nature of soil texture in Alaba, according to FAO soil mapping[5], is dominantly andisol and hallowed, secondly phaeozem, thirdly chromic-luvisol. This means that it is mostly 'silt' and 'ash' (white, volcanic) characterised by a high water infiltration capacity, fragile and easily collapsible particularly when pits are dug. Annual rainfall covers a range of 857-1085mm, while the mean annual *temperature* varies from 17°C to 20°C with mean value of 18°C. Administratively, the woreda is organized into 78 kebeles (2 urban and 76 rural kebeles). Projected population *size* of the woreda, for July 2005 (1998 E.C) was 251,385 with an estimated population growth rate of 3% per annum. The proportion of male to female was about 49% and 51% respectively. The dominant ethnic group is Alaba followed by Silte and others and the woreda is predominantly Muslim (93.8%).

Alaba faces scarcity of water resources. According to the Alaba Water Resources Office, the main sources of safe water are deep bore holes, with a water table of 150–300m below the ground surface; and rainwater harvesting. Groundwater has a high level of fluoride, of up to 26mg/l. Bilatie river and man-made ponds are also used as alternative sources of water. Currently, and according to the woreda Water Resources Office, the potable water supply coverage is 41%. The sanitation coverage in Alaba rose from 10% in 2002 (1995 E.C) to 48% in 2003 (1996 E.C), a drastic increase of 38% resulting from the S&H campaign of SNNPR.

2.1.2 Mirab Abaya Woreda

It is a district located in Gamogofa Zone, SNNPR and covers a land area of 1,613km^2. The centre of the woreda is Mirab Abaya, which is 230 km away from Awassa and 457 km from Addis Ababa. According to the 2006 population projection, the woreda has a population of 69,036, with a density of 43 people per km^2 and a male to female ratio of 1:1.027. The majority (91.8%) of the population live in the rural part of the district, with an average family size in the woreda is 4.8. Administratively, the *woreda* is divided into 24 *kebeles* made of one urban and 23 rural *kebeles*.

The woreda is composed of three climatic zones; namely, 'Kola' (lowland) 'Woinadega' (mid-land) and 'Dega' (highland) covering 62%, 27%, and 11% of the area respectively. The nature of soil texture in the woreda is mainly composed of sandy (55%), silt (30%), and clay (10–15%). The dominant ethnic group is Gamo (85%) followed by Wolayita (9%) and others (2.5%). Protestant (52%), Orthodox Christian (41%), Muslim (5%), and Catholic religions are the main religions. Farming system in the woreda is crop, livestock and mixed system. Main crops are maize, sorghum, wheat, barley, cotton,

[4] Alaba woreda Agricultural and Rural Development Office, Jan 2008

[5] Source: Alaba woreda Agricultural and Rural Development Office, Jan 2008

false banana ('Enset'), banana, and other minor crops. Banana and cotton are the cash crops in the woreda. Livestock found in the *woreda* are cattle, sheep, goats, horses, mules, and donkeys. Poultry also form a key component of the local economy as is bee-keeping.

According to the district Water Development Office, potable water supply coverage in 2006 was 27.4% in the woreda. The main water source was ground water. The groundwater table depth ranges from 6–108m. As of 2006 (1999 E.C) data indicate that there were a total of 57 water schemes, of which about 40 were functional. Two irrigation schemes were found in the *woreda* namely Wojifo site and Raya sites with a potential of 300ha and 425ha irrigable land areas respectively. Lake Abaya is situated near the town of Mirab Abaya (that means West of Lake Abaya). Two NGOs, World Vision Ethiopia and the World Bank Woreda Support Group (WB WSG) are working in the woreda on water and sanitation related activities.

The woreda is among one of the food insecure areas in the region. WB WSG has been working in 10 kebeles in the district since 2004 (1997 E.C.). According to the Woreda Health Office, latrine coverage was 51.8% in 2005 (1998 E.C.).

2.2 Research Sites

In consultation with the Alaba Special Woreda and Mirab Abaya Woreda Health Offices three kebeles from each woreda were selected for this pilot study. The main selection criteria were availability of all weather road (as this would permit data collection during the rainy season), and absence of similar studies and WASH intervention by NGOs. In collaboration with the woreda health offices, the RiPPLE Office selected six *kebeles*. The *kebeles* were selected from different climatic zones, which may have differences in cultural and socio-economic attributes as well as coverage/availability of safe water supply and latrine facilities.

Table 2.1: RiPPLE Selected Kebeles in Alaba Special district for S&H with data on estimated population, distance to Alaba Town and availability of resources.

S. No.	Name of Kebele	Estimated Population	Estimated** Distance from Alaba Town	Availability of		
				HEWs*** (Y/N)	S&H programs (P/FS/Na*)	Water*** source (Y/N)
1.	Hologeba Kukie	3443	5km	Y	NK	N
2.	Galeto	1638	3km	N	NK	N
3.	Amata	2241	8km	Y	NK	Y

*P=Pilot, FS= Full Scale, NK= Not known **Distance was estimated from Alaba to the centre of the catchments***

Table 2.2: RiPPLE Selected Kebeles in Mirab Abaya district for S&H by estimated population, distance to Mirab Abaya and availability of resources.

S. No.	Name of Kebele	Estimated Population**	Estimated** Distance from Mirab Abaya	Availability of		
				Climatic Zone*	Latrines/ Coverage*	Safe Water* source, coverage (Y/N)
1.	Omo Lante	3640	25 km	Mid-land	NK	Y, NK
2.	Mole	4260	5 km	Mid-land	NK	Y, 34%
3.	Wojifo	3900	18 km	Mid-land	87%	Y, 36%

*Source: Mirab Abaya district Health Office. July 2007. **Distance was estimated from Mirab Abaya to the centre of the catchments and estimated population not yet Known, to be cleared during site visit.

3 Reports of the activities

3.1 Sources of information

Primary data sources were used to collect quantitative and qualitative data from individual households, health workers (CHP, HEW and woreda health staff), a local NGO in the selected woredas and kebeles. Secondary data sources were also used to complement the primary data and for background information. These sources included records and reports of the relevant offices of the selected woredas and the region (SNNPR).

3.2 Methods of data collection - Who? How? When?

Quantitative and qualitative research methods were used in the collection of data for this study. Quantitative data was collected using a pre-tested questionnaire, while qualitative data was gathered through a semi-structured open-ended schedule of questions with individual respondents, KI and FGD. Data was also collected through a checklist of observation of technical issues on S&H facilities. A systematic random sampling method was used to select households. In turn, heads of households or their representatives were selected for interviewing.

Data collection was conducted by trained and experienced research assistants (see Appendix 3). These included ten graduating Environmental Health students of Hawassa University, who collected quantitative data, and two students who have been working as sanitarians in the region. The latter assisted the principal researcher in moderating FGD as well as taking notes and recording the interviews.

3.2.1 Methodological Challenges,

- Selection of woredas and kebeles for the case study work was a challenge, as there was need for a consensus to be reached between RiPPLE and key stakeholders, namely BoH and BoWR.
- Objective selection of woredas and kebeles was hampered by the fact that some areas are inaccessible during the rainy season. As such case study sites were selected from areas that had all weather roads, which would make the areas accessible during the summer rainy season
- Selection of FGD discussants by the HEW or CHP was challenging, as the RiPPLE woreda facilitating offices were new, or not yet functional during the period of qualitative data collection;
- Overlapping of activities within RiPPLE office, meant that regional and woreda facilitating offices were unable to give full support;
- Quantitative data collection, entry and cleaning took a longer than anticipated to complete.
- Flooding of the Lante river made Mirab Abaya difficult to get access to.

3.2.2 Methodological solutions and successes,

- The selection of study woredas and kebeles was made possible with the successful negotiation and understanding of the concerned government agents, BoH and BoWR and their subsequent lines at woreda level along with RiPPLE facilitation;
- The collaboration between key stakeholders and RiPPLE facilitation offices was very successful;

- The selection of discussants was made possible with necessary cautions taken by orienting health workers;
- Though the study was started during the rainy season, it was possible to succeed in collecting the relevant information as per the design;
- Positive support from woreda council and health offices in both woredas;
- The chance to have Hawassa University students participating in the data collection and the possibility to use their expertise helped to collect more valid and quality data;
- The use of local people to observe S&H behaviours was important to complement the data, despite the initial plan to use Hawassa University students for observation which would have created a false image of practicing in front of an identified observer, instead of being unnoticed while observing behaviours.

4 Results of the study

A total of 396 households constituted the sample for the survey research – 192 households from Alaba special woreda and 204 households from Mirab Abaya woreda.

4.1 Socio-demographic

More than half (56.5%) of all interviewees (n=388) were females. About half (53.2%) of them were illiterate, while only 69 (17.4%) of them completed not more than 4 years of primary education, while 17.9% had completed between 5 and 8 years of education. Approximately six percent of the respondents had, at least, attended high school. Majority of the respondents 59.4% were farmers by occupation and 35.5% stated that they are housewives.

Majority (88.6%) of the respondents were married, followed by a few (8.1%) who indicated that they were divorced. The major ethnic groups in Mirab Abaya were, Gamo (46%), Wolayta (43%), Alaba (4.5%), Gofa (4%), Amhara (1.5%), and Oromo (1%), while almost all (97.8%) respondents in Alaba were from Alaba ethnic group and the rest were Gofa and Amhara, 1.1% each. The mean family size of the households was 7.04 in M. Abaya (n=204), and that of Alaba (n=189) was 6.49. More than 95% of all households have children. (See Table, Appendix 3)

4.1.1 Common Health Problems and Perceived Causes

The common health problems reported by respondents were malaria (82.3%), diarrhoea (33.1%), typhoid (25.3%), giardiasis (17.4%), amoebiasis (14.6%), and ascariasis (6.1%). Household heads gave as causes of the diseases: unsanitary disposal of waste water (32.1%), poor personal hygiene (21.3%), unsanitary disposal of solid waste (15.7%), unsanitary disposal of human waste (11.9%), and shortage of food (10.1%) (n=395). (N.B. *percent will not add up to 100% because of multiple responses*.)

Community members in the FGD also similarly identified shortage of safe water supply as the cause of water-borne diseases and malaria. They indicated the use of pond water and well water as a cause of diarrhoea and other abdominal diseases. The discussants suggested the need for environmental sanitation and personal hygiene; the construction and use of latrines, to prepare refuse pits, environmental management to control malaria; use of bed nets and to wash hands after visiting latrines. Some discussants revealed that their children told them about good hygiene and sanitation practices, which the children learnt from school.

4.2 Latrines and latrine utilization

4.2.1 History of Latrine: Did you ever have a latrine?

Nearly all respondents (97%) in Mirab Abaya (n=204), and 76.3% in Alaba (n=190) reported that they had constructed a latrine, while the rest had never constructed a latrine in their life (see Fig. 4.1 and 4.2). More than half of the first ever latrines to be constructed in the area were built from 2005 (1998 E.C) onwards. FGD discussants also underlined the time mark of 2003 G.C (1996 E.C) as the time when most latrines were constructed partly as a result of the training given to CHP in their kebele. Those who had constructed a latrine (n=343) were supported mainly by CHP (35.5%), HEW (30.9%), and Kebele Administration Council (25.5%). Of the respondents with a latrine in their homestead, 91.1% reported that they have used it.

Figure 4.1: History of latrines in Alaba and M. Abaya, October 2000

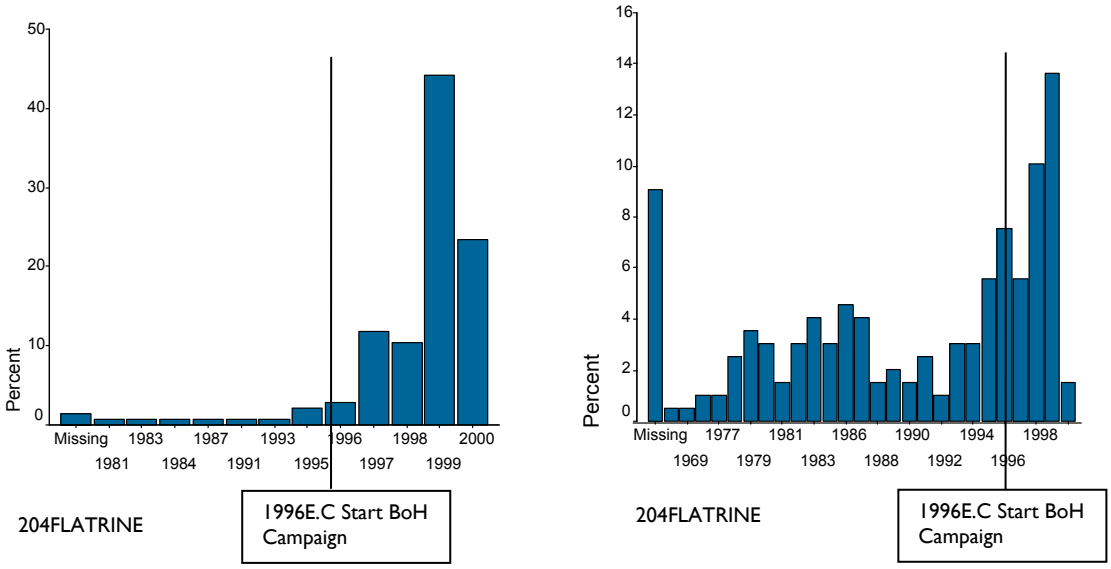
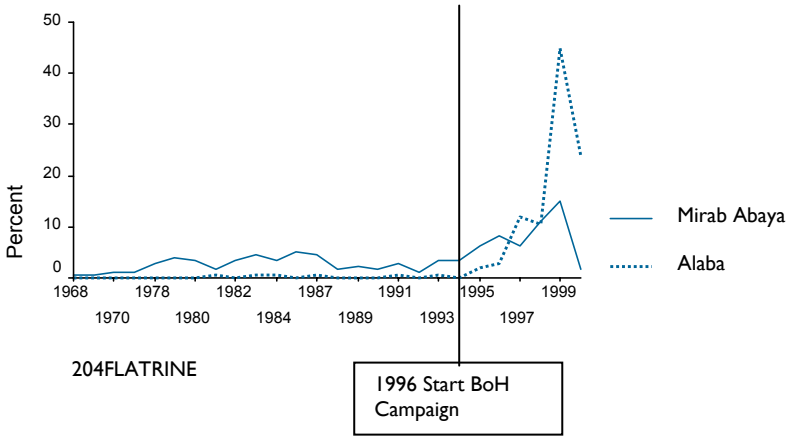


Figure 4.2: First-ever latrine constructed in Mirab Abaya and Alaba, October 2000



4.2.2 Current Availability of Latrines

Respondents were asked whether they are currently had latrines in their homesteads. Majority of them (94.1%) in Mirab Abaya and 68.9% in Alaba reported that they currently had latrines, while the rest did not. The difference in latrine coverage might be due to the educational level, which is significantly higher in M. Abaya compared to that in Alaba. Data from Figures 4.3 and 4.4 (below) show that construction of latrines in both woredas increased significantly in the period from 2003 (1996 E.C) onwards.

Figure 4.3: Year current latrines constructed in M Abaya, October 2000

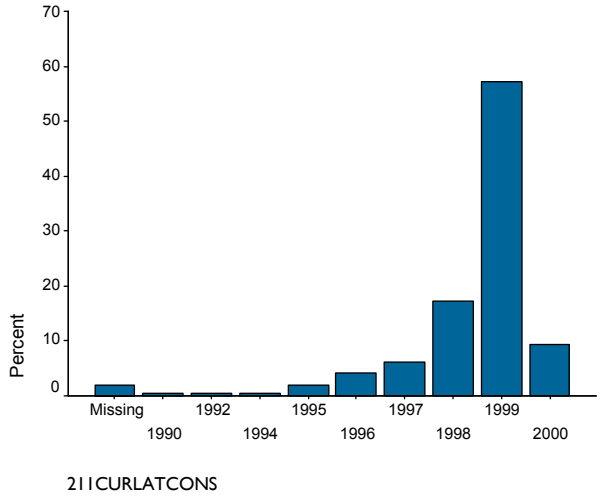
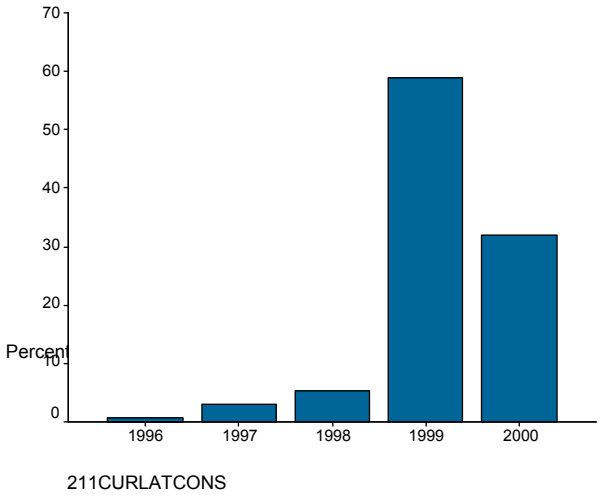


Figure 4.4: Year current latrines constructed in Alaba, October 2000



The graph clearly shows that in Alaba there were few or apparently no latrines constructed before 1996 E.C (2003). In Mirab Abaya there were a low percentage of households (less than 10%) who constructed latrines since the 1980s (1970s E.C.) (Refer also Figure. 4.2). More than 57% of the current latrines in both woredas were built in 2006 (1999 E.C) (see Figures. 4.3 & 4.4). All of the latrines surveyed were Traditional Pit Latrines (TPL), except one Ventilated Improved Pit latrine (VIPL) found in M. Abaya.

4.2.3 Why Current Latrine is built?

Most of the respondents (60%) in M. Abaya stated that they built the current latrine because the previous latrine was full up, while only 19% reported the same in Alaba. This may indicate that there was a better experience and appreciation of use of latrines in M. Abaya than in Alaba. However, the majority (61.2%) in Alaba gave improving the health of their family as the reason for building a latrine,

while only 34.9% in M. Abaya gave a similar reason. This may indicate that people in Alaba received recently new knowledge about sanitation.

4.2.4 Frequency of latrine construction: Is the current latrine your first one?

For most respondents (75%) in Alaba, the current latrine was the first ever latrine, while 22% reported that it was their second latrine. Only 3% noted that it was their third latrine that they had constructed. In M. Abaya the history was quite different as shown in Table 4.1 (below).

The main reason attributed for the building of the new one was mostly because the old one got filled up in M. Abaya (59.6%), while only 19% said so in Alaba. The majority (61.2%) in Alaba reported that the main reason they constructed a latrine was to improve family's health, while approximately 13% noted 'keeping cleanliness of the area' as key. On the hand, 35% and 2.2% in M. Abaya gave similar reasons respectively. For those who built for the second time or more, 9.7% in Alaba noted that the older one got flooded, while 2.5% gave a similar reason in M. Abaya.

Table 4.1: Number of times households (n=329) in Alaba and M. Abaya built new latrines, Oct 2000

	Mirab Abaya (n=190)	**Alaba (n=139)**
First latrine ever	14% (27)	75% (104)
Second latrine	27% (51)	22% (31)
Third latrine	26% (49)	3% (4)
Fourth or more	33% (62)	0% (0)

4.2.5 Current utilization of latrines

The use of latrines was assessed by asking questions of past use, using indirect measurement of history of recalling use during the last day i.e. 'yesterday'. The respondents who had latrines, in both Mirab Abaya and Alaba, reported 100% use, except 2 respondents (one in each woreda). All family members, i.e. mothers, fathers, young girls and boys, used the latrine facilities. There was less use reported by elders/grandparents in both woredas. Comparison in different categories using crude bi-variate analysis showed a statistically significant difference among the practice of fathers in the two woredas: The odds of utilizing latrines fathers in Alaba was found more than two folds greater than that in M. Abaya at $P<0.02$, OR(95% C.I)=2.17(1.15, 4.17)

4.2.6 Type of construction and material used

From qualitative results, it was understood that individuals who got the chance of getting prefabricated concrete slabs used it in construction.

The quantitative survey asked respondents about the construction and materials used for their latrine. These are the results: wood was used for floors (77.5%), walls (89.3) and roofs (31.8%). Only 7.2% of the latrine floors were made of cement or were prefabricated slabs. About 18.7% of the roofs and 16% of the walls (all in M Abaya) were made of banana leaves. (Refer to Table A.4 – Appendix 3. to allow comparison between results of similar variables using different data collection methods).

The mean depth of pit of the latrines was 4.8m with a range of 1–20m. The mean depth of hand dug wells was 10.8m ranging from 1–60m. The distance (horizontal) of hand dug wells (n=17) from latrines was on average 23m; R [5,60]m.

4.2.7 Need for skilled masons/carpenters

Most discussants indicated that there is no need for skilled masons to help them in constructing latrines. Only those economically better off may call for carpenters to build the superstructure. People construct their own latrines based on the instructions given by the CHP. Actually, CHP requested technical support as to how to determine the size of the latrine pit in terms of depth and width.

4.2.8 Most accepted type of latrine

The most accepted and commonly used type of latrine was reported to be TPL without concrete slab (90.3%) followed by VIPL (9.3%) in both M. Abaya and Alaba. The main reasons for choosing this TPL were affordability of the cost (50%), simple and easy to clean (28%), and low operations and maintenance (O&M) cost (15%). The reason for choosing VIPL as their preferred latrine by some households might be due to their intention to upgrade their present latrine; however there are hardly VIPL examples around.

The community members who dug the pit in circular shape gave as reason the loose structure of the soil. Circular shaped pits remain longer intact as compared to those with a rectangular shape. The shape of the superstructure is made like a 'gottera'– a structure used to store grains.

4.2.9 Problems encountered during construction and use of latrines

Main problems in Alaba were: (i) termites and mites that eat the wood; termite-resistant wood like 'girar' and 'woyira' was not readily available in the woreda; and (ii) problem of flooding of pit, while waiting for slab materials, and (iii) collapsing of pits due to loose soil formation.

In Mirab Abaya the main problems were: (i) flooding poses a serious problem when a high intensity rain falls in the highland areas during the rainy season, though it is not a problem for all households; pits become filled with floodwater; (ii) pits caving in due to loom soil type; female discussants in FGD pointed out that the caving-in of pits is the first and major challenge. For both problem areas people may abandon their latrine and either rehabilitate them or construct a new one.

Older female discussants raised the problem of foul smell and fly larvae breeding when the pit has a shallow depth. Older male discussants indicated that women without a husband or son and elderly people fail to build latrines for obvious reasons. CHP mobilized the local people to help elderly and economically weak individuals to build latrines.

4.2.10 Remedies undertaken to overcome problems

In Alaba, some people confronted with the termite problem, used stones to avoid contact of wood. To decrease foul smell, people used to sprinkle ashes after use over the hole. In Mirab Abaya, discussants suggested that people should go elsewhere to find better place as a solution to the problem of flooding. They also suggested that the Government, educated people and the organizations like RiPPLE could be approached for finding solutions to the problems they are facing.

4.2.11 Practice of latrine use or non-use for defecation and urination

Good practice of latrine use was reported among mothers in M. Abaya (86.5%), and Alaba (85%). More than two-third of fathers and school age children used latrines consistently in both woredas, though only 8.8% and 6.4% of the grand parents used in M. Abaya and Alaba respectively.

The use of latrines was explained in Alaba by a female CHP as follows:

> *'People use their own latrine. Nobody uses his or her neighbours' latrine. People don't use latrines for urination. Especially, women urinate around the house, not in the latrine….'*

A key informant in Mirab Abaya explained the practice as:

> *'Though the type of latrine is not upgraded, we see that people are using it. Farmers may use open field defecation… But, for urine, they urinate everywhere* [no specific place]*'*.

4.2.12 Use of latrine during night time

Children do not use latrines during night times. They fear the risk of hyenas that may be hiding in the bush near the house; so children do not get out of home during the night.

For women, as the latrine is nearer than finding a sanitation place some distance away, they use the latrine during the night.

Some people used 'Popo' (waste receptacle). They disposed the content in the morning into the latrine.

Some used open fields by tradition instead of using latrines. Even then, since the open field space is far and the latrine is near to their house they use the latrine.

4.2.13 Cultural barrier, social pressure and privacy

In Alaba, the traditional culture does not allow a woman to see her in-laws for some time after her wedding. They also fear to use the same latrine as their in-laws are in their nearby presence.

A woman said to a HEW (as reported by the HEW):

> *'I won't use the latrine again as I faced my father-in-law when he intends to use it while I was there using it. Rather I would construct a new latrine for my own.'*

Gradually there is a culture of using latrines being developed. As a result, defecating in the open is becoming a shame.

A key informant explained the situation as:

> *'…Even the culture develops into not allowing people to defecate in open field, urinating near the house is yet a habit by some people.'*

The use of old sacks to reduce visibility was seen in both woredas as a means to create privacy. But it is clear that most present super-structures are liable to view the user from a distance unless it is early morning or during night times.

4.2.14 Satisfaction of use of sanitary facilities

A CHP in Alaba said that people are very happy with the use of latrines. They are also practising better environmental sanitation by collection, combustion, and composting of household refuse.

A female discussant from rural kebele in Alaba stated;

> *'We are very happy since we started using latrines. The environment is kept hygienic because of its presence and use. The backyard and the surrounding are now beautiful. Before, children's stool was disposed openly here and there. Flies bred on it and I think diseases were also transmitted through it. But nowadays it is nice.'*

4.2.15 Willingness to Pay

When assessed whether people can afford and are willing to pay for slabs, people responded that they need them. But, it is only after the harvest that they can afford. A female discussant (CHP) indicated that the people would accept to buy slabs if the chairperson of the kebele would suggest it.

4.2.16 Law Enforcement to non-compliance

Fines, banning from social services like 'Edir' and even to the extent of arresting the non-compliant head of the household were identified as the main sorts of punishments.

The story of enforcement in a kebele in Mirab Abaya was clarified by a CHP discussant who noted that;

> *'Initially, it (the penalty) was said to be good, but after the concept of 'Good Governance' has come, penalties became less common as a punishment for those who refused to comply. People used to comply in fear of the penalty. But, now because of 'Good Governance', they (the Kebele) say we will keep justice right.'*

4.2.17 Role of women in the construction of latrines

The survey concluded that two-third of the current latrines (66.7%) were mainly built by fathers, followed by labourer (18%) and sons (11.3%). Mothers were not really latrine constructors (3%), even in collaboration with the father.

Qualitative results indicate that in M. Abaya building latrines is mainly the responsibility of men, and heads of household. Women used to help in constructing the superstructure, putting banana leaves or savannah grasses. However, in Alaba women were very involved in the construction of latrines by removing the soil dug out by the men, by bringing stones, arranging them on the logs for the floor, plastering the floor and wall with mud.

In both woredas, the situation of women-headed households or widowed women is similar: they used to hire labour or seek help from their relatives or neighbours to dig the pit, and bought logs and built the latrine, with the help of their children.

4.2.18 Factors pushing-up or pulling-down households and their Future plan/intention on the Sanitation Ladder

Lack of logs to construct good floors was the main hindering factor. Other problem factors were foul smell, breeding of fly larvae, termites; overflowing of latrine due to flooding and high ground water table.

People fell off the 'sanitation ladder' when their latrine got flooded and destroyed, or when filled up. A KI indicated that households could wait until after the rainy reason to construct a new latrine. According to the quantitative data, 10% of households that had a latrine in Alaba temporarily resorted to open defecation.

The involvement of the Woreda Council 'Cabin' (heads of different sector offices in the woreda) in giving advice and teaching the community has brought a positive effect on pushing up sanitation in the households.

CHP and KI explained the extent of sanitation improvement by noting that;

> *A household head do not allow for others (neighbours) to use his latrine. …. If someone uses open field defecation, the community thinks that he/she pollutes the environment*

In the qualitative study many discussants expressed their will to construct a better latrine if the government or other organization would help them in accessing slabs.

4.3 Water Storage and Handling

According to the survey the major sources for drinking were piped-water vendors (called Bonos) in M. Abaya (90%) and in Alaba (74%). In Alaba other sources were rivers (19.4%) and rainwater harvesting (6.3%). The average water consumption in the study kebeles was 7.6 litres per person per day in M. Abaya and 7.2 litres per capita per day in Alaba.

All, except one household in Alaba, used jerry cans to transport water from source to home, while varying types of containers were used to store water at home. The reasons for using jerry cans were mainly comfort to carry (65%), less risk for contamination (24.4%), and water '*stays longer*' than in clay pots (9.6%). People indicated that in the past they used clay pots, especially to keep water cool.

Pouring water for drinking from the storage container was the most common (76.4%) practice in drawing water although dipping cup was also often practised. Most (58%) people put the dipper/cup on a clean rack or table after use, many hang it over a stick or on the wall (33%) while about 9% put it just anywhere.

In contrast to the survey results, qualitative results in M. Abaya indicated that water in the house was stored mostly in clay pots. People said that due to hot weather condition they want to cool the water, and also to get a better taste as the water is salty.

Most people use dipping, although pouring from jerry cans was also practised in some households. In some households living 'near the main (asphalt) road' (perhaps perceived to be better-offs or have greater awareness), the dippers are put on racks or shelves.

4.4 Hand washing and hand washing facility

4.4.1 Hand washing practice

When asked in the survey the critical times of them washing hands, about 56% of the interviewees in M. Abaya and 50% in Alaba indicated that they wash their hands after visiting the latrine. A crude bi-variate analysis shows that the practice of hand washing when asked 'Did you wash your hands this morning?' among respondents in M.Abaya seemed about 3 times more likely than those in Alaba (See Appendix 3: Table 4.2). Nevertheless, a chi-square test of the critical times that they wash their hands was revealed that there was no statistically significant difference in the practice at critical times between the respondents of two woredas (with d.f 3, chi-square=0.99, and P-value=0.8).

When asked 'Who in the family doesn't usually wash his/her hands after visiting latrine?' about 11% and 12% of respondents indicated that particularly 'young boys' and 'young girls' respectively do not; while the majority (69.9%) of the respondents also indicated that no one in their family does not!

Except two individuals, all respondents replied that they washed their hands that particular morning of the survey day (n=392). Majority of them (73.5%) answered that they did so 'to prevent disease', followed by aesthetic value (18.3%), and as it is a regular practice/ custom (6.2%).

People do not wash their hands, especially after visiting latrines because they don't understand the purpose of doing so (46.8%) and that it has not yet become a habit (7.1%). Where as 27.8% said they don't know why people don't practice.

On the other hand, qualitative results show that hand-washing practice doesn't seem well grounded; apparently many people do not wash their hands immediately after latrine use. The text box below gives some statements from FGDs and KIs.

A CHP describes his experience in his area as:

> *'There was no habit of washing hands in my village. After we educated them, they started practising hand washing. Still many people do not understand the purpose of hand washing. They are on the learning curve now.'*

Another CHP in Alaba explained their efforts and effects as:

> *'Despite our teachings, many people do not often wash their hands.'*

Almost all (98.1%) respondents reported hand washing after visiting latrine The majority of interviewees reported the use of a 'detergent/abrasive' during hand washing (85%). This result was different when asked times of hand washing. Only 64.4% respondent that they wash hands after visiting the latrine. There is also a statistically significant difference between this practice of the two woredas at $p< 0.001$; OR [95%CI]=2.8[1.8, 4.3]. This shows that people in M Abaya are 3 times more likely to wash their hands after visiting latrines than those in Alaba. (Refer Appendix 3: Table 4.2).

Most of the people interviewed used water and soap (80%), while some of them reported the use of ash with water (22%), and only water (13%); but only very few respondents reported the use of sand or soil with water for hand washing. The main reason mentioned by some of the respondents for not using detergents was lack of enough money to buy soap (12%).

A key informant in Mirab Abaya explained the affordability of detergent and behaviour of hand washing as:

> *'They don't use soap… using ash as a detergent is a new adoption of technology.'*

A female in Omo Lante, Mirab Abaya supported the above idea saying,

> *'… educated people may use detergents…'*

The perceived adequacy of water for drinking as well as for washing and cooking purposes was assessed. Almost all respondents said 'No' (= not enough) for drinking in both woredas, where as majority of them said 'Yes' (= enough) in M. Abaya and 'No' in Alaba for washing and cooking purposes.

4.4.2 Availability of hand washing facility and its usage

In M. Abaya 84.3% of the respondents said they had a hand washing facility, while in Alaba the proportion was 81.5%. The main reasons mentioned for not having hand-washing facility were lack of awareness (47%) followed by financial problems (32%).

Most of the available washing facilities were inside the house (64%), while only a few were located outside the house (10%) and near the latrine (6%).

Qualitative methods indicated that in both woredas it is common practice to use a plastic 'Highland' bottled water containers as hand washing device. People usually pierce a hole near the bottom with needle/nail. They plug it to close and unplug it to get water.

Differing views relating to the availability of appropriate HWF were expressed. For instance, a CHP in Alaba explained the availability of HWF as:

> *'We all have latrines but hand-washing facilities are rarely found in the area.'*

A female respondent in Wojifo, Mirab Abaya also remarked that;

> *'You don't find 50 HWFs out of a thousand households. (WT: seems a nice guess!). We don't have separated HWFs for latrines and for other activities of the household…'*

The types of container used for hand washing were mostly jugs (80%), followed by steel kettles (8%), and oil cans/water bottles (7%).

Half of the households (50%) encounter no problems with their HWFs, while some indicated lack of soap (22%), lack of clean water (17%), lack of direct water connection system (13%), misplacement of the facility (10%), and lack of appropriate local HWF (9%). The qualitative information from FGDs gave some further explanation on HWF use.

Females in Wojifo, Mirab Abaya stressed lack of habits of hand washing near the latrine as:

> *'We do wash our hands after we get into the house. We don't know such thing (as washing hands near the latrine)'.*

A male respondent in Mole kebele, Mirab Abaya said:

> *'…use of ash is not well accustomed but few people who do have lemon use it.'*

5 Conclusions and recommendations

- A drastic change was observed in latrine construction during the last 2–3 years in both woredas. Half of the *ever constructed* latrines were built during the last three years (i.e. 2005G.C./1998 E.C.) While more than 57% of the *current* latrines were built in 1999 E.C (2006-7);
- The coverage in Mirab Abaya increased from about 16% in 1995 E.C. to 95% in 2000 E.C., and in Alaba from about 10% in 1995 to 69% in 2000.
- Post–1996 (EC) policy of the BoH in SNNPR was successful in raising the awareness of people about S&H; and particularly in increasing the number of household latrines. The HEW and voluntary CHP were effective change agents and information sources along with kebele council in general;
- The higher coverage of latrines in Mirab Abaya (95%) as compared to that of Alaba (69%) might be due to the fact that the families in the first woreda are more literate than in the later, as evidenced by a statistically significant difference ($P<0.001$) in the educational level of both respondents and their spouses between the two woredas;
- The drop off in latrine possession was also assessed. In Alaba the percentage of those who had built a latrine once, but do not have one any more (i.e. 'Ever had a latrine' minus currently possessing a latrine) was 7.4% (n=192) (that is 10% of those who constructed ever a latrine); in M. Abaya this percentage was 2.9% (n=204) (that is only 3% drop off);
- The actual condition/quality of latrines was very poor in both woredas. 18.1% of the latrines (n=360) had properly constructed floor (made of earth, sealed, flat), and only 16.1% had concrete slab/ Sanplat. Only 11% of those latrines provide privacy. The majority of the TPLs had roofs and walls made of grass/thatched, banana leaves, or wood, materials that can easily perish in the prevailing weather conditions. Lack of privacy may lead individuals to using other options like open defecation. Therefore, only very few latrines (3%) could fulfil the definition of sanitation[1]. A similar study[6] conducted in the region in 2005 reported an over all 50% of the HHs had proper latrine in thee districts;
- Widowed women and elderly people were found the most vulnerable groups of the communities, which do not have latrines. Hence, special consideration of 'subsidy' is important, along with strengthening the existing collaboration of their neighbours;
- Women participate considerably in the construction of latrines in different forms, but the main responsibility lies with the men household heads, especially for laborious activities like digging pits. But the preparation of hand washing facility lies mostly with women. Flooding poses a serious problem in both woredas, especially in M. Abaya. As a result some households may slip-back on the sanitation ladder by abandoning their latrine forever or for some time at least until the rain season has passed. Hence, households need solutions like diversion ditch construction around the pit latrine, and in some cases relocation of it. Technical support is also needed as – in some locations – the soil nature is so fragile that pits may cave in while

[6] Ethiopian Kalehiwot Church. Baseline Survey Report on Hygiene and Sanitation Practices of Communities in Goffa, Kucha, and Zalla Districts in SNNPRS, Ethiopia. Aug 2005.

digging. In such cases, circular shape and narrow holes are possible technical solutions. In M. Abaya, due to high groundwater table (up to 6m), faeces contaminate the ground water;

- The problem of termites in Alaba needs considerable attention. The use of locally available wood species that is not affected by termites, or use of wood treated with insecticides or burned oil and avoiding contact of wood with soil using stones, are local knowledge and wisdom to be generally applied;
- Lack of materials/ appropriate technologies for floors was a major problem of latrines in both woredas. Prefabricated slabs distributed free-of-charge were found as a factor of promoting as well as hindering sanitation; in some cases pits get flooded while waiting for the free concrete slabs, this shows the problem of dependency. The BoH 'no hardware subsidy' policy is acceptable in principle. But, promotion of better technologies is important. The issue here is: how can we address the existing technical problems and harmonize the different approaches effectively? Plan Ethiopia in Shebedino Woreda, SNNPR, is exemplary. Local youth trained to produce concrete slabs were organized in a form of union, and got micro financing to produce the slabs and sell them to local people in a social marketing approach (demand-driven). This approach will strengthen the public-private partnership on S&H issues;
- As almost all latrines are TPL and to avoid foul smell and fly breeding, squat-holes should be covered; ash be used;
- The culture of latrine use is being developed despite some cultural influences on women in Alaba that is fear of in-laws. Such influences need social discussions along with prevention of other harmful traditional practices. Urination in open field is not yet considered as a shame and harmful to their health by the community members. It needs continuous health education to curve this problem;
- The apparent lower use of latrines among elders/grand parents might be due to the lower population of this age group in the communities as compared to others like fathers and mothers. This elder age people are less receptive to new innovations than younger age groups. Elders, as they are gatekeepers in most traditional societies, need to be communicated and convinced to use latrines so that they can also advise others to build their own latrines. The better use of S&H facilities by youth could be due to the influence of schools. School curriculum should be revitalized to maximize the benefits on behavioural change of young children and their parents;
- Despite the relatively long history of latrine use in M. Abaya as compared to Alaba, fathers in Alaba were found to be twice more likely to use latrines than fathers in M. Abaya. This might show that fathers in M. Abaya made use of latrines as their tradition/ custom; where as fathers in Alaba had better recent exposure to knowledge about sanitation. The other reason might be fathers will go to the field for agricultural activities during the day, and might use open defecation. In some FGD, there was such evidence as they think it is used as natural fertilizer for the soil. Further study is needed to identify which groups of the population are not using latrines and the reasons why;
- Water consumption rate in both woredas was similarly very low (7 l/c/d) indicating scarcity of water. The use of unprotected hand-dug wells in Mirab Abaya and rivers and ponds in Alaba poses a potential health risk leading to water-borne and water–washed diseases. Some latrines were located very close to hand-dug wells, up to 5m distance. Water was mostly transported with jerry

can but needs safe handling at home. Drinking water storage was usually not covered, and when dippers or jugs used they were placed just anywhere. Water handling and storage practice was also liable to contamination as most people use pouring water from cans but also use the dipping practice when abstracting water. The use of narrow necked containers and placing cups over a stick or on racks was promoted. Such practices need to be further promoted to others widely;

- The availability and usage of HWF was reportedly very high (>80%). About three-fourth of them knew the objective of hand washing. But, the actual hand washing behaviour and practice of using proper HWF was not so impressive. Most hand washing facilities are in the house, not near to the latrine. The problem might be due to prevailing culture of washing hands before eating meals and food preparation. The qualitative results also substantiate the poor habit of washing hands after visiting latrines and non use of soaps while washing hands is a common practice. The main reasons for not washing hands were lack of in-depth knowledge and resistance to change in behaviour. Reasons for not using detergents were lack of money to buy soap and not knowing the purpose of soap. This calls for an intensive health education program to change behaviour of people on hand washing;
- Collective behavioural change using some triggering factors like 'shame' seemed more influential than merely focusing on individual behavioural change. Therefore, collective behavioural change should be focused along with individual behavioural change communication;
- CHP lack training as there was deficit of knowledge on technical issues of S&H. So, they need refresher trainings in the area of technical issues like shape and volume of pits based on family size and desired years of service, possibility of ground water and soil pollution, use of squat-hole covers for TPL and vent-pipes for VIPL, fly control techniques, diversion ditches, location of latrine with respect to dwelling and prevailing wind direction; location of latrines with respect to hand dug wells etc including how diseases are transmitted (faeco-oral route of transmission) and health benefits of hand washing in reducing child diarrhoea and mortality;
- In conclusion, SNNPR BoH post-1996 E.C policy on S&H was very successful on increasing latrine coverage, and could be replicable to other regions in Ethiopia and beyond. However to achieve sustainable Sanitation & Hygiene conditions and behaviours, some areas need attention, including latrine technology options and construction materials, siting of latrine, hand-washing facilities, hand washing with soap, and safe water handling.

Long-term Action Research directions for future

- **Locally viable technology** to alleviate the problem of slab, and other problems (S&H); and new promising and affordable technologies addressing problems. Is provision of free slabs by INGOs a feasible, replicable solution?
- To **Produce, Test and Implement: Key messages** of hygiene behaviour communication for households on hand washing; approaches to increase behavioural change, e.g. involvement politicians, CHP, HEW, social pressure, schools-students can influence/positively reinforce their families on S&H;
- **Revitalize school curriculum** on appropriate syllabus on S&H at different school grades so as to cultivate the young generation on leading healthy life style;

- Introducing **water treatment skills** at household level to alleviate the problem of safe water; safe water storage technologies and drawing methods;
- Study **which groups** of the community are **not using S&H facilities**, and answer the question 'Why?'
- How to strengthening the existing system by **supportive supervision** and **Monitoring and Evaluation** (M&E) – community-based monitoring; ownership creation;
- Involve Private Organizations to innovate S&H technologies and social marketing: Strengthen the link between the **Public-Private Partnership**; e.g. Engineering aspect, chemical industries/factories produce user friendly/affordable detergents for hand washing, motivate local entrepreneurs to participate in solving community S&H problems, etc;
- Design **Training Manuals** and provide **New/Refresher Courses** for HEW and CHP to build their capacity at different levels in order to **properly guide** the community on S&H and strengthen Health Management Information Systems (HMIS) for better M&E;
- Community-Led Total Sanitation practices (CLTS) for Ethiopia: Experiences, Implications, and Future Prospect to Scale Up S&H.

6 References

Alaba Woreda Agricultural and Rural Development Office (2008). Secondary source of Data

Alaba Woreda Health Office (2007) Secondary source of data.

Ethiopian Kalehiwot Church (2005) *Baseline Survey Report on Hygiene and Sanitation Practices of Communities in Goffa, Kucha, and Zalla Districts in SNNPR*, Ethiopia. August 2005.

Evans, B. (2005), *Securing Sanitation: The Compelling Case to Address the Crisis*. Stockholm International Water Institute in collaboration with WHO.

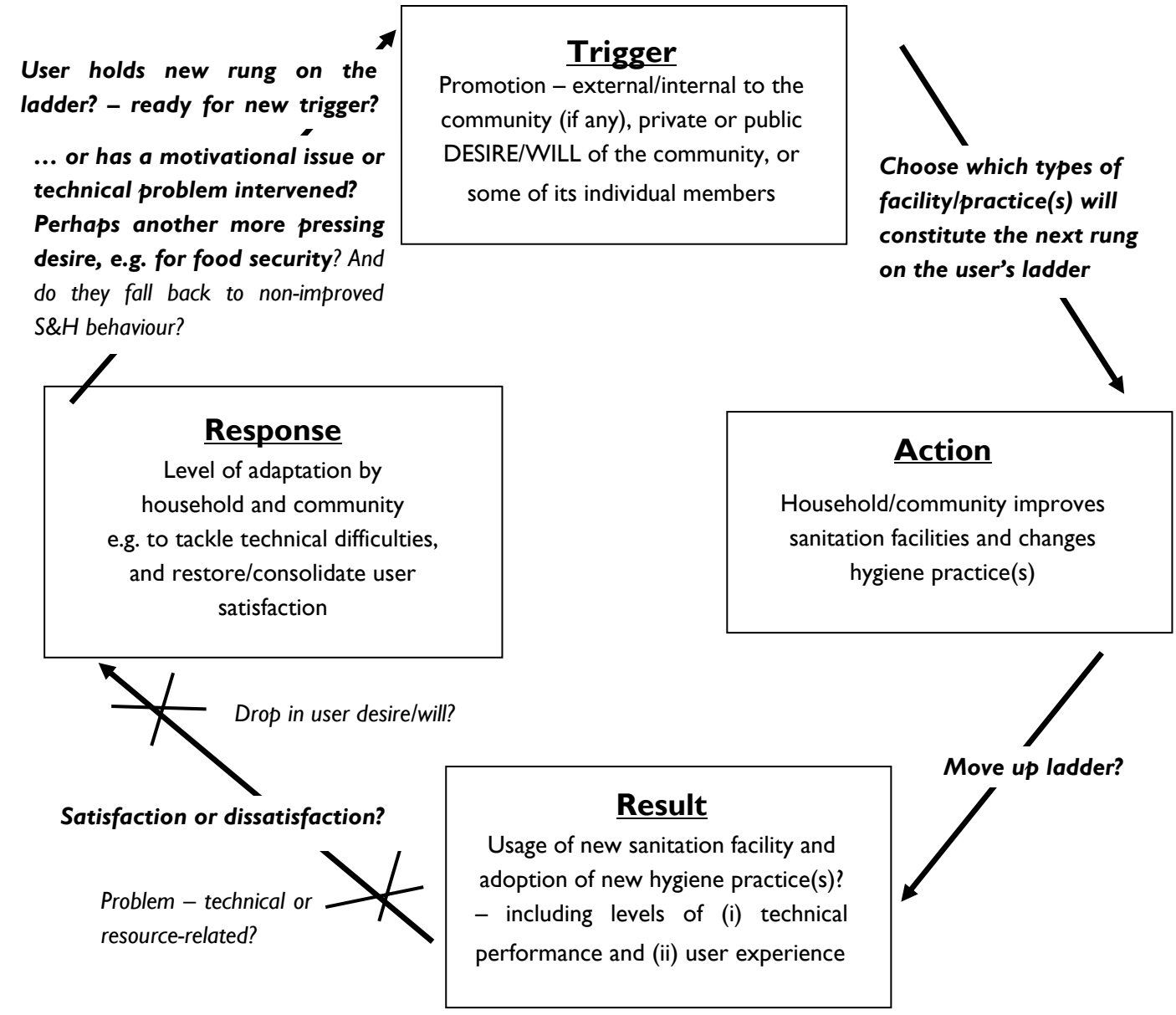
Newborne, P. and Welle, K. (2005) 'Sanitation and Hygiene: Knocking on new doors'. *ODI Briefing Paper No. 13*; December 2006.

WSP, SNNPR BoH (2007) 'From Burdon to Communal Responsibility: A Sanitation Success Story from Southern Region in Ethiopia.' Field Note. *Sanitation and Hygiene Series*.

Appendix 1: Evolving motivation diagram

Maintaining Motivation, Sustaining Technology

- How/why does the user choose to move up her/his Sanitation & Hygiene Ladder?
- Or allow her/himself to slip back down?



How does the motivation of households and communities for S&H evolve?

How does technology perform/adapt? When is external support needed, and of what kind?

How/when do other motivations for other things intervene?)

Appendix 2: Sample Size Determination and data collection

Sample size determination options for quantitative survey:

Single population sample size determination formulae ($n=Z_{1-\alpha}^2 P(1-P)/d^2$) was used with the following assumptions: 95% CI; 5% margin of error(d); Standard (Z-) score of 1.96; and with 85% coverage of sanitation(P=0.85) in SNNPR.

Options	Statistical assumptions			Sample Size Determined
	Proportion (P) of sanitation coverage[2]	Confidence Interval	Degree of Precision-d	
Sample 1	85%	95%	5%	196 (selected)*
Sample 2	78%	95%	5%	264
Sample 3	88%	95%	5%	162

*Each RiPPLE selected woreda had 196 households sample size.

396 HHs were selected for quantitative survey for both woredas (204, M. Abaya & 192, Alaba)

The qualitative survey was conducted as follows

Method of data collection	Data collector/s	Groups of Discussants/ Interviewees	Group Size	Sample size
FGD	2 EH students + PI*	CHPs, Men and Women (both sexes separately categorized)	6–8 people per group	CHP (4FGDs), men (4FGDs)& women (4FGDs)
KI interview	PI	HEWs, CHAs (as delegated by HEWs and working in Health Posts in Omo Lante and Hologeba Kukie)	One individual interviewed in-depth at a time.	HEW (2 KIs)& CHAs (2 KIs)
Observation	Local people were used to observe the hygiene behaviour in the households	Focus: Household latrine, hand washing facility; drinking water storage, utilization of latrine & hand washing facilities		76 HHs were selected one in five sampled households in the two woredas

*PI= Principal Investigator

Hygiene Behaviour Observation Inventory Results

A total of 78 randomly selected households, which possess latrine were selected and observed for a day by local observers.

Distribution of HHs Observed from 6 Kebeles in Alaba and M. Abaya, August 2007.

Study Kebeles	No. of Households	Percent
Hologeba Kuke	17	22.4
Omo Lante	13	17.1
Molle	11	14.5
Hamata	11	14.5
Galeto	10	13.2
Wojifo	14	18.4
Total	76	100.0

Appendix 3: Quantitative results tabulated as follows to give more information.

Table A3.1 Socio-demographic characteristics of residents in Mirab Abaya and Alaba Special Woredas, SNNPR, Oct 2007

Characteristics	Mirab Abaya	Alaba	Total	
			No	%
Sex (n=388)				
Male	82	87	169	43.6
Female	117	102	219	56.4
	199	**189**		
Education (n=395)				
Illiterate (Can't read & write)	78	132	210	53.2
Literate (able read & write)	10	11	21	5.3
Grade 1–4	37	32	69	17.5
Grade 5–8	60	11	71	17.9
Grade 9–10	10	3	13	3.3
Grade 11/10+1	1	1	2	0.5
Grade 12/10+2	6	1	7	1.8
College/university	2	0	2	0.5
	204	**181**		
Occupation (n=390)				
Farmer	111	120	231	59.2
Housewife	75	64	139	35.6
Student	5	0	5	1.3
Merchant	10	5	15	3.8
Religion (n=391)				
Orthodox Christian	43	5	48	12.3
Protestant	145	0	145	37.1
Catholic	5	0	5	1.3
Muslim	7	186	193	49.4
	200	**191**		
Ethnicity (n=392)				
Alaba	9	186	195	49.7
Gamo	93	0	93	23.7
Wolayta	87	0	87	22.2
Gofa	8	2	10	2.6
Amhara	3	2	5	1.3
Oromo	2	0	2	0.5
	202	**190**	**392**	
Marital Status (n=395)				
Married (Cohabited)	177	173	350	88.6
Separated	2	0	2	0.5
Divorced	6	0	6	1.5
Widowed	15	17	32	8.1
Single	4	1	5	

Characteristics	M Abaya	Alaba	Total	
	No	No	No	%
Family size (n=393)				
1–3	18	24	42	*10.7*
4–6	66	78	144	*36.6*
7–9	86	67	153	*38.9*
10–12	27	14	41	*10.4*
13+	7	6	13	*3.3*
Do you have children? (n=394)				
Yes	195	182	377	*95.7*
No	9	8	17	*4.3*
No of Children (n=378)				
1–3	70	79	149	*39.4*
4 –6	82	70	152	*40.2*
7–9	37	29	66	*17.5*
10+	6	5	11	*2.9*
Spouse's Education (n=368)				
Illiterate (Can't read & write)	82	128	210	*57.1*
Literate (able read & write)	5	11	16	*4.3*
Grade 1–4	33	27	60	*16.3*
Grade 5–8	51	11	62	*16.8*
Grade 9–10	12	2	14	*3.8*
Grade 11/10+1	3	0	3	*0.80*
Grade 12/10+2	2	1	3	*0.8*
College/university	0	0	0	*0*
Spouse's Occupation (n=368)				
Farmer	99	103	202	*54.9*
Housewife	75	69	144	*39.1*
Student	5	3	8	*2.2*
Merchant	9	5	14	*3.8*

Table A3.2 Hand washing practice at critical times and use of detergent in M Abaya and Alaba woreda, Oct 2007

Variables	Woreda		P–Value	OR (95%CI)
	M Abaya (n=204)	Alaba (n=191)		
Hand Washing Practice ('this morning')	154 *(75.5%)*	100 (52.4)*	0.000	2.8 [1.8,4.3]
Critical Times of HW				
After visiting latrine	114 *(55.9%)*	96 *(50.3%)*		
Before preparing Food	164 *(80.4%)*	150 *(78.5%)*		
Before Eating	138 *(67.6%)*	136 *(71.2%)*		
After Work	58 *(28.4%)*	48 (25.1%)		
Use of Detergent***	(n=175)	(n=158)		
Only water	22*(12.6%)*	22*(13.9%)*		
Water & Soap	150*(87.7%)*	118*(74.7%)***	0.013	2.0[1.2, 3.5]
Water & Ash	21*(12%)*	52*(32.9%)**	0.000	0.28[0.16, 0.49]
Water & Soil	6*(3.4%)*	7*(4.4%)*		
Water & Sand	7*(4%)*	7*(4.4%)*		

Significant difference at * P<0.001;** P<0.02; ***x2=18.06 (df 5), P=0.002;

Table A3.3 S&H survey results of Observation checklist in Mirab Abaya and Alaba Woredas, October 2007

Variables	M. Abaya n=194 No (%)	Alaba n= 166 No (%)	Total n=360 No (%)	Pvalue	OR [95%CI]
Properly constructed floor (made of earth; sealed; flat) *	23(11.9%)	42(25.3%)	65(18.1%)	0.001	0.38[0.23,0.69]
Concrete slab/ San-plat	29(14.9%)	29(17.5%)	58(16.1%)		
Wooden slab*	121(62.4%)	58(34.9%)	179(49.7%)	0.000	3.0[2.0,4.7]
Presence of roof	69(35.6%)	34(20.5%)	103(28.6%)		
Properly constructed superstructure/ privacy &Protection from adverse weather	27(13.9%)	14(8.4%)	41(11.4%)		
Presence of cover for drop-hole	11(5.7%)	15(9%)	26(7.2%)		
Presence of door (providing privacy– no look through)	13(6.7%)	4(2.4%)	17(4.7%)		
Presence of wall (providing privacy; no look through) *	63(32.5%)	19(11.4%)	82(22.8%)	0.000	3.7[2.1,6.5]
Presence of proper hand washing facility near the latrine	10(5.2%)	8(4.8%)	18(5%)		
Presence of water in the hand washing facility.	19(9.8%)	12(7.2%)	31(8.6%)		
presence of soap/ash/sand	8(4.1%)	4(2.4%)	12(3.3%)		
Cleanliness of the surrounding of the latrine (no faeces visible within three metres)	62(32%)	50(30.1%)	112(31.1%)		
Presence of route (clear path) to latrine	81(41.8%)	55(33.1%)	136(37.8%)		
presence of smell	86(44.3%)	37(22.3%)	123(34.2%)		
clearly fresh faeces inside	89(45.9%)	66(39.8%)	155(43.1%)		
Whether the water storage container is covered	2(1%)	2(1.2%)	4(1.1%)		

*variable which shown statistically significant difference between M Abaya and Alaba

Table A3.4 Comparison of Methods of Observation with Quantitative survey results with selected variables

Methodology used	Observation done by local people		Quantitative Survey done by HU students/Remarks		
			Interview		Observation (n=360)
Variable	No	%	No	%	
Latrine: utilization					
Utilized	69	93.2			
Not utilized	4	5.4			
Not yet functional	1	1.4			
Roof: Present(n=72)	48	66.7	(n=261)	72.2	28.6
Made of (n=65)					
CSI	1	1.5		8.8	
Thatched	24	36.9		13	
Banana leave/'selen'	22	33.8		18.7	
Bush	-	-		13.8	
wood	-	-		31.8	
Others	18	27.7		9.9	
Wall: made of (n=70)			(n=313)		22.8(Privacy wall)
Banana leave/'selen'	18	25.7		15.7	
Mud/wood	9	12.9		69.3	
others	43	61.4		9.7	
Floor: made of (n=75)			(n=334)		
Firm and strong	54	72	Cement/concrete slab	7.2	16.1
Not firm	12	16	Mud/soil/ earth	13.2	18.1
Have holes	6	8	Wood	77.5	49.7
other	3	4			
No smell (n=74)	34	45.9			66
Cleanliness (n=75)	54	72			31.1
Distance from living (n=74)					
<15m	35	47.3			
15–30m	26	35.1			
>30m	13	17.6			
Location (n=75)					
Within compound	61	81.3			
Out of comp.	12	16			
Very far	2	2.7			
Pathway to toilet clearly seen (n=75)	73	97.3			37.8
Hand Washing F					
Present (n=76)	49	64	(n=392)	82	
Location (n=59)			(n=327)		
Near to the toilet	37	62.7		6	5%
Near to the kitchen	1	1.7		10	outside the house
In the living room	21	35.6		64	
Type of HWF (n=63)			(n=330)		
Tipi-tap	1	1.6		-	
Pot/kettle	29	46		8	Kettle made of steel
Jugs	-	-		80	
Oil can/water bottle	-	-		7	
other	33	52.4			

Appendix 4: Administrative division of SNNPR