

Rapid Assessment of CRS Experience with Arborloos in East Africa

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Cover photo:

Arborloo in Wonji, Ethiopia, built in 2006. *Paul Hebert for CRS.*

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Arborloo & sanitation promotion

The Arborloo is the simplest and least expensive ecological toilet design, consisting of a shallow pit, a slab (preferably concrete), and a simple superstructure. Because it is a closed loop system, the Arborloo is an “ecological toilet” that allows waste to be used as a fertilizer once it is composted. Soil and ash are added to the pit after each use. Once filled, the pit is topped up with good topsoil. A new pit is dug and the slab and superstructure are moved. A fruit or shade tree seedling or vegetable crop is planted in the soil above the composted material in the old pit. Hygiene education and participatory community sanitation promotion and planning go hand in hand with Arborloo construction.

EXECUTIVE SUMMARY

A. Introduction

This rapid assessment reviewed sanitation activities by Catholic Relief Services (CRS) in East Africa, in particular the promotion of the Arborloo – an innovative latrine designed to help achieve sustainable and scalable sanitation improvements in rural Ethiopia, South Sudan, Kenya and Uganda. The assessment explored the factors affecting Arborloo acceptance and sustainability, the scope and approaches for scaling up the latrine in these countries and in Tanzania, as well as opportunities to foster links between community and school sanitation.

A team of one international and two national consultants, one from Kenya and one from Ethiopia, carried out the rapid assessment from 22 November to 5 December 2009. Six CRS project sites were visited in Ethiopia, one in South Sudan, and two each in Uganda and Kenya. The consultants gathered data through key informant interviews with CRS and partner staff, local government officials, community leaders and students, focus group discussions with community members in project areas, and 45 household interviews. CRS country programs also provided project data and estimates of requirements and areas for potential scale up.

B. Major Findings

I. Arborloo implementation

From 2005 to 2009 in Ethiopia, 53,840 households in 7 regions installed Arborloos with the help of CRS and partners. CRS country programs in South Sudan, Kenya and Uganda in 2008 and 2009 implemented pilot projects in which the Arborloo was introduced, but where larger scale implementation has yet to be undertaken. In Ethiopia, the large number of Arborloos constructed by households from 2005 to 2009 was nearly ten times the number of conventional latrines built between 1995 and 2004, which were found to be more costly and difficult for households to construct. CRS considers this expansion to be a major breakthrough with the potential for significant scale up.

2. Factors affecting Arborloo acceptance and sustainability

Understanding the link between good health and the use of a toilet was the main reason households gave for wanting improved sanitation in their communities. Other important factors influencing households to adopt and

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sustain the use of the Arborloo were: simplicity and ease of construction, low cost, potential for fruit or other crop production from the compost pit, as well as privacy, dignity and convenience.

Households reported that improved knowledge about proper sanitation came mainly from CRS and partners through Participatory Hygiene and Sanitation Transformation (PHAST) training. The assessment found that Arborloo availability has allowed this understanding to be translated into actual sanitation improvement at the household and community level. These findings were consistent in all four assessment countries. In Ethiopia, villagers, CRS partner staff and health officials state that villages with full Arborloo coverage have escaped outbreaks of acute watery diarrhea and villagers interviewed claim that they have significantly reduced incidences of diarrhea, particularly among children, since having their Arborloos.

The assessment found six other important factors at the program level influencing Arborloo acceptance and sustainable use in communities, which impact the potential for scale up:

- a. Arborloo and PHAST training:** Where training for CRS staff partners, community health workers and local government officials was robust, understanding of sanitation and the Arborloo and the support garnered has been strong and this has been transferred to the village level. In such cases, 100% or near 100% coverage with Arborloos in project villages has been achieved.
- b. Access to inexpensive, durable concrete slabs:** CRS, partners and government officials reported that slabs made of local materials were not sanitary or durable and they strongly supported continuing to provide households with concrete Arborloo slabs. CRS staff in Ethiopia and South Sudan and local government officials in Ethiopia stated strongly that decentralizing slab production should be encouraged and privatization should be explored. The assessment also found that some households were willing to pay for the slabs.
- c. Model families:** Selecting model families to demonstrate Arborloo use and achieving a small but critical mass of users in a community are important for quick acceptance of the Arborloo concept. There was little or no take-off of the technology where Arborloos were few in number and spread over a large geographic area.
- d. Exchange visits:** Seeing is believing! In Ethiopia, visits by partners, government and community leaders to Arborloo sites have had a positive impact on the latrine's acceptance in new communities.

- e. **Access to tree seedlings:** An important element for Arborloo sustainability is ensured access to tree seedlings, both for filled pits and to serve as a control, as new families learn about the fertilization advantages of the Arborloo. While CRS usually provides the first seedlings, the assessment found there was inadequate or no planning for future access to seedlings and this was a concern expressed at the household level.
- f. **Government policy and support:** In Ethiopia, where CRS staff liaised with the local authorities at early stages of project development, government health bureau staff, agricultural staff and health extension workers have been enthusiastic Arborloo supporters and promoters. The federal governments of Ethiopia, Kenya and Uganda have recognized ecological sanitation as an accepted option within their policy frameworks, but this does not always trickle down to the local level.

3. Household issues and needs

During interviews and focus group discussions, all households interviewed indicated their general satisfaction with the Arborloo as their sanitation technology and said they planned to continue using it. However, individuals noted the following needs for further support, providing insight into their concerns: (1) more hygiene training, (2) agriculture production and manure use training, (3) information on how to use urine as a fertilizer, (4) support for bio-gas production from their Arborloos, (5) credit if they were to have to purchase their slabs, (6) more slabs for households without Arborloos, (7) formation of district or sub-district sanitation committees, (8) better school toilets for girls, (9) handles on slabs, (10) easier access to seedlings, (11) help in establishing local seedling nurseries, (12) water supply for seedlings, (13) help to market their fruit produced on the Arborloo pits, (14) training as artisans to produce slabs, and (15) tools for digging pits.

4. Gender

The assessment found that women seem to be the driving force to improve sanitation for their own privacy and to improve household health, while men are usually the impetus in taking advantage of the agricultural productive capacity of the Arborloo. Women-headed households in Ethiopia (7 of 45 households surveyed) indicated that they were able to dig the Arborloo pit themselves, build the superstructure and move the slab once the pit was filled. This finding was substantiated in focus group discussions and key informant interviews, where it was also revealed that elderly and handicapped people were also able in most cases to dig the pits, place the slabs and move them.

5. Religion

CRS' experience in Ethiopia and this assessment suggest that the religious affiliation of households and communities does not have an important impact on whether or not they are willing to accept, use and sustain the Arborloo. The fact that 40,000 of the 54,000 Arborloos constructed so far in Ethiopia are used by Muslim households attests that Muslim communities have found the Arborloo acceptable. Hygiene education and understanding of sanitation and the Arborloo seem to be the keys to acceptance of the Arborloo among Muslims and Christians alike. Nearly half of the households interviewed in the four countries were Muslim and all had decided that the Arborloo was acceptable as a toilet, even though they might have different views on growing a tree on the pit.

6. Linkage between community and school sanitation

The findings strongly suggest that schools could play a key role in educating about sanitation and demonstrating the Arborloo for the benefit of surrounding communities. The assessment revealed strong support from school administrators, teachers, students and health officials to develop linkages between schools and communities for sanitation improvements.

7. Cost of Arborloos and promotion

The investment costs of sanitation programs using the Arborloo appear to be fairly consistent throughout East Africa. With the exception of Ethiopia, CRS does not have enough experience to know precisely the costs of promoting and providing Arborloos, since the programs in South Sudan, Kenya and Uganda have been implemented only on a small pilot scale. However, CRS country programs reported the following costs per household for Arborloos based on their best estimates (includes provision of hygiene education, promotion and other training, provision of a concrete Arborloo slab, as well as program staff, support costs and monitoring and evaluation.)

Table 1. CRS Estimated Program Costs per Household for Promoting the Arborloo (in US\$)*

| COUNTRY | SLAB | PROMOTION/ EDUCATION | TOTAL COST |
|---------------|------|-------------------------|------------|
| Ethiopia | 6.60 | 9.40 | 16 |
| South Sudan** | | | 17.50 |
| Kenya | 9 | 12 | 21 |
| Uganda | 10 | 10 | 20 |
| Tanzania | 7 | 12 | 19 |

*The household bears the costs of digging the pit and building the superstructure and are not reflected in this table.

**The cost per household for South Sudan is based on a proposed model for commercial (privatized) production and sale of 40,000 slabs out of 56,000 proposed to be produced, so that households are expected to pay for those slabs.

It is important to note that these costs are significantly lower than for households to build conventional deep pit latrines, which in Ethiopia cost about \$44 for the slab and about \$73 with local labor costs. These costs are considerably more in Kenya and Uganda, amounting to more than \$100 per latrine.

C. Potential for Scale up in East Africa

CRS country programs in Ethiopia, South Sudan, Kenya, Uganda and Tanzania provided preliminary proposals for possible scale up of sanitation and Arborloo promotion. Table 2 summarizes these proposals, all of which project five-year programs.

Table 2. Potential for Scale up in East Africa

| | ETHIOPIA | SOUTH SUDAN | KENYA | UGANDA | TANZANIA |
|-----------------------------------|--|---|---|---------------------------------|--|
| HHs without sanitation | 8-10 million | 1-2 million | 2.7 million | 1.7 million | 5 million |
| Target HHs | 1,000,000* | 125,000 | 151,000 | 12,000 | 135,200 |
| Target areas | 7 regions: Somali, Oromia, Dire Dawa, SNNPR, Amhara, Addis Ababa, Tigray | Central and Western Equatoria, Jonglei State, Great Abeyei Region | Districts: Kitui, Mwingi, Machakos, Malindi | Districts: Gulu, Amuru and Lira | Regions: Kilimanjaro, Tanga, Arusha, and Manyara, in 12 districts in Northern Tanzania |
| Estimated investment costs | \$16 million (\$16 per HH) | \$2.18 million (\$17.5 per HH) | \$3.2 million (\$21 per HH) | \$240,000 (\$20 per HH) | \$2.6 million (\$19 per HH) |

*CRS Ethiopia believes they can reach 4 million households using expanded partnerships. This estimate of 1 million assumes existing partnerships only. The total number of proposed target households is approximately 1.4 million, which would achieve enough of a critical mass in each country to influence government policy and community behaviors.

D. Conclusions and Recommendations

The findings strongly suggest that the Arborloo introduction in Ethiopia has been successful in overcoming barriers to sanitation sustainability. With hygiene education and sanitation promotion, the Arborloo provides an appropriate and low-cost technology for scale up in Ethiopia. Small-scale projects in South Sudan, Kenya and Uganda provide evidence that the Arborloo may also provide a technology choice for households that will allow scale up in those countries, although further pilots are suggested. In Ethiopia, sanitation coverage can conceivably be on a scale that will enable Ethiopia to meet the Millennium Development Goal of halving the number of people without proper sanitation by 2015. Following are the

recommendations from the assessment team to move forward:

- **Build capacity:** Build further CRS and partner capacity for sanitation training and promotion.
- **Cultivate stakeholder support:** Strengthen existing partnerships, build new relationships, and provide leadership to bring major stakeholders – including governments – fully on board. Liaise proactively with all levels of government to explain the programs and the support CRS provides to government sanitation objectives.
- **Develop a market approach to slab production and provision:** Design and test market approaches to produce and provide low-cost, durable concrete Arborloo slabs to meet the expected high demand and to ensure sustainability.
- **Investigate Arborloo impact on preventing spread of acute watery diarrhea:** Follow up reports from Ethiopia that communities with Arborloo coverage had fewer outbreaks of acute watery diarrhea.

I. INTRODUCTION

Catholic Relief Services (CRS) first introduced the Arborloo in Ethiopia in 2005 in order to break through long-standing barriers to achieve sustainable and scalable sanitation improvements in the rural areas of Ethiopia where CRS and its partners center their development and emergency operations. Those barriers included the high cost of conventional pit latrines in relation to the low income and assets of the rural poor. Success with its program in Ethiopia led CRS to pilot the introduction of the Arborloo in Kenya and Uganda in 2008 and in South Sudan beginning in 2009. This rapid assessment reviews the accomplishments of CRS in promoting the Arborloo in Ethiopia, South Sudan, Kenya and Uganda. The assessment also looks at the scope and approaches for scaling up the Arborloo in these four countries and in Tanzania.

This report was prepared for CRS headquarters, the East Africa Regional Office (EARO) and country programs involved in the assessment. The reader should take note that the terms latrine and toilet are used interchangeably in this report to refer to an option for sanitary disposal of human waste.

2. STUDY OBJECTIVES AND METHODS

2.1 Objectives

The scope of work for this rapid assessment asked consultants to answer the following questions:

- What is the sustainability and scalability of the Arborloos installed under CRS guidance in Ethiopia, South Sudan, Kenya and Uganda?
- Can Arborloos be used as a sustainable intervention in schools? Or can Arborloos be built in schools for student and teacher educational purposes with the objective of reaching out to households and/or supporting an Arborloo community sanitation project?
- What is the relationship between sustainable school sanitation and sustainable household/community sanitation?

Specific objectives of the assessment were:

- To identify the extent of Arborloo installation supported by CRS in Ethiopia and other EARO countries.
- To identify and assess the factors influencing the sustainability of Arborloo latrines in CRS programs.
- To identify areas in Ethiopia and the other selected EARO countries where scaling up of Arborloo programs could be sustainable.
- To identify the linkages between sanitation in schools and sanitation in the surrounding community.
- To identify gender issues associated with uptake and sustainability of Arborloos.
- To determine the cost of promoting and provision of Arborloos in each country program.

The complete Scope of Work is included in Annex 1.

2.2 Methods

A team of one international consultant and two national consultants, one from Kenya and one from Ethiopia, carried out the rapid assessment from 22 November to 5 December 2009 in Ethiopia, Kenya, Uganda and South Sudan. The international consultant visited Arborloo project sites in

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Ethiopia and South Sudan. The Kenyan national consultant visited sites in Kenya and Uganda, and the Ethiopian national consultant visited additional sites in Ethiopia. The consultants prepared draft reports of findings for each of the countries visited and these were used for this consolidated report.

Six project sites were visited in Ethiopia, two sites each in Uganda and Kenya, and one site in South Sudan. The CRS partner in each country selected the sites to visit. (See Annex 2 for a list of the sites.) These sites provided sanitation training and/or demonstration of the Arborloo, and households within the communities had constructed either Arborloos or other latrines. In Ethiopia, the consultants also asked the CRS partner to select sites that had the longest experience with Arborloos in order to assess utilization over an extended period of time. In Ethiopia, the period since the initial construction of the Arborloos varied from 1 to 5 years. In South Sudan, Kenya and Uganda, the period since initial construction of latrines was 6 months to a little over one year. Due to time constraints, the partners selected sites that were accessible by vehicle. Partners reported that the selected sites were generally representative of project villages. The consultants then visited the sites and selected households to interview by walking through the villages and observing the general condition of sanitation and the presence of Arborloos. A total of 45 household interviews were carried out in 15 villages in the four countries visited. The results of these interviews are detailed in Annex 4.

Key informant interviews were conducted with relevant CRS and partner staff, local government officials, schoolteachers, school administrators and community leaders. In addition, focus group discussions were carried out with primary school students, teachers, household members and community members. All participants in the focus group discussion were selected by the consultants. Annex 5 details the number of household interviews, focus group discussions and key informant interviews carried out in the four countries. Table 3 summarizes the number of discussions and interviews.

Table 3. Sources of Data from Field Visits

| DATA SOURCE | ETHIOPIA | SOUTH SUDAN | KENYA | UGANDA |
|---|----------|-------------|-------|--------|
| Project sites visited | 6 | 1 | 2 | 1 |
| Villages visited | 8 | 2 | 3 | 2 |
| Households interviewed | 18 | 7 | 10 | 10 |
| Primary students interviewed | 12 | 6 | 6 | 14 |
| Focus Group discussions | 4 | 2 | 9 | 2 |
| School teachers/ administrators interviewed | 4 | 2 | 3 | 2 |

The consultants also reviewed CRS project documents, conference papers, published articles and papers and books on ecological sanitation, including the works of Peter Morgan, the inventor of the Arborloo. In addition, they reviewed the software approaches currently being used to promote sanitation, Participatory Hygiene and Sanitation Transformation (PHAST) and Community-Led Total Sanitation (CLTS). A list of reference materials reviewed is included in the References section at the end of this report.

3. BACKGROUND TO THE ARBORLOO AND PROMOTIONAL METHODS

3.1 Ecological Sanitation Options

There are 15 different types of ecological toilets, but the Arborloo is the simplest and easiest to construct. Another simple type piloted by CRS Ethiopia is the Fossa Alterna. Both technologies benefit from a comprehensive and participatory hygiene education promotion program where communities learn about technology options and are empowered to select what is best for them and to lead the process of change for sanitation improvement. This section describes the Arborloo, the Fossa Alterna and discusses the two most prominent methods for hygiene education and community-led change: PHAST and CLTS.

Ecological sanitation is an approach that safely recycles human excreta for use as a fertilizer for agriculture while preventing pollution of ground and surface water sources. Ecological sanitation is a closed loop system that treats human excreta as a resource, while also providing the same degree of health protection as more sophisticated and costly water borne sanitation systems (flush toilets).

Arborloo

The single pit compost toilet, or “Arborloo,” shown in Figure 1, is the simplest and least expensive ecological toilet design. The Arborloo, originally designed by Peter Morgan¹ in Zimbabwe, was introduced to CRS Ethiopia in 2005 and is now promoted by CRS in its work throughout East Africa. It has three components:

- Shallow pit of flexible size but usually 60 cm diameter x 1 – 1.5 meters deep
- Concrete slab (about 65cm x 65 cm and 5 cm thick) which fits over the pit and is movable,
- Simple superstructure which is also movable or easily replicable (see Figure 1)

¹ See the book, “Toilets that Make Compost – Low cost, sanitary toilets that produce valuable compost for crops in an African context”, Peter Morgan, Aquamor, Harare, Zimbabwe, Published by the Stockholm Environment Institute, EcoSanRes Programme, 2007.

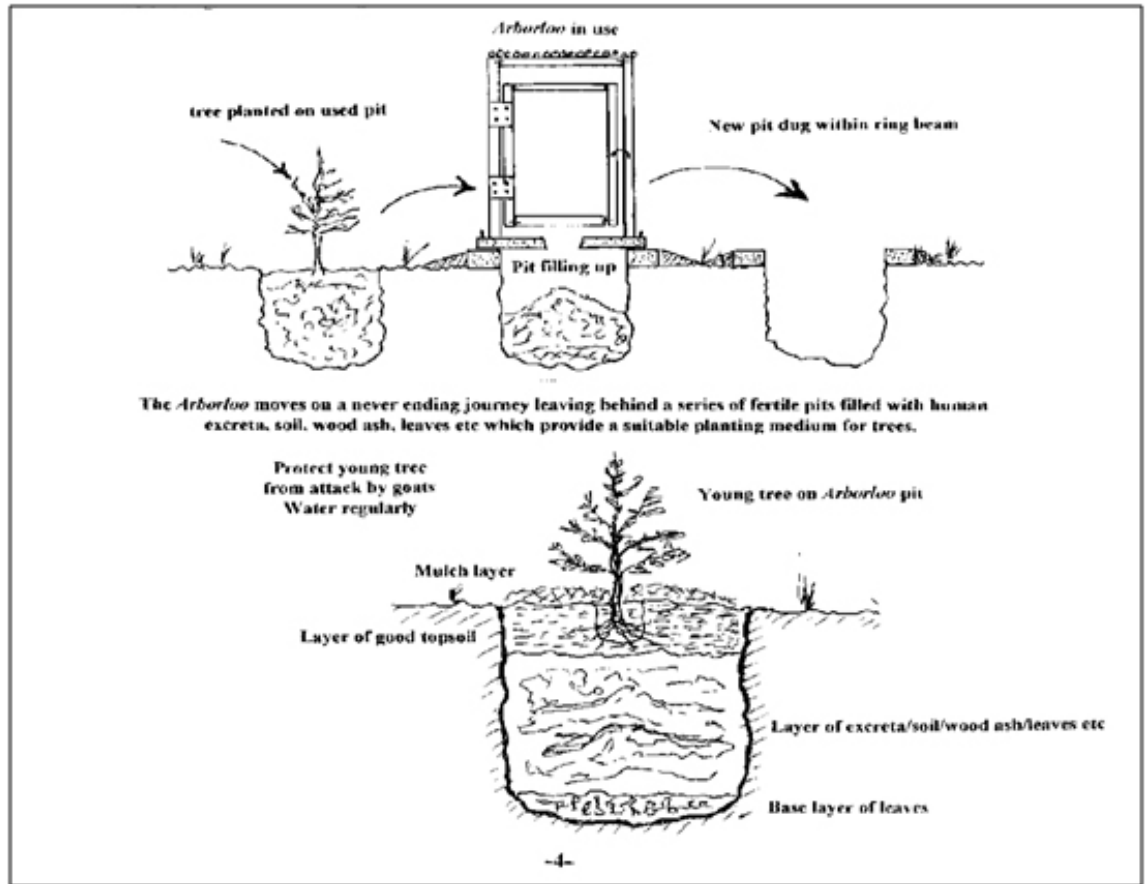


Arborloo in Wonji, Ethiopia, built in 2006. *Paul Hebert for CRS.*



Avocado tree on Arborloo pit in Wonji, Ethiopia. *Paul Hebert for CRS.*

Figure 1. Arborloo Design



The standard design is suitable for use by one family of 5 to 6 people for one year. The pit is also an ideal size for tree planting. Soil and ash are added to the pit after each use, which helps with the composting of the excreta and keeps away smell and flies. The pit is allowed to fill, usually in 6 to 12 months, depending on the depth and number of people using it. Once filled, the pit is topped up with a least 15 cm of good topsoil. A new pit is dug and the slab and superstructure are moved to the new pit. A tree (fruit or shade tree seedling) or vegetable crop is planted in the soil above the composted material in the old pit. It is important for water to be available for the seedling, at least until it is established. If water is not readily available, the seedling can be planted at the beginning or during the rainy season to allow the tree to effectively take root. The small-sized pit is easy to dig, even for women and children. The slab weighs only about 30 kg and thus can be moved by one or two people. The superstructure can be simple or more elaborate to provide the level of privacy and portability desired by the family.

Fossa Alterna

A variation on this design is the Fossa Alterna that is comprised of two alternating shallow pits that can be used when space is limited in the

household compound. In this design, once the first pit is filled, the slab and superstructure are moved to a second pit and the first pit is covered, left to sit for 12 months, after which time the now safely-composted material is excavated and spread on a garden or field as fertilizer. The first pit can then be reused after the second pit is filled. The same size of slab used for the Arborloo can also be used for the Fossa Alterna.

3.2 Sanitation Promotion and Hygiene Education

Participatory Hygiene And Sanitation Transformation (PHAST)

CRS Ethiopia partners and other CRS country programs use the PHAST methodology for hygiene education, community-led sanitation and hygiene promotion. At about the same time that ecological sanitation was introduced to Ethiopia, CRS Ethiopia and partners began using PHAST.

CRS EARO and Ethiopia staff emphasized that PHAST is both an educational and a planning tool that empowers communities and individuals to learn about the relationship between good hygiene, sanitation and health and to plan for community sanitation and hygiene changes. It transfers responsibility for sanitation improvements from the facilitating non-governmental organization (NGO) to the community. The PHAST methodology, created by the World Health Organization (WHO), World Bank and the United Nations Children's Fund (UNICEF) in the 1990s, is designed for use with literate or illiterate groups. It uses drawings for learning, discussion and problem solving. Through PHAST, groups are indirectly encouraged to achieve 100% sanitation coverage through learning activities such as understanding the fecal-oral route of diarrhea transmission and exposure to the pros and cons of different latrine options through an activity called sanitation options.

According to CRS Ethiopia staff, PHAST has been a good tool for helping communities select the sanitation option most appropriate for them. They reported that the methodology has been used to promote related hygiene behaviors, such as hand washing and community efforts to achieve 100% sanitation coverage, and has resulted in communities developing sanctions against open defecation. During the assessment, villages visited by the lead consultant had achieved full or nearly full sanitation coverage with Arborloos. Health officials in East and West Hararge districts confirmed that full or nearly full coverage (85% or more) had been achieved in all villages targeted for Arborloo promotion by CRS and partners. During the visits, the consultants observed that hand washing facilities were available adjacent to Arborloo structures. In four of the six villages visited by the lead consultant, local administrations had enacted village-wide rules that provided penalties for individuals who are caught practicing open defecation.

3. Background to the Arborloo and Promotional Methods

PHAST has been used to promote sanitation in CRS Kenya and CRS Uganda. In CRS Tanzania, there are plans to use it in FY2010 in the Global Water Initiative (GWI)² project area. CRS South Sudan received PHAST training in 2009 and now has begun to use it in its programs. District health officials interviewed in Ethiopia commented that the methodology was transformational and was the first hygiene training method that was truly effective and understood by communities.

Community Led Total Sanitation (CLTS)

CLTS is an alternative sanitation promotion methodology developed in Bangladesh and currently being encouraged by the World Bank and UNICEF (who were also previous partners in the development of PHAST). CLTS does not address or promote any specific toilet technologies. It endorses sanctions against open defecation and encourages local leaders to adopt total sanitation coverage without any subsidies for toilet construction. In Ethiopia, it is currently being piloted in the Southern Nations and Nationalities People's Region (SNNPR).

CRS Ethiopia and CRS Kenya and partners have attended a number of trainings on CLTS but do not find it superior to PHAST and have so far not seen the need to adopt it, given the good success they have had with PHAST. CLTS relies upon community walks with local leaders to look for open defecation and create shame, but both country programs have remarked that feces are often eaten by animals (monkeys and donkeys) and therefore not always found during a CLTS walk. In both countries, communities do not express shame about open defecation. This makes it difficult for CLTS to be effective in those cultural settings. Since both PHAST and CLTS are community-led approaches, there may be some way in the future to combine elements of CLTS into PHAST and to add the Arborloo and other ecological toilets designs to CLTS.

Some partners have successfully promoted sanitation and the Arborloo without PHAST or CLTS by using more traditional teaching methods, usually going house to house. CRS staff explained that this success without a specific methodology is because the Arborloo has proved to be so well suited to the needs of poor rural farmers that demand occurs without a great deal of promotion. However, CRS Ethiopia has learned that education and understanding of how the Arborloo should be constructed and used is important for its success. There is a minimum package of information that the household needs: the theory behind the Arborloo, the process of composting, specifications for construction (with flexibility), the use of ash and soil to deter smell and flies and to speed up composting, and cleaning the slab with water but keeping the pit dry. Households need to understand

²The GWI is a multi-agency program funded by the Howard G. Buffet Foundation to improve water and sanitation services in Tanzania, Kenya, Uganda and Ethiopia.

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that the Arborloo pit is a good size for growing a tree and that the fruits or vegetables from the pit grow in compost, not excreta.

It is important to emphasize that the Arborloo has been presented as one technology among several that can be used by the household for sanitation improvement. The fact that the Arborloo has been the technology of choice is explained by many factors, in the next section.

4. EXTENT OF ARBORLOO INSTALLATIONS IN EAST AFRICA

Ethiopia

CRS began promoting the Arborloo in 2005 in Ethiopia, with more recent pilot projects beginning in 2008 and 2009 in Kenya, Uganda and South Sudan. Table 4 summarizes the numbers of Arborloos installed in each of these four countries until the end of 2009.

Table 4: Arborloos Installed in Ethiopia, South Sudan, Kenya and Uganda

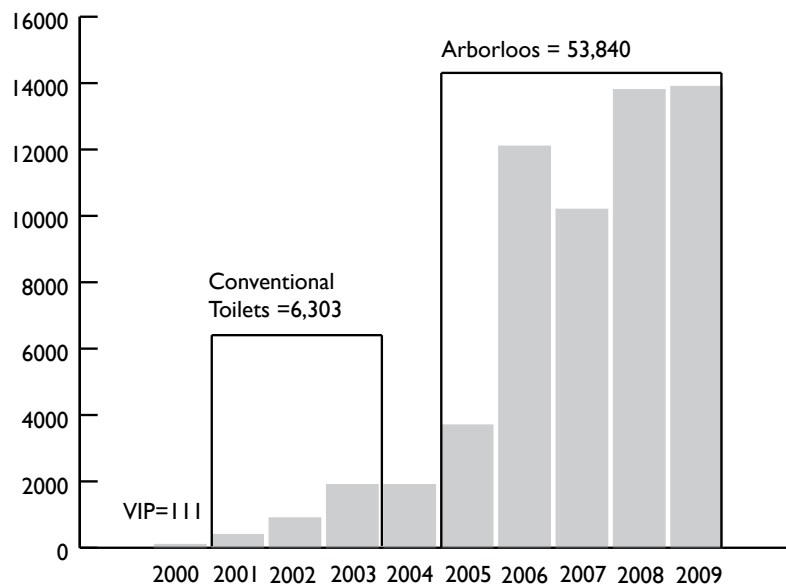
| COUNTRY | BEGINNING YEAR OF ARBORLOO PROMOTION AND INSTALLATION | NUMBER OF ARBORLOOS INSTALLED TO THE END OF 2009 | LEVEL OF IMPLEMENTATION |
|-------------|---|--|---|
| Ethiopia | 2005 | 53,840 | Full implementation in 7 regions of the country |
| South Sudan | 2009 | 500 | Pilot in 4 areas |
| Kenya | 2008 | 50 | Pilot in 2 districts |
| Uganda | 2008 | 28 | Pilot in one district |

CRS in Ethiopia completed its pilot phase at the end of 2005, and implementation has rapidly expanded from the installation of 3,000 Arborloos during the pilot phase to a total of 53,840 today, not counting adoption of Arborloos in communities outside immediate project areas. During the rapid assessment, CRS partners in Ethiopia reported that such spontaneous adoption has occurred but remains uncounted.

Figure 2 shows the dramatic increase in toilet construction in Ethiopia following introduction of the Arborloo. CRS Ethiopia reported that the primary constraint to further expansion is the lack of funding for more extensive promotion and production of Arborloo slabs. Funding for sanitation has been through both emergency and development funding windows, but there has been no strategic funding for sanitation to date. This rapid expansion of sanitation coverage by CRS has not gone unnoticed. A World Bank sanitation advisor, who is responsible for the Bank's support for both Ethiopia and South Sudan, indicated that the organization recognizes that CRS has "led the way" in achieving important increases in sanitation coverage by promoting the Arborloo. More will be said on government support in a subsequent section.

The assessment found that demand for more hygiene training and for Arborloo slabs is high in communities where CRS Ethiopia has been promoting sanitation and in nearby communities which are aware of the CRS program. CRS and partners have provided slabs at no costs to households in most program areas. In a few areas where CRS partners have not had resources to produce slabs, such as SNNPR, households have been making their own slabs from mud and wood. One artisan was found making slabs from flat stones he collects in the forest. After chiseling a hole in the center, he sells them for 20 birr (\$1.50). According to local health authorities, households in areas near CRS project sites, but not covered by CRS programs, have made their own slabs from wood and mud, and then asked the local bureaus of health to help them obtain concrete slabs.

Figure 2: Household Toilets Constructed through CRS Support in Ethiopia (2000-2009)



Some households in Ethiopia are now building Arborloos for animal excreta in order to plant more trees. Others are practicing collection of urine for garden fertilizer and are trying to develop biogas systems with the pits. Households often created these new practices themselves and continue to request more information. These are just a few examples of how the Arborloo seems to have had spin-off effects and has gotten communities to think differently about the use of waste materials that can increase local productive capacities.

South Sudan

CRS South Sudan has successfully completed a pilot application in four areas and is now ready to move into larger scale

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implementation. CRS South Sudan recently submitted a Multi-Year Activity Proposal (MYAP) to the United States Agency for International Development (USAID) that has an objective to promote improved sanitation through the use of the Arborloo among approximately 56,000 households in Eastern Equatoria. Due to the limited number of slabs available in the pilot villages, households were found to be sharing Arborloos with neighbors. Local officials also reported that they are receiving a large number of requests for slabs from households which did not obtain one from the lottery system used to determine the distribution of slabs.



Artisan Mohamed Mushukie from Kernso Kebele, Badawacho Woreda, Hadayea zone who makes stone Arborloo slabs in SNNPR, Ethiopia.
Alemayehu W/Mariam for CRS.



Stone Slabs on Arborloo – SNNPR, Ethiopia
Alemayehu W/Mariam for CRS.

Kenya, Uganda and Tanzania

CRS Kenya and CRS Uganda are still in a pilot stage with only a few installations of Arborloos. CRS Tanzania, which was not included in the assessment, has had training in PHAST and the Arborloo but has not as yet implemented the latrine in its program area. It plans to install the Arborloo under the Global Water Initiative in Sami District. The areas for potential scaling up in each country are discussed in a subsequent section.

5. FACTORS INFLUENCING ACCEPTANCE AND SUSTAINABILITY OF ARBORLOOS

5.1 Household Acceptance

Households interviewed for this assessment (out of 45 interviewed, 39 had Arborloos) reported that the most important factors influencing them to adopt the Arborloo, as shown in Table 5, were an understanding of the link between good health and use of a toilet, simplicity and ease of construction, the potential for production of fruits or other crop from the compost pit, privacy, dignity, convenience and low cost.³ Since households were allowed to indicate more than one factor from a provided list, the total adds up to more than 100%.

Table 5. Factors Influencing Households to Accept and Sustain their Arborloos (N=39)*

| FACTORS INFLUENCING ACCEPTANCE AND SUSTAINING THE USE OF ARBORLOOS | PERCENTAGE OF HH RESPONDENTS WHO INDICATED THE FACTOR WAS IMPORTANT |
|---|---|
| Understanding the linkage between health improvement and use of a sanitary latrine | 81% |
| Simplicity and ease of construction | 67% |
| Production of a fruit tree, shade tree or vegetable crop from the filled Arborloo pit | 67% |
| Privacy, dignity, and convenience | 62% |
| Low costs to the household | 55% |
| Reduced smell and flies | 25% |
| Safety in construction and use of the Arborloo | 6% |

*6 household interviews were not included in the above analysis due to the questionable status of their latrines as Arborloos. These 6 latrines were more than 1.5 meters deep. However, data from the 6 interviews were used along with the other 39 interviews in drawing some of the overall conclusions in this report.

Respondents in focus group discussions and key informant interviews also confirmed the above factors.

Health and hygiene training

Discussions with local health officials and villagers and interviews with households revealed that an understanding of and desire to improve health was the most important factor in motivating a household to construct a latrine. The level of hygiene education and Arborloo training provided

³The small sample size of households was due to the limited amount of time available for the rapid assessment. A more extensive household survey of perhaps 300 households would have required hiring enumerators and supervisors, developing an appropriate sampling methodology, more extensive field time, extensive data analysis, and at least 4 to 6 months to undertake the work.

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by CRS, partners and health workers varied from country to country and was reflected in how well the Arborloos were maintained and if they were used properly. For example, in Ethiopia the promotion of PHAST is fairly widespread and includes training of partners and of government health extension workers, volunteer community health workers and other government health staff by CRS and partner staff. Once trained, these personnel provide hygiene and sanitation training at the community level, some using the PHAST methodology. CRS reported that this has helped rural villagers to learn the value of improved sanitation and of the Arborloo as a useful technology. All 18 households interviewed in Ethiopia knew principles of hygiene and sanitation and could explain how to use an Arborloo properly. Learning has also come from observation and word of mouth.

Villagers interviewed in East and West Hararge in Ethiopia reported that since achieving nearly 100% coverage in their communities, they no longer see diarrhea among children and they have saved money which formerly was needed for the clinic or to buy medicine. The Bureaus of Health in Gorogotu and Chiro Districts confirmed this observation and stated that villages with full sanitation coverage with Arborloos were protected from recent outbreaks of acute watery diarrhea which occurred in adjacent districts not yet covered. This information has spread to other communities, which are now demanding that they have access to Arborloo slabs and training. The assessment team recognizes that these observations are not proven, since health officials did not provide data to back up the claims of reduced diarrhea incidence in villages covered by CRS sanitation activities. Nevertheless, the villagers and local health officials believe them to be true. A study to document these claims would be extremely valuable.

In South Sudan, on the other hand, the Arborloo was introduced only in late 2008 and PHAST training in July 2009. CRS South Sudan, therefore, has not yet been able to train enough promoters to adequately do proper education in all areas covered by the pilot program. In some households, the importance of adding ash and soil to the pit was not understood, and there was little knowledge of what to do when the pit was filled. There were similar findings from household interviews in Kenya and Uganda. In Uganda, the consultant found that when training was thorough and participatory and when new committees were open and participatory and not controlled by local political leaders, trust was developed. These communities were ready to act to embrace improved sanitation and latrine use.

Despite the above, all households interviewed had a basic understanding of the connection between improved sanitation and health. Where Arborloos were introduced, they seemed to know the basics of using the Arborloo and planned to continue their use in the future.

5. Factors Influencing Acceptance and Sustainability of Arborloos

These findings highlight the importance of hygiene education as a critical component in the promotion and acceptance of sanitation interventions and the Arborloo.

Other factors

Simplicity and ease of construction were important factors in acceptance of the Arborloo, especially among women interviewed during the assessment. Women also pointed out their need for privacy, while men noted the aspect of convenience of having the Arborloo near the house. Production of a tree or plant was also given a high level of importance, which tended to become more important the longer the Arborloo was used. However, even where the Arborloo had been used for only a few months, community members talked enthusiastically about the prospect of growing a fruit tree on the filled pit. The low cost of the Arborloo was also a factor, but seemed to be taken as a given, along with the ease and simplicity of the design. The low cost aspect was mentioned more prominently in focus group discussions and with government officials. The reduction of smell and flies was mentioned by about 25% of respondents as important to them, while less than 10% mentioned the aspect of improved safety, which was related mainly to ease of use by children and the minimal danger of walls collapsing on the workers digging the shallow pit.

5.2 Program Level Factors

The consultants concluded from the assessment that there are at least six other important factors in acceptance and sustainability of Arborloos.

1) Understanding the Arborloo

- **CRS country programs and partners.** The assessment found that there were varying degrees in the understanding of the Arborloo among CRS implementing partners. Country programs and partners in Ethiopia and South Sudan have been provided with intensive training on PHAST and the Arborloo, which has resulted in a thorough understanding of the benefits of the Arborloo over other sanitation options in poor rural areas. Hygiene education promoters seem to have adequately transferred this understanding to the village level, which has had a positive influence on the acceptance of the Arborloo in these areas.

Where training has not been as strong or complete, partners have not been as proactive in introducing the Arborloo. This has been the situation in Uganda and to a certain extent in Kenya. From the findings of the consultants, there seem to be lost opportunities in introducing the Arborloo, particularly for women-headed households. In both

Kenya and Uganda, some women respondents expressed their frustration that the men were not willing to build deep pit toilets, even though this seemed to be the preferred sanitation option, given the lack of knowledge or promotion of the Arborloo. With better knowledge and understanding of the simple Arborloo, and the ease of its construction, women could have been in the position to build their own toilets if they were provided with the training.

The assessment also found that where families tried the Arborloo in pilot projects in Kenya and Uganda, they plan to continue to use the Arborloo in the future. Women seem to immediately see the benefits, and many reported that they value both the privacy afforded by the Arborloo, its ease of construction and the productive potential of the pits. It was also found that both Ethiopia and South Sudan have CRS staff members who act as “champions” for the Arborloo and sanitation promotion, and that these personality factors influence partner enthusiasm.

- **Government staff and health workers.** In Ethiopia, South Sudan and Kenya the assessment found that where government officials had attended PHAST and Arborloo training and worked closely with CRS and partners, government support was attained. CRS and partners reported that this support was key to adoption and sustainability, since the officials themselves became agents for promotion. In Ethiopia, achievements in promoting rapid and extensive sanitation coverage gives the officials good marks within their ministries, since their performance is measured by these successes. Resistance to the introduction of the Arborloo by government officials has occurred only where there seems to have been inadequate communication between CRS, its implementing partners and government officials and a lack of more extensive training in PHAST and the Arborloo technology.
- **Empowering communities through choice of technology.** CRS Ethiopia offers the Arborloo as a CHOICE – the other choice is the deep pit latrine. CRS Ethiopia makes available the inexpensive Arborloo slab to everyone but does not offer the much larger slab required for a conventional deep pit latrine due to its high cost. All of this is explained to communities. Despite this, some 10% of households still select the deep pit latrine. Having a choice is important in that it is empowering and respectful to households. CRS explained that households are not having an Arborloo forced on them. They learn, then they select.

2) Access to slabs, preferably painted

The availability of inexpensive, durable concrete latrine slabs has been a key to the acceptance and sustainability of Arborloos at the community level. Until now, CRS has provided concrete slabs to households free of charge as a part of project investment costs. The household investment has been for labor to dig the pits and to build the superstructure, which usually requires little or no monetary investment. In South Sudan, plastic slabs were provided free to households in pilot programs (concrete slabs are to be provided for the future in view of the high costs of plastic slabs), and concrete slabs are now provided in Kenya and Uganda.



Artisans with painted slabs in Wonji, Ethiopia
Paul Hebert for CRS.

CRS partners as well as government staff interviewed in this assessment thought that the use of concrete slabs for the Arborloo was important for three main reasons:

- First, concrete slabs can be easily cleaned, especially when they are painted. Health officials in Ethiopia reported that slabs made from local materials often smell and attract flies, and in their opinion they were unhygienic.
- Second, concrete slabs are durable and can last for years. The consultants found that concrete slabs that had been in use for five years were still like new, even those that were painted. Households said they expect these slabs will last for many more years, even after being moved numerous times. Health officials and villagers in Ethiopia reported that slabs made from local materials of wood and clay soon deteriorate from rot or from termites, and last only a few months. CRS has also noted that households using homemade slabs often lose interest in the Arborloo due to the necessity of replacing the slab every few months.

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- Third, government officials report that the use of concrete slabs is consistent with government policy to conserve forests and trees, since wood is not required for construction of the slabs.

At best, homemade slabs of mud and wood provide an interim solution, but interviews indicated that Arborloos with such slabs are not likely to be sustained over the long term.

The government of Ethiopia has a policy guidance of “no direct subsidies” to the household for sanitation. They would rather have households buy their own slabs or use local materials to produce them, which they feel will ultimately reduce dependency by rural communities on outside aid. However, at the local level, officials recognize that concrete slabs are not available on the local market and that slabs made from local materials are not durable and are generally unsanitary. At the local level, officials have taken a pragmatic approach and have allowed CRS to provide slabs as part of project costs, treating all projects up to now as “pilot” projects. Both CRS Ethiopia and local government officials in Ethiopia interviewed by the lead consultant thought that about half of rural households in CRS project areas would be able to pay for the full cost of concrete slabs (\$6) and the other half could pay some amount, or with credit they might be able to pay the full costs.

So far, the provision of slabs by CRS free of charge to households has not had a negative impact on sustainability of sanitation in the CRS project areas. On the contrary, as reported by government officials and CRS staff, provision of good quality concrete slabs has raised awareness of sanitation and increased demand for Arborloos. It is also important to note that CRS estimates households contribute the equivalent of about \$12 to the cost of the Arborloo by way of their labor and materials for each toilet, indicating a strong willingness to achieve sanitation improvements.

As part of the household interviews for the assessment in Ethiopia and South Sudan, the consultants questioned households about their willingness and ability to pay for their Arborloo. All 25 households that responded to this question expressed a willingness to pay for their slabs, anywhere from about \$4 to \$15. Currently, the cost of a concrete slab in Ethiopia is about \$6 and about double that amount in South Sudan. New projects in Ethiopia and in South Sudan in 2010 are proposing a local enterprise model for production and sale of latrine slabs to help ensure sustainable provision of slabs in the medium and longer term. This would overcome any objections that governments might have regarding the subsidization of latrines. There remains the concern that the poorest households will not be able to pay for slabs. CRS and partners may need to consider a strategy for the provision of credit for the purchase of slabs for these households, for example, through existing CRS Savings and Internal Lending Community (SILC) groups,

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from artisans themselves, or through other mechanisms. Households may need to consider sharing the cost of the purchase of a slab with one or more neighbors and then sharing the use of the Arborloos until such time that the individual households can afford their own.

3) Model families and critical mass for a normative shift

The assessment found that selecting model families to demonstrate the use of the Arborloo and achieving a small but critical mass of Arborloo users in a community are important for quick acceptance and spread of sanitation and the Arborloo concept. There was little or no take-off of the technology where Arborloos were few in number, spread over a large geographic area and where early adopters were not asked to demonstrate to their neighbors or to larger community.

In Ethiopia, model families are selected to demonstrate the Arborloo in targeted villages. This approach has proved to be extremely successful when 40 to 50 model households are in a village of several hundred or more. With a critical mass of model families, the CRS-funded projects have found that demand for Arborloos by new households grew quickly as neighbors witnessed the benefits of improved hygiene, privacy, convenience and the possibility of growing a fruit or shade tree or other vegetable crops on the filled pits. In South Sudan, a similar approach was used, but households were given Arborloo slabs through a lottery system, with 50 slabs being provided for each of several selected villages in the target areas. The additional demand in these target areas quickly grew, outstripping the capacity of CRS South Sudan to provide additional slabs. The demand has been met temporarily through households voluntarily sharing Arborloos with neighbors who did not win a slab through the lottery.

The conclusion reached by CRS in Ethiopia and South Sudan is that a critical mass of demonstration latrines is necessary to achieve a normative shift and create high demand. Providing just one or a few latrines in a village of several hundred is not sufficient to achieve the desired shift in behavior. It is too early to assess whether such a normative shift is occurring in Kenya in the area where some 50 Arborloos have been installed, or in Uganda where 28 were installed in an area of several villages. However, an engineer working with the GTZ Ecological Sanitation Unit in Nairobi reported that GTZ has come to a similar conclusion in its Kenya pilot sanitation program, where it has been introducing double vault ecological toilets in several communities. This GTZ engineer stated “it takes a certain critical mass of demonstration toilets before demand begins to take off”.

4) Exchange visits

In Ethiopia, visits by partner staff, government officials, and community leaders to communities with Arborloos have had a very positive impact on acceptance of the Arborloo. Visitors return with an understanding of the benefits of improved sanitation in general and the Arborloo in particular and become promoters themselves. Such cross visits were organized by CRS for its staff and selected partners in South Sudan, Kenya, and Uganda, so that they could better understand the promotion work and successes in Ethiopia.

5) Access to seedlings

Given the importance households place on the production element of the Arborloo, as reported in household interviews and during focus group discussions, an element for Arborloo sustainability is ensured access to tree seedlings to help new families learn about the fertility advantages of the Arborloo. The CRS strategy is that every household building an Arborloo for the first time should have access to two seedlings by the time their first pit is filled, one seedling for the filled pit and another as a control for comparison of growth. Therefore, a plan for the supply of seedlings needs to be in place prior to the installation of Arborloos. The only exception to this would be households that prefer to grow other crops, such as pumpkins, on their filled pits. While the Arborloo is ideal for planting fruit trees, some households in this assessment preferred to plant shade trees.

The provision of tree seedlings seems to be the least planned element in Arborloo promotion in all four assessed countries. Nearly all household respondents noted anxiety about not having tree or plant seedlings to plant once their Arborloo pits were filled (expressed by more than 50% of households interviewed in Ethiopia and South Sudan). Household respondents and focus group participants expressed their preference to develop local nurseries that could supply households with seedlings. CRS and partners in Ethiopia have provided tree seedlings as a part of projects, but in many cases they have not provided a strategy for ensuring a sustainable supply once the projects are completed and CRS and partners move on to other areas.

In the case of Mogale, one of the pilot sites in Eastern Equatoria of South Sudan, no planning had been made for seedling supply, even though many of the Arborloo pits constructed in July 2009 were nearly full and the slabs were ready to be transferred to new pits within the next month. The lack of access to seedlings is likely to have significant negative motivation for households in the future. CRS Ethiopia expressed the need to better coordinate between its water and sanitation staff and agriculture development staff to ensure strategic planning related to seedling supply for future projects. This should be possible because CRS Ethiopia has a

5. Factors Influencing Acceptance and Sustainability of Arborloos

wealth of experience with development of community nurseries within its watershed management projects that could be reviewed and assessed to determine their relevance to Arborloo programs.

In Ethiopia, the provision of two seedlings at the time of the first planting on the filled Arborloo pit has proven to be an additional motivating factor for sustaining the use of the Arborloo. Some CRS Ethiopia partners have provided instructions to households to plant one seedling on the Arborloo pit and another seedling (same variety) in normal soil and then to monitor the growth of both plants. CRS reported that households find that the growth of plants in the Arborloo pit proceeds much more rapidly than the control plant, and that the production of fruit or vegetables is often double that from the control plot. This has apparently provided high motivation for them to continue using the Arborloo. During the assessment in Ethiopia, several households reported that they had witnessed such higher production from trees planted on their Arborloo pits.

6) Government policy

Government support is important as a further motivating factor for communities to adopt and sustain the Arborloo. In Ethiopia, where the CRS staff has made efforts to connect directly with the local authorities at an early stage of project development, local government health bureau staff, agricultural staff and health extension workers in general have been enthusiastic supporters of the Arborloo. Of the six assessment areas in Ethiopia, one partner and its project area did not have a good working relationship with local government, and it was only here that government officials expressed some doubt about the Arborloo.

In Ethiopia, Kenya and Uganda, the conventional deep pit latrine or VIP latrine remains the central government official standard for latrine design, even though most poor rural households cannot afford them. Despite this official standard, government acceptance of ecological toilet designs is increasing. At the European Union Water Initiative Multi-Stakeholder Forum in October 2006 in Addis Ababa, ecological sanitation was recommended as a main sanitation option for Ethiopia, and this was stated in the memorandum of understanding signed by the Ministries of Water Resources, Health and Education at the conclusion of the forum. GTZ has been active in Kenya and Uganda in demonstrating double-vault urine-diversion toilet designs for institutions and households and, as a result, both countries have officially accepted these ecological toilet designs in national policy. However, this message may not always have reached the field level.

The Government of Ethiopia has stated its policy to achieve 100% sanitation coverage by 2015, but provides no local sanitation budget. District health

bureau officials realize they have a real problem. In Ethiopia, in almost all instances, local health officials have welcomed the help from CRS and partners and the Arborloo, as this inexpensive design provides the only approach they have seen that can achieve 100% coverage in a short period of time.

One World Bank official, responsible for sanitation in Ethiopia and South Sudan, expressed the opinion that the Arborloo was an important low-cost and appropriate option for sanitation in both Ethiopia and South Sudan. He also expressed the view that NGOs would need to provide the lead for sanitation improvements in the near future in South Sudan, due to the low capacity of the government at the present time.

To conclude, where the Arborloo has been introduced and local officials are appropriately engaged, government officials have been supportive of the CRS programs. The lead consultant found that in Ethiopia and South Sudan local officials have been among the most enthusiastic supporters of this CRS approach to low-cost, sustainable sanitation.

5.3 What Communities and Households say they Want

During the household interviews and focus group discussions, the consultants asked people what additional support they would like to have from the sanitation project. The responses are listed below and detailed in Annex 4:

- **More hygiene training.** This request came from Ethiopian households that had received training in the past and from households who had heard of but not received training themselves. Household members mentioned that they wanted PHAST training in particular, as they had heard it was very effective and helpful for community members to understand the linkages between improved health and sanitation. The same request came from households in South Sudan, but they did not mention PHAST specifically as they had no familiarity with it.
- **Training in agriculture production and use of manure.** Some farmers requested help in knowing how to use the Arborloo pits most effectively, including the use of compost on their fields.
- **Information on how to use urine as fertilizer.** Some households in Ethiopia were interested in how to use urine as a fertilizer and wanted to know more about this concept.
- **Support for bio-gas production from Arborloos.** One farmer in West Hararge, Ethiopia, was experimenting with bio-gas production for a combined Arborloo pit to which he had also added cow manure. He was getting some advice from the agriculture extension worker but was also seeking information on how to optimize the process to produce gas for cooking and for lighting.

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- **Credit if they have to buy slabs.** A number of households and some men in the focus group discussions in Ethiopia and in South Sudan expressed the need for credit if they were to pay the full price for slabs. They were willing to pay what they could, as they noted that they valued the slabs as important household assets.
- **Households and communities without slabs want concrete slabs.** In Ethiopia, households with Arborloos noted that many neighboring communities did not have concrete slabs and needed them to build proper Arborloos. In South Sudan, households with Arborloos noted that due to the lack of supply, even their neighbors could not obtain slabs. They expressed the lack of slabs as an important impediment to sanitation improvement in the community. They noted that some households were using local materials to build Arborloo slabs until such time as “good”, durable slabs were available. The high demand for concrete slabs cannot be over-emphasized.
- **Sanitation committees with village members, schoolteachers, students, village administration.** Some villagers during the assessment in SNNPR in Ethiopia noted that they would like to have a sanitation committee consisting of members from schools, the community and local government, in which they could discuss sanitation in the community and decide on measures to improve community sanitation. They would also like to have sanitation promoters, one per ten households. CRS partners usually organize water and sanitation committees around each water distribution point, but it seems that these community members are asking for a sanitation committee that has broader representation than the usual water and sanitation committee, as well as more intensive promotion at the village and sub-village level.
- **School toilets for girls.** In focus group discussion with students in Ethiopia, Kenya and Uganda, girls expressed their desire to have more privacy with toilets in schools. In Ethiopia girls said they thought the Arborloo would be a good toilet for them at school. Students said they could build their own school Arborloos (school sanitation is discussed further in a subsequent section).
- **Handles on slabs.** Several households mentioned the need for handles on the slabs that would make moving them easier and ensure that there was no contact with the pit contents when removing the slab from the filled pit.
- **Easy access to seedlings.** Nearly every household interviewed expressed the need to have easy access to seedlings and seeds for their Arborloo pits, which they noted was not always the case.

- **Local seedling nurseries.** Many households expressed the desire to have community nurseries, which could supply seedlings locally and could also be used for income generation through sale of seedlings to other communities.
- **Water supply for seedlings.** In villages where water was not readily available, some household members said that their seedlings have not survived during times of drought. They asked if the projects could help in providing more convenient water sources. This was a particular problem during the severe drought conditions of 2009. However, both government officials and households noted that this had not been a problem during the previous few years when rains had been sufficient.
- **Help to market the fruit produced from the Arborloos.** Several households in Ethiopia mentioned they would like help to market the fruit produced from their Arborloo pits.
- **Training as artisans.** Some villagers in Ethiopia and in South Sudan indicated that they would like to be trained to be artisans to make Arborloo slabs.
- **Tools for digging pits.** In Ethiopia and South Sudan, men expressed the need for tools to dig their pits. This is a particular need in South Sudan, where families have recently returned from refugee or IDP status with little or no possessions.

The consultants felt that some households that already had Arborloos had to “dig deep” to think of what additional support they wanted or needed. The lead consultant felt that in many cases what was said was likely to be a wish list that probably did not have a major impact on the household’s decision to sustain the use of their Arborloo. In most cases, household members reported general satisfaction with the sanitation improvements brought about by the CRS interventions. This is reflected in the responses given by all households with Arborloos: they planned to continue using them and to plant something on the filled pits.

6. GENDER ISSUES, RELIGION AND PASTORALISM

Gender. The assessment found that women seem to be the driving force in improving sanitation for their own privacy and to improve the health of their families, while men are usually the ones who take full advantage of the agricultural/horticultural productive capacity of the Arborloo. Household respondents reported that it was the men who usually dug the Arborloo pits, while the women of the household often assisted. In Northern Uganda women reported that they desperately wanted latrines but their husbands refused to dig deep pits. Thus, for women and child-headed households in Northern Uganda, the Arborloo would be an easy solution that they could construct themselves. Women-headed households in Ethiopia (seven of the 45 households surveyed) indicated that they were able to dig the Arborloo pit, build the superstructure and move the slab once the pit was filled. This finding was substantiated in the focus group discussions and key informant interviews, where it was also revealed that elderly and handicapped people were also able in most cases to dig the pits, place the slabs and move them when the time came to dig another pit. In Kenya, women reported that there was a cultural prohibition on sharing their latrine with the sons-in-law. They noted that the ease of construction of the Arborloo meant that they could have two latrines and thereby avoid sharing.

Religion. The experience of CRS in Ethiopia and information obtained from this assessment suggest that the religious affiliation of households and communities does not have an important impact on whether or not they are willing to accept, use and sustain the Arborloo. The fact that Muslim households own 40,000 of the 54,000 Arborloos constructed to date in Ethiopia attests that Muslims accept the Arborloo.

Hygiene education and an understanding of sanitation and the Arborloo seem to be the keys to the acceptance of the Arborloo among Muslims and Christians alike. CRS and partners in Ethiopia did report that some Muslim leaders and community members objected to the idea of eating fruit or vegetables planted on the Arborloo pits, noting that the waste could contaminate the fruit and that eating such food is “haram”, forbidden by their religion. In some communities, additional education and discussion about the composting process that renders the waste harmless and allows the release of nutrients to the tree planted on the pit are enough to change this viewpoint. CRS Kenya noted the same concern expressed by Muslim leaders and by some Muslim households. Nearly half of the households

interviewed in the four countries during this rapid assessment were Muslim, and there were clearly mixed views on whether or not to eat fruit or vegetables grown on Arborloo pits. However, all of those interviewed had decided that the Arborloo was acceptable as a toilet. Some had planted fruit trees, while others had planted shade trees. Some said they would sell their fruit and some said they would eat the fruit as well. Those that said they would eat the fruit explained that once the human excreta is composted, it is just like any fertilizer and does not contaminate the fruit from a tree grown on the pit. Clearly, they understood the science of composting. This was also the view expressed in focus group discussions with Muslim villagers in East Hararge and Arsi Zone in Ethiopia. CRS has not made an issue of such objections to growing or eating fruit, but merely presents the scientific evidence available on the matter. This open discussion is often enough to change viewpoints on the issue. CRS and partners suggest options of planting a fruit tree, a vegetable crop, a shade tree or nothing at all, emphasizing that improvement in sanitation and ease of construction alone are enough incentive to accept the Arborloo.

It is important that CRS and partners not make assumptions about who will accept the Arborloo and who will not, but rather carry out good hygiene education and provide clear information about sanitation options, costs and benefits, and the process of using the Arborloo pits for production. Regardless of their religion or cultural beliefs, households can then make informed decisions regarding which sanitation option to use, and how to maintain their latrine.

Pastoralists. CRS EARO reported that in Kenya pastoralists seem to have a cultural prohibition against putting one's excreta in one place, either the same defecation field or a pit. They truly believe it is more hygienic to practice open defecation and to spread it widely. Nevertheless, familiarity with latrines is growing in pastoral areas and there is some slow acceptance as pastoralists settle down. Pastoralists in Eastern Ethiopia and Eastern Kenya tend to be Muslims, which confuses the issue – which are Muslim beliefs and which are pastoralist beliefs? CRS EARO reported that a recent meeting in Kenya among Muslim pastoralists confirmed to us that CRS is dealing with both pastoralist beliefs and a Muslim belief that human excreta should not be used to grow food. However, it should also be emphasized that these beliefs are being challenged and are changing as these people settle in villages and witness the rise in diarrheal rates and the general filth of the villages.

7. LINKAGE BETWEEN COMMUNITY AND SCHOOL SANITATION

The results of this assessment strongly suggest that schools could play a key role in sanitation education and Arborloo demonstration for the broader communities served by the schools. So far, this is an untapped opportunity that appears to have strong support from local actors.

Schoolteachers, administrators and government officials in all four countries said that schools play an extremely important role in educating households in various ways, as schools are the center of community life and are looked upon as models for development. They were extremely receptive to the idea of using schools as learning sites for sanitation for both children and parents, and where students could build Arborloos for demonstration purposes and for their own use. It was understood that parents could view the latrines and children would take home sanitation messages. In addition, during focus group discussions in Ethiopia, girls in particular expressed great interest in the Arborloo, noting that its simple design and low cost would allow a large number to be built, thus providing adequate privacy for them.

School personnel interviewed in this assessment were also keenly interested in improving sanitation at their schools, and they were very receptive to the idea of trying other ecological sanitation options for students, including institutional double vault urine diversion latrines. They saw the potential for using Arborloo pits for growing shade trees and using urine diverted from toilets for fertilizing school vegetable gardens. School administrators in Ethiopia, South Sudan, Kenya and Uganda noted that sanitation has been included in its health studies curricula.

CRS has installed school latrines in the four countries where the rapid assessment was carried out. These have mostly been multi-stall deep pit latrines. In Ethiopia, CRS has also introduced Child Hygiene and Sanitation Training (CHAST) in schools in several districts. This learning module is similar to PHAST, but designed specifically for very young school-age children.

To date, CRS has had no direct programs to link school and community sanitation, which suggests that large-scale pilot/demonstration projects to link schools and communities on sanitation education and promotion should be considered as a part of new projects to scale up Arborloo and sanitation promotion.

8. COSTS OF ARBORLOOS

With the exception of Ethiopia, CRS has insufficient experience to know precisely the costs of programs that promote and provide Arborloos, since the programs in South Sudan, Kenya and Uganda have been implemented only on a small pilot scale. The consultants asked CRS country offices to provide their best estimates for the costs per household for sanitation service that includes provision of hygiene education, promotion and other training, a concrete Arborloo slab, program staff, support costs and monitoring and evaluation (M&E). As shown in Table 6, the reported costs amount to about \$16 in Ethiopia, \$17.50 in South Sudan (slab marketing model – see discussion below), \$21 in Kenya, \$20 in Uganda and \$19 in Tanzania. The costs of only producing concrete Arborloo slabs were estimated to be \$6.60 in Ethiopia, \$15-\$20 in South Sudan, \$7 in Kenya, \$10 in Uganda and \$9 in Tanzania.

The costs of CRS sanitation programs are made up of several components, including:

- Hygiene education, sanitation promotion, demonstration and other training
- Production of the slabs (labor and materials for digging the pits and construction of a superstructure are the responsibility of the household)
- Provision of tree seedlings
- Support costs of CRS and its partners in implementing the programs
- Monitoring and evaluation (M&E)

Table 6. CRS Estimated Program Costs per Household for Promoting the Arborloo (in US\$)*

| COUNTRY | SLAB | PROMOTION/ EDUCATION | TOTAL COST |
|---------------|------|-------------------------|------------|
| Ethiopia | 6.60 | 9.40 | 16 |
| South Sudan** | | | 17.50 |
| Kenya | 9 | 12 | 21 |
| Uganda | 10 | 10 | 20 |
| Tanzania | 7 | 12 | 19 |

*The household bears the costs of digging the pit and building the superstructure. These costs are not reflected in this table.

**The cost per household for South Sudan is based on a proposed model for commercial (privatized) production and sale of 40,000 slabs out of 56,000 proposed to be produced, in which households are expected to pay for the slabs.

Rapid Assessment of CRS Experience with Arborloos in East Africa

As already noted, CRS provides hygiene education, promotion and demonstration of the Arborloo as critically important parts of its sanitation programs, though the intensity and completeness of these component were found to vary from country to country. CRS partners in Ethiopia have also trained artisans to produce slabs for specific projects, both centrally at the headquarters of the partner and more recently at the district or even sub-district levels. Until now, these artisans have worked as wage labor to produce and distribute slabs.

In all four countries where the rapid assessment was carried out, CRS has provided slabs free of charge to some households as a part of sanitation promotion. In all countries, the digging of the latrine pit, installing the slab and construction of the superstructure is the responsibility of each individual household, as well as digging the new pit when the old pit is filled, transferring the slab to the new pit and moving the superstructure or building a new one.

In most Arborloo projects, tree seedlings on the first Arborloo pits are usually provided by the CRS partner to the household as a part of promotion.

CRS also has support and M&E costs associated with every sanitation project.

CRS Ethiopia

CRS Ethiopia has by far the most experience related to the costs of Arborloos and estimates that the overall sanitation package amounts to about \$16 per household. It is worth noting that the investment costs by CRS in Ethiopia to provide a conventional deep pit latrine (pit and slab only) averages \$44 and the labor and materials for constructing a superstructure costs about \$29, for a total of \$73, not including training and support costs.

Table 7 details the investments made by CRS from 2005 to 2009 in Ethiopia for its sanitation activities across all regions of the country, broken down by different project components. Production of the slab amounts to 41% of the investment (\$6.60 per household). Training represents 25% of the total investment costs (\$4 per household), support costs are 30% (\$4.80 per household), and M&E is 4% (\$0.60 per household). The cost of digging the pit, installing the slab, building the superstructure, and later moving the slab and digging new pits is the responsibility of the household. CRS Ethiopia estimates this cost to be equivalent to about \$12 per household. In most cases, households provide the labor and can collect materials locally, and therefore do not have to make a monetary contribution for these inputs.

The cost of providing only tree seedlings could not be identified by CRS Ethiopia and was included as a part of the support costs. In many cases, tree seedlings have been available at no cost from government nurseries or from agriculture research stations. In Ethiopia, tree seedlings vary from as little as a few US cents to \$2 to \$3 per seedling from private nurseries.

**Table 7. Costs to Construct 53,840 Arborloos and Related Activities
Factors Affecting the Scale-up of Sanitation and Arborloos and
the Readiness of CRS to Lead the Way**

| ACTIVITY DESCRIPTION | BUDGET (US\$) | % OF COSTS |
|--|---------------|------------|
| Hygiene Education, Promotion and Demonstration* | 215,360 | 25% |
| Toilet Construction (hardware and labor) | 353,190 | 41% |
| Support Costs (personnel, office, travel, vehicle) | 258,432 | 30% |
| M&E | 34,458 | 4% |
| Total | \$861,440 | 100% |

*The cost of capacity building in this table includes all hygiene and health education in the CRS projects where Arborloos were a part. The specific training and promotion for sanitation and Arborloos could not be disaggregated from the overall training costs, which also included education related to HIV/Aids, malaria and disease prevention.

If CRS Ethiopia were to continue with the current model (provision of slabs without cost to the household), they could expect the cost to be in the range of about \$16 per household. With continued inflation of materials and labor, this could conceivably rise to as much as \$20 per household within the next few years. CRS has indicated that there are ways that the cost per household could be reduced. These include use of wire mesh as reinforcement in the construction of the slabs instead of standard iron rods, use of local products as a replacement for cement, and use of slab molds made of wood or carved in the ground. Possibly one or two US dollars could be shaved from the current costs of about \$6.60 per slab in Ethiopia. Training costs might also be reduced by focusing more directly on hygiene promotion and demonstration, although there is the possibility that short-cutting the training in PHAST could lessen the acceptance and sustainability of Arborloos in the long term.

The most direct way to reduce investment costs in Ethiopia would be to privatize the production of slabs and train artisans within the projects to market and sell the slabs. The artisans could be trained as hygiene and sanitation promoters to raise their effectiveness as entrepreneurs and increase demand. Training in business development would also need to be a part of this training. Partners and government officials interviewed in

Rapid Assessment of CRS Experience with Arborloos in East Africa

Ethiopia estimated that at least 50% of households have an ability to pay for a low-cost slab, such as the Arborloo slab currently produced, but that others might need some means of credit to afford to pay the full cost of a slab. The rapid assessment did find that households interviewed have a willingness to pay for slabs, but this data cannot be confidently extrapolated for rural Ethiopia. Selling the slabs, rather than providing them at no cost, would reduce CRS investment costs to about \$10 per household.

CRS EARO has expressed the view that CRS country offices in East Africa should pursue a medium to long-term strategy of privatizing the production of Arborloo slabs as a means to better ensure a sustainable supply, to better fit with governments' policy of no subsidies for sanitation, and to develop productive capacities and employment at the local level. At this point, and from this limited rapid assessment, it is difficult to know if such privatization would have a negative or positive impact on scaling-up Arborloo use in the near and medium term. CRS would need to consider such questions as the availability of cement and reinforcing iron in local markets, the ability and willingness to pay, and whether artisans might be in a position to offer credit. Use of the SILC methodology, as well as other local initiatives, such as encouraging the sharing of Arborloos with those who cannot afford to buy a slab, could be explored as one means of ensuring availability of slabs for purchase. There could also be a strategy to gradually phase in the privatization model as more experience is gained on the willingness and ability of households to pay for slabs. This is the approach being put forward by CRS EARO and South Sudan within the proposed 2010 MYAP Program for South Sudan (see discussion below).

CRS South Sudan

In South Sudan, CRS has less experience with Arborloo promotion and installation costs. In the pilot promotion of Arborloos, CRS has provided plastic slabs, which cost \$60 to \$80 each. CRS does not plan to use these in the future due to their high costs, but instead will promote the use of concrete slabs, which they estimate will cost about \$15-\$20 each, including labor and materials.

By using a private enterprise model for Arborloo production and sale, CRS Sudan and the CRS regional office have concluded that much lower Arborloo investment costs per household are possible for the sanitation component of the proposed South Sudan MYAP. In this model, some slabs are to be given out by lottery for promotional purposes, but the majority will be sold either at full cost or with some discount. The total costs for the sanitation portion of the MYAP is estimated to be around \$975,000, which includes training of health promoters, support costs, training of artisans in concrete slab production, grants to artisans for initial materials, and business development.

The project will guarantee that 16,250 slabs will be produced and distributed by artisans as a part of project cost. However, if the model works and the artisans successfully launch their businesses, and if 100% coverage is achieved in the 75 Bomas targeted (about 56,000 households), the investment cost will be approximately \$17.50 per household, representing a major savings over the provision of free slabs. The MYAP model is explained in Annex 4, and is likely to provide important lessons and guidance for other Arborloo promotion projects in the near future.

CRS Kenya and CRS Uganda

CRS Kenya and Uganda have much less experience regarding the cost of Arborloo promotion and construction. However, CRS Kenya reports that the investment cost of an Arborloo slab is \$7 per household and that the total cost – including training, staff and other support – is approximately \$14, or a total of \$21 per household. These are the costs that they have proposed for scaling up sanitation in Kenya for the five-year period 2010-2014.

CRS Uganda reports that the cost of an Arborloo slab is about \$10 and the cost of hygiene education and promotion is another \$10, bringing the total investment cost to about \$20 per household.

9. FACTORS AFFECTING THE SCALE-UP OF SANITATION AND ARBORLOOS AND THE READINESS OF CRS TO LEAD THE WAY

The level of proactiveness by CRS, partners and donors represents a key factor for scaling up sanitation and the use of Arborloos in East Africa. Experience from Ethiopia and South Sudan already show that it is extremely easy to create demand for Arborloos in rural areas because the latrine has proven to be the technology of choice for most households. In the opinion of CRS staff in Ethiopia and South Sudan, the main factors inhibiting a rapid scale-up at the current time are a lack of funding for sanitation and a lack of an appropriate strategy for sustainable production of good quality, inexpensive, long-lasting manufactured slabs, for which there is growing demand. The results of the rapid assessment strongly suggest that when CRS has implemented a good pilot or demonstration on a significant scale, which shows the Arborloo is hygienic, inexpensive, productive and well accepted by rural households, then local government support follows.

Other factors for scaling up include building capacity of local partners, ensuring a supply of seedlings for the productive element of the Arborloo, and a willingness to pay for slabs if a private enterprise model is to be used. CRS feels these issues can be adequately addressed in future projects and do not serve as impediments to the expansion of sanitation and the Arborloo.

Ethiopia and South Sudan indicated that they are ready to scale up and take the lead in expanding sanitation implementation and that the Arborloo will be the technology of choice for most households. CRS' experience with promotion, construction and sustainable use of more than 50,000 Arborloos in Ethiopia provides a sound basis for further scaling up. In South Sudan, UNICEF has subcontracted CRS to provide hygiene training and to facilitate the construction of 1,200 Arborloos in Abeyei in 2010, which should allow CRS to build on the pilot project experience of 2009. The proposed MYAP, if approved, will allow further experience to be gained by CRS South Sudan.

The pilot projects in Kenya and Uganda have been on a smaller scale than in South Sudan. Kenya shows promise for expanding its sanitation activities based on experience from the pilot project in the diocese of Kitui, where 50 Arborloos were constructed and are being used and sustained. Uganda is at a similar stage. The assessment results from Uganda indicate a strong demand for sanitation improvements and suggest that the Arborloo could

Rapid Assessment of CRS Experience with Arborloos in East Africa

achieve wide acceptance because of its simple design and low costs. CRS Kenya and CRS Uganda and their partners would benefit from more intensive hygiene training in order to strengthen sanitation and Arborloo promotion as a part of larger pilot programs. This training could be included in plans for large-scale sanitation implementation programs in those countries. A strengthened education component will be key to future acceptance, sustainability and scaling up. It should be noted that GTZ has been active in both Kenya and Uganda, where it is piloting ecological sanitation on a large scale at the household and institutional levels. Thus, eco-san is understood and accepted by the governments of both countries.

CRS Tanzania was not a part of this assessment, but under the GWI they plan to promote the Arborloo. An assessment carried out by CRS EARO with assistance of CRS Ethiopia in August 2008 showed willingness on the part of CRS Tanzania and three implementing partners to introduce the Arborloo into geographic areas beyond the scope of the GWI. CRS Tanzania should be included with Kenya and Uganda in further pilot projects, but also as part of longer-term large-scale sanitation

10. AREAS WHERE SANITATION AND ARBORLOOS COULD BE SCALED UP

The lead consultant asked CRS country programs in Ethiopia, South Sudan, Kenya, Uganda and Tanzania for informal draft strategies for sanitation scale up to get some preliminary ideas for this report. This request was followed up by email correspondence for additional data from the country offices. This information, along with data gathered during the field visits, forms the basis for this section, which is summarized in Table 8.

Table 8. Potential for Scale-up in East Africa

| | ETHIOPIA | SOUTH SUDAN | KENYA | UGANDA | TANZANIA |
|-----------------------------------|--|---|---|---------------------------------|--|
| HHs without sanitation | 8-10 million | 1-2 million | 2.7 million | 1.7 million | 5 million |
| Target HHs | 1,000,000* | 125,000 | 151,000 | 12,000 | 135,200 |
| Target areas | 7 regions: Somali, Oromia, Dire Dawa, SNNPR, Amhara, Addis Ababa, Tigray | Central and Western Equatoria, Jonglei State, Great Abeyei Region | Districts: Kitui, Mwingi, Machakos, Malindi | Districts: Gulu, Amuru and Lira | Regions: Kilimanjaro, Tanga, Arusha, and Manyara, in 12 districts in Northern Tanzania |
| Estimated investment costs | \$16 million (\$16 per HH) | \$2.18 million (\$17.5 per HH) | \$3.2 million (\$21 per HH) | \$240,000 (\$20 per HH) | \$2.6 million (\$19 per HH) |

*CRS Ethiopia believes they can reach 4 million households using expanded partnerships. This estimate of 1 million assumes existing partnerships only.

10.1 Ethiopia

Ethiopia has an estimated 8 to 10 million rural households that are presently not served by sanitation. Since 1998, CRS has installed a total of about 60,000 latrines, of which nearly 54,000 are Arborloos installed since 2005. CRS Ethiopia estimates that with its nine implementing partners (Table 9), it could promote and support households to install approximately 180,000 Arborloos per year or about 900,000 Arborloos over 5 years. If CRS Ethiopia were to think big and lead a consortium of NGOs, it estimates that it could likely achieve 800,000 toilets per year or about 4 million over a five-year period. This would allow the country to achieve the Millennium Development Goal (MDG) of halving the number of people without access to sanitation in Ethiopia by 2015. CRS Ethiopia indicates that such a program could be implemented in the following areas:

- All regions, zones and districts where CRS and partners are currently working (see Table 7), but where 100% coverage with Arborloos or

other sanitation options have not been achieved. This would include:

- All areas where CRS has implemented integrated water resource management projects between 1998 and 2009. There are approximately 18 such areas, many of which were phased out with low sanitation coverage.
- Other CRS water supply and sanitation projects that were phased out, but with no sanitation or low sanitation coverage.
- New areas within the regions, zones and districts where CRS and partners operate, but so far with limited sanitation coverage.
- New areas within regions, zones or districts that new partners could cover with CRS leadership.

Table 9. CRS Partners and Areas of Operation for Initial Arborloo Scale up

| CRS ETHIOPIA PARTNER | REGION OF OPERATIONS | ZONES OF OPERATION |
|--|----------------------------|--------------------------------|
| Hararge Catholic Secretariat | Oromia, Dire Dawa, Somalia | East and West Hararge, Shinile |
| Wonge Catholic Secretariat | Oromia | Arsi, East Shewa |
| Meki Catholic Secretariat | Oromia | East Shewa, Arsi |
| Soddo Hosanna Catholic Secretariat | SNNPR | Hadina, Wolita |
| West Amhara Catholic Secretariat | Amhara | West Gojam |
| Water Action | Amhara | South Wollo |
| Organization of Social Services for AIDS | Oromia | East Shewa |
| Progress Integrated Development Organization | Addis Ababa | |
| Adigrat Catholic Secretariat | Tigray | East and West Tigray |

New partners for this sanitation program might include current members of the Millennium Water Alliance and GWI, as well as other NGOs. These could include: CARE, Oxfam, Relief Society of Tigray, Action Contre la Faim, World Vision, Food for the Hungry, Water Aid, and Save the Children. In addition, the Government of Ethiopia, UNICEF and the World Bank could be brought on board in a sanitation learning alliance. The strategy would advocate the use of PHAST, but accept other software approaches, such as CLTS. CLTS would need to present the Arborloo, Fossa Alterna or other sanitation technologies as alternatives that rural households could adopt, and

10. Areas Where Sanitation and Arborloos Could be Scaled up

it would need to provide training on their use as is presently done in PHAST. CLTS would have to change its current message that human excreta is dirty and needs to be disposed of, to one that human excreta can be sanitized and used as a productive resource.

Subcontracting with new partners or forming a consortium should be done very carefully to ensure that the successful model demonstrated in Ethiopia and emerging in South Sudan is not distorted in favor of competing models of sanitation promotion by new partners, which might jeopardize success. As such, CRS would be the best lead for such a major national initiative in Ethiopia. A new larger partnership for sanitation in Ethiopia would require an appropriate name, such as Ethiopian Millennium Sanitation Alliance or Community-Led Sanitation Alliance. A name that highlights the important roles of Kebele leadership and local artisans might be best.

A project to install four million toilets in Ethiopia seems daunting from an M&E perspective. However, monitoring is essential with such a large project and with new partners. To help monitor achievements, a global positioning system reading could be made for each household where a toilet is installed. The toilet would be digitally mapped, with data provided to the partners and the government. The local Kebele chairman would be made responsible for reporting to district officials the number of latrines built under the project. The Kebele chairman could be paid a small stipend for this monitoring work.

As noted above, based on the experience of CRS Ethiopia, the current average investment cost is about \$16 per household (excluding household-provided inputs, estimated to be the equivalent of about \$12 per Arborloo for labor and materials). Experience suggests that under the current approach by CRS, which provides Arborloo slabs to households free of charge, the overall investment costs for a program to promote and install four million Arborloos would be \$64 million of which about 25% would be for promotion and education. The cost could be lowered under a new market-based model for production and sale of Arborloo slabs, as noted in Section 8 of this report.

10.2 South Sudan

In South Sudan, one to two million households are currently unserved by sanitation, representing more than 90% of the population. Current population statistics obtained from the recent national census are in dispute, so the exact numbers of unserved are not definitive. CRS South Sudan has thus far only implemented pilot projects but is convinced that the Arborloo is an excellent sanitation option for much of the country, and CRS is prepared to scale up sanitation activities significantly.

Rapid Assessment of CRS Experience with Arborloos in East Africa

Under a conservative scenario, CRS South Sudan believes it has the capacity, with existing partners, to install 20,000 to 25,000 Arborloos per year for a total of 100,000 to 125,000 over a five-year period. The proposed areas for scaling up include Central Equatoria, Western Equatoria, Jonglei State and the great Abeyei Region. Eastern Equatoria will be covered by the 2010-2013 MYAP, if approved by USAID. Catholic dioceses in the respective regions would be used as implementing partners along with other community-based organizations in South Sudan.

The CRS MYAP proposal for 2010-2013 will train 150 artisans in 75 Bomas as private entrepreneurs to provide Arborloos for 56,000 households, of which 16,250 slabs will be contracted by the project for direct sale to households and the remaining slabs will be produced by artisans at their own cost to meet additional demand. Five hygiene promoters per 75 Bomas will support the sanitation program for all 56,000 households, creating demand for the Arborloo, Fossa Alterna or conventional pit latrines, depending upon household preference. If this model works well, it will be adopted for further expansion of the Arborloo.

If CRS South Sudan should decide to develop a broader partnership, it may have the ability to facilitate the construction of up to one million Arborloos or other ecological toilet designs throughout the country.

10.3 Kenya

Based on current data, CRS Kenya estimates that about 2.7 million households are without basic sanitation facilities in Kenya. CRS Kenya proposes a program of sanitation improvements to be implemented largely in the Eastern province in the districts of Kitui, Mwingi, and Machakos as well as in Malindi in Coast Province. Beneficiaries of both CRS Kenya Orphans and Vulnerable Children's Program and Home-Based Care Program would be included. A total of approximately 151,000 households would be included in the project over a five-year period. CRS Kenya has developed a preliminary budget for this project, which amounts to approximately \$3.1 million over a 5-year period, at a cost of about \$20.50 per Arborloo or other latrine. The proposed CRS program would offer a choice of latrine options including the Arborloo, Fossa Alterna and conventional pit latrine. CRS Kenya has noted the need for further discussion and analysis of approaches for slab production and provision to households.

10.4 Uganda

CRS Uganda reports that about 1.7 million households (about 37% of all households) lack sanitation facilities in Uganda. The proposal from CRS Uganda is still general and needs further work. However, they have indicated that they could work in the former GWI areas – Gulu and Amuru – and in the current GWI project area of Lira for future scaling up of sanitation. CRS Uganda is currently in the second year of a three-year GWI project in Lira District, which plans to cover 18,000 households for water and sanitation. The consultant notes again that the Uganda pilot for Arborloos was extremely small in Gulu and suggests that additional piloting of the Arborloo is probably needed as a part of a proposal for larger-scale expansion of sanitation coverage by CRS in Uganda. The current GWI project might serve as an initial pilot, where the Arborloo could be offered to households along with the Fossa Alterna and traditional pit latrines. CRS Uganda estimates that the current cost of an Arborloo in Uganda is about \$20, which includes \$10 for hygiene education and promotion and \$10 for the latrine slab.

10.5 Tanzania

CRS Tanzania estimates that Tanzania has five million households unserved by sanitation. CRS Tanzania is currently preparing to pilot the Arborloo among several hundred households in Sami District under the GWI. This project would provide hygiene education through PHAST and introduce the Arborloo. CRS Tanzania has also prepared a preliminary proposal for scaling up sanitation over the five-year period 2010-2014 to cover approximately 135,200 households in 12 Districts in the regions of Kilimanjaro, Tanga, Arusha and Manyara in Northern Tanzania. CRS Tanzania intends to work with seven local partners: Diocese of Same, PASADIT, Muheza Hospice Care, Diocese of Mbulu, Archdiocese of Arusha, Dareda Hospital and UHAI. The preliminary budget, at \$2.6 million, works out to be about \$19 per Arborloo.

II. OVERALL CONCLUSIONS

The findings of this assessment strongly suggest that the introduction of the Arborloo in Ethiopia has been successful in overcoming barriers to sanitation coverage and sustainability. With appropriate hygiene education and sanitation promotion, the consultant considers that the Arborloo provides an appropriate and low-cost technology that can allow future major sanitation scale up in Ethiopia. Pilot projects in South Sudan, Kenya and Uganda provide evidence that the Arborloo may also provide a technology choice for households that will allow major sanitation scale-up in those countries as well. In Ethiopia, sanitation coverage can conceivably be on a scale that will enable Ethiopia to meet the MDG of halving the number of people without proper sanitation by 2015. There are some major challenges, mainly internal for CRS, in moving forward with sanitation scale-up:

- CRS will need to build further capacity for sanitation training and promotion.
- Country programs will have to be more proactive with governments, strengthen existing partnerships, build new partnerships and provide leadership to bring major stakeholders, including governments fully on board.
- CRS will need to develop and test new enterprise models to allow movement towards a market approach for production and provision of concrete Arborloo slabs in order to meet the expected high demand and to ensure the long-term sustainable production of low-cost, durable slabs.
- CRS should follow up reports from Ethiopia that communities with Arborloo coverage were spared outbreaks of acute watery diarrhea while adjacent communities without Arborloos suffered. It is not known whether data can be found to support such claims and whether communities using other sanitation options were also spared the outbreaks. However, if such claims can be substantiated scientifically, it would be an important contribution to the literature on the role of sanitation in preventing water borne diseases and would further support arguments for promoting the Arborloo in particular, or sanitation in general.

These are important challenges, but ones that this consultant feels CRS can meet, initially in Ethiopia and South Sudan, and also in Kenya, Uganda and Tanzania, where some additional piloting as part of scaling up is suggested.

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ANNEX I: SCOPE OF WORK

Rapid Assessment of CRS Experience with Arborloo Latrines in East Africa

November 16, 2009 to January 7, 2010

Catholic Relief Services, East Africa Regional Office, Nairobi

Assignment: Catholic Relief Services, East Africa Regional Office in Nairobi, is seeking a lead consultant and two assistant consultants to carry out a rapid assessment of the scalability and sustainability of the Arborloo latrine in households in one or more countries in East Africa. There is interest to know also whether the Arborloo has any feasibility for schools, and whether there might be a relationship between sustainable school sanitation and sustainable community sanitation, if the Arborloo, or any other latrine design, would be promoted simultaneously in communities and schools.

Timeframe: The timeframe of the assignment is November 16, 2009 until January 7, 2010.

Consulting days: The time this assignment will take can only be estimated and therefore the following information is a guide. The lead consultant will have maximum of 25 consulting days, of which approximately 13 will be for travel and field work in one or more East African countries, and 12 days for review of reports and writing up of findings. The assistant consultants will have maximum of 25 consulting days each, 13 for travel and field work in one or more East African countries, and 12 days for review of reports and writing up of findings. The assistant consultants will administer household and school checklists, review reports, write up their findings and report consolidated findings to the lead consultant. Each consultant should keep a time sheet that records the hours worked and the activities and accomplishments of each day. The consultants should invoice CRS for the total number of days worked and provide the timesheets.

Consultant assignments: The three consultants will share the task of gathering data and writing the final report, with the lead consultant taking all final decisions on what is included in the final report. The lead consultant will visit sites in Ethiopia and South Sudan. The assistant consultant for Ethiopia will visit different sites in Ethiopia. The assistant consultant for Kenya and Uganda will visit sites in each of those countries. The lead consultant is responsible for consolidating the results from all four countries into one report. The three consultants will determine together details of how they will divide up this assignment and have latitude to make adjustments to this general plan.

Table of Report-writing Responsibilities

| | ETHIOPIA | SOUTH SUDAN | KENYA | UGANDA |
|-----------------------------|----------|-------------|-------|--------|
| Lead Consultant | X | X | X | X |
| Assist. Consultant 1 | X | | | |
| Assist. Consultant 2 | | | X | X |

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The three consultants will have other specific duties that are described in the **Description of the Assignment**, below.

CRS Support to Consultant: The consultants need to work closely with the CRS country offices to plan and administer this rapid assessment. CRS country offices and the East Africa Regional Office will support and facilitate the consultants' travel by making airline reservations, arranging airport transfers, make hotel bookings and will pay all related costs for the same. CRS country offices will facilitate interview appointments and travel within country to field sites. CRS and Partner staff will be available for interviews.

Reporting due dates: The lead consultant will provide CRS a preliminary feedback report on December 15, 2009 which will summarize the field sites visited, the names and types of schools visited, the names of the key informants interviewed, any focus group discussions that may have taken place, and preliminary findings and conclusions. This information will be used discussed with CRS staff before the final report is prepared to ensure that the consultant has acquired the needed information. The final report will be due no later than January 7, 2010 and no extension can be given on this date.

Compensation payments: The first compensation payment to the consultant (50%) will be December 15, after the feedback meeting, and the second compensation payment will be within 10 days after delivery of the final report.

Qualifications of the Consultants: The consultants shall have a background in public health, at least 5 years experience in public health and have a good knowledge of issues surrounding sanitation in developing countries. An advanced degree in public health, water and sanitation, social sciences or a closely related field is preferred. The lead consultant should have excellent skills in written and spoken English.

Supervision: The lead consultant will work under the supervision of the Regional Technical Advisor for Health and the Deputy Regional Director in CRS EARO (Mayling Simpson: msimpson@earo.crs.org and Lori Kunze: lkunze@earo.crs.org). The assistant consultants will work under the supervision of the lead consultant. All questionnaires and checklists need to be approved by CRS/EARO.

Lead Consultant obligations: to provide CRS EARO with a soft copy of the final report no later than January 7, 2010. Photos with captions that illustrate concepts in the report would be appreciated.

Description of the Assignment

Assessment Goal:

To better understand the potential for scaling up Arborloo sanitation programs in EARO.

Major Questions to Address:

These are higher order issues for the consultant to handle once the assessment objectives below have been answered.

1. What is the sustainability of the Arborloos installed under CRS guidance in Ethiopia, South Sudan, Kenya and Uganda?
2. Can Arborloos be used as a sustainable intervention in schools? Or can Arborloos be built in schools for student and teacher educational purposes with the objective of reaching out to households and/or supporting an Arborloo community sanitation project?

3. What is the relationship between sustainable school sanitation and sustainable household/community sanitation?
4. What are the program and non-program factors in the successful uptake of the Arborloo in communities, such as CRS and Partner staff attitudes, subsidies or free slabs, types of sanitation education, use of PHAST or other sanitation promotion tools, culture (farming and pastoral), religion, and any other factors?

Assessment Objectives:

1. To identify the extent of Arborloo installation supported by CRS in Ethiopia and other EARO countries.
2. To identify and assess the factors influencing the sustainability of Arborloo latrines in CRS programs.
3. To identify the linkages between sanitation in schools and sanitation in the surrounding community.
4. To identify areas in Ethiopia and selected EARO countries where scaling up of Arborloo programs could be sustainable.
5. To identify gender issues associated with uptake and sustainability of Arborloos.
6. To determine the cost of promoting Arborloos in each country program.

Work Plan:

1. Compile from office records existing data on number, location and date of Arborloo installation in Ethiopia, Sudan, Kenya and Uganda.
2. Compile any associated data from existing records on current operating status of Arborloos. That is, how many households are still using Arborloos, and how many new ones they have built since their first one. Collect data on how many fruit trees or other plants have been grown on household Arborloos since inception, per household and collectively, and/or whether Arborloo compost has been used for any other fertilizer purpose. Assess whether households are earning income from fruits and vegetables produced strictly from Arborloos. If households have not sustained their Arborloos, assess why.
3. Assess gender issues associated with uptake and sustainability of Arborloos. Questions might include, but are not limited to, whether female-headed households are more likely to have an Arborloo latrine than no latrine or another design of latrine, whether women can build Arborloos themselves without male labor, whether women can more likely afford Arborloos, whether the Arborloos makes it more likely that households can have two latrines (due to lower cost) in situations where men and women cannot share a household latrine.
4. Determine the cost of promoting Arborloo latrines in each country. Determine the cost of one slab and the associated cost of promotion, and whether PHAST or any other promotional is required and those costs of training. Determine whether local artisans can and should be trained and the cost of their training and any other support costs to artisans.
5. Administer questionnaires to CRS staff and partners and to relevant government ministries on factors leading to scalability and sustainability in their country programs.

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6. Select representative communities with Arborloos for field visits. The number of communities to visit and the number of household questionnaires to administer is suggested below.

| | ETHIOPIA | SOUTH SUDAN | KENYA | UGANDA |
|---------------------------------|----------|-------------|-------|--------|
| No. of Arborloos to date | 55,000 | 460 | 335 | 28 |
| No. communities to visit | 3 | 2 | 2 | 1 to 2 |
| No. Household interviews | 10 | 10 | 10 | 10 |

7. Plan field trips (max 10 days) with the CRS country offices to the selected communities.
8. Carry out rapid assessment in selected communities using office data as a base for comparison. Conduct household and school interviews using checklists of questions.
9. To the extent possible, collect information on the four assessment objectives above in each community.
10. Prepare a rapid assessment report, specifically addressing each of the above objectives.

Questionnaires and interview checklists to be prepared:

1. Create a questionnaire for Ethiopia and South Sudan CRS and partner staff on factors that helped to scale up the Arborloo in their country programs.
2. Create a questionnaire for Kenya and Uganda CRS and partner staff on factors inhibiting scale up.
3. Create a checklist for interviewing a few households on sustainability. Determine how households will be selected.
4. Create a questionnaire for CRS and country staff on why our country programs have not tried Arborloos at schools.
5. Create an interview checklist for teachers in at least 5 schools in each country on their perception of the impact of water and sanitation at schools on the wider community and whether demand for sanitation has increased. We could also ask teachers about what they think about Arborloos for schools, especially as an educational activity, as well as providing school sanitation.

Comments:

- This is a rapid assessment, not a controlled research study. We are looking for some evidence-based conclusions, even if the conclusions remain preliminary. We intend to share the assessment with the Gates Foundation, showing how we are progressing with sanitation issues and indicating where we think scaling up can occur. We hope that Gates will be intrigued by the results of the assessment, find it fits in with their priority concerns for improving sustainable sanitation coverage, and then request CRS to submit a concept paper outlining future efforts.
- Consultants will administer questionnaires and checklists with the assistance of CRS country program staff and/or partner staff. Consultants should keep records of all of their interview and questionnaire

notes to share with CRS. There will be no enumerators hired and there will be no statistical analysis of results. Consultants will form impressions of what is happening in the field from field observations, discussions with households and interviews with various staff.

Further Background for the Consultants

Scaling up Arborloo

Two CRS country programs show signs of already scaling up the Arborloo. Ethiopia has completed Arborloos at 55,000 households since 2005. South Sudan has completed Arborloos in 460 households since January 2009 and UNICEF has contracted CRS Sudan to build 1,200 more in FY 2010. We could ask those two countries to fill in a questionnaire on what they think are the factors that led to rapid scaling up.

- **Action:** create questionnaire on factors leading to scaling up (brief with open-ended questions)

Two countries – Uganda and Kenya - were introduced to the Arborloo at the beginning of the GWI project in 2007/8 and staff from both country offices has seen Arborloos in the field in Ethiopia. Both country offices have done a few pilot households (Kenya 280 and Uganda 28) but neither has shown much movement toward going to scale. We could ask those two countries for factors inhibiting going to scale.

- **Action:** create questionnaire on factors inhibiting scaling up (brief with open-ended questions)

Sustainability of the Arborloo

Sustainability is an area that we know much less about and we are not sure if there is any monitoring on this. Ethiopia partners may have some data or a sense of what is happening. We could ask them to fill in a questionnaire on this. The Arborloo has not been in Sudan long enough to judge sustainability, other than talking to households that currently have one.

- **Action:** create a checklist of questions for households on sustainability – interview about 10 households in each country (brief, with close-ended questions)

Arborloos at schools

We have urged Ethiopia since 2005 to try some Arborloos at schools both for use as toilets and for teaching children and their parents how they are built. As far as we know there has been no movement on this. We could ask CRS and partner staff in Ethiopia why. We could also ask the other 3 countries on why they have not tried Arborloos at schools for educational and sanitation purposes.

- **Action:** create a questionnaire for CRS and partner staff on why our country programs have not tried Arborloos at schools (brief with open-ended questions).

Connection between community sanitation and school sanitation

The GWI project in Garissa and Tana River has been serving schools with water and sanitation and many or most pupils come from pastoralist communities. It is interesting to note that the project has reported an overcrowding at those schools that are now served. Teachers say that parents are moving their children to schools with water and toilets because they want them to have these amenities. This has resulted in the originally planned ratios of students to water and sanitation to become quickly distorted and kids are now

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underserved. But it is also a hopeful sign that parents want these things for their kids and perhaps even in their homes. We are not sure how we will document or judge that toilets at schools spread to communities or vice versa. Perhaps we can interview teachers at schools with toilets to see if they have any opinion or observations on their influence on the wider community.

Both school and community sanitation is hampered by the cost of the units we usually promote, and the fact that these facilities soon become foul and smelly. The Arborloo is cheap to build, doesn't smell and can be closed and re-dug if it becomes foul or full. It is a much more flexible design. Therefore, the connection between school and community may be that they have a common problem –but perhaps the Arborloo can become the common solution. Schools are a great place to demonstrate new ideas, as long as the school takes responsibility for their maintenance and sustainability over time. Now that may also be challenging.

- **Action:** create a checklist of questions for interviewing teachers in at least 5 schools on their perception of the impact of water and sanitation at schools on the wider community and whether demand for sanitation has increased. We could also ask teachers about what they think about Arborloos for schools. This could be a focus group discussion with teachers.

Data requirements per country

| DATA REQUIREMENTS | ETHIOPIA | SOUTH SUDAN | KENYA | UGANDA |
|--|----------|-------------|-------|--------|
| Scalability questionnaire for CRS and partner staff (N=5 or more) | X | X | | |
| Non-scalability questionnaire for CRS and partner staff (N=5 or more) | | | X | X |
| Households interviews on sustainability (about 10 per country) | X | X | X | X |
| Questionnaire for staff on feasibility of Arborloos at schools from perspective of CRS Country Programs (N=5) | X | X | X | X |
| Checklist of questions for teacher interviews on feasibility of Arborloos at schools from perspective of schools (5 schools in each country) | X | X | X | X |

ANNEX 2: AREAS VISITED FOR RAPID ASSESSMENT

| COUNTRY | REGION | ZONE/ COUNTY | DISTRICT | SUB- DISTRICT/ VILLAGE |
|--------------------|-------------------|-----------------|----------------|---|
| Ethiopia | Oromia | East Hararge | Gorogotu | Worji jalala/ Gandijundi village |
| | | West Hararge | Chiro | Fugna dimo/ Sekera and Fugnagdino villages |
| | | Arsi | Dodota | Tadecha Guracha (2 villages) |
| | | East Showa | Meki | Wolda Hafa Peasant Association(P.A) |
| | | West Arsi | Siraro | Basa Meja Peasant Association(P.A) |
| | SNNPR | Walita | East Wadewacho | Wara Laloo Peasant Association(P.A) |
| South Sudan | Eastern Equatoria | Torit | Nimule | Mogale/Matabwa and Masiri |
| Kenya | Coast | | Tana River | Bangali Division: Ruko, Tula & Korat Villages |
| | Eastern | | Mwingi | Nuu Division: Wingemi Location |
| Uganda | | | Gulu | La Logi Sub- county:Awat Lela Village; Lakwana Sub-County: Lagwe Dola Village. |

ANNEX 3: HOUSEHOLD INTERVIEWS, FOCUS GROUP DISCUSSIONS AND KEY INFORMANT INTERVIEWS

| COUNTRY | REGION | AREAS/ SITES VISITED | NO. OF HOUSEHOLD INTERVIEWS | NO. OF FOCUS GROUP DISCUSSIONS | KEY INFORMANT INTERVIEWS |
|--------------------|----------------------|---|-----------------------------------|---|--|
| Ethiopia | Addis Ababa | | - | - | CRS Watsan Unit CRS Agriculture Unit Watsan Head |
| Ethiopia | Oromia | East Hararge/ Gorogotu | 3 | Village Users (12) | Bureau of Health School Teacher HCS (at Dire Dawa and in Field) Kebele Chairman |
| | | West Hararge/ Chiro | 3 | Village Users (6) | Bureau of Health HCS Partner (local) School teacher Village Head |
| | | Arsi/Wonji | 3 | Village women's groups (12) Village men's groups (4) | Wonji Catholic Sec. Bureau of Health |
| | | East Showa/ Meki | 3 | School Director and students | S.D. Officer |
| | | West Arsi/ Siraro | 3 | | Partner Project Officer Gov. Health Office Health Ext. Worker |
| | SNNPR | Walita/ East Wadewacho | 3 | Student group | Health Office |
| South Sudan | Juba | | | | CRS Watsan Officer CRS Head of Office CRS Health Promotion Officer |
| South Sudan | Eastern Equatoria | Mogale/ Matabwa and Masiri | 7 | Village men and women (6) Masiri/Village | Payam Watsan Officer – Mogale Dev. Officer –Mogale Boma Administrator- Masiri Payam Administrator and Executive Officer -Mogale Administrator – Loa Primary School Administrator – Loa Secondary School |
| Kenya | Coast | Tana River, Bangali Division: Ruko, Tula & Korat Villages | 5 | Boys and Girls school group Muslim leaders (2 groups) Men's groups (2) Womens group (1) Boys school group (1) Mixed group of men and women (1) | Div. Public Health Off. Deputy Head Teacher Teacher (2) Diocese Project staff |
| | Eastern | Mwingi, Nuu Division: Wingemi Location | 5 | Primary School Group Womens' group | District Health Officer Partner Project Officer School Teacher District Health Technician |
| Uganda | | Gulu, La Logi Sub-county: Awat Lela | 10 | School students Women's group Mixed men's and women's group | CRS and partner project staff (12) Community planning chair Primary school teacher District Water Officer |
| TOTALS | | | 45 | | |

ANNEX 4: HOUSEHOLD SURVEY DATA TABULATION SUMMARY

| NO. | QUESTION | RESPONSES | N=7 | N=9 | N=9 | N=6 | N=7 |
|-----|---|----------------------------|-------------|------------|------------|---------|-----------|
| | | | SOUTH SUDAN | ETHIOPIA 1 | ETHIOPIA 2 | KENYA | UGANDA |
| | Respondent | MHH | 7 | 8 | 9 | 3 | 4 |
| | | FHH | 0 | 1 | 0 | 3 | 3 |
| | | Female | 4 | 7 | 9 | 5 | 6 |
| | | Male | 7 | 6 | 0 | 2 | 1 |
| 0 | What factors influenced your decision to build an Arborloo? | Health | 7 | 5 | 8 | 5 | 7 |
| | | Simplicity/costs | 3 | 3 | 7 | 5 | 7 |
| | | Production | 5 | 6 | 7 | 4 | 6 |
| | | Status | 1 | 1 | 1 | 5 | 7 |
| | | Subsidy | 1 | 0 | 4 | 5 | 7 |
| | | Knowledge | 5 | 1 | 1 | 2 | 3 |
| | | Privacy/convenience | 4 | 4 | 6 | 4 | 6 |
| | | Safety | 0 | 2 | 0 | 0 | 0 |
| | | Smell and flies | 0 | 2 | 1 | 0 | 0 |
| 1 | Arborloos built | No | | 1 | 1 | 1 | 1 |
| 3 | Years using Arborloo | Years | 0.51 | 3.44 | 1.6 | 0.25 | 1 |
| 4 | Slab provided | Yes | 6 | 9 | 7 | 5 | 7 |
| | | No | 0 | 0 | 2 | 0 | 0 |
| 5 | Would you have built the Arborloo w/o the slab? | Yes | 6 | 9 | 4 | 2 | 2 |
| | | No | 0 | 0 | 4 | 3 | 5 |
| 6 | What would you have paid? | Average cost in USD | 3.71 | 6.8 | 4 | - | - |
| 7 | Who dug the pit? | Men | 6 | 8 | 6 | 3 | 4 |
| | | Women | 0 | 1 | 2 | 1 | 0 |
| | | Hired | 2 | 5 | 1 | 2 | 3 |
| | | Volunteer outside | 1 | 0 | 0 | 0 | 0 |
| 8 | Any problems? | Yes | 4 | 3 | 0 | 1 | 4 |
| | | No | 2 | 6 | 9 | 4 | 3 |
| 9 | How much did you pay, if anything? | Amount | 0 | 0 | 0 | 200 Ksh | 6000 USh |
| 10 | How long did it take you to dig the pit? | Days | 1 | .75 | 1 | 1.33 | 3.5 |
| 11 | Who made the superstructure? | HH member | 6 | 9 | 8 | 5 | 5 |
| | | Help from outside | 2 | 0 | 1 | 0 | 1 |
| | | Paid for materials, if any | 0 | 0 | 0 | 0 | 15000 USh |
| 12 | How long to build entire latrine? | Average number of days | 4.5 | 1 | 3.29 | 3.8 | 5.71 |
| 13 | How many Arborloos do you have now? | Average number | 1 | 1 | 1 | 1 | 1 |

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| NO. | QUESTION | RESPONSES | N=7 | N=9 | N=9 | N=6 | N=7 |
|-----|--|--|-------------|------------|---|-------|--------|
| | | | SOUTH SUDAN | ETHIOPIA 1 | ETHIOPIA 2 | KENYA | UGANDA |
| 14 | How many times have you moved the Arborloo? | Average no. of times | 0 | 3.78 | 2 | 0 | .29 |
| 15 | How long to fill the pit? | Average no. of months | 7.33 | 7.67 | 3.22 | 4 | 21.2 |
| 16 | Does everyone use the pit? | Yes | 6 | 9 | 9 | 4 | 4 |
| | | No | 0 | 0 | 0 | 1 | 1 |
| 17 | | No of HH members who don't use the pit | 0 | 0 | 0 | 0 | 0 |
| 18 | How many people use the Arborloo? | Average No. of Arborloo users | 8.5 | 7.22 | 6.67 | 7.8 | 11.6 |
| 19 | Have you planted or do you plan to plant something on the filled pit ? | Yes | 6 | 9 | 7 | 2 | 1 |
| | | No | 0 | 0 | | 3 | 6 |
| 20 | What has been planted or what do you plan? | Fruit tree | 5 | 8 | 4 | 2 | 1 |
| | | Vegetables | 0 | 1 | 3 | 0 | 0 |
| | | Shade tree | 2 | 1 | 0 | 0 | 0 |
| 21 | Do you use the produce for family consumption? | Yes | 3 | 8 | 4 | 0 | 0 |
| | | No | 1 | 3 | 2 | 0 | 1 |
| | | No production yet | 4 | 6 | 2 | 5 | 6 |
| 22 | Do you sell or plan to sell produce? | Yes | 5 | 4 | 1 | 0 | 0 |
| | | No | 0 | 5 | 2 | 0 | 2 |
| 23 | Was training adequate? | Yes | 0 | 9 | 6 | 4 | 2 |
| | | No | 6 | 1 | 1 | 1 | 5 |
| 24 | What training was given? | PHAST | 0 | 7 | 9 | 0 | 0 |
| | | Other Hygiene Education | 1 | 4 | 1 | 3 | 4 |
| | | Demonstration | 7 | 9 | 0 | 0 | 0 |
| 25 | Any problems with the Arborloo and its use? | Yes | 2* | 0 | 0 | 0 | 2** |
| | | * Problems were: 1) termites eating superstructure in one household 2) digging without tools available | | | ** Problems were flies and smell too many users | | |
| | | No | 4 | 9 | 7 | 5 | 7 |
| 26 | Do you plan to continue using and moving the Arborloo? | Yes | 6 | 9 | 9 | 5 | 7 |
| | | No | 0 | 0 | 0 | 0 | 0 |

Annex 4: Household Survey Data Tabulation Summary

| NO. | QUESTION | RESPONSES | N=7 | N=9 | N=9 | N=6 | N=7 |
|-----|---|------------------------------|-------------|------------|------------|-------|--------|
| | | | SOUTH SUDAN | ETHIOPIA 1 | ETHIOPIA 2 | KENYA | UGANDA |
| 27 | Any further support needed? | Slab | 1 | 1 | 0 | 1 | 0 |
| | | Digging tools | 4 | 0 | 1 | 0 | 2 |
| | | Artisan training | 1 | 0 | 0 | 0 | 0 |
| | | Hygiene/Arborloo training | 1 | 4 | 3 | 4 | 4 |
| | | Tree seedlings | 3 | 3 | 3 | 0 | 0 |
| | | Support building Arborloo | 0 | 0 | 0 | 0 | 1 |
| 28 | What are the major benefits of having a toilet? | Health | 6 | 8 | 7 | 5 | 7 |
| | | Time and money | 1 | 2 | 0 | 1 | 0 |
| | | Privacy/ convenience | 4 | 5 | 7 | 0 | 4 |
| | | Production | 5 | 7 | 0 | 0 | 6 |
| | | Other (reduced distance) | 0 | | | 2 | 0 |
| 29 | What are the major benefits of the Arborloo over conventional design? | Arborloo over other latrines | 0 | 0 | 0 | | 0 |
| | | Simplicity | 6 | 9 | 7 | 1 | 3 |
| | | Costs | 2 | 8 | 7 | 2 | 3 |
| | | Production | 6 | 6 | 7 | 2 | 5 |
| | | Smell and flies | 1 | 5 | 1 | 1 | 2 |
| | | Food security | 0 | 3 | 0 | 1 | 1 |
| | | Safety | 1 | 4 | 1 | 1 | 0 |
| 30 | Any other toilet option you would want? | Yes | 0 | 0 | 1 | 0 | 1 |
| | | No | 6 | 9 | 6 | 5 | 8 |

ANNEX 5: SOUTH SUDAN MYAP PROPOSAL

South Sudan MYAP Proposal – SO4 (Sanitation Promotion and Arborloos)

SO4: Health of people in 75 bomas has improved

Improved health is key to improving food security. Healthy families have a reliable labor force and spend less time and money on medicines. Good hygiene and sanitation ensures that families will suffer less from diarrheal diseases and intestinal parasites, both of which contribute to malnutrition. The project will implement multiple activities in sanitation and dietary diversity to achieve improved health, including: 1) improvement of household sanitation and dietary diversity through the introduction of simple ecological toilets that are later used for growing fruit trees, 2) improvement of household hygiene practices through health and hygiene education and promotion, 3) improvement of dietary diversity through the introduction of backyard gardens for households and nutrition education and 4) promotion and sales of improved fuel-efficient smokeless stoves, described in SO3.

IR.4.1 16,250 households have improved sanitation and hygiene practices

LEAP will educate households and communities on the importance of hygiene and sanitation and will promote two ecological toilet designs through a private market entrepreneurship model. CRS has successfully assisted 54,000 households in Ethiopia and 500 households in South Sudan to adopt simple ecological toilets. In this project, a new model of training private artisans to make latrine slabs and fuel-efficient stoves is being piloted with review at the end of each year. It will also be one of three special studies undertaken within LEAP

Activity 4.1.1 Train 375 Hygiene Promoters using the PHAST methodology

The project will train 375 volunteer Hygiene Promoters (five per boma) using the PHAST methodology. They will not be trained as PHAST facilitators but rather they will reinforce hygiene messages and appropriate use of the Arborloo and Fossa Alterna within their bomas. Trainings at the payam level will take six days. After three months, they will have one week refresher training and, after testing, receive certificates.

Activity 4.1.2 Train 75 local artisans in making latrine slabs & fuel-saving stoves

The project will provide training for 75 interested and motivated local artisans (one per boma), selected from the five Hygiene Promoters in Activity 4.1.1, in a) making latrine slabs and stoves, b) hygiene education, c) proper management of Arborloo or Fossa Alterna, d) basic business skills and e) interpersonal skills for working with households. The artisans will attend the same payam-level training using PHAST with Hygiene Promoters, followed by another one-week training in slab and stove making and basic business skills. At the end of the course, the trainees will be tested and given certificates as trained artisans and health promoters. They will also return for an additional week of refresher training after three months, along with the health promoters in activity 4.1.1.

Activity 4.1.3 Community Planning Groups in 75 bomas learn about and plan for hygiene and sanitation change using the PHAST methodology

LEAP will facilitate a process of community planning for improved hygiene practices and sanitation to bring about a normative shift in household behaviors in each boma using the Participatory Hygiene and Sanitation

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Transformation (PHAST) methodology (See Attachment W3). Demand for toilet slabs and stoves will be created through this process. The project will form PHAST Groups composed of about 30 community members in each of 75 bomas. The Groups will share their training, findings and recommendations with all households in their boma, experience from Ethiopia shows that this usually results in a recommendation for 100% sanitation coverage. Hygiene Promoters and local artisans will have been trained in Activities 4.1.1 and 4.1.2. They will regularly visit households to promote the community plan including toilets, stoves, hand washing, food hygiene and water purification techniques. Hygiene promoters receive T-shirts, banners, certificates and a great deal of community and project recognition for their voluntary activities.

Activity 4.1.4. Provide grants to artisans to make their first 100 slabs and 100 stoves

The Arborloo toilet (See Attachment W5 and W6) will be promoted in rural areas. In urban areas another Ecosan toilet, the Fossa Alterna will be promoted (See Attachment W7). Its advantage for urban areas is that it requires less space, as no trees are planted in the pits. The same concrete latrine slab can be used for a traditional deep pit latrine, if the household prefers. LEAP will provide information on at least three designs and let households decide for themselves which design they want to try. Trained and certified artisans, also trained as Hygiene Promoters, will be provided with grants to purchase start-up materials to make their first 100 slabs and 100 stoves for sale. In year 2 of their service, they will receive a grant for 50% of the materials needed to make another 100 slabs. Artisans who receive these grants will enter into a contract with LEAP stating they will give away, by lottery, half the slabs in year one and sell the other half. In years 2 and 3 they will make an additional 100 slabs for sale. Artisans will train households in construction and management of their Arborloos, including how and when to plant seedlings. In the case of the Fossa Alterna, they will train households in how to manage the toilet and how and when to empty the compost and use it on a home garden. They will promote and give education on the fuel-efficient stoves. This intermediate result does not require Title II food assistance, but will be implemented through cash resources.

ANNEX 6: CRS KENYA DRAFT STRATEGY FOR SCALING UP SANITATION

The estimated number of households in Kenya without sanitation is approximately 16 million people, translating to approximately 2.7m Households (size of HH taken as 6).

Q 2: What are the figures included in the strategy for the areas where you propose initial work, as noted in the strategy document?

| DISTRICT | CURRENT POPULATION | CURRENT SANITATION COVERAGE USING 50% NATIONAL COVERAGE | POPULATION WITHOUT SANITATION & TARGETED BY PROGRAM - 80% | TARGET BY HOUSEHOLD (HH SIZE= 6) |
|---|--------------------|---|---|----------------------------------|
| Mwingi | 408,319* | 204,159 | 163,328 | 27,221 |
| Kitui | 692,684 | 346,342 | 277,074 | 46,179 |
| Malindi | 378,382 | 189,191 | 151,353 | 25,226 |
| Machakos (Masinga, Matungulu and Mwala) | 574,865 | 287,433 | 229,946 | 38,324 |
| Suba | 209,202 | 104,601 | 83,680 | 13947 |
| Total | | | | 150,897 |

*On average, only half of Kenya's total population has sanitation facility. From Rapid Assessment report May 2008 by NETWAS International for WASH Cluster in Kenya.

*Population for Kitui and Mwingi computed using data from 1999 census with a projection of 3.0% growth rate.

Q 3: Where would the program go in the country to serve this larger number of HHs?

The proposed program will be implemented largely in the Eastern province in the districts of Kitui, Mwingi, and Machakos as well as in Malindi in Coast province. Beneficiaries of both OVC and HBC programs in Malindi district without sanitation coverage will be included in the program.

Q 4: Who would be your partners?

CRS Kenya will partner with local church partners in each project area as follows:

| DISTRICT | PARTNER |
|----------|---------------------|
| Mwingi | Diocese of Kitui |
| Kitui | Diocese of Kitui |
| Malindi | Diocese of Malindi |
| Machakos | Diocese of Machakos |
| Suba | Diocese of Homa Bay |

Q 5: Do you think the CRS office would be capable of leading such a big effort in the country?

CRS Kenya programs department will coordinate the work. However, additional staff will be hired both by CRS and the four proposed partners to further support the five-year program.

Q 6: What would be your estimate of the minimum number of households that CRS could serve in five years?

| PERIOD | AREA | PROPOSED ANNUAL COVERAGE | % AVERAGE COVERAGE PER YEAR | CUMULATIVE LATRINES COVERAGE |
|-----------------------------|--------------|--------------------------|-----------------------------|------------------------------|
| Year 1 | Mwingi | 2,722 | 10%* | |
| | Kitui | 4,618 | 10% | |
| | Malindi | 2,523 | 10% | |
| | Machakos | 3,832 | 10% | |
| | Suba | 1,395 | 10% | |
| | Total | | 15,090 | |
| Year 2 | Mwingi | 5,444 | 20% | |
| | Kitui | 9,236 | 20% | |
| | Malindi | 5,045 | 20% | |
| | Machakos | 7,665 | 20% | |
| | Suba | 2,789 | 20% | |
| | Total | | 30,179 | |
| Year 3 | Mwingi | 8,167 | 30% | |
| | Kitui | 13,853 | 30% | |
| | Malindi | 7,568 | 30% | |
| | Machakos | 11,497 | 30% | |
| | Suba | 4,185 | 30% | |
| | Total | | 45,270 | |
| Year 4 | Mwingi | 5,444 | 20% | |
| | Kitui | 9,236 | 20% | |
| | Malindi | 5,045 | 20% | |
| | Machakos | 7,665 | 20% | |
| | Suba | 2,789 | 20% | |
| | Total | | 30,179 | |
| Year 5 | Mwingi | 5,444 | 20% | |
| | Kitui | 9,236 | 20% | |
| | Malindi | 5,045 | 20% | |
| | Machakos | 7,665 | 20% | |
| | Suba | 2,789 | 20% | |
| | Total | | 30,179 | |
| Total 5 years target | | 150,897 | | |

*The focus in the first year of the program will be on hygiene education and promotion.

Q 7: What are the estimated costs per Arborloo, including slabs, training and hygiene education, staff and support costs?

Slabs are estimated to cost USD 7 per piece. However, see the detailed budget below for the other related costs.

Proposed Sanitation Scale-up Budget

Country: Kenya

Organization: Catholic Relief Services

Project: Running Dry

Period: October 01 2010 - September 30, 2015

| | BUDGET DESCRIPTION | % EFFORT | UNIT | NO. OF UNITS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|---|--|----------|-------|--------------|------------------|-------------------------|
| A | Personnel (Salaries & Benefits) | | | | | |
| A.1 | CRS National Staff Salaries | | | | | |
| | Deputy Head of Programs | 0.05 | Month | 60 | 3700 | 11100 |
| | Community Mobilizer | 1 | Month | 60 | 2,000 | 120000 |
| | Sanitation Project Officer | 1 | Month | 60 | 2,000 | 120000 |
| | Sub-total Salaries | | | | | 251,100 |
| | Fringe Benefits (40% of base salary) | | Month | 60 | | 100,440 |
| | Sub-total CRS Salaries & Benefits | | | | | 351,540 |
| A.2 | Project Partner | | | | | |
| | Development Coordinators -4 | 0.15 | Month | 60 | 1000 | 36000 |
| | Partner Finance Managers-4 | 0.15 | Month | 60 | 800 | 28800 |
| | Health Technicians 4 | 1.00 | Month | 60 | 600 | 144000 |
| | Project Accountants- 4 | 1.00 | Month | 60 | 600 | 144,000 |
| | Drivers -4 | 1.00 | Month | 60 | 300 | 72,000 |
| | Sub-total Salaries | | | | | 424,800 |
| | Fringe Benefits (11% of base salaries) | | | | | 46,728 |
| Sub-total PH Salaries & Benefits | | | | | 471,528 | |
| Sub Total A - Personnel (Salaries & Benefits) (CRS and PH) | | | | | | 823,068 |

Rapid Assessment of CRS Experience with Arborloos in East Africa

| | BUDGET DESCRIPTION | % EFFORT | UNIT | NO. OF UNITS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|---|---|---|-------------|--------------|------------------|-------------------------|
| B. | Travel, Per diem & Transportation | | | | | |
| B.1 | Per Diem and Hotel CRS | | | | | |
| | Dep. Head of Programming 1 trip per year each 4 days | | Days | 20 | 55 | 1100 |
| | Sanitation Project Officer-12 trips per year ,4 days each local | | Days | 240 | 55 | 13200 |
| | Community mobilizer travel 12trips per year for 4 days | | Days | 240 | 55 | 13200 |
| | Project Accountant 2 trips per year, 5days each | | Days | 50 | 55 | 2750 |
| | Driver | | Days | 280 | 55 | 15400 |
| | Sub-total Per Diem and Hotel (CRS) | | | | | 45650 |
| | Project Partner | | | | | |
| | Health Technicians 4 - for 20 days per year | | Days | 100 | 20 | 8,000 |
| | | Community Mobilizers/ social workers 4 for 20 days per year | | Days | 100 | 20 |
| Drivers 4 for 20 days per year | | | Days | 100 | 20 | 8,000 |
| Sub-total Per Diem and Hotel (PH) | | | | | | 32,000 |
| Total CRS & Partner Travel, Per diem and Hotel | | | | | | 77,650 |
| B.2 | Vehicle operating/ Transport Expenses CRS | | | | | |
| | trips each 1200Km | | Round trips | 60 | 0.6 | 43200 |
| | Sub- total CRS Transportation | | | | | |
| | Partners | | | | | |
| | Fuel and lubricants | | Month | 60 | 450 | 108,000 |
| | Spare parts and Maintenance | | Month | 60 | 350 | 84,000 |
| | Sub-total Partner Transportation costs | | | | | 192,000 |
| Total CRS & Partner Transportation | | | | | | 235,200 |
| D. | Office Supplies and Equipment | | | | | |

| | BUDGET DESCRIPTION | % EFFORT | UNIT | NO. OF UNITS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|---------------------------------|---|----------|-------|--------------|------------------|-------------------------|
| D.I | CRS | | | | | |
| | Stationery | | Month | 60 | 17 | 1020 |
| | Partner | | | | | |
| | Stationery | | Month | 60 | 100 | 24000 |
| | Equipment | | | | | |
| | GPS sets for 4 partners | | No. | 4 | 200 | 800 |
| | Desktop computers for 4 partners | | No. | 4 | 1200 | 4800 |
| | Sub-total CRS and Partner supplies | | | | | |
| E | Occupancy Costs | | | | | |
| E.I | CRS | | Month | 60 | 300 | 18000 |
| E.2 | Project Partners | | | | | |
| | Occupancy (security, water, electricity) | | Month | 60 | 80 | 19200 |
| Sub-total Occupancy Cost | | | | | | 37200 |
| F | Communication | | | | | |
| F.I | CRS | | Month | 60 | 100 | 6000 |
| F.2 | Project Partners | | | | | |
| | Communication | | Month | 60 | 50 | 12000 |
| | Sub-total communication costs | | | | | |
| G | Program Activity Costs | | | | | |
| IR1.1 | Hygiene Education | | | | | |

Rapid Assessment of CRS Experience with Arborloos in East Africa

| | BUDGET DESCRIPTION | % EFFORT | UNIT | NO. OF UNITS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|---------------------------------------|---|----------|------------------|--------------|------------------|-------------------------|
| | Sensitization/ Mobilization meetings @ 1 meeting per group | | Meetings | 50 | 150 | 7500 |
| | Train 8 partner community mobilizers and sanitation staff on PHAST | | Once | 1 | 3500 | 3500 |
| | Training of artisans @ 2 per group on slab fabrication, including demonstration | | No. | 100 | 100 | 10000 |
| | Training Community Health Promoters on PHAST - 2 per group | | No. | 100 | 150 | 15000 |
| | Community hygiene promotion sessions led by trained community health promoters@ 2 sessions per group per week for 5 years | | Sessions | 24000 | 5 | 120000 |
| | Allowances for 8 Line ministry officials, 1 per partner @ 4 days per month | | Monitor-ing days | 1920 | 30 | 57600 |
| | Training of Caretakers- 2 per group | | Once | 1 | 4000 | 4000 |
| | Sub Total IRI.1 | | | | | 217600 |
| IR2.1 | Water and Sanitation Coverage | | | | | |
| | Slabs for sanitation facilities in villages | | No. | 150,897 | 7 | 1056279 |
| | Mapping the Infrastructures using GIS | | Lump sum | 1 | 2,000 | 2000 |
| | Sub Total IR2.1 | | | | | 1,058,279 |
| G.4. Monitoring and Evaluation | | | | | | |
| | Documentation costs 4 reports per year @ USD 200 per report | | No. | 20 | 200 | 4000 |
| | Sub total Monitoring and Evaluation | | | | | 4000 |
| Total Direct Costs | | | | | | 2,501,617 |
| H | Country Office Shared Program Costs (10% of total direct project cost) | | | | | 250,162 |
| I | HQ Support Costs (15% of total direct costs and CO SPC) | | | | | 412,767 |
| Grand Total | | | | | | 3,164,546 |

ANNEX 7: CRS TANZANIA DRAFT PROPOSAL FOR ARBORLOO SCALE-UP

Question 1: What are the figures included in the strategy for the areas where you propose initial work, as noted in the strategy document?

CRS/Tanzania estimates that it will serve 135,185 HHs by the end of 2014. Table 1 below shows the number of Households that CRS can serve in each district.

Table 1. Target Beneficiaries for Arborloo scale up 2010-2014)

| REGION | DISTRICT | CRS PARTNERS | TOTAL POPULATION ¹ | NO. OF HOUSEHOLDS ¹ | PERCENTAGE OF RURAL HOUSEHOLDS WITHOUT ADEQUATE FACILITIES ² | TARGET BENEFICIARY HOUSEHOLDS | NUMBER OF HHS THAT CRS CAN SERVE BY 2014 |
|--------------|------------|-----------------------|-------------------------------|--------------------------------|---|-------------------------------|--|
| Kilimanjaro | Same | Diocese of Same | 212,325 | 44,474 | 33.0% | 14,676 | 11007 |
| Kilimanjaro | Mwanga | Diocese of Same | 115,620 | 24,326 | 33.0% | 8,028 | 6021 |
| Tanga | Korogwe | PASADIT | 261,004 | 58,512 | 33.0% | 19,309 | 14482 |
| Tanga | Muheza | Muheza Hospice Care | 279,423 | 62,183 | 33.0% | 20,520 | 15390 |
| Tanga | Pangani | PASADIT | 44,107 | 11,283 | 33.0% | 3,723 | 2793 |
| Arusha | Karatu | Diocese of Mbulu | 178,434 | 33,299 | 33.0% | 10,989 | 8242 |
| Arusha | Arumeru | Archdiocese of Arusha | 516,814 | 113,002 | 33.0% | 37,291 | 27968 |
| Arusha | Ngorongoro | Archdiocese of Arusha | 129,776 | 26,722 | 33.0% | 8,818 | 6614 |
| Arusha | Monduli | Archdiocese of Arusha | 185,237 | 41,110 | 33.0% | 13,566 | 10175 |
| Manyara | Mbulu | Diocese of Mbulu | 237,882 | 38,729 | 33.0% | 12,781 | 9585 |
| Manyara | Babati | Dareda Hospital | 303,013 | 59,970 | 33.0% | 19,790 | 14843 |
| Manyara | Simanjaru | UHAI | 151,676 | 32,582 | 33.0% | 10,752 | 8064 |
| TOTAL | | | | | | 180,243 | 135,183 |

¹ Tanzania Population and housing census report 2002

² Tanzania Demographic and Health Survey 2004 for rural HH without facilities

Question 2: Where would the program be carried out in the country to serve this larger number of HHs?

For the first 5 years, CRS will work in 12 districts in northern Tanzania, namely; Same, Mwanga, Korogwe, Muheza, Pangani, Karatu, Arumeru, Mbulu, Babati, Ngorongoro, Simanjiro and Monduli (see attached map for specific locations). The districts are the most critical in term of low sanitation coverage. The last three mentioned districts have the lowest coverage of toilets nationwide, as shown in Table 2 below.

Table 2. Three Districts With More Than 50% Of Rural Households With No Toilet Facilities³

| DISTRICT | % OF HOUSEHOLDS WITHOUT TOILET | NO. OF HOUSEHOLDS IN THE DISTRICT | NO. OF HOUSEHOLDS WITHOUT TOILET |
|------------|--------------------------------|-----------------------------------|----------------------------------|
| Ngorongoro | 57 | 26722 | 15,232 |
| Simanjiro | 61 | 32582 | 19,875 |
| Monduli | 79 | 41110 | 32,476 |

³ WaterAid (2005), An update Based on the 2002 Population and Housing Census, Water and sanitation in Tanzania

Question 3: Who would be your partners?

CRS will work with seven local partners. The partners are Diocese of Same, PASADIT, Muheza hospice care, Diocese of Mbulu, Archdiocese of Arusha, Dareda hospital and UHAI.

Question 4: Do you think the CRS office would be capable of leading such a big effort in the country?

CRS is capable of implementing the arborloo project with targeted households because of the following reasons:

1. Has existing local partners who are active in the targeted areas mentioned above.
2. CRS/Tz strategy is focusing on integration of projects. Currently the OVC program (one of our biggest projects in CRS/Tz) is currently being implemented in northern Tanzania and CRS/TZ thinks that it will attain better results if it is integrated with WATSAN program.
3. Our local partners have long time experience of working in the Districts that have been selected above.

Question 5: What would be your estimate of the maximum number of households CRS could serve in five years?

After 5 years, CRS can serve 135,183 Households which is 75% of total number of Households (180,243) without adequate sanitation facilities in Northern Tanzania. In case the Grant is provided to CRS after serving 135,183 households, the remaining 25% can also be served after 5 years. Please refer table 1 above.

Question 6: What is the estimated cost per Arborloo, including slabs, training and hygiene education, staff and support costs?

The cost of Arborloo is US \$9. This includes slab, ring beam and labour costs. However, it is assumed that, the beneficiaries will construct the superstructures themselves. Regarding costs for training and hygiene education together with staff and supporting costs, please see proposed budget attached above.

These are our responses by now. As you mentioned before I have copied Ehsan, Hemmed and other people for more inputs- especially on linking OVC with WATSAN programmes.

Proposed budget for Arborloo scale up

Country: TANZANIA

Partner Organization: CATHOLIC RELIEF SERVICES

Period: 2010 – 2014

Table 3. Budget

| | BUDGET DESCRIPTION | LEVEL OF EFFORT (%) | UNIT | NO. OF UNITS | UNIT COST IN TSHS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|------------------------------|---|---------------------|-------|--------------|-------------------|------------------|-------------------------|
| Program Support costs | | | | | | | 2,330,911 |
| A | Personnel (Salaries & Benefits) | | | | | | 1,800,233 |
| | CRS Salaries | | | | | | |
| | Head of Programs | 20% | Month | 60 | | 10000 | 120,000 |
| | Program Manager | 20% | Month | 60 | 4,727,300 | 4,100 | 49,200 |
| | Program Coordinator | 20% | Month | 60 | | 2,500 | 30,000 |
| | Watsan Project Officer | 50% | Month | 60 | 1,500,000 | 1,290 | 38,700 |
| | Health and Hygiene Project Officer | 50% | Month | 60 | 1,500,000 | 1,290 | 38,700 |
| | Monitoring and Evaluation Officer | 50% | Month | 60 | | 1,290 | 38,700 |
| | Finance Officer | 10% | Month | 60 | | 3,500 | 21,000 |
| | Accountant | 50% | Month | 60 | 1,300,000 | 1,120 | 33,600 |
| | Administration Officer | 20% | Month | 60 | 1,300,000 | 1,121 | 13,452 |
| | Administrative Assistant (purchase) | 20% | Month | 60 | | 690 | 8,280 |
| | Driver | 100% | month | 60 | 691,800 | 596 | 35,760 |
| | Sub-total Salaries | | | | | | 307,392 |
| | Fringe Benefits (34% of base salaries) | 100% | Month | 60 | | | 104,513 |
| | Sub-total CRS Salaries & Benefits | | | | | | 411,905 |
| A.2 | Project Holder/ Partner | | | | | | |
| | 7 Project Managers | 100% | Month | 60 | 600,000 | 7,000 | 420,000 |
| | 14 Health/social workers | 100% | Month | 60 | 625,000 | 6,300 | 378,000 |
| | 7 Accountants | 100% | Month | 60 | 600,600 | 6,300 | 378,000 |
| | 14 Watchmans | 50% | Month | 60 | 150,000 | 2,100 | 63,000 |
| | 7 Drivers | 100% | Month | 60 | | 258 | 15,480 |
| | Sub-total Salaries | | | | | | 1,254,480 |
| | Fringe Benefits (10% of base salaries) | | | | | | 125,448 |
| | Sub-total PH Salaries & Benefits | | | | | | 1,379,928 |
| | Sub Total A - Personnel (Salaries & Benefits) (CRS and PH) | | | | | | 1,791,833 |
| A.3 | Recruitment Costs | | | | | | 8,400 |
| | CRS Tanzania staff recruitment cost | | | | 1,400,000 | 4,200 | 4,200 |
| | PH/Local partner staff recruitment cost | | | | 1,400,000 | 4,200 | 4,200 |
| | | | | | | | 8,400 |

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| | BUDGET DESCRIPTION | LEVEL OF EFFORT (%) | UNIT | NO. OF UNITS | UNIT COST IN TSHS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|------------|--|---------------------|------|--------------|-------------------|------------------|-------------------------|
| B | Travel & Per diem | | | | | | 102,880 |
| B.1 | Per Diem and Hotel | | | | | | |
| | CRS | | | | | | |
| | Head of Programs | 100% | Days | 20 | | 70 | 1,400 |
| | Program Coordinator | 100% | Days | 24 | 50,000 | 70 | 1,680 |
| | Program Manager | 100% | Nos. | 75 | | 70 | 5,250 |
| | Watsan Project Officer | 100% | Days | 150 | 50,000 | 70 | 10,500 |
| | Health and Hygiene Project Officer | 100% | Days | 150 | 50,001 | 70 | 10,500 |
| | Monitoring and Evaluation Officer | 100% | Days | 75 | | 70 | 5,250 |
| | Finance Officer | 100% | Days | 30 | 50,002 | 70 | 2,100 |
| | Accountant | 100% | Days | 30 | 50,000 | 70 | 2,100 |
| | Driver | 100% | Days | 150 | | 70 | 10,500 |
| | Sub-total Per Diem and Hotel (CRS) | | | | | | 49,280 |
| B2 | Per Diem and Hotel (PH) | | | | | | |
| | 7 Project Manager | 100% | days | 300 | 25,000 | 40 | 12,000 |
| | 14 Health/social worker | 100% | days | 440 | 25,000 | 40 | 17,600 |
| | 7 Accountant | 100% | days | 150 | 400,000 | 40 | 6,000 |
| | 7 Driver | 100% | days | 450 | 450,000 | 40 | 18,000 |
| | Sub-total Per Diem and Hotel (PH) | | | | | | 53,600 |
| | Sub-total Per Diem and Hotel (CRS and PH) | | | | | | 102,880 |
| C | Equipment | | | | | | 30,400 |
| | CRS | | | | | | |
| | LCD Projector | 100% | No | 1 | | 1,200 | 1,200 |
| | Digital Camera | 100% | No | 1 | | 400 | 400 |
| | Video Camera | 100% | No | 1 | | 800 | 800 |
| | Laptop computer | 100% | No | 7 | 2,075,400 | 1,200 | 8,400 |
| | CRS Sub-Total | | | | | | 10,800 |
| | Project Holder/Partner | | | | | | |
| | Digital Camera | 100% | No | 7 | | 400 | 2,800 |
| | Laptop computer | 100% | No. | 7 | 1,383,600 | 1,200 | 8,400 |
| | Desktop Computer | 100% | No. | 7 | | 900 | 6,300 |
| | UPS | 100% | No. | 7 | 1,441,250 | 300 | 2,100 |
| | PH Sub-Total | | | | | | 19,600 |
| | Sub Total C. Equipment | | | | | | 30,400 |
| D | Supplies & Communication | | | | | | 397,398 |

| | BUDGET DESCRIPTION | LEVEL OF EFFORT (%) | UNIT | NO. OF UNITS | UNIT COST IN TSHS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|----------|---|---------------------|-------|--------------|-------------------|------------------|-------------------------|
| | CRS | | | | | | |
| | Vehicle Expenses | | | | | | |
| | Fuel and lubricants | 100% | Month | 60 | 500,000 | 440 | 26,400 |
| | Spare parts and Maintenance | 100% | Month | 60 | 400,000 | 500 | 30,000 |
| | Licensing & Insurance | 100% | Month | 60 | 100,000 | 100 | 6,000 |
| | Internet Installation and fee | 100% | Month | 60 | | 150 | 9,000 |
| | Telephone, fax, etc. | 25% | Month | 60 | | 250 | 3,750 |
| | Stationary | 100% | Month | 60 | | 70 | 4,200 |
| | Occupancy (rent, security, water, electricity) | 20% | Month | 60 | - | 310 | 3,720 |
| | Sub-total CRS | | | | | | 83,070 |
| | Project Holder | | | | | | |
| | Occupancy (rent, security, water, electricity) | 20% | Month | 60 | 300,000 | 1,540 | 18,480 |
| | Internet Connection | 100% | Month | 60 | 345,900 | 840 | 50,400 |
| | Internet rent | 100% | Month | 60 | | 700 | 42,000 |
| | Telephone, fax, etc | 20% | Month | 60 | 250,000 | 826 | 9,912 |
| | Stationary | 20% | Month | 60 | 300,000 | 1,813 | 21,756 |
| | Vehicle Expenses | | | | | | |
| | Fuel and lubricants | 100% | Month | 60 | 576,500 | 63 | 3,780 |
| | Spare parts and Maintenance | 100% | Month | 60 | 461,200 | 2,800 | 168,000 |
| | Sub total Supplies Project Holder | | | | | | 314,328 |
| | Sub total D. Supplies and Communication (CRS and Project Holder) | | | | | | 397,398 |
| | Communication (CRS and Project Holder) | | | | | | |
| E | Program Activity Costs | | | | | | 5,670,493 |
| | Activity 1: Training Artisans and making slabs for 135183 Households | | | | | | 1,236,993 |
| | a. Identify 968 local artisans | 100% | No | 968 | 10,953,500 | - | - |
| | b. Train 968 local artisans on how to make slabs and demonstrating at few selected households | 100% | No. | 968 | 700,000 | 30 | 29,040 |
| | c. Making slabs for 134,217 households | 100% | No | 134217 | 10,377,000 | 9 | 1,207,953 |
| | Subtotal | | | | | | 1,236,993 |
| | Activity 2: Training and hygiene education | | | | | | 4,377,000 |

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| | BUDGET DESCRIPTION | LEVEL OF EFFORT (%) | UNIT | NO. OF UNITS | UNIT COST IN TSHS | UNIT COST IN USD | (B) TOTAL BUDGET IN USD |
|--|--|---------------------|--------|--------------|-------------------|------------------|-------------------------|
| | a. Train 7 Local Partners teams on PHAST | | No | 7 | | 3,000 | 21,000 |
| | b. Train 968 WATSAN Committees on PHAST | | No | 968 | | 3,000 | 2,904,000 |
| | c. Promotion cost at village level | | No | 968 | | 1,500 | 1,452,000 |
| | Subtotal | | | | | | 4,377,000 |
| Activity 3: Monitoring and Evaluation | | | | | | | 56,500 |
| | 2. Process documentation and reporting | | Months | 60 | 230,600 | 200 | 12,000 |
| | 3. Monitoring and Evaluation | | Year | 2 | 10,377,000 | 15,000 | 30,000 |
| | 4. Annual Audit | | Year | 5 | 3,459,000 | 2,900 | 14,500 |
| | Sub Monitoring and Evaluation | | | | | | 56,500 |
| F | Total Direct Costs | | | | | | 8,001,404 |
| G | Country Office Shared Program Costs (5% of total direct project cost) | | | | | | 400,070 |
| H | CRS HQ (4.75% of total direct project cost) | | | | | | 380,067 |
| | Sub total ICR | | | | | | 780,137 |
| I | Grand Total | | | | | | 8,781,541 |

ANNEX 8: ETHIOPIA: ECOLOGICAL TOILETS CONSTRUCTED THROUGH CRS SUPPORT (FY2000-2009)

| IMPLEMENTING PARTNER | REGION | ZONE | WOREDA | KEBELES | NO. CONSTRUCTED | YEAR OF CONSTRUCTION | FUNDING SOURCE | STATUS |
|----------------------|-------------|---------------|----------|-------------------|-----------------|----------------------|----------------|-----------|
| HCS | Oromia | East Hararghe | Kersa | Gend Haji | 157 | 2004-2006 | SPSNP | Completed |
| | | | | Belina | 120 | " | SPSNP | " |
| | | | | Burak | 188 | " | SPSNP | " |
| | | | | Jebawater | 180 | " | SPSNP | " |
| | | | | Rahmeta | 500 | " | SPSNP | " |
| | | | | Sodu | 300 | " | SPSNP | " |
| | | | | Medeoda | 235 | 2004 | OFDA | " |
| | | | | Kufanzik | 470 | 2004 | OFDA | " |
| | | | | Subtotal | 2150 | | | |
| | | | | HCS | Oromia | East Hararghe | Metta | Gorobiyo |
| Koromi Bela | 700 | " | " | | | | | " |
| Kelina | 275 | " | " | | | | | " |
| chelenko Lola | 300 | " | " | | | | | " |
| Mudilench | 450 | " | " | | | | | " |
| Duse | 300 | " | " | | | | | " |
| Wolda Gemechu | 400 | " | " | | | | | " |
| Goromuti | 345 | " | " | | | | | " |
| Gedera | 280 | " | " | | | | | " |
| Subtotal | 3350 | | | | | | | |
| HCS | Oromia | East Hararghe | Gorogutu | Yeka aman | 180 | 2004-2006 | SPSNP | Completed |
| | | | | Yeka umemetokkuma | 600 | " | " | " |
| | | | | Edojalele | 570 | " | " | " |
| | | | | Chefe Anani | 175 | " | " | " |
| | | | | Biftudiremu | 230 | " | " | " |
| | | | | Sephelo | 365 | " | " | " |
| | | | | Ifa jalala | 423 | " | " | " |
| | | | | Horewoligela | 884 | " | " | " |
| | | | | Ifa Dhaba | 850 | " | " | " |
| | | | | Werji jalela | 950 | " | " | " |
| | | | | Jiru Iffa | 360 | " | " | " |
| | | | | Medhisa jalela | 450 | " | " | " |
| | | | | Nedhi | 456 | " | " | " |
| | | | | Bika | 500 | " | " | " |
| | | | | Bilu Nejata | 457 | " | " | " |

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| IMPLEMENTING PARTNER | REGION | ZONE | WOREDA | KEBELES | NO. CONSTRUCTED | YEAR OF CONSTRUCTION | FUNDING SOURCE | STATUS |
|----------------------|-----------|--------------|------------|--------------|-----------------|----------------------|----------------|-----------|
| Subtotal | | | | | 7450 | | | |
| HCS | Partner | West Haraghe | Boke | Meyu | 500 | 2006-2009 | OFDA | on going |
| | | | | Arba | 460 | 2006-2009 | " | " |
| | | | Gemechis | Beka | 1440 | 2006-2009 | " | " |
| | | | | Eleoda | 480 | 2006-2009 | " | " |
| Subtotal | | | Fugna Dimo | 227 | 2006-2009 | " | " | |
| | | | | | 3107 | | | |
| HCS | Dire Dawa | Dire Dawa | Dire Dawa | Legedini | 263 | 2004-2006 | SPSNP | Completed |
| | | | | Ayale gumgum | 496 | " | " | " |
| | | | | Elehamer | 327 | " | " | " |
| | | | | Biyo Awale | 514 | " | " | " |
| Subtotal | | | | | 1600 | | | |
| HCS | Somali | Shinile | Shinile | Tomi | 650 | 2006-2007 | UNOCHA | Completed |
| | | | | Harewato | 350 | " | " | " |
| | | | | Shinile town | 650 | " | " | " |
| | | | | Mito | 522 | " | " | " |
| | | | | Harmukale | 370 | " | " | " |
| | | | | Harewa | 500 | " | " | " |
| | | | | Berak | 680 | " | " | " |
| | | | | Berder | 586 | " | " | " |
| | | | | Mulu | 380 | " | " | " |
| | | | | Adayitu | 712 | " | " | " |
| Subtotal | | | | | 5400 | | | |
| HCS | Somali | Shinile | Dembel | Worabesa | 300 | 2006-2007 | UNOCHA | Completed |
| | | | | Dembel | 2603 | " | " | " |
| | | | | Andobedo | 219 | " | " | " |
| | | | | Garegun | 350 | " | " | " |
| | | | | Harabi | 650 | " | " | " |
| Subtotal | | | | | 4122 | | | |

Annex 8: Ethiopia: Ecological Toilets Constructed Through CRS Support (FY2000-2009)

| IMPLEMENTING PARTNER | REGION | ZONE | WOREDA | KEBELES | NO. CONSTRUCTED | YEAR OF CONSTRUCTION | FUNDING SOURCE | STATUS |
|----------------------|--------|------------|--------|-----------------|-----------------|----------------------|----------------|-------------|
| WCC | Oromia | Arsi | Sire | Iseta Huduga | 808 | 2006-2007 | UNOCHA | Completed |
| | | | | Koloba Hawas | 490 | " | " | " |
| | | | | Bele Bika | 634 | " | " | " |
| | | | | Alelugesela | 720 | " | " | " |
| | | | | Koloba Bele | 530 | " | " | " |
| | | | | Ufra Hagemsa | 604 | " | " | " |
| Subtotal | | | | 3786 | | | | |
| WCC | Oromia | Arsi | Dodota | Tedche Guracha | 600 | 2006-2007 | UNOCHA | Completed |
| | | | | Dodota Alem | 401 | " | " | " |
| | | | | Bedhesa Batela | 345 | " | " | " |
| | | | | Belale | 601 | " | " | " |
| Subtotal | | | | 1947 | | | | |
| WCC | Oromia | East Shewa | Adama | Kelbo Mariam | 440 | 2004-2008 | OFDA | Completed |
| | | | | Gedemse Kurfa | 89 | " | " | " |
| | | | | Batigermama | 250 | " | " | " |
| | | | | Batikelo | 250 | " | " | " |
| | | | | Batibora | 228 | " | " | " |
| | | | | Dibi kelo | 80 | " | " | " |
| | | | | Didimtu | 130 | " | " | " |
| | | | | Subtotal | | | | 1467 |
| MCS | Oromia | East Shewa | Dugda | HafaRasa | 650 | 2006-2007 | UNOCHA | Completed |
| | | | | Wolda Kocha | 730 | " | " | " |
| | | | | Koye Jejeba | 1109 | " | " | " |
| | | | | Beimo Gusa | 1010 | " | " | " |
| | | | | Berta Sami | 300 | " | " | " |
| | | | | Malima | 44 | " | " | " |
| Subtotal | | | | 85 | | | | |
| Subtotal | | | | 3928 | | | | |

Rapid Assessment of CRS Experience with Arborloos in East Africa

| IMPLEMENTING PARTNER | REGION | ZONE | WOREDA | KEBELES | NO. CONSTRUCTED | YEAR OF CONSTRUCTION | FUNDING SOURCE | STATUS |
|----------------------|--------|-------------|-----------|----------------------|-----------------|----------------------|----------------|-------------|
| MCS | Oromia | East Shewa | Bora | Tuka langeno | 430 | 2006-2007 | UNOCHA | Completed |
| | | | | Gose Korke | 650 | " | " | " |
| | | | | Keshi Huluko | 450 | " | " | " |
| | | | | Ellen | 530 | " | " | " |
| | | | | Dodowadera | 799 | " | " | " |
| | | | | Tuch Deko | 350 | " | " | " |
| | | | | Doyo Lemen | 134 | " | " | " |
| | | | | Tute Koremti | 191 | " | " | " |
| | | | | Sori Dolesa | 180 | " | " | " |
| | | | | Berta Sami | 210 | " | " | " |
| Subtotal | | | | 3924 | | | | |
| MCS | Oromia | East Shewa | Dugda | Tuchi sumiya | 350 | HGBF | HGBF | On going |
| | | | | Wolda qalina | 350 | | | |
| | | | | Tepo choroke | 260 | | | |
| | | | | Argo gedilala | 240 | | | |
| | | | | Shube gammo | 350 | | | |
| | | | | Deraara dalecha | 250 | | | |
| | | | | Subtotal | | | | 1800 |
| Subtotal | | | | Chefe Didegnata | 285 | 2008-2009 | OFDA | Completed |
| | | | | Hagugeta Kuni | 285 | " | " | " |
| | | | | Bassa Meja | 341 | " | " | On going |
| | | | | Bereda Ashoka | 461 | " | " | " |
| | | | | Subtotal | 1372 | | | |
| | | | | | | | | |
| SHCS | SNNPR | Hadiya | Badawacho | Kerenso I | 1520 | 2006-2007 | USAID | Completed |
| | | | | Kernso2 | 1621 | " | " | " |
| | | | | Lenda | 120 | " | " | " |
| | | | | Woirala lalo | 155 | " | " | " |
| | | | | Woribira Suke | 1101 | 2008-2009 | OFDA | On going |
| | | | | Woribira Golo | 838 | " | " | " |
| | | | | Bibiso Olola | 420 | " | " | " |
| | | | | Lera | 580 | " | " | " |
| Subtotal | | | | 6355 | | | | |
| WACT | Amhara | South Wollo | Kalu | Harbu and Addis Alem | 1440 | | | |

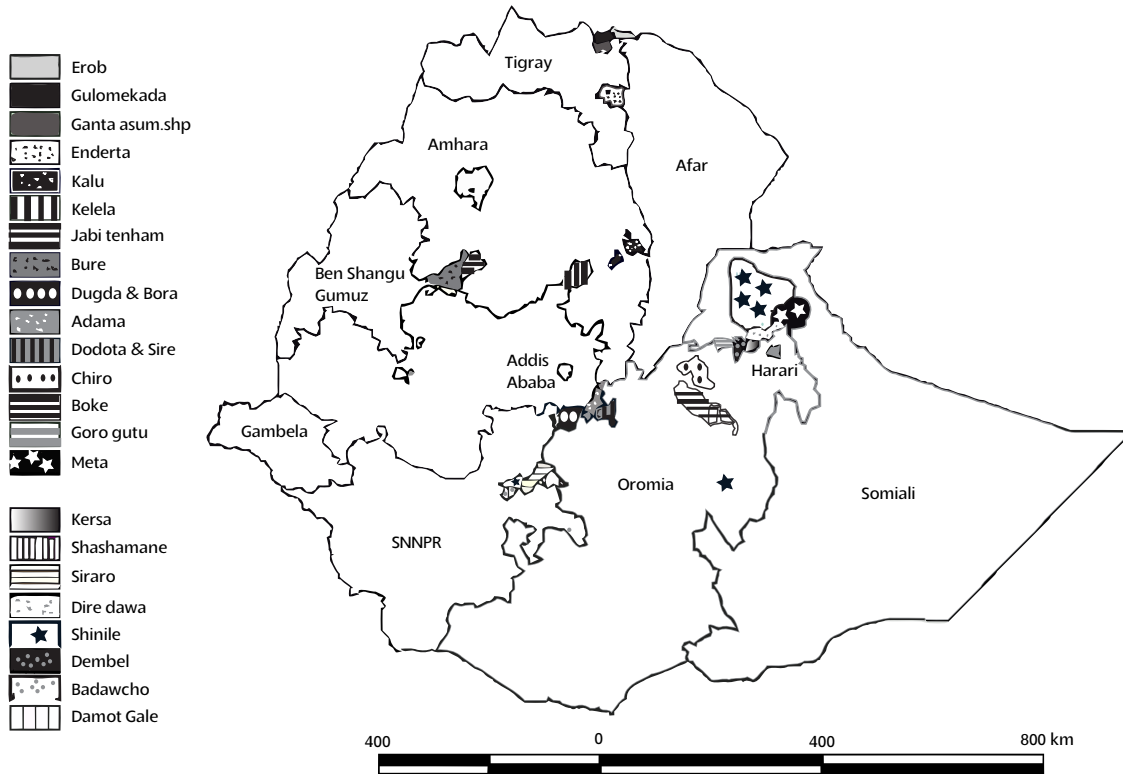
Annex 8: Ethiopia: Ecological Toilets Constructed Through CRS Support (FY2000-2009)

| IMPLEMENTING PARTNER | REGION | ZONE | WOREDA | KEBELES | NO. CONSTRUCTED | YEAR OF CONSTRUCTION | FUNDING SOURCE | STATUS |
|----------------------|-------------|--------------|-------------|--------------------|-----------------|----------------------|----------------|-----------|
| Subtotal | | | | | 1 440 | | | |
| WACR | | Amhara | Jabitehnan | Hodansh | 130 | 2007-2010 | USAID | On going |
| | | | | Mendermeter | 90 | " | " | " |
| | | | | Woinimaworkima | 78 | " | " | " |
| | | | | Arbaitu Ensisa | 85 | | | |
| | | | | Teji atel | 10 | " | " | " |
| Subtotal | | | | | 393 | | | |
| OSSA | Oromia | East Shewa | Nazereth | Urban | 19 | 2007-2009 | CRS | On going |
| PICDO | Addis Ababa | subcity | Yeka | Ferensai Legasiyon | 25 | " | " | " |
| Subtotal | | | | | 44 | | | |
| ADCS | Tigray | East Tigray | Erob | Endalegada | 30 | 2007-2008 | UNOCHA | Completed |
| | | | | Kileat | 100 | | | |
| ADCS | Tigray | South Tigray | Genta Assum | Hadush Hiwot | 25 | | | |
| | | | | Maygenet | 50 | 2005-2008 | CRS | Completed |
| Subtotal | | | | | 205 | | | |
| Grand Total | | | | | 53840 | | | |

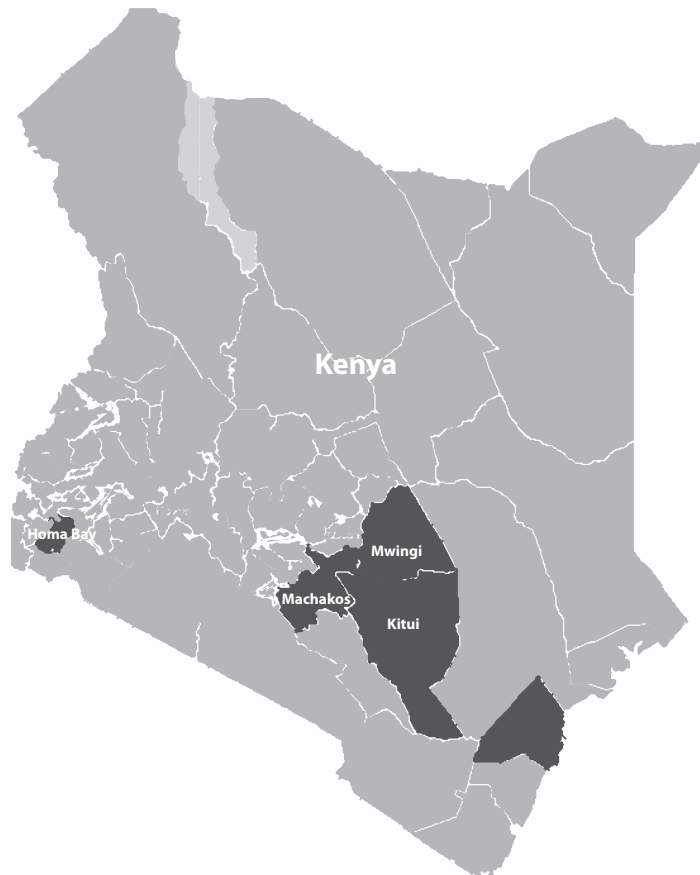
Remarks: HCS = Haraghe Catholic Secretariat; SHCS = Soddo Hosanna Catholic Secretariat; ADCS = Adigrat Catholic Secretariat; WACT = Water Action

ANNEX 9: MAPS OF ETHIOPIA, KENYA AND TANZANIA

Ethiopia: Toilets Constructed by CRS FY2000-FY2009



Kenya: Proposed Project Sites (dark shading)



Tanzania: Proposed Areas for CRS Arborloo Promotion (dark shading)





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