COUNTRYWIDE BASELINE SURVEY REPORT ON ECOLOGICAL SANITATION COVERAGE, USE AND EXTENT OF INTERGRATION OF SUSTAINABILITY ISSUES

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EcoSanRes2	Ecological Sanitation Research 2
FGDs	Focus Group
IEC	Information, Education and Communication
KIII	Key In depth Informant Interviews
NETWAS-U	Network for Water and Sanitation Uganda
NGOs	Non Governmental Organization
NSWG	National Sanitation Working Group
RGCs	Rural Growth Cetres
SEI	Stockholm Environment Institute
SPSS	Statistical Package for Social Sciences
TOR	Terms of Reference

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EXECUTIVE SUMMARY

Introduction

1.1 This Report describes the Results of a countrywide baseline survey on ecological sanitation commissioned by NETWAS-U with the support from Stockholm Environment Institute (Ecological Sanitation Research Knowledge Node).

1.2 The purpose of the survey was to generate evidence based data on the coverage of ecological sanitation, its use and the extent of integration of sustainability issues among users in Uganda.

1.3 The specific objectives are:

i. To describe the knowledge, attitudes and views of Ecosan latrine owners and users and assess the levels actual functionality of the Ecological Sanitation latrines among owners.
ii. To assess the coverage of the ecological sanitation latrine technology in Uganda.

iii. To determine the extent of loop completion among Ecosan latrine owners, providers and users so as to ascertain extent of integration of sustainability issues.
iv. To document existing Ecosan technology types, any best practices and/or successes around Ecosan technology use for subsequent sharing within the national framework.

Methodology

1.4 The survey covered 16 districts across the country; Yumbe and Nebbi (West Nile), Gulu (Acholi), Apac (Lango), Masindi (Bunyoro), Kamwenge (Toro), Mbarara (Ankole), Kabale (Kigezi), Kalangala, Mukono and Kampala (Central), Kamuli (Busoga), Pallisa (Bukedi), Mbale (Bugisu), Kumi (Teso) and Moroto (Karamoja). In each district, two subcounties (urban and rural) were studied.

1.5 A total of 957 households and 66 institutions in 32 subcounties were selected for interviews. The methods of data collection included;

- Desk review of relevant documents
- Household Questionnaire Interviews
- Institutional Questionnaire Interviews

- Key Informant In-depth Interviews
- Technical Assessments/ Observations
- Focus Group Discussions

1.6 Quantitative data from household and Institutional questionnaires, and Technical Assessment form was entered and analyzed in the Statistical Package for Social Sciences. Qualitative data from notes of desk review, focus group discussions and Key Informants Interviews were summarized analyzed using thematic and content analysis methods.

Key Findings

Knowledge and Attitude towards Ecosan

1.7 *Knowledge of Ecological Sanitation:* The majority of the respondents (63.3%) said they had not heard about ecological sanitation toilet. It was only 36.7% that reported as having heard about ecological sanitation. 33.5% of the respondents said they had seen an Ecosan toilet.

1.8 *Attitude:* 80% of the respondents said that if they were given a choice between a traditional pit latrine and Ecosan toilet, they would choose ecological sanitation toilet. The major reason they gave was Ecosan toilets were durable or last longer (31%) and production of fertilizers from the compost (28%).

1.9 *Cost:* The cost of Ecosan toilets was cited among the factors affecting adoption of Ecosan toilets. One stance household Ecosan cost between UGX 0.83 million to UGX 3 million; while a four stance public/ institutional toilet cost between UGX 8 million to UGX 13 million.

1.10 *Cultural beliefs:* In most districts and tribes, there were cultural beliefs associated with faeces particularly with regard to mixing with ash. In many tribes, applying ash to faeces is associated with witch craft which may lead to illness and sometimes death. In addition, many people believe that faeces should not be exposed because people with evil intentions may use them for witch craft purposes.

1.11 *Religious Practices* with regard to toilet use affected the attitude towards Ecosan. Muslims insist on using water for anal cleansing after defecation which is not compatible with proper use of Ecosan toilets.

Coverage of Ecosan Toilets

1.12 Out of the 957 households visited, 64 (7%) reported having some form of Ecosan toilets. However, only 3.5% of the households had Ecosan toilets and were completing the Loop. Seven out of the 16 districts (44%) had no household found with some form of Ecosan toilet. The districts which had Ecosan toilets were mainly Mbarara (33%), Mukono (25%), Kabale (15%) and Kamwenge (11%).

1.13 All the districts covered had at least one institutional or public Ecosan toilets constructed by the District Water or Health Departments as demonstration

Ecosan toilets and NGOs. A total of 146 public/ institutional Ecosan toilets were reported in the 16 districts. The majority (84/146) were school Ecosan toilets.

1.14 All household Ecosan toilets but two, over 90% of the cost was contributed by the projects implemented by the Government, Development Partners and NGOs. KCC and SWTWSP asked households to contribute UGX 100,000 which was about 5% of the cost. Some projects like AMREF did not ask for contribution from households. The cost of the household Ecosan toilet ranged between UGX 0.8 million and UGX 3 million.

1.15 The full cost of constructing institutional and public toilets was paid by the projects implemented by Government, Development Partners and NGOs. The cost per stance ranged from UGX 1 million to UGX 3 million.

Existing Ecosan Technologies

1.16 There were two types of Ecosan toilets; the compost and dehydration. Among the compost toilets; there were two types of construction; above the ground and below the ground. All Compost toilets had double vaults and separate urine from faeces. Ash was used as absorbent.

1.17 Dehydrated Ecosan toilets: these were single vault urine diversion Ecosan toilets constructed above the ground with vent pipe. Most of the Ecosan toilets (91%) were compost and dehydrated Ecosan toilets were 9 percent.

1.18 There were two types of pans; squat pan and seater pan. Most of the pans (92%) were squat pans and seater pans were (8%). The material used for the pans was plastic (54%), concrete (35%), clay (8%) and Bricks (2%).

Functionality/use of Ecosan toilets

1.19 Sixty two percent (62%) of the Ecosan toilets (household, public and institutional) were functioning well. 29% were not functioning/ abandoned, 5% were mixing urine and faeces and 4% were not completed.

1.20 Most of the Ecosan toilets (83%) functioning were household toilets. Only 17% of the public/ Institutional toilets were functioning. Most of these toilets which were not functioning were public toilets (constructed at landing sites, trading centres, taxi/bus parks and markets) and Institutional toilets constructed at health centres and administrative headquarters (district and subcounties). However, the challenge of maintaining of public toilets is not limited to Ecosan. For public toilets to function, the management must be privatized and operated on commercial basis.

1.21 Only two public toilets were reported functioning; one in Kampala (Kyanja) and another in Mukono (Kasenge). The one of Mukono was rented out to neighbouring households who were supposed to pay UGX 3000 per month.

Problems with using Ecosan Toilets

1.22 The majority of the respondents (43%) reported that the major problem they were facing with Ecosan toilets was blockage of urinal diversion pipes. The current installation of urine diversion pipes does not provide for safe cleaning when need arises.

1.23 The other major problem cited (41%) was improper use of the Ecosan toilets arising from largely lack of user education.

Completion of the Ecosan loop

1.24 As reported earlier, 3.5% of the household and 2.7% of the institutional Ecosan toilets were completing the loop.

1.25 The sanitization period (decomposition) reported by the majority of the respondents (58%) was 7 months to 1 year. However, in 38% of the cases, the sanitization period was 3 – 6 months.

1.26 The majority of the respondents (54%) reported that they used the compost as manure or soil conditioner. 22% reported that they dispose of the compost in the bush.

1.27 59% of the respondents said that the urine is drained in the ground/soak pit. This was partly because there were no containers to collect the urine particularly among households. Only 41% diverted the urine in a container. This was common in institutions and public toilets. In Kabale and Kampala, the schools reported to be selling the urine to farmers at a cost of UGX 20,000 per 20 litres jerry can.

Emerging issues

1.28 The level of knowledge on ecological sanitation is limited particularly among rural communities. There were rural – urban differentials with those in urban more informed.

1.29 Promotion of Ecosan is limited to construction of demonstration toilets. However, using these demos to create awareness and demand for Ecosan is yet to be realized.

1.30 Generally the attitude of people towards ecological sanitation is positive. However, cultural beliefs associated with application of ash on feaces and exposure of urine and faeces was affecting the rapid adoption of Ecosan technology. Many communities still associate mixing of ash and faeces with witchcraft.

1.31 Most of the public toilets were found non functional. The introduction of these toilets ignored the required software. These supply driven facilities lack ownership and their failure hinges on lack of management structures.

2.32 The rationale for constructing public Ecosan toilets has often been presented as for demonstration of the technology. However, most of these structures are expensive and their cost discourages the poor from adopting the technology. The demos should be appropriate to the setting and cost of the would be adopters.

1.33 The re-use of nutrients from urine and compost is still very limited. Most of the urine is drained in the ground and the compost takes long to cumulate. At institutions the quantities generated are economically viable but there is no ready market in most of the districts. Consequently, the compost is either disposed in the bush or buried

Recommendations

National level

1.1 There is need for MWE and MoH to carry out Value for Money audit on the Public Ecosan Toilet to draw lessons and inform future strategy.

1.2 Given that most of public Ecosan toilets are still structurally sound, the MWE and MoH should invest in establishment of management structures for these facilities. NGOs with expertise in setting management structures should be engaged for this purpose.

1.3 The MWE and MoH should develop Ecosan promotional strategy aimed at educating the public about Ecosan and its advantages.

1.4 There is need for adapting the Ecosan toilet design to meet the requirements of the different groups including Muslims, disabled and children,

1.5 More research needs to be done in the cultural beliefs associated with the management of urine and faeces.

1.6 There is need for building technical capacity at lower local governments for promotion of Ecosan in terms of skills for education and construction of the Ecosan toilets.

1.7 There is need to promote appropriate Ecosan demo toilets which are within the means of the communities.

District Level

1.8 The districts should plan and budget for the promotion of Ecosan facilities.

1.9 Reactivating the management structures

1.10 1.10 Continuous sensitization of the community on use of Ecosans.

District Level

1.11 The districts should plan and budget for the promotion of Ecosan facilities.

1.12 Reactivating the management structures

1.0 INTRODUCTION

1.1 This Report describes the Results of a countrywide baseline survey on ecological sanitation coverage, use and sustainability commissioned by NETWAS-U with the support from Stockholm Environment Institute (Ecological Sanitation Research Knowledge Node). The Stockholm Environment Institute (SEI) with the support from SIDA is managing the Ecological Sanitation Research 2 (EcosanRes 2) programme.

1.2 EcoSanRes 2, is an international environment and development programme on ecological sanitation. It is intended to develop and promote pro-poor sustainable sanitation on the ground through capacity development and knowledge management.

1.3 In Uganda, NETWAS-U hosts the ***Uganda Knowledge Node***. The overall objective of the programme is to contribute to sustainable sanitation development through facilitating and coordinating capacity development and knowledge management. The Specific objectives include;

(i) To generate knowledge and develop capacity among stakeholders to design and implement sustainable sanitation solutions.
(ii) To strengthen communication and marketing of the sustainable sanitation knowledge node products and services in Uganda.
(iii) To increase awareness on sustainability issues of sanitation amongst stakeholders at the local, national and regional levels.

1.4 The survey was conducted between March and April 2010. The purpose of the survey was to generate evidence based data on the coverage of ecological sanitation, its use and the extent of integration of sustainability issues among users in Uganda.

1.5 The survey covered 16 districts across the country; Yumbe and Nebbi (West Nile), Gulu (Acholi), Apac (Lango), Masindi (Bunyoro), Kamwenge (Toro), Mbarara (Ankole), Kabale (Kigezi), Kalangala, Mukono and Kampala (Central), Kamuli (Busoga), Pallisa (Bukedi), Mbale (Bugisu), Kumi (Teso) and Moroto (Karamoja). In each district, two subcounties (urban and rural) were studied.

1.6 Section 1 is the Introduction. It gives a brief background, outlines the survey objectives and describes the methodology used. Section 2 describes the survey findings under five subsections; (i) Knowledge and Attitude, (ii) Coverage and Use of Ecological Sanitation, (iii) Sustainability of Ecological Sanitation, and (iv) Emerging Issues. Section 3 draws the Conclusions and makes Recommendations on the way forward. Annex 1 Shows the Map of Districts Covered. Annex2 Shows the Questionnaires/Tools used. Annex 3 Terms of Reference (TOR) for the Study

1.2 Background

1.2.1 Intestinal worms, diarrhea and all diseases related to poor sanitation are reported to be amongst the top 5 causes of morbidity in Uganda. There is a 5% higher incidence of diarrhea in children in households without improved latrine facilities and the continued prevalence of such diseases and indignities affect health, productivity and performance of school children in Uganda. It also compromises individual and societal abilities to reduce and improve the quality of life.

1.2.2 The Population and Housing Census by the Uganda Bureau of Statistics (2002) shows that 83.3% of the population had access to some form of sanitation facility. The Health Inspectors Report (2008) shows that 62.4% of population had access to facilities up to national required standards which was an increase from 59% reported by the Ministry of Water and Environment (2007).

1.2.3 However, these figures mask disparities in sanitation coverage across the country. Preliminary findings from a national service delivery survey conducted in 2008 indicated that 43% lacked toilet facilities due to ignorance; lack of knowledge and negligence; while 29% relate it to high investment costs.

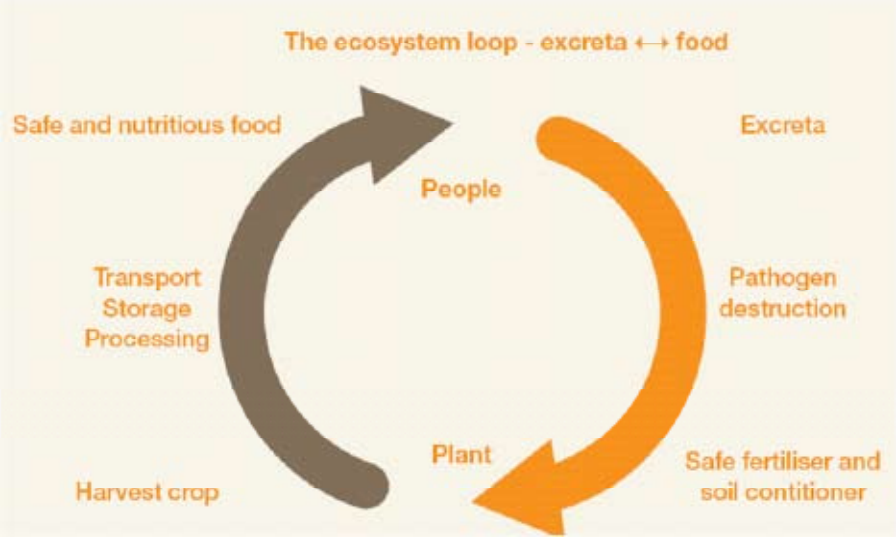
1.3 Ecological Sanitation

1.3.1 Sanitation refers to a wide range of services and arrangements intended to improve the hygienic conditions of the human environment. Environmental sanitation refers to the management of human excreta, greywater, sullage water, stormwater drainage, solid waste and industrial and agricultural rest products.

1.3.2 Ecological Sanitation is a new paradigm is sanitation that recognizes human excreta and water from households not as waste but as a resource that can be recovered, treated and where necessary safely used again. Ideally, ecological sanitation systems enable a complete recovery of nutrients in household wastewater and their reuse in agriculture. In this way, they help preserve soil fertility and safeguard long-term food security, whilst minimizing the consumption and pollution of water resources.

1.3.3 Ecological Sanitation is based on the idea that urine, faeces and water are resources in an ecological loop. It is an approach that seeks to protect public health, prevent pollution and at the same time return valuable nutrients and humus to the soil.

1.3.4 In ecological sanitation urine and faeces are separated at source and are not mixed with water. Hence this sanitation solution avoids the contamination of large volumes of water with pathogens. In addition, the separation of urine and faeces make it easier to recover and recycle nutrients such as phosphorous and nitrogen. After dilution and/or processing separated urine



can be applied to the soil as a hygienic fertiliser. Faeces, on the other hand, can be safely composted and allows for the integration of organic waste treatment into food production (IRC, 2004).

1.35 The diagram of the ecosystem loop illustrates that people produce excreta (faeces and urine) which goes through the process of pathogen destruction (composting). The resultant matter (compost and urine) is used as fertilizer (urine) and soil conditioner (compost) for plants/ crops. The crops harvested are processed and stored as nutritious food which is eaten and the cycle repeats itself.

1.3.6 Ecological sanitation systems safely recycle excreta and other organic waste products to crop production in such a way that the use of non-renewable resources is minimized.

1.3.7 The statement 'safely recycle' includes hygienic, microbial and chemical aspects. Thus, the recycled human excreta product, in solid and liquid form, shall be of high quality both concerning pathogens and all kind of hazardous chemical components. This means the product should not pose any significant health threat or environmental impact when used.

1.3.8 The focus is on the health, environment and resource aspect of sustainable sanitation. Thus ecological sanitation is not, per se, sustainable sanitation, but ecological sanitation systems can be implemented in a sustainable way and have a strong potential for sustainable sanitation, if technical, institutional, social and economical aspects are cared for appropriately.

1.3.9 In Uganda, the concept of ecological sanitation was introduced a decade ago by the South – Western Towns Water and Sanitation Project (SWTWSP) under the Directorate of Water Development in late 1997s. Since then ecological sanitation has been promoted by Government, bilateral agencies and NGOs including the Ministry of Water and Environment, Ministry of Health, Ministry of Education, UN Agencies (UNICEF and UNDP), SIDA, WaterAid, NETWAS-U and Local Governments. Details of the Organizations promoting Ecological Sanitation

are shown in Table 1.1 on the next page.

1.3.10 Ecological Sanitation is being promoted as an alternative sanitation approach initially in rural areas with difficult geographical conditions that limit construction of ordinary pit latrines and for urban areas now. However, the re-use of dried substrates, high rate of filling of vaults especially primary schools and public toilets and poor performance in operation and maintenance continue to pose challenges to up scaling.

1.3.11 It is estimated that ecological sanitation initiatives account for 0.5% - 1% of improved sanitation (NSWG&WSP, 2008). There are over 15 different types of Ecosan toilets but in Uganda there are four major types;

(i) Urine diversion compost Ecosan Toilets (promoted in households and institutions)

(ii) Urine diversion Dehydrated Ecosan Toilets (promoted in households)

Arbarloo Toilets (households)

Fossa Alterna (households and institutions)

Details of these toilets are described in section 2.5.

1.3.12 This survey was intended to generate evidence based data on the coverage of ecological sanitation, its use and the extent of integration of sustainability issues.

Table 1.1 Organizations? Projects Promoting Ecological Sanitation

	Project	Apac	Gulu	Kabale	Kalangala	Kampala	Kamuli	Kamwenge	Kumi	Masindi	Mbale	Mbarara	Moroto	Mukono	Nebbi	Pallisa	Yumbe	Kitgum	Masaka	Arua	Kotido
1	South Western Towns Water and Sanitation Project (SWTWS) - (1996 - 2002)			√								√									
2	Urine-diverting dehydration and compositng toilets constructed by the Kitgum town water supply extension and basic sanitation programme, Kitgum																	√			
3	Resource-Orientated Sanitation Concepts for Peri-urban Areas in Africa (ROSA); Implementation in Kitgum Town Council (2006 - 2009)																	√			
4	Water supply and sanitation Arua Diocese and Maracha Hospital, Maracha																			√	
5	Urine-diverting dehydration toilets at a rural secondary school, Kalungu (2003 - 2004)																		√		
6	Improvement of sanitation at Kanawat health center, Kanawat (2002)																				√
7	Pdimu landing site ecosan project: urine-diverting dehydration toilets and constructe wetland																			√	
8	Urine-diverting dehydration and composting toilets constructed by the Lake Victoria Environmental Management Project (LVEMP), Ddimo (1997 - 2002)																				
9	Multi-storey dry toilets in Rubaga Girls Secondary School					√															
10	Rural water supply and sanitation programme																				
11	Self uptake of ecological sanitation toilets by households in Kabale Municipality, Kabale District: Case study (2009)			√																	
12	Social marketing approach to scale-up sanitation and hygiene in urban slums of Kawempe division, Kampala (2008 - 2018)					√															
13	UDD toilets for the pupils of the Biina primary school in Luzira, Kampala					√															
14	Construction of UDD toilets in Kampala slums as part of the Kampala City Council (KCC) Ecological Sanitation Projects.					√															
15	EcoSanRes Knowledge Node Uganda (hosted by NETWAS Uganda)					√															
16	DED EcoSan																				
17	District Water and Sanitation Conditional Grant (since FY 2001/02 to date)	√		√	√		√	√	√			√	√	√	√	√	√				
18	NUSAF (World Bank project) (2003 - 2013)										√				√		√				
19	Public Health Care Conditional Grant													√							
20	African Medical Research Foundation (AMREF) (2003 - 2008)			√																	
21	Small Towns Water and Sanitation Project										√					√					
22	UNICEF sanitation project												√				√				
23	SNV sanitation project								√		√										
24	ACF/ECHO (2008 - 2009)		√																		
25	SHED (UNDP)				√																
26	SSECODA				√																
27	Uganda Red Cross				√																
28	Area Agric. Modernisation project (AAMP) (2008)											√									
29	FORUD/PROTOS (2007 - 2010)							√													
30	JESSE/PROTOS (2007 - 2010)							√													
31	Compassion International										√										
32	Mbale School of Hygiene (2004)										√										
33	CDD										√										
34	MoES (SFG)														√						
35	Katosi Women Group (2002 to date)													√							
36	Kampala City Council (SIDA)					√															
37	CIDI (2009 - 2013)					√															
38	RUDMEC					√															
39	Save the children Uganda		√																		
40	Send a Cow Uganda								√												
41	Action Against Hunger		√																		

1.4 Objectives

1.4.1 The overall objective is to generate evidence on the coverage of ecological sanitation, its use and extent of integration of sustainability issues among users in Uganda through a formative baseline report.

1.4.2 The specific objectives are:

(i) To describe the knowledge, attitudes and views of Ecosan latrine owners and users and assess the levels actual functionality of the Ecological Sanitation latrines among owners.
(ii) To assess the coverage of the ecological sanitation latrine technology in Uganda.
(iii)
(iv) To determine the extent of loop completion among Ecosan latrine owners, providers and users so as to ascertain extent of integration of sustainability issues.
(v) To document existing Ecosan technology types, any best practices and/or successes around Ecosan technology use for subsequent sharing within the national framework.

1.5 Survey Methodology

1.5.1 Participatory methodologies were used to carry out survey. These included household and institutional questionnaire interviews, key informant interviews with local, district and national leaders in water and sanitation sector, focus group discussions and observations.

1.5.1 Sampling Procedure

1.5.2 Selection of Administrative Units: A Multi-Stage Cluster sampling procedure was used to select the administrative units. 32 Clusters were selected in the entire country. The clusters were represented by Subcounties which are the lowest Local Governments (LGs). The criteria used to select the clusters were representation of subregional socio-economic diversities and rural-urban differentials.

1.5.3 The country was divided into 7 Regions; (i) North-West (ii) North-Central (Acholi and Lango), (iii) North-East (Taso and Karomoja), (iv) Eastern (Busoga, Bukedi and Bugisu), (v) Central (Buganda), (vi) South-West (Ankole and Kigezi) and (vii) West (Toro and Bunyoro). The major reason for this subdivision is to get areas with similar characteristics. In each region at least two districts were randomly selected. In bigger regions, more than two districts were selected as shown in the Table 1: below.

Table 1.2: Selection of Administrative Units

Region	Sub-region	District	Subcounties
North-Central	Lango	Apac	2
	Acholi	Gulu	2
North-West	West-Nile	Nebbi	2
		Yumbe	2
North-East	Karamoja	Moroto	2
	Teso	Kumi	2
Eastern	Bugisu	Mbale	2
	Bukedi	Palisa	2
	Busoga	Kamuli	2
Central	Buganda	Kalangala	2
		Mukono	2
	Kampala	Kampala	2
West	Bunyoro	Masindi	2
	Tororo	Kamwenge	2
South-West	Ankole	Mbarara	2
	Kigezi	Kabale	2
Total	**14**	**16**	**32**

1.5.4 Selection of survey units: (i) Households; In each of the 32 selected subcounties, one parish was randomly selected and in each of the selected parishes, one village (LC1) was purposively selected based on presence of ecological sanitation. In each of the selected village 30 households were randomly selected for interviews. Altogether, 957 household interviews were conducted.

(ii) ***Institutions:*** The institutions that were covered include; schools and Health Centres. In each of the selected sub-counties one school and one health centre were purposively selected. Altogether 66 institutions were covered.

1.5.2 Data Gathering Methods

(i) Desk review: Relevant literature including reports and publications on Ecosan were reviewed using a checklist. The list of documents reviewed is shown in the References.

(ii) Household Questionnaire Interviews: Questionnaires interviews were conducted in each of the selected households. The interviews involved face to face interaction household heads or their representatives.

(iii) Institutional Questionnaire Interviews: Interviews were conducted with heads of institutions in the selected institutions. The interviews involved face to face interaction heads of intuitions or their representatives.

(iv) Key Informant In-depth Interviews (KIII): KIII were conducted with health teams, Health assistants in target areas, community development officers at sub-

county levels, district health inspectors and water officers; NGOs, national Ecosan focal point officer, NETWAS officials using a structured KII interview guide.

(v) Observations: This method was used to capture data on condition and use of Ecosan toilets including separation of urine, smell, presence of flies, vault, superstructure.

(vi) Focus Group Discussions (FGDs): In each of the villages selected 1 focus group discussions was conducted with the representatives of the community members including women and men. Altogether 32 Focus group discussions conducted.

1.5.3 Data Processing and Analysis

1.5.3.1 Quantitative data: Quantitative data from household and Institutional questionnaires, and Technical Assessment form was edited and coded. It was then entered and analyzed in the Statistical Package for Social Sciences (SPSS). Tables, graphs and charts were generated for further analysis and interpretation.

1.5.3.2 Qualitative data: Qualitative data from notes of desk review, focus group discussions and Key Informants Interviews were edited and summarized according to the survey variables. The data was then analyzed using thematic and content analysis methods. Emerging themes were interpreted and conclusions drawn.

2.0 SURVEY RESULTS

2.1 This section describes the survey results. It starts with describing the socio-demographic characteristics of the survey population, followed by Knowledge and Attitude, Coverage and Use and Sustainability of Ecological Sanitation. The section concludes with Emerging Issues from the findings.

2.1 Socio-Demographic Characteristic of Survey Population

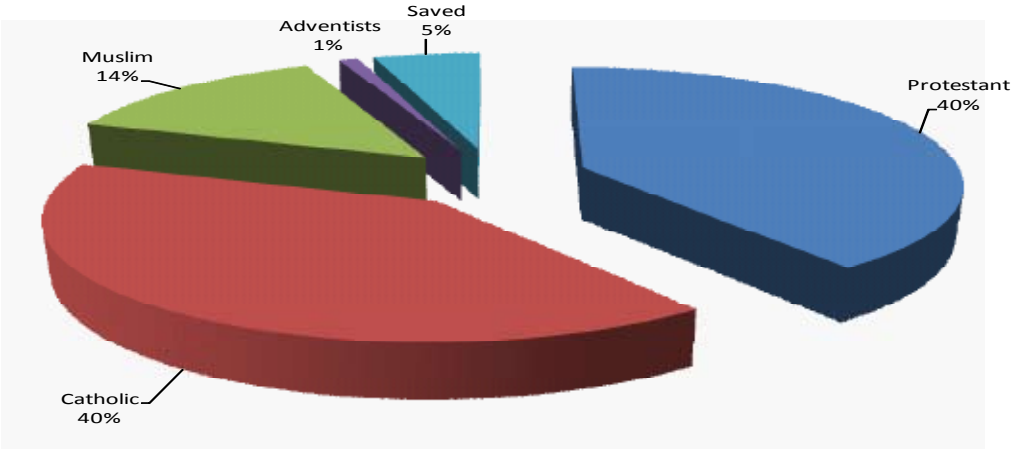
2.1.1 Gender of the Household Head: Out of the 957 households selected, 78% were headed by Males and 22% by Females. Apac had highest percentage of male headed households (99%); while Mukono and Kamuli had equal percentage (50%) of male and female headed households.

2.1.2 Age of Heads of Households: The majority of the household heads (38%) were aged between 35 and 44 years. Only 1% of the households were child headed i.e. the heads of households were less than 18 years of age. Graph 1 depicts the age distribution of the head of households.

2.1.3 Marital Status of Heads of Households: Most of the household heads (77%) were married. However, 8% were windows, 8% were singles and 7% were divorced/ separated.

2.1.4 Religion of Heads of Households: The most of household heads (40%) were Christians. Roman Catholics and Protestants were the majority as shown in Chart 1 below.

Chart 1: Distribution of Religion among Household Heads



2.1.5 Occupation of Heads of Household: The majority were peasant farmers (33%) and traders (32%). The rest were salaried employees (23%), casual labourers (6%) and fishermen (3%). Kabale, Kamwenge and Gulu districts had more than 50% of the households involved in farming; while Mbarara, Apac and Kamuli had more than half of the household involved in trade.

2.1.6 Source of Household Income: Similar to the occupations, the majority of household heads (36%) earn their income through salary or wages and farming. Table 2.1 shows details of the sources of income.

Table 2.1: Sources of Income for Household Heads

Farming	Livestock	Salary/wages	Fishing	Business	
317	7	348	62	221	955
33%	1%	36%	6%	23%	100%

Cross tabulation of the data revealed that the occupations of the heads of households were the same sources of income.

2.1.7 Education: The majority of the heads of households (38%) attained primary education. Only 10% had attained university education. Details were as shown in Table 2.2

Table 2.2 : Education Level Attained by Household Heads

Primary (1-7)	Secondary (1-4)	Secondary (5-6)	University	Technical Institution	None	Other tertiary institutions	Quran school	Total
367	232	75	97	109	62	8	5	955
38%	24%	8%	10%	11%	6%	1%	1%	100%

In terms of districts, Nebbi and Kumi had more than a quarter of the household heads having attained university education; while Kabale district had more than a quarter of the households having not attained formal education.

2.1.8 Type of Dwelling House: The majority of the households (51%) had permanent houses, 36% had semi-permanent houses and 14% had huts. Mukono, Mbale and Kampala had over 90% of the households having permanent dwelling houses. Apac and Gulu had more that 50% of the households living in huts. This is partly because of the effects of civil war which ragged Northern Uganda for over 20 years.

Cross tabulation of the dwelling house with source of income shows that the majority of households that had permanent houses were salaried/wage earners and business people. Conversely, the majority of households that lived in semi-permanent houses and huts were peasant farmers.

2.1.9 Ownership of land: 65% of the households owned the plot where the household was located. Pallisa, Mbale, Kampala, Kalangala and Moroto had more than half of the households not owning land where their houses were located. This has implications on the leverage to use the land for construction of permanent structures like Ecosan toilets.

2.1.10 Household size: The average household size was 3 members with minimum of one person and maximum of 12 persons. The small size households were more in urban areas and big households in rural areas.

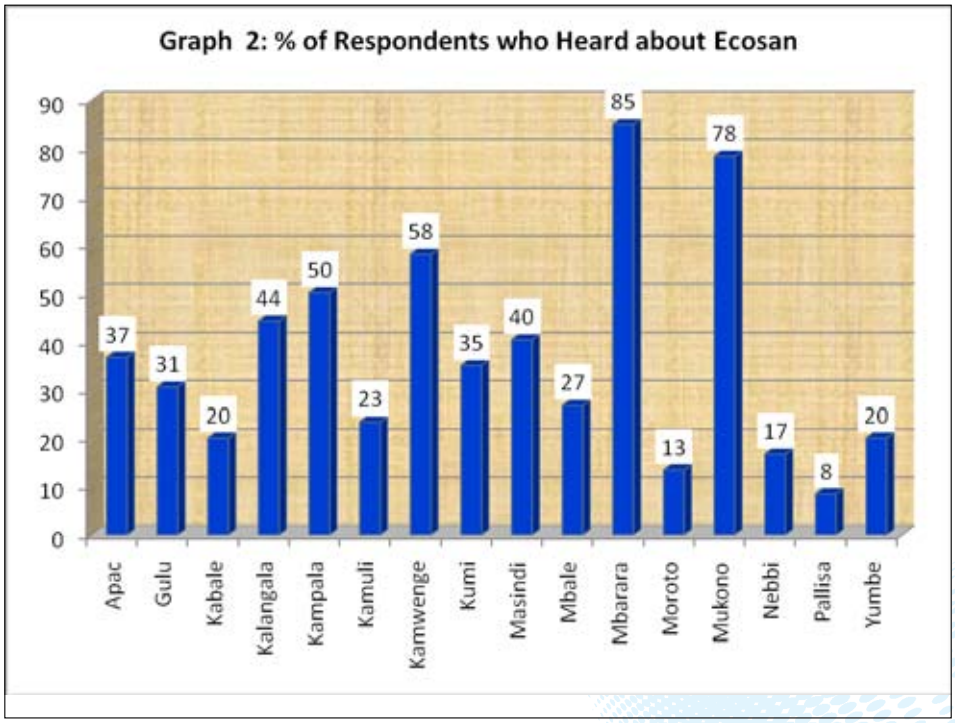
Knowledge, Attitude and Views about Ecological Sanitation Toilets

2.2.1 Knowledge of Ecological Sanitation

2.2.1.1. The majority of the respondents (63.3%) said they had not heard about ecological sanitation toilet. It was only 36.7% that reported as having heard about ecological sanitation. There is need to intensify education and awareness creation on ecological sanitation.

2.2.1.2 At district level, Mukono, Mbarara and Kamwenge had more than half of the households that had heard about ecological sanitation toilets. Conversely, Pallisa, Moroto and Nebbi had less than 15% of the households that reported having heard about ecological sanitation toilets. Kabale district which is considered to be the cradle of ecological sanitation in Uganda had less than 20% of the households having heard about ecological sanitation.

Graph 2 on the next page depicts the households that had heard about ecological sanitation by district.



2.2.2.3 These finding corroborated with those of focus group discussions where the majority of the participants said they had not heard about ecological sanitation. This shows that the message on ecological sanitation HAS NOT REACHED THE MAJORITY OF THE PEOPLE IN UGANDA.

Box 1: Knowledge of Ecosan Toilets

> "We lack knowledge on ecological sanitation toilets. No NGO or Government Institution has sensitized us on ecological sanitation" FGD, Apac in Apac
>
> "No sensitization whatsowever has been done and there has been no campaign to promote Ecosan" FGD, Industrial division in Mbale

2.2.2.4 It was Kamwenge, Mbarara and Kabale where more than 50% of the focus group members reported having heard about ecological sanitation. The high level of awareness of ecological sanitation in these districts was attributed to SWTWSP particularly in Kabale and Mbarara.

2.2.2.5 In terms of gender, 29% of males had heard about Ecosan toilets as compared to 7% of the females. This means that 93% of the females had not heard about Ecosan toilets. This was because women stay most of the time at home busy with household chores and seldom attend meeting, listen to radio or travel.

2.2.2.6There were rural urban differentials with the majority of the people who had heard about Ecosan having been in rural areas. This is partly because the majority of the Ecosan projects are based in rural areas. Table 2.3 on the next page illustrates the urban rural differentials.

Table 2.3 Respondents who Heard About Ecosan by Location

Location	Heard about Ecosan		
	Yes	No	**Total**
Rural	183	263	446
Urban	163	316	479
Trading centre	5	26	31
Total	**351**	**606**	**956**

2.2.2.7 For those who heard about ecological sanitation, the majority (18%) heard from a friend, Health Assistant (17%) and community members (15%). Other sources of information were as shown in Table 2.4 below;

Table 2.4: Sources of information on Ecological Sanitation

Source of Information	Frequency	Percent
Health Assistant	61	17
Community Development Assistant	29	8
LC official	37	10
Village health tam	9	3
Radio	29	8
Newspapers	5	1
Poster	6	2
Flyers	1	0
District officials	23	6
Friend	65	18
NGO	20	6
Television	1	0
AAMP	7	2
Heard from the community	54	15
FORUD	9	3
Total	**356**	**100**

2.2.2.8 As shown in Table 2.4 above, there was no dominant source of information on ecological sanitation. People heard from a variety of sources. This means that the information disseminated is not uniform and may be adulterated or distorted as shown in Table 2.5 below.

Table 2.5: Messages Heard on Ecosan

Information heard	Frequency	Percent
Good technology better than pit latrine	84	24
How to look after Ecosan toilets	46	13
They are going to bring them to our area	7	2
it separates urine from faeces	110	31
Ecosan toilet is a permanent superstructure	5	1
It can produce manure	48	14
Don't remember	2	1
You use ash and toilet papers	15	4
Re-useable toilet	26	7
Toilets that are strong and constructed above the ground	8	2
Total	**351**	**100**

2.2.2.7 Table 2.5 shows that most people heard incomplete information about ecological sanitation. Of the respondents who had heard about ecological sanitation, only 31% had attended a meeting, seminar or workshops on ecological sanitation.

2.2.2.8 The workshops/meeting/ seminars were organized by Local Governments, Projects and NGOs as shown in Table2.6.

Table 2.6: Organizations that Conducted Ecosan Meetings

District	District	Sub-county	Local council officials	KCC/Town council	Ssesse Comm. Dev. Association	NGO from Kabale	AAMP	Rural growth Project	Action Against Hunger	Save the children Uganda	FORUD	School of hygiene	Send a cow Uganda	Total
Apac		5	1											6
Gulu									3	1				4
Kabale														0
Kalangala	2				14									16
Kampala	1			11										12
Kamuli	1													1
Kamwenge	3										4			7
Kumi													1	1
Masindi	8	1	1											10
Mbale		1	1									1		3
Mbarara	8		9				6							23
Moroto	4													4
Mukono	7	2	1			2								12
Nebbi		1												1
Pallisa	1													1
Yumbe	4							1						5
Total that attended	**39**	**10**	**13**	**11**	**14**	**2**	**6**	**1**	**3**	**1**	**4**	**1**	**1**	**106**

2.2.2.9 Analysis based on gender shows that 24.5% (86/351) of the males and 4.5% (16/351) of the females had attended sensitization meetings, workshops or seminars Ecosan. This confirms earlier finding that females were the least knowledgeable about Ecosan because they rarely attend meetings where Ecosan messages are disseminated.

2.2.2.10 In terms of location, the number of rural people who reported having attended an Ecosan meeting, seminar or workshop was twice higher than that of urban people. This is partly because rural people had many Ecosan projects and are less busy to attend meetings as compared to those in urban areas who are busy working. Table 2.7 shows the attendance by location.

Table 2.7 Respondents who attended Sensitsation Meetings by Locations

Location	Attended a sensitization meeting, seminar or workshop on Ecosan		
	Yes	No	Total
Rural	70	106	446
Urban	34	122	479
Trading centre	0	5	31
Total	104	233	957

2.2.2.11 In these meetings people were taught how to use Ecosan toilets and disposal of the compost, encouraged to construct Ecosan toilets and the need to have caretakers on public Ecosan toilets.

2.2.2.12 The knowledge gaps were not only limited to the households. There were also knowledge gaps among the district extension staff responsible for promotion of ecological sanitation as shown by the answers to the question what is ecological sanitation in the box below;

Box 2: Knowledge Gaps on Ecosan among Key Informants

"Ecological sanitation is a way of making sanitation friendly and sustainable" (KI, Agricultural Officer).

"Ecological sanitation is a new technology of sanitation which involves disposal of faeces" (KI, District Water Office)r.

"Ecological sanitation is Ecosan latrine" (KI Health Assistant)

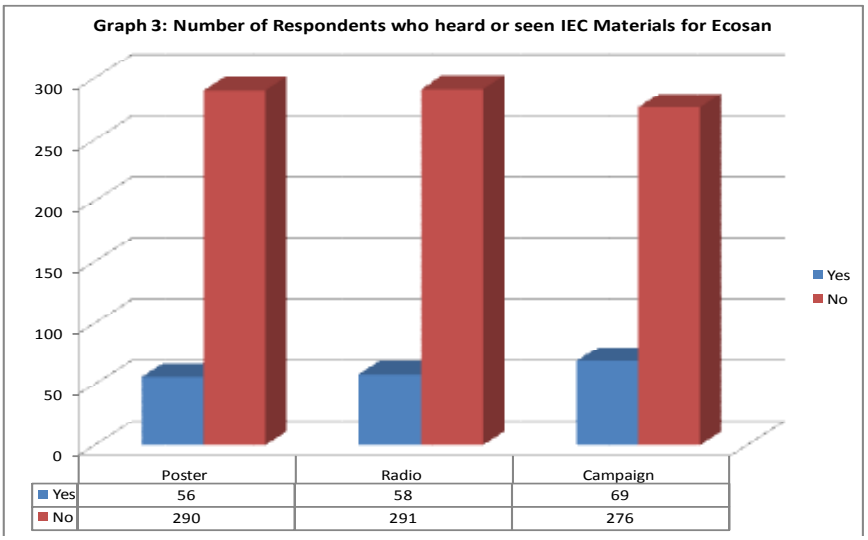
"Ecological sanitation is a facility friendly to the environment promoted as a good way of promoting sanitation – improved latrine" (KI Community Development Officer).

2.2.2.13 The above quotation demonstrates that even those who are supposed to spread the message of ecological sanitation have inadequate understanding of ecological sanitation.

2.2.2.14 In a power point presentation made by the Sanitation Coordinator (MWE/DWD) on Ecological Sanitation in Uganda (not dated), it was stated that capacity had been built at national, regional, District and community level. This achievement seems to have been overstated is shown by the quotation in Box 2.

2.2.2.15 This low level of awareness about ecological sanitation was attributed to lack of Information, Education and Communication (IEC) materials including

posters, flyers, booklets, radio programmes, campaigns, film and drama shows as well as seminars and workshops in the communities on ecological sanitation. Less than a quarter of the respondents had seen or heard a poster, radio program or campaign on ecological sanitation. Graph 3 below provides a graphic representation of access to Ecosan IEC materials



2.2.10 the problem of lack of IEC materials was not limited to households; even in institutions there was limited coverage of IEC materials. Among the 29 institutions visited, only one had Ecosan poster shown as picture 1 on the next page. The rest did not have.

2.2.2.10 The Key Informants interviewed acknowledge the low level of knowledge about ecological sanitation. They attributed it to lack of resources (technical and financial) dedicated for the promotion of ecological sanitation. Districts Health Departments reported that the money for PAF which they used to use for promoting Ecosan stopped and now they have no budget sanitization and awareness campaigns. NGOs and other agencies have limited scope confined to areas they support.

Picture 1: Poster of Ecosan in Kapolin P/S in Kumi

2.2.3 Exposure to Ecological Sanitation Facility

2.2.3.1 The survey explored further the level of knowledge of ecological sanitation by asking whether the respondents had seen an Ecosan toilet. The findings show that 91% (319/349) of the respondents who said they had heard of ecological sanitation had seen an Ecosan toilet.

2.2.3.2 One person who reported that he had not heard about ecological sanitation reported that he had seen an Ecosan toilet. This person may be representing many who see Ecosan toilets but they have not been sensitized about them. Table 2.8 shows the people who heard and seen Ecosan toilets.

Table 2.8: Respondents who Heard and Saw Ecosan Toilets.

	Heard about Ecosan Toilets		Total
	Yes	No	
Seen Ecosan toilets Yes	319	1	320
No	30	0	30
Total	349	1	350

2.2.3.3 In terms of districts, Mbarara, Mukono, and Kamwenge had more than 50% of the respondents having seen an Ecosan toilet. While Pallisa, Moroto and Yumbe districts had less than 20% of the respondents having seen an Ecosan toilet.

2.2.3.4 Mbarara, Mukono and Kamwenge had the highest percentage who had seen Ecosan toilets because Ecosan projects implemented in those districts by Government and NGOs. Table 2.9 on the next page shows the number of respondents who had seen Ecosan toilets by district.

Table 2.9: Respondents who Saw Ecosan Toilets by District

District	Yes	No	Total	%
Apac	19	41	60	32
Gulu	18	42	60	30
Kabale	12	48	60	20
Kalangala	25	35	60	42
Kampala	27	32	59	46
Kamuli	11	49	60	18
Kamwenge	31	29	60	52
Kumi	14	43	57	25
Masindi	19	37	56	34
Mbale	16	44	60	27
Mbarara	49	12	61	80
Moroto	8	52	60	13
Mukono	45	16	61	74
Nebbi	10	50	60	17
Pallisa	5	55	60	8
Yumbe	11	49	60	18
Total	**320**	**634**	**954**	**33.5**

2.2.3.5 Gender dissagregated data shows 26% of males and 7% of females had seen an Ecosan toilet. This finding was consistent with the percentage of males and females that heard about Ecosan toilets.

2.2.3.6 In terms of location, more respondents (170) living in rural areas reported having seen Ecosan toilets as compared to their counterparts in urban areas (145). Table 2.10 below illustrates the rural urban differential in exposure to Ecosan toilets.

Table 2.10 Respondents who Saw Ecosan Toilets by Location

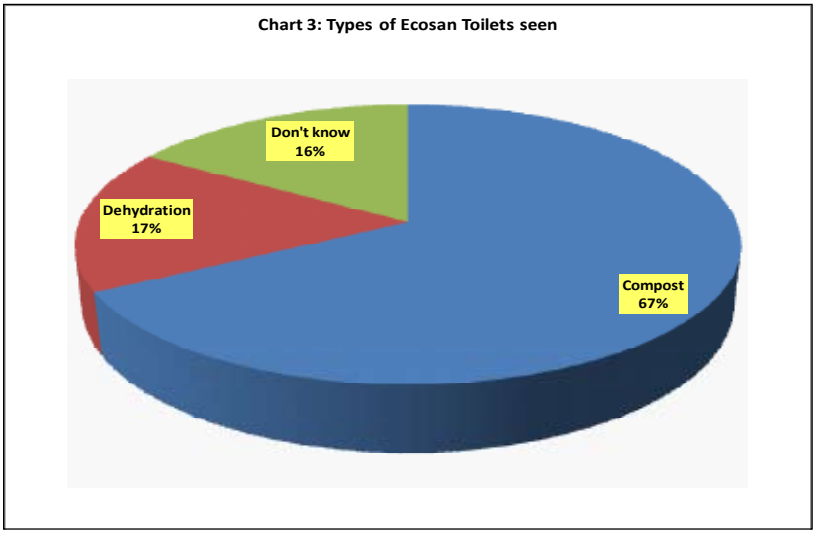
Location	Have seen an Ecosan toilet		
	Yes	No	Total
Rural	170	13	183
Urban	145	17	162
Trading centre	5	0	5
Total	**320**	**30**	**350**

2.2.3.7 Those who had seen Ecosan toilets were asked to describe the key features of the Ecosan toilets as a means of verification of their answers. The findings were as Table 2.11 below.

Table 2.11: Knowledge of Ecosan Toilet Characteristics

Characteristic	Yes	No	Total	%
Urine diversion	254	66	320	79
Has Chambers	232	88	320	73
Has compost	80	240	320	25
Don't know	4	316	320	1

2.2.3.8 The most common feature mentioned was separation of urine (79%) and having chambers (73%). Re-use of the compost was the least mentioned (25%). The type of Ecosan toilet reported seen by the majority of respondents was the compost (67%). However 16% did not know the type of Ecosan toilet they saw. Chart 3 on the next page depicts the toilets seen.



2.2.4 Level of awareness about ecological sanitation in Institutions

2.2.4.1 A total of 29 heads of institutions (22 schools and 7 Health Centres) were interviewed. Out of the 29 heads of institutions 7 (24%) said they had not heard or seen an Ecosan toilet.

2.2.4.2 Out of the 22 who had seen an Ecosan toilet, 18 mentioned urine diversion as one of the features of Ecosan toilet, 19 said chambers and only 10 (less than half) mentioned compost.

2.2.4.3 Most of the heads of institutions (20/22) had seen compost type of Ecosan toilet; one had seen hydration and one did not know the type of Ecosan toilet he saw.

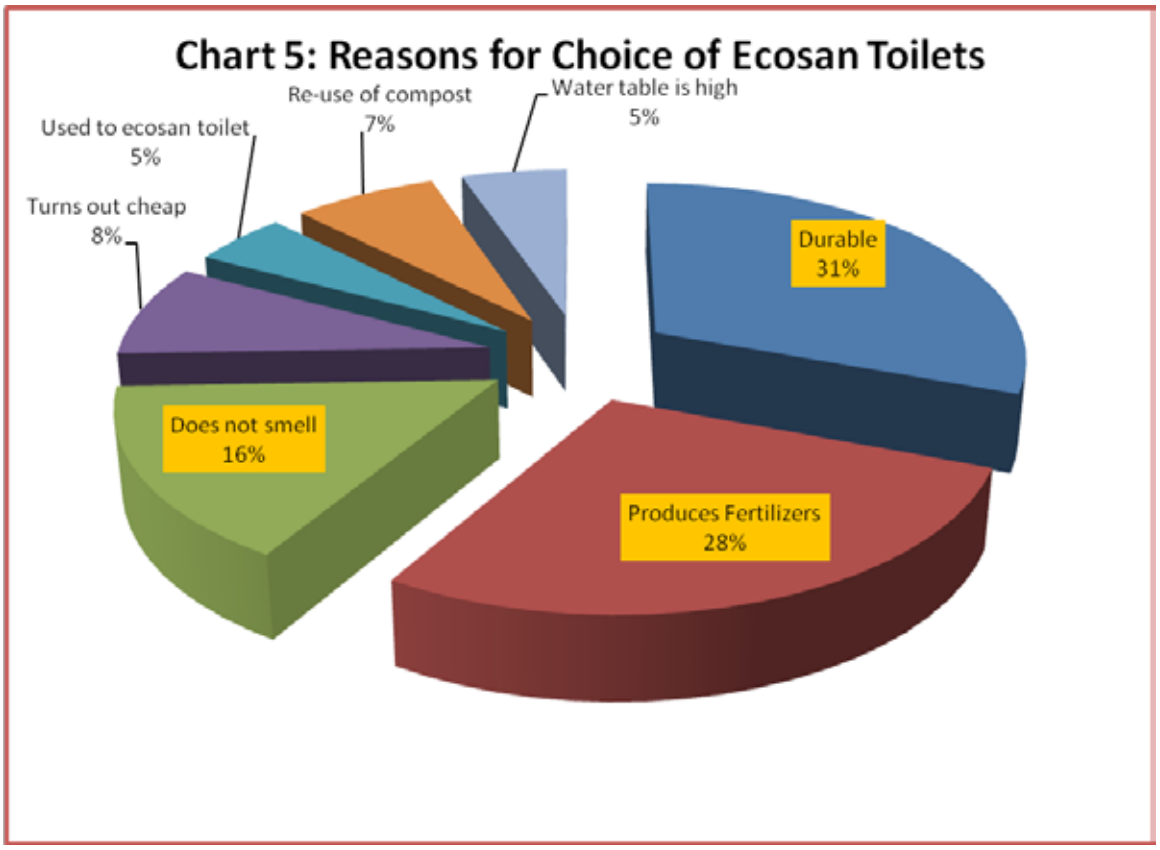
2.2.4.4 With regard to IEC materials, 12 out of the 22 had seen Ecosan poster, 7

heard a radio program and 7 said there was a sensitization campaign. These findings corroborate with those of the household survey which indicated limited availability of EIC materials.

2.3 Attitude and Views about Ecological Sanitation Toilets

2.3.1 The attitude towards ecological sanitation was mixed and varied across the districts and between rural and urban population. The level of awareness coupled with cultural beliefs had an influence on the attitude towards ecological sanitation.

2.3.2 ***Willingness to adopt ecological sanitation technology***: 80% of the respondents said that if they were given a choice between a traditional pit latrine and Ecosan toilet, they would choose ecological sanitation toilet. The major reason they gave was Ecosan toilets were durable or last longer (31%) and production of fertilizers from the compost (28%). Chart 5 below gives a summary of the reasons for preferring ecological sanitation toilets.



2.3.3 There was no major difference between rural and urban respondents in terms of preference for ecological sanitation toilets. 80% of rural respondents as compared to 81% of urban respondents said that they preferred Ecosan toilets. However, there differences in terms of the major reason for choosing Ecosan toilets.

2.3.4 While the reason for the majority of rural respondents was generation of fertilizers, for the urban respondents it was because of durability of the Ecosan toilets. This is not surprising because the rural respondents were more concerned with increased agricultural production while in urban respondents their concern was lack of land/space to construct more pit latrines.

2.3.5 Disaggregated data by district shows a similar pattern as illustrates by Table 2.12 below.

Table 2.12: Reasons for Preference of Ecological Sanitation Toilets (in numbers)

District	Durable	Produces Fertilizers	Does not smell	Turns out cheap	Used to Ecosan toilet	Re-use of compost	Water table is high
Apac	10	25	23	1	4	2	4
Gulu	37	37	7	2	0	15	1
Kabale	32	18	6	3	0	8	14
Kalangala	36	30	7	10	1	6	0
Kampala	13	27	6	16	6	2	3
Kamuli	28	17	18	2	3	11	0
Kamwenge	9	33	26	4	7	6	0
Kumi	19	29	7	12	1	7	1
Masindi	20	28	18	3	3	5	0
Mbale	16	7	20	15	10	2	3
Mbarara	28	9	10	2	3	2	18
Moroto	24	7	12	9	12	1	1
Mukono	20	8	16	3	6	14	12
Nebbi	43	16	5	18	0	0	1
Pallisa	26	27	10	1	4	5	6
Yumbe	23	32	7	3	0	4	2
Total	**384**	**350**	**198**	**104**	**60**	**90**	**66**

3.3.6 Those who choose traditional pit latrines said that they prefer them because they are cheaper to construct as compared to Ecosan toilets and they are used to them. Other reasons given were, traditional pit latrines don't smell and others said they did not know how Ecosan toilets work.

3.3.7 These reasons corroborated well with those given by Key Informants and Focus Groups. The issue of cost of Ecosan toilets was raised in all focus group discussion as too expensive for the majority of the community members. This was partly because, the demonstration Ecosan toilets constructed for both households and public places were costly to build ranging between UGX 0.83 m to 3 million (1 stances) for household toilets and UGX 8 million to UGX 13 million (4 stances) for public toilets. These were not the appropriate toilets for promotion because they are not affordable and instead discouraged they would be early adopters.

The pictures on the next page show the types of Ecosan toilets promoted in Uganda.

Picture 2 Household Ecosan toilet demo in Yumbe: Beautiful and more expensive than the main dwelling house in the background (cost UGX 3 million or USD 1500).

Picture 3: HCIV toilet in Gulu district (cost more than UGX 13 million (USD 6500)

Box 3: Views of Respondents on the cost of Ecosan Toilets

"if Ecosan is to be adopted, it should be equal or cheaper than pit latrines. What is being promoted is expensive and requires skills which are not available in the villages" KI Nebbi.

"Ecosan technology is too technical and expensive" KI, Moroto

"I am a poor man who walks while calling God. Even if they told me to contribute 300,000/- for construction of that toilet I cannot afford. I like that toilet very much but my pocket cannot allow me to have one. The pit latrine I have is so deep (about 30m) and I am sure it would keep me going after all I am left with a few years to die (FGD, Kasenge in Mukono).

2.3.8 ***Support for ecological sanitation:*** Seventy four (74%) of the respondents said that they strongly support ecological sanitation, 12% said they somehow support, 9% said they neither support nor oppose and 6 percent said they oppose ecological sanitation. The major reasons advanced in support of ecological sanitation were that it was permanent solution for problematic areas with high water table, rocky and sandy soils; and production of organic fertilizers.

2.3.9 Those who opposed ecological sanitation said it was not compatible with the local culture and the cost of building it was not affordable by the majority of the households. The other reason given was disposal of the compost and hard to maintain Ecosan toilets.

2.3.10 There were no major differences between the rural and urban respondents in opposing Ecosan toilets. 47 urban respondents opposed Ecosan toilets as opposed to 44 rural respondents. However, there difference in the reasons for opposing Ecosan toilets between the rural and urban respondents. The major reason for the rural folks was Ecosan toilets were not compatible with their culture while for the urban folk disposal of the compost because of lack of land for farming or market for the compost.

2.3.11 ***Views about Compost:*** The majority (81%) said that compost was a cheap source of fertilizers which increases crop yield. However, 11% said the compost spreads diseases and 8% said it was not culturally acceptable to use compost for agricultural purposes.

2.3.12 Seventy nine percent (79%) of the respondents said they had no doubts about eating food grown with compost as soil conditioner; they would it without any problem. Those who had doubts cited fear of getting diseases and culture as the major reason.

2.3.13 There were mixed views about compost in the focus group discussions. The majority of the members of focus group discussions across the districts said they had no doubts in eating food grown with compost because they may be already eating it without knowing. However, there were some dissenting voices. The box 4 below summarizes the views in focus group discussions.

Box 4: Views about Compost

Positive

"The crops grown will not smell faeces. There is no need to fear eating such food" FGD, Laro in Gulu.

"There is no problem with eating food grown with compost because even in the past there were no toilets and people used to defecate anywhere in the bush where we would grow food. So we have already been eating such food produced with this kind of manure although unconsciously" FGD, Masindi.

"In our culture, when you are young, you are told that dig a small pit in the plantation and put your faecal waste to return fertility of the soil" FGD, Kakiika in Mbarara

Negative

"It is madness to feed on faeces and urine because God intended them to be disposed off since they are useless" FGD, Lakwana in Gulu.

Elders from this village will refuse to eat food grown by compost and urine as fertilizers., FGD Ngoleriet in Moroto.

"I wouldn't eat food grown with compost because it is irritating to eat other people's farces" FGD, Mbale (urban).

In case I am not told that the soil was fertilized with faecal human wastes, I can eat but if I happen to know the truth, I cannot dare eat food that is associated with human wastes even if it is the medicine to save my life. I don't want (FGD, Kasenge in Mukono).

2.3.14 conversely, 81% of the respondents had doubts in eating food grown with urine as fertilizers. The major reason given was fear of getting diseases and culture. There was mixed response among participants of focus group discussion on this matter as shown in the box 5 below.

Box 5: Views about Urine

Positive

"Its o.k to use the urine because even one teacher used it on her cabbage and they really look health" FGD, Mbale (urban)

"We are using urine as pesticide to kill diseases especially on banana plantations" Mbarara (rural).

Negative

" I am requesting you not to teach people to use human wastes in the gardens. Our people love money so much and if they learn that their wastes can bring them money, they will start selling them hardly before they turn into the manure you are talking about. People will make us eat their faeces and get complicated diseases. There is a woman I know, she sells tomatoes and later I found out that she collects her urine everyday and spray in on the tomatoes, after she sells the tomatoes to us. Can you imagine all we eat is her urine! Such people are dangerous and I am requesting you not to impose them on us (FGD Katosi in Mukono).

"I cannot buy or eat food grown with urine because it is not hygienic" FGD, Mbale (rural)

2.3.15 Most respondents (81%) said that they would recommend to someone else to use urine and the compost as manure/ fertilizers. 78% said that they were willing to engage in business to sell urine and compost and would participate in the removal of compost from the toilets.

2.3.16 However, many participants in focus group discussions were not willing to participate in the removal of the compost from the toilets saying that it would undermine their dignity. The box below summarizes the views of the participants of focus group discussions.

Box 6: Views about Handling Compost

"If people find you scooping the compost from the toilet, they may start under looking you and may even refuse to eat anything from your home" FGD Mbale.

"Emptying the vaults may be looked at as handling faeces" KI Kamwenge.

"The community has bad attitude towards associating with faeces especially when you talk of removal of compost" KI Nebbi.

2.3.14 Cultural beliefs

2.3.14.1 In most districts and tribes, there were cultural beliefs associated with faeces particularly with regard to mixing with ash. In many tribes, applying ash to faeces is associated with witch craft which may lead illness and sometimes death. In addition, many people believe that faeces should not be exposed because people with evil intentions may use them for witch craft purposes. The box 7 below provides excerpts from FGD discussion and KII across the country.

Box 7: Views about mixing ash with Faeces

"Mixing faeces with ash is a taboo. If you mix faeces and ash, the owner of the faeces will get problems with his anus because it will boil like hot water", (FGD Kasambira in Kamuli)

"Feaces are used in witchcraft and sorcery, they should not be exposed to others" (FGD, Laro Gulu).

"The challenge is changing cultural belief that faeces can be mixed with ash and causes no harm. People believe that if you mix someone's faeces with ash that person may die" (KI, Gulu)

" There is a belief in Teso that if you added ash on faeces the appendix may come out " (KI Kumi)

"most people have not readily adopted the use of ash after defection. They look at it as not cultural " (KI Kabale)

"Inlaws are not allowed to mix feaces because it is not allowed by the gods" (FGD Moroto, town).

*"It is not **CULTURALLY ACCEPTABLE** to separate faeces from urine" (KI , Kalangala).*

"most of us know that in this society, faeces are not permitted to be use as manure" (FGD Kinoni in Mbarara).

"people don't want to expose their faeces for fear of others using them for evil things" (KI Kamwenge).

"someone can bewitch you using your own faeces, so you must hide them" (FGD Kyanja in Kampala)

"If you use or mix ash with feaces, your skin begins to pill off and cause skin irritation" (FGD, Mbale (urban).

2.3.14.2 These cultural beliefs are not limited to faeces and ash but also urine. Some communities also associate urine with witch craft as illustrated below;

Box 8: Views about Exposure of Urine

"You are not supposed to expose your urine anyhow because one may bewitch you. That is why it is advised that after urinating in a public place, you follow it with a spit of saliva to prevent you from being bewitched" (FGD, Kasenge in Mukono).

To these negative beliefs, there need for intensive education to dispel these misconceptions about Ecological sanitation. In communities where beliefs that Ecological sanitation exposes faeces and urine are entrenches, promotion of Fossa-Alterna Ecosan toilets should be explored.

2.3.15 Religious Practices

2.3.15.1 In almost all districts, it was frequently mentioned that Ecosan toilets were suitable for Muslims because they use water for anal cleansing after defecation. The waste water is supposed to be drained in the toilet. Conservative Muslims may not be amenable to change from this tradition.

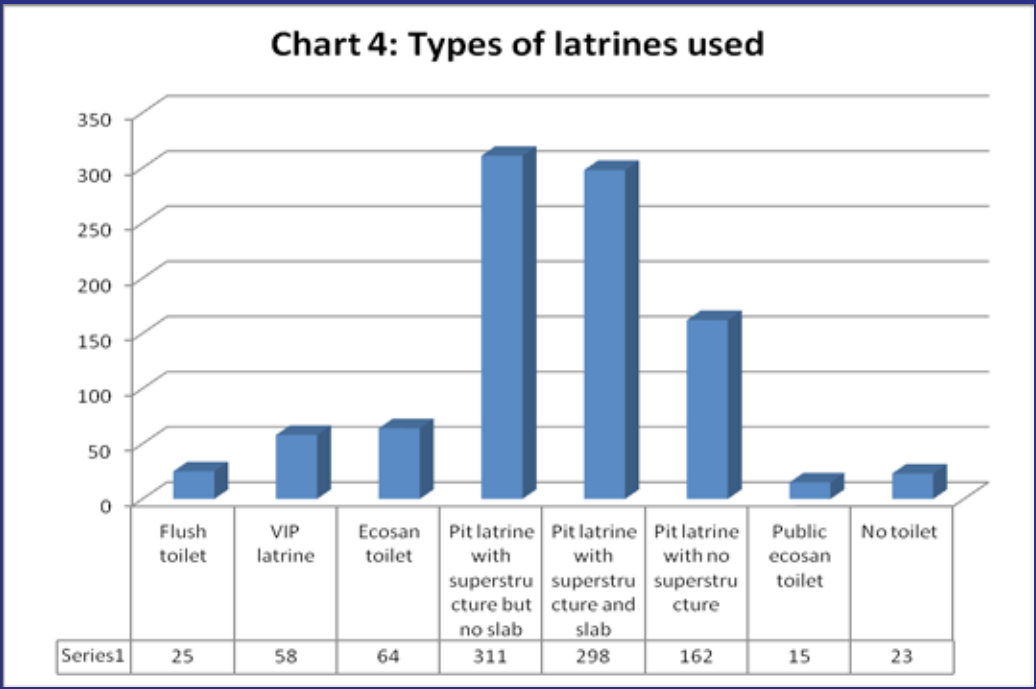
2.4 Coverage of Ecological Sanitation Toilets

2.4.1 Household Ecosan Toilets

2.4.1.1 It was not possible to make accurate estimation of coverage of ecological sanitation toilets based population of the sampled district because of lack of complete data set. There was no district with a complete data set on the number of households having ecological sanitation toilets and as a result, it was difficult to compute Ecosan toilets coverage.

2.4.1.2 The District health Departments responsible for collecting such data reported lack of resources to collect household data. The District Water Offices which had the resource for sanitation under the District Water and Sanitation Condition Grant said it was not their responsibility to collect household data on sanitation except where water points are planned to be constructed.

2.4.1.3 Therefore, the estimate provided here is based on the sample of households visited. Overall, out of the 957 households visited, only 64 (7%) had some form of Ecosan toilet. This percentage is lower (3.5%) if Ecosan toilet is defined in terms of completion of the Ecosan Loop. This is higher that NSWG&WSP (2008) estimated that ecological sanitation initiatives account for 0.5% - 1% of improved sanitation. Chart 4 shows the type of toilets used by the households.



2.4.1.4 However, in terms of districts, the coverage was skewed. Seven out of the 16 districts (44%) had no household found with Ecosan toilet. The districts which had Ecosan toilets were mainly Mbarara (33%), Mukono (25%), Kabale (15%) and Kamwenge (11%). Table 2.13 shows the coverage of Ecosan toilets by district.

Table 2.13 Distribution of Ecosan Toilets by District

District	Ecosan toilet	Sample	%
Apac	0	60	0
Gulu	1	59	2
Kabale	9	60	15
Kalangala	3	61	5
Kampala	5	58	9
Kamuli	2	60	3
Kamwenge	6	62	11
Kumi	0	60	0
Masindi	0	57	0
Mbale	1	60	2
Mbarara	20	60	33
Moroto	0	60	0
Mukono	15	60	25
Nebbi	0	60	0
Pallisa	0	60	0
Yumbe	1	60	2
Total	64	957	7

2.4.1.4. It is apparent from Table 2.13 that most of the household Ecosan toilets were concentrated in central and south-western subregions. This was partly because of the Ecosan Projects like South- West Towns Water and Sanitation Project, Area Agricultural Modernization Project, AMREF, Water and Sanitation Conditional Grant (PAF) etc (see Table 1.1 on page 5). Key informant interviews with ARMEF staff revealed that in Kabale districts, 160 households Ecosan toilets were constructed by ARMREF (100) and SWTWSP (60).

2.3.1.5 Households in Subregions like Karamoja, Teso and Bunyoro were yet to adopt Ecosan toilets. For Lango and Bukedi subregions, the data provided by the district shows presence of household Ecosan toilets. In Apac, DHI's records shows that there were 28 household Ecosan toilets in the entire district. In West Nile, Yumbe district, 7 household demos were reported constructed for Local Council One Officials by the District Water Office.

2.4.1.6 There was slight difference between the rural and urban areas. Out of the 64 households with Ecosan toilets, 37 were in urban areas and 27 in rural areas. This may be partly because the need for Ecosan toilets is higher is urban areas than in rural areas because of land shortage.

2.4.1.7 The findings show that all household Ecosan toilets but two, over 90% of the cost was contributed by the projects implemented by the Government, Development Partners and NGOs. KCC and SWTWSP asked households to contribute UGX 100,000 which was about 5% of the cost. Some projects like AMREF did not ask for contribution from households. The cost of the household Ecosan toilet ranged between UGX 0.8 million and UGX 3 million. The two households that constructed Ecosan toilet without external support used local materials; timber, mud and wattle.

Picture 4: Ecosan Toilets Constructed using local materials

2.4.2 Institutional/ Public Ecosan toilets

2.4.2.1 In most districts, institutional/ public Ecosan toilets were constructed partly for demonstration of how the Ecosan technology works as well as solve the sanitation problem where other forms of sanitation technologies had failed. The institutions targeted where schools, health units, prisons and administrative headquarters (District Water Offices and District Health Departments). For the public places, the target was markets and landing sites.

2.4.2.2 The general finding was that all the districts covered had at least one institutional or public Ecosan toilets constructed by the District Water or Health Departments as demonstration Ecosan toilets and NGOs.

2.4.2.3 The districts which reported having institutional/ public Ecosans toilets and where they were located were as shown Table 2.14 below:

Table 2.14: Institutional/ Public Ecosan Toilets by District

District	Schools	Health Centre	Markets/ trading Centres/ Taxi Park	District HQrs/ DWO	Subcounty HQrs	Prison/ Police	Fish Land Sites	Commercial Institt	Total	Remarks
Apac	4		2	1	1	2	5		14	6 for school and DWO functioning and DWO. 8 Not functioning
Gulu	3	1	0						4	1 is used by teachers, 2 not functional because of block urine pipe and 1 at HCIV newly constructed – not used.
Kabale	67	3	10						80	67 for schools were reported functioning but the 13 for health centres and markets were reported as poorly managed.
Kalangala		1	0				4		5	None was functioning
Kampala	1		5						6	5 not functioning and 1 functioning .
Kamuli		1	3						4	1 not completed , 1 not functioning and 2 mixing urine and faeces.
Kamwenge	2		0						2	Functioning
Kumi	2		0	1					3	2 were not functioning. One at school functioning.
Masindi	1	1	2						4	1 not completed, 1 not functioning, 1 mixing urine and faeces and 1 at school functioning.
Mbale	3		0			1			4	None was functioning
Mbarara		1	2						3	None was functioning
Moroto	1		0	1					2	None was functioning
Mukono			4				1		5	1 was functioning (rented out)
Nebbi	1		2	1				1	5	4 not functioning. One at CERUDEB functioning
Pallisa		1	2				1		4	2 Not Functioning. 2 mixing urine and faeces
Yumbe			0	1					1	Not functioning at the district headquarters
Total	**84**	**9**	**32**	**5**	**1**	**3**	**11**	**1**	**146**	

Source of data – Key Informant Interviews and Inspections

2.4.2.3 Table 2.13 shows that there has been substantial investment in institutional/ public Ecosan toilets. However, most of these toilets except schools were either not used or not functional as Ecosan toilets. However, the challenge of maintaining of public toilets is not limited to Ecosan. For public toilets to function, the management must be privatized and operated on commercial basis.

2.4.2.4 The full cost of constructing institutional and public toilets was paid by the projects implemented by Government, Development Partners and NGOs. The cost per stance ranged from UGX 1 million to UGX 3 million.

2.4.2.5 There have been a number of projects involved in ecological sanitation particularly in South Western Uganda where the South-Western Town Water and Sanitation Project first introduced Ecological Sanitation. The case for this project was as described below:

The Case of South-Western Towns Water And Sanitation Project

"We began operations in 1996 in this region with the focus on safe water and sanitation to the public. In an attempt to promote sanitation we constructed Ecosan toilets (compost type) for households. The first type of Ecosan we constructed were mixing urine and faeces and the chambers were below the ground. The maintenance of the toilets was a problem and decomposition was difficult leading to further contamination of ground water. These toilets were mainly constructed in Kisoro district because the area was rocky.

In 1997/98, this technology of compost was dropped and we opted for dehydrated Ecosan toilet which separate urine and faeces and constructed above the ground. We constructed one public toilet in Kisoro Taxi Park of 6 stances and 12 chambers. It worked well and people borrowed the idea. Over 400 household Ecosan toilets were constructed in Kisoro district.

Because of high adoption exhibited in Kisoro, we decided to rollout to other districts focusing on rural growth centres which were facing shortage of land and high water table (especially in Kabale). In the first Phase we operated in 7 districts of Kabale, Kisoro, Rukungiri, Ntungamo, Kanungu, Mbarara and Bushenyi. In the second Phase which started in 2006, three districts of Ibanda, Isingiro and Kiruhura were added.

In the third Phase (2010), 7 more districts of Kasese, Kabarole, Kamwenge, Kyenjojo, Sembabule, Lyantonde and Rakai were added. The project currently operates in

17 districts covering 50 piped water schemes in Rural Growth Centres and small towns.

We also covered Landing Site on L. Edward in Rukungiri district because of high prevalence of water and sanitation related diseases like cholera. Households were asked to contribute UGX 100,000 and the balance was contributed by the project. A total of 300 household dehydrated Ecosan toilets were constructed.

In the beginning we promoted household, public and institutional Ecosan toilets. However, because of mismanagement we have dropped public and institutional Ecosan toilets. The only public toilets we are funding are those at water offices in the 50 schemes in RGCs. The table provides the summary of the Ecosan toilets constructed in the Third Phase.

Third Phase of the Project (WSDF)

Level	No. toilet	Location	% contribution by Project	No. stances	No. chambers
Household	350	7 in each of 50 schemes	100%	1	2
	400	Kisoro	100%	1	2
	300	Rwashama fish landing site	90%	1	2
Institutions	3	Immaculate SSS, Kinyasamo Girls SSS and St Mary's Rushoroza SS	100%	5	10
	1	Mushroom Training and Research Centre	80%	2	4
Public	**50**	**50 schemes**	**100%**	**2**	**4**

Cost of a stance ranges between UGX 1 million to UGX 1.5 million depending on availability of materials.

Ecosan Toilets work in areas where there is need. Otherwise, people seem reluctant to adopt the technology. Very few have adopted the technology from the demos constructed in the 50 schemes. The lesson we have learnt is that demos which are not accompanied by public sensitization and mobilization don't work. Another lesson is that Ecosan toilets are easily adopted in areas with need particularly those with shortage of land, high water table or rocky". *Social Worker with SWTWSP*

2.5 Existing Ecological Sanitation Technologies

2.4.1.5 The survey found two type of ecological sanitation technologies namely; the compost Ecosan toilets and dehydration Ecosan toilets.

2.4.1.6 Compost Ecosan toilet is constructed below or above the ground. It has two chambers which are used in turn for defecation and an outlet for urine. There is no mix of urine and faeces. When the first chamber is filled, it is closed for 6 months. In the meantime the second chamber is opened for use. During the six months the faeces in the first chamber decompose. Then the chamber is opened up and the compost scooped and taken to the gardens for use for soil condition. Ash has to be strewn in the chamber after defecation. Pictures 2 shows the compost Ecosan toilet.

2.4.1.7 The survey found double vault, constructed above the ground as shown in the Picture 4

Pictures 4: Household compost toilet in Kalangala

2.4.1.8 Dehydration Ecosan toilet is the one that treats excreta through creating dry conditions, increasing pH, ventilation and addition of dry absorbents. This type of toilet may be urine diversion or urine mixing and may be single or double vault. The construction may be above or below the ground. A single vault dehydration Ecosan toilet uses a container removed and sealed when it gets full. The absorbents used are ash, dry soil or lime. The ventilation reduces the smell and helps in evaporation.

2.4.1.9 The dehydration Ecosan found were single vault, divert urine and constructed above the ground. Picture5 depicts the dehydration Ecosan found during the survey.

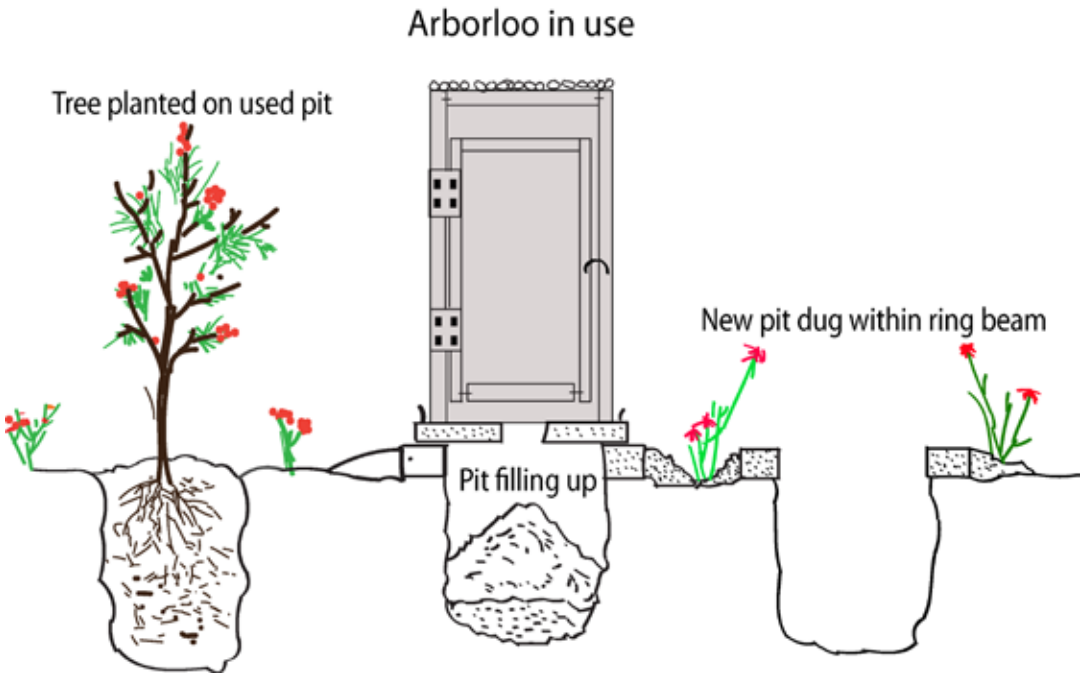
Picture 5: Household Dehydration Ecosan Toilet in Kalangala District

2.4.1.10 Most of the Ecosan toilets (91%) were compost and dehydration Ecosan toilets were 9 percent. The compost Ecosan toilets were found in all districts. However, dehydration toilets were found in Kamwenge and Kalangala districts.

2.4.1.11 Arborloo Ecosan toilet is a shallow pit latrine. Once it is filled up, it is abandoned and the superstructure and the brick or concrete "ground collar" are removed, taken to a new pit site and a new shallow pit is dug for use. In the old pit, a fruit tree or other tree is planted (Morgan and SEI (2004). The Picture blow shows the example of Arborloo toilet.

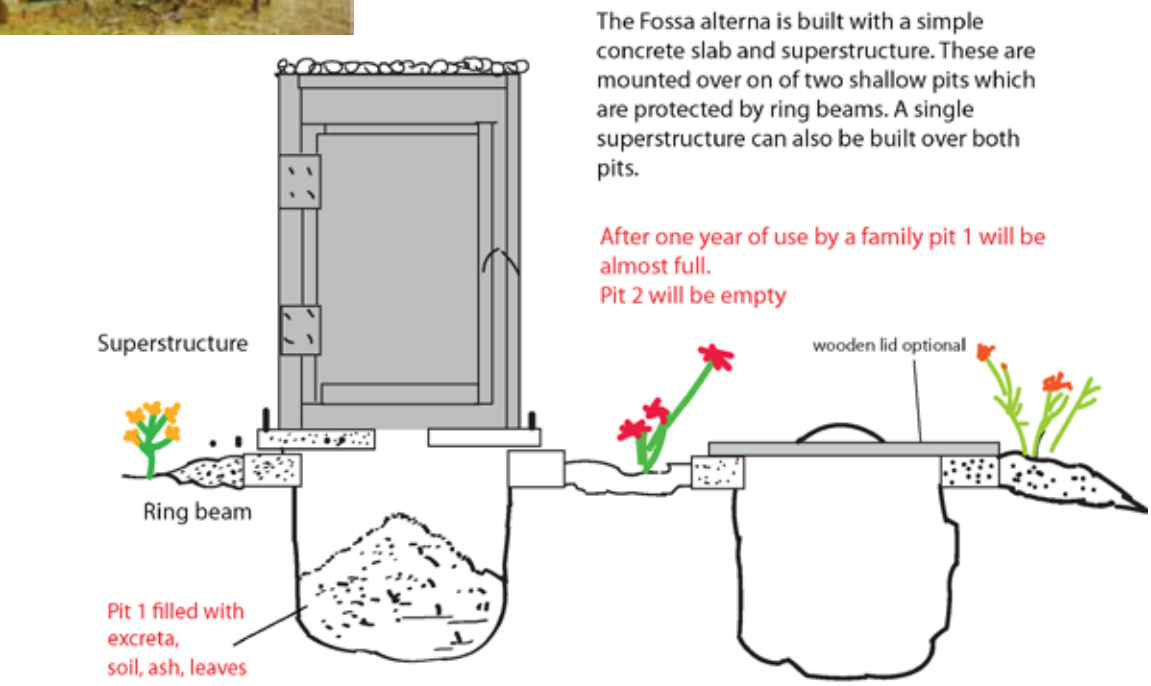
Arborloo pit lined with bricks

Arborloo pit covered with a slab



2.4.1.12 Fossa Alterna is a permanent system of two shallow pits being used alternately. It is a sound on-site Ecosan system for small plots in rural and urban areas. The pits are usually bigger than for the arborloo so to last longer (9 – 15 months). In the non –in-use pit, the content of human excreta mixed with ash, dry soil and dry leaves to produce safe compost. The pit content is harmless and can be emptied by shovels and used for agricultural purposes. The superstructure and slabs are shifted from full to emptied pit while collar may be permanent or moved as well. The pictures below shows the Fossa Alterna Ecosan toilet.

2.4.1.13 In terms of size, the majority of Ecosan toilets inspected (41.5%) were of two stances. 35% of the Ecosan toilets had 3 stances and above. It was mainly institutional/ public toilets which had three or more stances. Table 2.15 below provides a summary of the size of Ecosan toilets inspected.



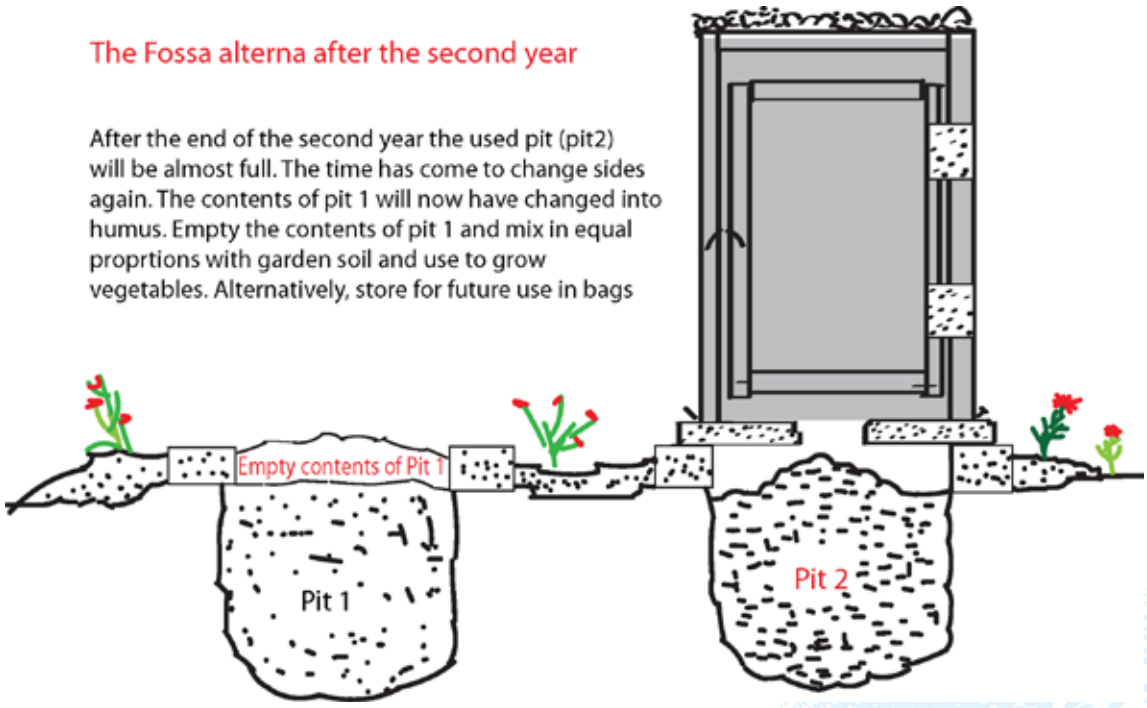


Table 2.15 Size of Ecosan Toilets Inspected.

Stances	Frequency	Percent
1	26	27.7
2	39	41.5
3	3	3.2
4	9	9.6
5	4	4.3
6	6	6.4
8	2	2.1
9	2	2.1
10	3	3.2
Total	**94**	**100.0**

2.4.1.14 All the compost Ecosan Toilets inspected had two and more vaults. It was dehydration toilets that had one vault.

2.4.1.15 In terms of the physical condition of the Ecosan toilets, the inspection revealed that 81% of the toilets had permanent superstructures. Most of these superstructures had cemented floor, brick walls and Corrugated iron roofs.

2.4.1.16 There were two types of pans; squat pan and seater pan. Most of the pans (92%) were squat pans and seater pans were (8%). The material used for the pans was plastic (54%), concrete (35%), clay (8%) and Bricks (2%). Picture 6, Picture 7 and Picture 8 depicts the types of pans and materials they were made of.

Picture 6 Seater pan made of plastic

Picture 7 Squat pan made of plastic

Picture 8: Concrete squat pan

2.4.1.17 Table 2.16 below shows a summary of the physical condition of the toilets inspected.

Table 2.16 Condition of the Ecosan Toilets Inspected

Condition of the toilet	Number	% of toilets
Has cemented floor	91	97%
Has permanent superstructure	76	81%
Has semi-permanent superstructure	3	3%
Has Temporary superstructure	15	16%
Has walls in good condition	83	88%
Roofed with corrugated Iron sheets	87	93%
Leaking roof	28	30%
Has squat pan	86	92%
Has seater pan	8	8%

2.6 Functionality/ Use of Ecological Sanitation Toilets

2.6.1 Functionality was assessed in terms of use and maintenance of the Ecosan toilets i.e. whether the toilets were being used and used properly and how they were maintained.

2.6.2 Functionality of Ecosan Toilets

2.6.2.1 Sixty two percent (62%) of the Ecosan toilets (household, public and institutional) were functioning well. 29% were not functioning/ abandoned, 5% were mixing urine and faeces and 4% were not completed. Table 2.17 below shows the number of toilets and functionality status.

Table 2.17 Functionality of Ecosan Toilets Inspected/Visisted (in numbers)

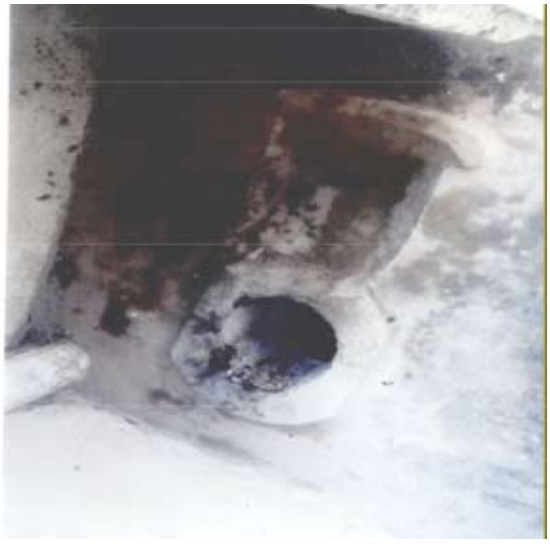
Status	Functional	Non-Functional/ abandoned	Mixing urine and faeces/ mismanaged	Not finishes
Apac	2	2		1
Gulu	2	3		
Kabale	8	0		1
Kalangala	2	4		
Kampala	5	1		
Kamuli	0	1	2	1

Kamwenge	5	0		2
Kumi	1	2		
Masindi	1	2	1	
Mbale	2	2		
Mbarara	20	3		
Moroto	0	2		
Mukono	15	1		
Nebbi	1	3		

Pallisa	0	2	2	
Yumbe	1	1		
Wakiso	1	1		
Total	66	30	5	5

2.6.2.2 Most of the Ecosan toilets (83%) functioning were household toilets. Only 17% of the public/ Institutional toilets were functioning. Pictures 9, 10 and 11 on the next page depicts some of the household toilets from the

Picture 11: Household Ecosan in Gulu



Picture 12 *Household Ecosan in Kampala*

2.6.2.3 Most of these toilets which were not functioning were public toilets (constructed at landing sites, trading centres, taxi/bus parks and markets) and Institutional toilets constructed at health centres and administrative headquarters (district and subcounties). The picture below depicts some of the abandoned public and household toilets.

2.6.2.4 Only two public toilets were reported functioning; one in Kampala (Kyania) and another in Mukono (Kasenge). The one of Mukono was rented out to

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Picture 14: Public Ecosan and Caretaker in Kyanja in Kampala

2.6.2.5 The failure of most public toilets were attributed many factors. Fish landing sites had problems migratory populations who move when the fish get depleted. Picture 15 and Shows the Ecosan toilets at fish landing sites abandoned

Ecosan toilet at

was improper
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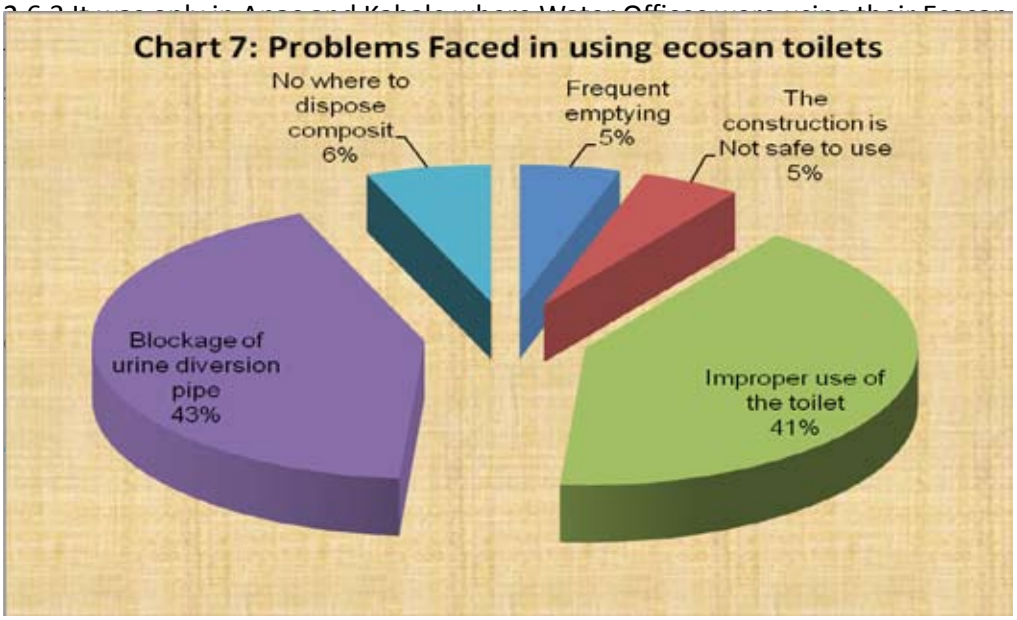
2.6.2.6 The first public Ecosan toilets were constructed below the ground. It was not easy to remove the compos. Most of them were mismanaged and were turned into pit latrines whereby urine and faeces are mixed. These currently pose serious threat to the environment because of the odor and disposal of the faeces by either burying or disposal in the bushes. Such toilets were found in Kamuli, Pallisa and Masindi. Picture 19 on the next page shows the Ecosan toilets turned into pit latrines

Picture 20: Kasambira public Ecosan toilet in Kamuli – never completed

2.6. 2 It was surprising to find that even the would be promoters were not using their Ecosan. In Kumi, Nebbi, Yumbe and Mbarara Ecosan constructed at the district headquarters/ District water office were not functioning. These beautiful structures remain white elephants with no convincing reason why they were not being used. Pictures 22, 23 and 24 show examples of the said toilets..

Picture 22 Nebbi District Water Office Ecosan-not used. *Picture 23HCIV Ecosan toilet in Gulu – Not being used.*

Picture 24: Kumi District Water Office Toilet – Not used. *Picture 25- Mbarara District Ecosan – Not used*



Picture 27: Public Ecosan toilet in Kalangala district – abandoned because of blocked drainage

2.6.5 Lack of ash was also cited for non functionality of some of the public toilets. This was commonly cited as the major reason in health units and some schools. Picture 28 below shows the school toilet closed because of lack of ash

Picture 28 Kapolin primary school in **Kumi** *– Closed because of lack of ash*

2.6.6 Apac district which had records of the in the district, revealed that out of the 14 institutional/public Ecosan toilets, 4 were for primary schools and one for the water office were functioning and well maintained. The rest of the toilets, 5 were for fish landing sites, 2 for the market/ trading centres, one for prison and one for subcounty headquarters were not functioning.

2.6.7 In Kable, the 69 toilets constructed in schools were functional. However, the four constructed in markets and three at health centres were non functional because of misuse.

2.6.8 In Kampala City Council, it was reported that 4 public Ecosan toilets were constructed in Bwaise Division and they failed and are no longer functional.

2.6.2 Problems faced in using Ecosan toilets

2.6.2.1 The majority of the respondents (43%) reported that the major problem they were facing with Ecosan toilets was blockage of urinal diversion pipes. The current installation of urine diversion pipes does not provide for safe cleaning when need arises. This problem was more common with public/ institutional Ecosan toilets.

2.6.2.2 The other problem reported was improper use of the Ecosan toilets whereby urine is mixed with faeces and users not applying ash after defecation. This was more common with public toilets. Chart 7 below provides a graphical

illustration of the magnitude of problems with use of Ecosan toilets.

2.7 Completion of Ecological Sanitation Loop

2.7.1 The extent of completion of the Ecosan loop was assessed in terms of how the compost and urine are sanitized and the nutrients re-used in terms of soil conditioning (compost) and fertilizers (urine). The survey elicited the concerns and views of the owners in this regard.

2.7.2 As reported earlier only 3.5% of the household Ecosan toilets were completing the loop. For the Institutional toilet, only 2.7% were completing the loop.

2.7.1 Management of the Compost

2.7.1.1 The majority of the Ecosan toilets assessed (52%) had never filled up mainly because they were abandoned. 27% of the toilets which were used filled up between 7 months and 1 year. These were mainly household toilets. 12% filled within less than 6 months. These were mainly school toilets. Table 2.18 shows the period taken for the toilets to fill up.

Table 2.18 Period taken for the Ecosan toilet to fill

Period	Frequency	Percent
1-6 months	11	12
7months - 1 year	25	27
2-3 years	7	7
4 years	2	2
Never filled	49	52
Total	**94**	**100**

THE CASE OF BINNA PRIMARY SCHOOL IN KAMPALA CITY

Binna Primary School is located in Mutongo Parish, Nakawa Division in Kampala City. The school learnt about of Water Development (DWD). The seminar described what Ecosan is all about, how it is built and the benefits of using Ecosan toilets – using urine and compost as fertilizers.

The school management liked the idea of Ecosan toilets and accepted the assistance from DWD. At that time, the school was using pit latrines and the space for constructing new latrines was getting finished. Ecosan toilets were seen as more appropriate for the limited space available.

The Ecosan toilet was constructed by DWD at cost of over UGX 8 million. The school did not contribute any money. The toilet block has 12 stances; 6 for Boys and 6 for girls. The toilet is a compost single vault Ecosan Toilet. It separates urine from faaeces. The toilet was properly used. However, being a school, sometimes pupils particularly new comers who are not sensitized about the use of the toilet mix urine with faeces. Pupils bring ash from their homes because the school kitchen could not supply enough ash. Six stances (3 for boys and 3 for girls) are used at time, when others are closed for decomposition to take place.

The toilet has an attendant/ cleaner who is UGX 60,000 (USD 30) per month. The school has a sanitation teacher/ master who teach new pupils on how to use the Ecosan toilet. This is done during morning parades held twice a week (Monday and Friday).

The school uses urine as fertilizers for the school flower gardens and the surplus is sold to people who take it to their gardens. A 20 litre jerry can of urine is sold UGX 2000 - 5000 depending on demand. The faeces are left for six months to decompose. The compost is used in the headmaster's garden. The compost is not sold because there no market for it.

The students were happy with using Ecosan toilets. They said they were good because the toilets do not have odour like pit latrines and there were no flies that transmit diseases. However, there were students who don't use Ecosan toilets because they don't want to carry ash from home and touch it after defecation.

The major challenge is **s**ome parents have got negative attitude about the Ecosan toilets. They say that the school does not have toilets; pupils defecate in "baskets". The toilets get filled up fast and the compost has to be removed before the six months elapses. The school does not have enough storage for keeping the compost for a long time. Sometimes there is no customer for urine and it has to be poured.

The experience with Ecosan toilets is that is that they are very good compared to pit latrines and every institution that can afford, should construct Ecosan toilets. Schools with shortage of land or in wetlands, Ecocan toilets are the best solution to such areas. The Ecosan toilets last longer and saves money for repeated construction of pit latrines.

Caretaker, Binna Primary School.

THE CASE OF TOM WAKISI, IN WATER VILLAGE, KAMPALA

Tom Wakisi lives in Water Village, Luzira Parish, Nakawa Division in Kampala City. Mr. Wakisi works with the Directorate of Water Development in the Ministry of Water and Environment as an Architect. He constructed an Ecosan toilet using timber. His unique experience with Ecosan toilet was as recorded below.

Ecosan built with timber

"I learnt about learnt about Ecosan toilets through sensitization by Directorate of water Development where I work. I was intrigued with what I heard that use can use the same toilet for a very long time. I also learnt that you can use cheaper materials like timber to construct Ecosan toilet if you don't have enough money to buy cement for concrete structures. At that time I had a pit latrine.

I decided to construct an Ecosan toilet using timber for the superstructure. The toilet is a stance toilet and it costed me UGX 800,000/=. I met the full cost of the toilet without subsidy or support. I bought timber, a bucket, plastic carpet and a jerry can for urine. I used local carpenters whom I instructed what to do. This is a compost dry Ecosan toilet. It has single vault chambers and separates urine from faecal matter. Ash is available and locally generated by the households.

I use urine as fertilizers in my garden around home. I normally keep the urine for at least 2 weeks before applying it in the garden. This is to ensure that pathogens die before using the urine. I don't sell urine because I don't generate enough for my garden and surplus for sell.

Floor made of timber

For the compost, when the bucket fills, I remove it and burry the faecal matter in the pit. I don't use it in my garden and there is no market for it. The major challenge with this toilet is removing the faecal matter which is still fresh.

My experience with Ecosan is that it is not expensive as most people allege because you can use construction materials which you can afford like timber or even mud and wattle. The problem is with the people who promote this technology. They show people very expensive structures which scare away the poor from embracing Ecosan toilets". I encourage everybody to construct Ecosan toilet because it does not smell and therefore there are no flies and no diseases transmitted by house flies.

THE CASE OF HANIFA NAKAWUNDE, KULAMBIRO IN KAMPALA.

Hanifa Nakawunde lives in Kulambiro village, Kyanja Parish, Nakawa Division in Kampala. She is a Muslim lady who owns an Ecosan toilet and doesn't agree that using it conflicts with her religious practices. Her experience was as recorded below.

"I learnt about Ecosan toilets through sensitization by Kampala City Council health officials. I was convinced to construct an Ecosan toilet because I wanted manure from the compost and urine. I had a pit latrine which was not giving me manure for my garden. The motivator was that KCC was going to construct for me the toilet and my contribution was only UGX 100,000/=. I don't know the total amount KCC paid to construct that toilet but it was a lot of money.

Muslim Washer Trough

This is dry compost Ecosan toilet. It has a single vault.It separates urine from faeces. There . is a washer trough for Moslems and a jerry can for the urine. I specifically requested for a washer trough because as a Muslim, we use water for anal cleansing. So to avoid mixing water with faeces, we use the washer trough.

I use urine as fertilizer for her gardens. I keep it for 2 weeks before taking it to the gardens. I don't sell urine, I use it myself.

For the compost, I remove it from the toilet, burry it for 6 months before applying in the gardens. I don't sell compost because I use it as manure in my gardens.

I like Ecosan toilet because it save the burden of digging new pit latrines whenever old ones fill up. It saves land required for digging new pit latrines and preserves land through providing manure. The only problem with the Ecosan toilet is that it not user friendly for the elderly and disabled because of climbing high stares.

The challenge I have with this toilet is removing the compost. No one wants to do it except myself. My message to others and particularly Muslims is that using Ecosan toilets is not inconsistent with Islam. You can still use water provided there is washer trough. Ecosan saves and preserves land ".

A CASE STUDY OF SEBUNE MONICA IN NTUNGAMO

Ms Monica Sebune lives in Kampala Mukadde village, Mutojo parish, Rubare subcounty in Ntungamo District. She retired as a midwife but continue to provide maternity services at home. She was one of the beneficiaries of the South-Western Towns Water and Sanitation Projects (SWTWSP) with an Ecosan toilet. Her testimony was as recorded below.

"I learnt about Ecological sanitation toilets from health officials from Ntungamo district who visited me in 2005. They sensitized me about Ecosan toilets; how they work and their advantages; and encouraged me to adopt the technology. I was scared and I asked them why they had chosen me and not anybody else. Their response was that it was because I had a model home in terms of hygiene and agriculture activities.

The Local Council official who accompanied them whispered to me not to hesitate because everything was going to be provided free of charge. I was also motivated when I heard that the Ecosan toilet would provide manure for my banana plantation. At that time I was using a pit latrine.

The cost of constructing this Ecosan toilet (with 1 stance and 2 chambers) was UGX 1.5 million (about US$800). That was a lot of money which I couldn't afford. It was all paid by South – Western Towns Water and Sanitation Project locally known as ' Maizi Marungi'. My neighbours admire my toilet but cannot afford to construct it. For me I was lucky to get a free one.

Decomposition pit

My toilet separates urine from faeces. We are happy with it. Both males and females use it comfortably without any problem. When I receive visitors, I first teach them how to use the toilet before letting them use it. There are no major challenges in using Ecosan toilet except when it is used by persons who don't know how it is supposed to be used. Such people mix urine with faeces or don't apply ash which cause the toilet to smell badly.

I collect urine in a jerry can. When the jerry can is full, I keep it for 3 – 4 weeks before applying it in my garden. This is to reduce the acidity content within the urine. After 4 weeks, I add water to the urine to further reduce the acid content. The ratio is 1 litre of urine to 2 litres of water (1:2). I then apply the urine to my banana garden. I don't apply

directly on the banana plants; I leave a distance of at least 1 foot to avoid the acidity in the urine burning my banana plants.

For the compost, when the chamber is full, I cover it for 6 months to enable the faeces decompose. After that, my son or myself remove the compost from the chamber and put it in another pit and cover it for a period of one month for further decomposition. After one month, apply it in my banana plantation. I don't have surplus to sell because all the urine and compost I generate is not adequate for my requirements.

I

Sebune's banana Plantation

Since I started applying urine and compost in my banana and fruit plantation, the yield and quality has greatly improved. I no longer have banana bunches of UGX 1000; these days have those for UGX 5000 and above. The quality of my fruits is also good.

For me, I have no problem in eating food grown using urine and compost as fertilizers. In any case do we know how the food we buy from the market is grown?

My last word goes to those who don't have Ecosan toilets and can afford. I encourage them to construct Ecosan toilets because they are user friendly, don't waste land, reduces cost of frequent construction of latrines and they are a source of cheap fertilizers.

I am proud of my Ecosan toilet, it is a demonstration site for South-Western Towns Water and Sanitation Project in this region. I receive visitors as far as Mbarara who come to learn about Ecosan."

CASE OF FUSTINO TWAYAGA IN KABALE

Mr. Fustino Twayaga lives in Rutega Zone, Nyaabikani Ward, South Division in Kabale Municipality. He is a retired tutor from Kabale National Teachers' College. He is beneficiary of the South-Western Towns Water and Sanitation Projects (SWTWSP) with an Ecosan toilet. His experience with Ecosan was as recorded below.

"I conceived the idea of having an Ecosan toilet from my work as a tutor at Kabale National Teachers' College (NTC) and my daughter who was working with the South-Western Towns Water and Sanitation Project. As a tutor, I used to take students for teaching practice in schools where I saw Ecosan toilets. I was impressed with what I saw and I decided to contact my daughter who was working with South-Western Towns Water and Sanitation Project in 2004. She educated me about Ecosan toilets, how it is used, benefits like manure and the procedure for getting one. At that time, I was using a pit latrine. I would construct pit latrines of 12 feet but every rainy season they would collapse because of sandy soils.

I contacted the project which agreed to construct for me an Ecosan toilet on cost sharing basis. The cost for this toilet (one stance with 2 chambers) was UGX 1.2 million (US$ 700) in 2004. I contributed half (UGX 0.6 million) and the project contributed the rest. Since then, I have made some improvements by adding tiles in bathroom at my own cost.

The toilet separate urine from faeces and has a washer. In the past we used to supplement home generated ash with buying some from the NTC at UGX 5,000 per sack. These days I invented another ways of generating ash. We collect dry sorghum stems and burn them for ash.

Urine fermentation

I collect urine in a tank of 100 litres, when the tank has reasonable quantity; I put it in another container and store it for 21 – 30 days. I get leaves of phobia plant and dip in the urine for 3 days to drain from leaves the nutrients. I add tethonia plant, ash and pepper. This mixture stays for 21-30 days before applying it in the garden. I also mix urine with water in a ratio of one 1 litre of urine to 4 litres of water (1:4) during rainy season and 1:6 during dry season. I do this to reduce the acidic content in the urine such that it does not burn the plants. I use knap sack pump to apply this urine cocktail to the vegetable and fruit gardens. This urine works as fertilizer and pesticide.

With regards to the compost, when a chamber fills up, I cover it and leave it for 6 months to allow the faecal matter to decompose. After this period, I ask my workers (or myself) to transfer it to another pit for further decomposition for 2 months. After which I apply it to the fruits and vegetable gardens. The crops I grow are apples, guavas, oranges, peers, avocados, grapes pineapples spinaches, onions and cabbages.

Although this is a dry season, my vegetables look healthy. The size of apples, cabbages and onions is big. My apples sell at UGX 300 – 500 each and during a good season, I get over UGX 2 million.

At the beginning, some household members resisted using the Ecosan toilet because they did not want to touch ash. However, this has since changed and they currently participate in applying compost and urine in the gardens.

The major challenge is management of Ecosan toilets. Sometimes my children go and use the toilet but stubbornly refuse to apply ash. You have to inculcate the culture of applying ash after using the toilet.

The urine pipe needs regular unblocking. The tap on the urine tank also needs regular repairs and cleaning. My neighbours do not have Ecosan toilets because they cannot afford the cost of construction. Others are ignorant about Ecosan and have not visited by toilet to learn about Ecosan toilets.

Some people have negative attitude towards applying compost and urine in gardens with crops. They say it is not health. My message to people who don't have Ecosan toilets is that if you live in an area with high water table or small plot of land, then Ecosan it the best technology for toilet. You also get some income from improved yield of crops after applying urine and compost."

A CASE OF KINIOGO PRIMARY SCHOOL IN KABALE

Kiniogo is a primary school located in Kitumba parish in Kitumba subcounty in Kabale district. The school benefitted from the ARMREF programme of constructing Ecosan toilets for institutions like schools. The experience of the school with Ecosan toilets was as recorded below.

"We heard about Ecosan toilets from AMREF. It was AMREF that introduced the idea to the School Management. AMREF sensitized the teachers, PTA Executive Committee members, Senior Woman and Man teachers, and the Prefects on how Ecosan toilet works its management and advantages.

Before we got Ecosan toilets, we had pit latrines of 6 feet deep because of high water table. These latrines would fill very fast and we had to construct new ones. When AMREF came, we readily embraced the idea of Ecosan toilets because we were tired of constructing pit latrines. Ecosan toilets are durable and the compost provides manure for the school garden. We also saved the UGX 110,000 we used to spend every term to empty the pit latrines after the school running short of land to construct new pit latrines.

The cost of a 3-stance Ecosan toilet was UGX 4 million. Altogether 3 blocks of 3 stances each were constructed. ARMREF paid all the costs for constructing the Ecosan toilet.

The toilets separate urine from faeces with 2 chambers per stance. The urine is collected in jerry cans and pupils bring ash from their homes.

The jerry cans (20 litres) for urine fill every day. We keep the urine for 4 weeks to reduce the acidity before applying it to the gardens. We then mix urine with water in a ratio of 1 litre of urine to 3 litres of water (1:3) before applying it between the ridges of cabbage, sweet potatoes and carrots. Sometimes we sell the urine to farmers at a cost of UGX 20,000 per a 20 liter jerry can.

School Garden

When the chambers fill, they are covered and the faeces are left for 3 months to decompose. The pupils then empty the chambers and we apply the compost immediately to the garden of carrots, sweet potatoes and cabbages. This done before planting. Using urine and compost has improved the yield. We now harvest cabbages of up to 3 kg which had never happened.

Both teachers and pupils, males and females comfortably use the Ecosan toilet. The girls have 2 blocks and boys have 1 block which they share with teachers. Ecosan toilets are better in everything including hygiene. New pupils are taught how to use the toilet by the sanitation teacher, prefect or fellow pupils.

The pupils interviewed said they like the Ecosan toilets because they do not smell and they are easy to clean. “We wish we had Ecosan toilets at home” said one of the girls interviewed.

The main challenge is keeping the toilet clean. Some pupils forget or stubbornly refuse to apply ash which makes the toilet smell.

2.7.1.2 The sanitization period (decomposition) reported by the majority of the respondents (58%) was 7 months to 1 year. However, in 38% of the cases, the sanitization period was 3 – 6 months. This was mainly the case with school toilets where the population using these toilets was high. This may have serious environmental health problems particularly in cases where the compost is deposed in the bush. It was only in 4% of the cases where the compost has left to sanitize for over 1 year.

2.7.1.3 The majority of the respondents (54%) reported that they used the compost as manure or soil conditioner. In Kabale, some of the schools visited reported to be selling the compost to farmers. The cost ranges between UGX 5,000 to UGX 20,00 per sack. 22% reported that they dispose of the compost in the bush. Table 2.19 on the next page shows the disposal of the compost.

Table 2.19 Disposal of the Compost

Uses of compost	Frequency	Percent
Used as manure in gardens	25	54
Burying it	11	24
Disposing in the bush	10	22
Total	**46**	**100**

2.7.1.3 While burying may be un intentional soil conditioning, disposal of the compost in the bush was tantamount to open bush defecation particularly in cases where the compost is disposed of within less than 6 months.

2.7.1.4 Cultural beliefs were often cited as hindrance to use of compost for manure as illustrated by the quotations below.

Box 9 Cultural beliefs about use of compost

> "Our culture strongly object the use faeces as manure" (KI Kamwenge)
>
> "Compost manure is believe to be contaminated with harmful germs" (KI Kamwenge)

2.7.2 Management of Urine

2.7.2.1 Fifty nine percent (59%) of the respondents said that the urine is drained in the ground soak pit. This was partly because there were no containers to collect the urine particularly among households.

2.7.2.2 Forty one percent (41%) diverted the urine in a container. This was common in institutions and public toilets. However, many of the pipes were blocked and urine could not reach the containers.

Table 2.10 Management of urine

Method	Frequency	Percent
Diverted into container	39	41
Drained into the ground	55	59
Total	**94**	**100**

2.7.2.3 For those who collected the urine, the majority (65%) poured the urine in the bush because of lack of market. It was again in Kabale where the schools were selling the urine. Ignorance coupled with cultural beliefs about urine, limited its use as fertilizers.

2.8 Best Practices

2.8.1 KCC after realizing the failure of public Ecosan Toilets embarked on supporting households to construct Ecosan toilets. Since 2002, 159 toilets household toilets were constructed with support of KCC and most of them were reported to be functioning.

2.8.2 Yumbe also adopted similar approach by constructing Ecosan toilets at household level. Local Council one Chairpersons were deemed as role models in the community and hence constructed for them Ecosan toilets. To this end 7 Ecosan toilets were constructed.

2.8.3 Promotion of affordable Ecosan toilets: Kabale districts promoted household Ecosan toilets made out of mud and wattle. This type of toilet is affordable to most community members.

2.8.4 Promotion of shared Ecosan toilets: This involves building Ecosan toilet for group of households with appointed caretakers paid by the users who stays at the toilet most of the time to teach new comers how to use the toilets .

2.8.5 Modifying the Ecosan design to suit the requirements of the Muslims as was done in Yumbe. This helped to encouraged Muslims to start using Ecosan toilets.

Box 10 Views about the design of Ecosan Toilets

> "At first it was hard for us to adopt to accept Ecosan Toilets because of being Muslims we have to wash immediately after defecating. However, modification of the design to provide for washing trough encouraged us to use these toilts" (FGD, Karu in Yumbe)

2.8.6 Renting out the Ecosan toilet to individual households as was done in Mukono is better way of managing public toilets. This ensures that the households takes charge of their stances and maintains them.

2.8.7 Some of the case studies on best practices were as documented on the next page.

Emerging Issues and Recommendations

4.1 Knowledge/ Awareness about ecological sanitation

4.1.1 The level of knowledge on ecological sanitation is limited particularly among rural communities. There were rural – urban differentials with those in urban more informed.

4.1.2 Promotion of Ecosan is limited to construction of demonstration toilets. However, using these demos to create awareness and demand for Ecosan is yet to be realized.

4.2 Attitude towards ecological sanitation

4.2.1 Generally the attitude of people towards ecological sanitation is positive. However, cultural beliefs associated with application of ash on feaces and exposure of urine and faeces was affecting the rapid adoption of Ecosan technology. Many communities still associate mixing of ash and faeces with witchcraft.

4.2.2 Religion was also cited as a major factor particularly with regard to Muslims. Muslims insist on anal cleansing with water in the toilet. However, change of Ecosan toilets design as was the case in Yumbe may overcome this problem. Picture … shows the changed design for Muslims in Yumbe.

4.2.3 Fear of getting diseases from compost and urine also affect the attitude towards ecological sanitation.

4.3 Public Toilets

4.3.1 Most of the public toilets were found non functional. The introduction of these toilets ignored the required software. These supply driven facilities lack ownership and their failure hinges on lack of management structures.

4.3.2 Some of the communities where these facilities were constructed (markets and landing sites) are migratory requiring continuous sensitization which is expensive.

4.3.3 Most of the public Ecosan toilets have either been abandoned or turned into pit latrines which show no value for money for tax payers or donors. Regrettably nobody has been asked to account but instead more public Ecosan toilets are being constructed.

4.4 Ecosan toilet demos.

4.3.4 The rationale for constructing public Ecosan toilets has often been presented as for demonstration of the technology. However, most of these structures are expensive and their cost discourages the poor from adopting the technology. The demos should be appropriate to the setting and cost of the would be adopters.

4.5 Sustainability Issues

4.5.1The re-use of nutrients from urine and compost is still very limited. Most of the urine is drained in the ground and the compost takes long to cumulate. At institutions the quantities generated are economically viable but there is no ready market in most of the districts. Consequently, the compost is either disposed in the bush or buried

4.6 Technical Capacity

4.6.1 The technical skills for construction and maintenance of Ecosans are still limited. The contractors for the demos came from outside the districts and left no capacity. Most of the extension staff had gaps in knowledge about Ecosan.

Recommendations

1. National level

1.1 There is need for MWE and MoH to carry out Value for Money audit on the Public Ecosan Toilet to draw lessons and inform future strategy.

1.2 Given that most of public Ecosan toilets are still structurally sound, the MWE and MoH should invest in establishment of management structures for these facilities. NGOs with expertise in setting management structures should be engaged for this purpose.

1.3 The MWE and MoH should develop Ecosan promotional strategy aimed at educating the public about Ecosan and its advantages.

1.4 There is need for adapting the Ecosan toilet design to meet the requirements of the different groups including Muslims, disabled and children,

1.5 More research needs to be done in the cultural beliefs associated with the management of urine and faeces.

1.6 There is need for building technical capacity at lower local governments for promotion of Ecosan in terms of skills for education and construction of the Ecosan toilets.

1.7 There is need to promote appropriate Ecosan demo toilets which are within the means of the communities.

2. District Level

2.1 The districts should plan and budget for the promotion of Ecosan facilities.

2.2 Reactivating the management structures

2.3 1.10 Continuous sensitization of the community on use of Ecosans.

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