

GOVERNMENT OF GHANA



COMMUNITY WATER AND SANITATION AGENCY



Sanitation and Water Innovation and Performance Programme (SAWIP)

SOCIO-CULTURAL AND ENVIRONMENTAL ANALYSIS FINAL REPORT

CONSULTING SERVICES FOR THE DEVELOPMENT OF TECHNICALLY FEASIBLE, SOCIALLY ACCEPTABLE AND FINANCIALLY VIABLE TOILETS AND FAECAL SLUDGE MANAGEMENT IN SOME RURAL AREAS AND SMALL TOWNS IN GHANA

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LIST OF ABBREVIATIONS

BCC	-	Behavioral Change Campaign/Communication
BMGF	-	Bill and Melinda Gates Foundation
BOO	-	Build-Own-Operate
BOOT	-	Build-Own-Operate-Transfer
BOT	-	Build-Operate-Transfer
CLTS	-	Community-Led Total Sanitation
CWSA	-	Community Water and Sanitation Agency
DESSAP	-	District Environmental Sanitation Strategy and Action Plans
EHA	-	Environmental Health Assistant
EHO	-	Environmental Health Officer
EHSD	-	Environmental Health and Sanitation Directorate
EPA	-	Environmental Protection Agency
ESP	-	Environmental Sanitation Policy
FSM	-	Faecal Sludge Management
GSS	-	Ghana Statistical Service
KVIP	-	Kumasi Ventilated Improved Pit
MLGRD	-	Ministry of Local Government and Rural Development
MLNR	-	Ministry of Lands and Natural Resources
MMDA	-	Metropolitan, Municipal and District Assembly
MoFEP	-	Ministry of Finance and Economic Planning
NESSAP	-	National Environmental Sanitation Strategy and Action Plan
NPHC	-	National Population and Housing Census
O&M	-	Operation and Maintenance
RSMS	-	Rural Sanitation Model and Strategy
SAWIP	-	Sanitation and Water Innovation and Performance Programme
TCPD	-	Town and Country Planning Department
UN	-	United Nations
VIP	-	Ventilated Improved Pit
WASH	-	Water, Sanitation and Hygiene
WC	-	Water Closet

EXECUTIVE SUMMARY

This report is the second (2nd) in the series of reports to be submitted to the Community Water and Sanitation Agency (Client) under the assignment; “Development of Technically Feasible, Socially Acceptable and Financially Viable Toilets and Faecal Sludge Management in Some Rural Areas and Small Towns in Ghana”. The assignment forms part of the larger Sanitation and Water Innovation and Performance Programme (SAWIP) with funding from the Bill and Melinda Gates Foundation (BMGF). It seeks to develop low-cost and locally suitable technologies for household latrines and sustainable faecal sludge management (FSM) schemes in small towns and rural communities.

This report presents findings and analysis on the socio-cultural and environmental situation of the study communities (Adesu, Tikobo No.2, Sefwi Asawinso, Edina Essaman, Dago and Twifo Hemang, Akateng, New Abirem, Donkorkrom, Kpedze, Sibi Hill Top and Dzodze).

The report is structured as follows:

Introduction: Overview of Socio-cultural Norms, Standards & Guidelines for Faecal Sludge Management, Gender and Social Equity

This covers the socio-cultural beliefs and societal norms which largely vary among communities, ethnic tribes, religions and locations although there are some similarities. They define the thinking and behaviour of the inhabitants of the communities and which inform key aspects of sanitation and hygiene promotion. The perception of human excreta as something ‘bad’ or repugnant cuts across socio-cultural boundaries and religions in Ghana. For example eating with the left-hand which is perceived as the ‘anal cleansing hand’ after going to the toilet is frowned upon in most parts of the country. People are therefore reluctant or feel ashamed to be associated with anything related to human excreta.

The practice of open defecation has become a norm in some rural and urban areas. Though influenced by inability to pay for building and owning toilets, there has been observed cases where community members are reluctant to construct their own facilities or use public facilities due to some traditional/cultural beliefs and will rather prefer to open-defecate.

The national Environmental Sanitation Policy (ESP), (Revised 2010) and National Environmental Sanitation Strategy and Action Plan (NESSAP 2010) provide some guidance on how faecal sludge should be managed. While the policy provides direction on the management of institutional facilities, excreta disposal facilities and sewerage and septage removal, the NESSAP 2010 outlines strategies and plans to facilitate the implementation of policy measures. These documents further indicate the various stakeholders and their expected roles with regard to faecal sludge management.

Understanding of the Water, Sanitation and Hygiene (WASH) needs of women and men plays a key role in developing solutions for more sustainable use of WASH facilities, resources and improved health and well-being. Issues such as security, privacy and menstrual needs of women are critical in the provision of sanitation facilities if gender equality in access is to be achieved. The United Nations Human Rights Council recognises access to safe water and sanitation as a human right and hence should be accessible to all irrespective of economic status (rich or poor), age, physical status (disability), ethnicity, caste or geographic location. The most prominent forms of social inequity in Ghana as far as WASH services are concerned is against the poor in society and the physically-challenged/disabled although they are the worse affected in the absence of improved services. Most

public toilets for example, do not have disability friendly features installed. The physically disabled persons therefore rely on good ‘Samaritans’ to access these toilets.

Existing Situation- Sanitation Habits, Attitudes to Household and Public Toilets, Open-defecation and Land-Tenure

In assessing the sanitation habits of the study communities the following were considered:

- Toilet facility use
- Sharing of toilet facilities with other household
- Sharing of household toilet by males and females
- Disposal of child faeces
- Cleaning of household toilet facility
- Anal cleansing materials used and their disposal
- Handwashing after using toilets

A significant proportion (more than 30%) of the households in majority of the study communities rely on public toilets. However there are a few exceptions; Tikobo No.2 and Dago have high prevalence of open-defecation and may account for the low usage of public facilities while New Abirem and Sefwi Asawinso had very high household toilet coverage. Public facilities in the communities were found to be untidy discouraging their usage. Sharing of household toilets was observed in all the communities although prevalence varied significantly among communities. The compound housing and communal living system common to both rural and urban communities was identified as the main factor.

For all twelve communities, over 80% of the respondents indicated that both men and women are allowed to share the same toilet facility. Over 30% of the households in all the communities with the exception of Tikobo No.2, Dago, Akateng and Sibi Hill Top, dispose of child faeces into the household toilet facility. Tikobo No.2, Dago, Akateng and Sibi Hill Top were identified to have high rates of open-defecation and hence the prevalent practice of disposing child faeces in the bush.

In all the study communities, majority of the households indicated they clean their toilets daily. In households with more than one family, the responsibility of cleaning is shared among the individual families on a rotational basis.

Paper (mostly old newspaper) was identified as the most used anal cleansing material in all the communities with burning of anal cleansing materials the prominent means of disposal. Majority of the households in most communities indicated they always wash their hands after toilet use and reflects a good level of hygiene awareness.

Typical of most rural and per-urban areas in Ghana, KVIP, VIP and Traditional/Simple Pit latrines are the most used household latrine types/technologies. Kpedze was the only community in which pan latrine use was recorded. Pan latrine use has however been banned in the communities. The main factor determining the choice of household facility type/technology in the communities was identified to be affordability.

In almost all of the communities surveyed, over 85% of the households preferred using household (private) toilet facilities to public toilets. Examples of the reasons given for their preference include privacy, healthier, safer, good social status, less expensive and potential to get organic manure. A smaller percentage of the community inhabitants also indicated they preferred public toilets with reasons being high cost of desludging facility when full, offensive smell/bad odour from privy

rooms, attraction of flies, pressure on facility as a result of sharing with other households, convenience, etc.

Peak time for the public toilet use in most of the communities is from 5-8 am. The fees charged range from GHp 20 to GHp 50 per facility use.

The practice of open-defecation in all the communities is influenced by either or a combination of the following beside the isolated case of social belief:

- Inability of the household to afford a household toilet
- Lack of /inadequate public toilets
- Unclean/unhygienic state of public toilets
- Long distance to public toilets

Common places for open-defecation are in bushes, wetlands, along the river banks, sea shore (in Akateng and Dago) and on open dumps; and this is usually done in the early hours of the day and at night.

Owners of dry household toilet facilities (pit, VIP and KVIP) manually dig out faecal sludge for burial or disposal at places deemed convenient when full. Households who use pit latrines often cover the pit with soil when full.

Common to most rural and peri-urban areas, the local chiefs have the allodial ownership of land. In all the communities, no challenges with regards to releasing or use of land for sanitation facilities were identified. Most household heads without household toilets desired to have their own toilet within premises. Discussions with some District Chief Executives, District Coordinating Director and other opinion leaders in the community indicate the preparedness of the district assemblies and community to release land for sanitation and faecal sludge management facilities if needed

Role of Private Sector in Sanitation, Willingness and Ability to Pay for Sanitation Services

The NESSAP 2010 indicates that, in order to effectively contain and mitigate the negative impact of poor environmental sanitation, the bulk of environmental sanitation services (faecal sludge management inclusive) should be provided by the private sector under regulation by the public sector agencies. Specific roles or areas of involvement of the private sector relevant to sanitation as recommended in the national policy are:

- Provision and management of septage tankers, on a fully commercial basis subject to licensing and the setting of maximum tariffs by the Assemblies;
- Construction, rehabilitation and management of all public baths and toilets, subject to the supervision and setting of maximum tariffs by the Assemblies;
- Cleansing of designated areas and facilities (streets, drains, markets, lorry parks, etc.) and maintenance of drains, under the agreements covering solid waste collection;
- Provision and management of waste (includes liquid waste) treatment, recycling and disposal facilities, transfer stations and bulk waste transfer to disposal under contract, franchise, concession, Build-Operate-Transfer (BOT), Build-Own-Operate (BOO), Build-Own-Operate-Transfer (BOOT) or other arrangements;
- Operation and maintenance of sewerage collection and treatment systems by contract, franchise or concession, supervised by the Assemblies;
- Equipment leasing and maintenance/workshop services

The private sector currently manages the public toilet facilities and provides desludging services in the study communities. Most of the desludging service providers come from neighbouring big towns except for Twifo Hemang and Dzodze. No private sector involvement was identified in Sibi Hill Top.

Majority of the study communities are into peasant farming and a few into small scale trading (Akateng-market hub & Dago-fish processing and sale), those who earned more than GH¢ 500.00 a month ranged from 0.3% (Tikobo No.2) to a maximum of 20.9% (in Dzodze). Majority of the households will therefore find it difficult to make on-time payment for improved sanitation facilities. More than 44% of the households in all the communities however indicated their willingness to finance their own facilities through loans. With regard to public toilet facility use, over 60% of the households in all the communities are willing to pay a GHp 50.00 for improved management of the facilities.

Acceptability of Re-use of Faecal Sludge Products and Environmental Assessment of Existing Faecal Sludge Management Systems

Awareness of the safety and benefits in application of treated faecal sludge by-products varied across communities. The least awareness level was observed in Sibi Hill Top where only 6.3% of the households indicated having knowledge on the safety and benefits in the use of treated faecal sludge. Dzodze, the largest of the communities in terms of population had 74.8% of the households interviewed being aware of the safety and benefits in the use/application of faecal sludge products. Examples of the use/application of treated faecal sludge by-products given by the households include organic manure/pit humus, biogas generation, and use of treated effluent for irrigation and fertilization of fish ponds. The predominant example in all the communities was the use of treated faecal sludge for pit humus/organic manure. There is also a general willingness to eat/use farm produce associated with treated faecal sludge by-product.

With KVIP, VIP and pit latrines being the predominant toilet facility types, the main environmental concern with such dry on-site facilities often has to do with how the fully or partially treated excreta/faecal sludge, is disposed of without any adverse effect on the environment. In most of the communities mechanically desludged faecal sludge is disposed of into open-bush on the outskirts or outside of the communities.

The mechanical desludging (use of vacuum suction trucks) of the public toilet facilities and some household facilities by the private service providers was generally considered safe unlike manual pit emptying which involves the use of tools like buckets, shovels, pick axe, carts, etc. for collecting the often dry faecal sludge. The use of these equipment to desludge VIPs for example, expose the collector to direct contact with faeces and hence a potential health threat.

Conclusions and Recommendations

In all the study communities, socio-cultural beliefs or norms have little or no influence on the attitude and practices of residents with regard to sanitation facility use and services. Key factors identified to influence open-defecation included the inability to afford household toilets, lack of public toilet facilities, unhygienic/deplorable state of public facilities and distant location of public toilets from residences. The high dependence on public toilets by households is as a result of the inability of most households to afford the capital costs of household toilets.

Manual desludging of household latrines (mainly VIPs and KVIPs) poses a significant environmental health threat to both the service providers and their clients. Spillage of faecal sludge around the premises is common due to the equipment used (e.g. buckets, shovels, ropes, pick-axe, etc.). The mechanical desludging on the other hand has minimal environmental and public health threat.

The crude disposal of untreated faecal sludge into the open-bush and wetlands (either designated or dispersed) common to most of the study communities, is due to the lack of treatment/disposal sites. The practice of disposing of faecal sludge in nearby bushes, at a designated open field within or outskirt of the community or outside the community, poses environmental and public health threats. The partly decomposed sludge is likely to pollute nearby water bodies during surface run-offs. For household latrines such as VIP and KVIPs, burial of the stabilised sludge if done properly, is environmentally safe with no significant threat to public health.

The lack of treatment/disposal facilities undermines the District Environmental Health and Sanitation Department mandate to effectively regulate the activities of private cesspit emptying service providers.

The high levels of awareness on the re-use/application of treated faecal sludge by-products and willingness to use the by-products identified in all the study communities is an indication of a potentially viable market for faecal sludge by-products and an opportunity to close the ‘nutrient-loop’.

In reducing or eliminating the practice of open-defecation as well as promote good hygiene practices, Community-Led Total Sanitation Strategy as approved by both the NESSAP and Rural Sanitation Model and Strategy (RSMS) is recommended for the study communities especially those with very prevalence of open defecation. The strategy will create the needed demand for household facilities. To meet the supply needs, Sanitation Marketing (SanMark) is recommended. As part of SanMark, district assemblies should engage and train local artisans in the construction and marketing of sanitation facilities. The willingness of most households in the study communities to take loan facilities to pre-finance the construction of household facilities creates a conducive environment for Micro-Finance Institutions (MFIs) and business opportunities.

To reduce or eliminate the unsafe return of excreta into the environment, it is proposed that the respective districts assemblies explore opportunities for providing faecal sludge treatment/disposal facilities through private-sector-partnerships.

1 INTRODUCTION

1.1 Overview of Sanitation and Socio-cultural Issues and Norms in Ghana

In Ghana, socio-cultural beliefs and societal norms largely vary among communities, ethnic tribes, religions, locations (e.g. rural/urban areas, coastal/in-land areas) etc.; although there exist some similarities. These beliefs and norms define the thinking and behaviour of the inhabitants of the communities.

Recent studies have established the fact that, socio-cultural beliefs, values and practices have a direct impact on sanitation. In most cases, these beliefs have been identified as barriers to improving access to sanitation and hence the inclusion of Behavioural Change Communication (BCC) as an integral component of recent sanitation policies, plans and project/programmes aimed at reducing open-defecation by improving access. The National Environmental Sanitation and Action Plan (NESSAP, 2010) and Rural Sanitation Model and Strategy (RSMS, 2012) take cognizance of this and have proposed specific strategies to be carried out.

The practice of open defecation for example is a norm (observed) in both rural and urban areas though more prominent in the former. Even though the inability to build and own household toilets may be identified as a key factor, there are cases where individuals or groups of people are reluctant to construct their own facilities or use public facilities due to some socio-cultural beliefs.

Table Box 2.1 below presents examples of socio-cultural beliefs/taboo in some parts of Ghana that influence the practice of open defecation and are likely barriers to improving sanitation based on research study by WaterAid.

Box 2.1: Example of Socio-cultural Beliefs that Influence Sanitation

- In the Kwahu North district, a significant number of respondents preferred to open defecation because they believed it prevented them from smelling unpleasant
- In Ghana, fear of being possessed by demons or losing your magical powers is the leading cause of open defecation across all the areas where the study was carried out. Nearly half of the respondents in Tamale believed that public toilets are surrounded by evil spirits and therefore should be avoided.
- A significant group of respondents in the Wa East district believing that latrine use will strip the user of their magical powers

Source: Towards Total Sanitation -Socio-cultural Barriers and Triggers to Total Sanitation in West Africa, WaterAid, 2009.

Another common practice with regard to toilet usage is the sharing of toilet facilities. This practice has been attributed to the compound-housing system as well as the extended-family lifestyle of Ghanaians and this common to both rural and urban communities. According to the National Population and Housing Census (NPHC) 2010, 51.5% of Ghanaians live in compound houses which usually consist of more than one household who may or may not be related. They are therefore likely to share toilet facilities especially in the urban areas where there is limited space for construction of household facilities.

The reliance on public toilets by households has become a norm in most communities. The NPHC 2010 indicates that 34.6% of the populations use public toilets as their main places of convenience although originally targeted at transient populations. This practice thus puts enormous pressure on these facilities causing them to easily deteriorate. Although some households tend to use the public facilities due to their inability to afford their own household toilets, others do not deem it as a need and are unwilling to spend money constructing their own facilities. Some owners (landlords) of premises without toilets also do not see the provision of these facilities necessary and are therefore would be reluctant to construct them even if requested by their tenants. In some cases, the landlords convert existing toilet facilities into rooms for rental forcing their tenants to rely on public toilets. This practice is very common in densely populated communities.

The perception of human excreta as something ‘bad’ or repugnant cuts across socio-cultural boundaries and religions. For example eating with the left-hand which is perceived as ‘anal cleansing (toilet) hand’ is frowned upon in most parts of the country. People are therefore reluctant or feel ashamed to be associated with anything related to human excreta. In some cases, people engaged in providing desludging services (especially those who empty the pits) are often looked down upon.

An extensive national community-based BCC programme is needed to change the perceptions and practices of people towards sanitation if access is to be improved and sustained. The process will however be gradual since changing the perceptions and practices/attitudes rooted in socio-cultural beliefs requires much time to achieve.

1.2 Overview of Standards and Guidelines for Faecal Sludge Management (FSM)

Although there is currently no specific national technical standards or guidelines for the management of faecal sludge, the national Environmental Sanitation Policy (ESP), (Revised 2010) and National Environmental Sanitation Strategy and Action Plan (NESSAP 2010) provide some guidance on how faecal sludge should be managed. The ESP (2010) provides the policy direction on institutional management, excreta disposal facilities and sewerage and septage removal. The NESSAP 2010 on the other hand outlines strategies and plans to facilitate the implementation of the policy directives. Individual Metropolitan, Municipal and District Assemblies (MMDAs) are also required to develop their own District Environmental Sanitation Strategy and Action Plans (DESSAPs) which should clearly indicate their local strategies and interventions for the management of faecal sludge in the assembly taking into consideration the nation policy recommendations.

Table 1.2 below presents the policy directives with regard to faecal sludge management in Ghana whereas Table 1.3 presents the strategy interventions indicated in the NESSAP 2010 to be achieved within the defined period.

Table 1.2: Environmental Sanitation Policy (Revised 2010) Directives on Faecal Sludge Management.

Component of FSM	Policy Directive
General Management of Liquid (Excreta) Waste	<ul style="list-style-type: none"> District Assemblies shall ensure the availability of facilities for the safe handling and disposal of human excreta (night soil and sewage), industrial waste, animal manure, industrial sewage and domestic/commercial wastewaters. These include excreta disposal facilities and systems for the conveyance (sewerage, vehicular, manual), treatment and final disposal of liquid wastes. The District Assemblies shall have authority to regulate, control, and co-ordinate the activities of all agencies involved in liquid waste management services MLGRD shall issue technical guidelines from time to time specifying which

Component of FSM	Policy Directive
	technologies may be used, including design parameters and recommended operating procedures.
Excreta Disposal Facilities	<ul style="list-style-type: none"> Recommended technologies are the water closet and septic tank system, the pour flush latrine (where water is used for anal cleansing), the ventilated improved pit latrine (VIP), the aqua privy, and any other proven technologies recommended by Ministry of Local Government and Rural Development (MLGRD). Bucket (pan) and open trench latrines are actively discouraged and must be phased out as they do not meet minimum sanitary standards. District Assemblies shall regulate technologies for domestic toilets by legislation and application of the building code Assemblies shall arrange for the provision of public facilities in central business districts, major commercial and light industrial areas, local markets and public transport terminals (lorry/bus stations). District Assemblies shall promote the construction and use of household toilets, including the conversion of pan latrines to approved types. District Assemblies shall transfer management and maintenance of all public toilets to the private sector, either by franchising existing facilities or granting concessions for the construction and operation of new ones.
Sewerage and Septage Removal	<ul style="list-style-type: none"> District Assemblies shall ensure the hygienic transfer of liquid wastes from the point of generation to the point of treatment and disposal. Desludging of septic tanks and VIPs shall be regulated by the Assemblies, but in general carried out by the private sector Small scale sewerage systems may be provided for high density areas where other on-site options are not technically feasible, institutions (schools, colleges etc.), and small estate developments. Simplified and small-bore sewerage systems will be adopted to cater for other areas including low-income high-density housing areas. In order to ensure adequate hygienic standards, equipment and protective clothing for staff should be inspected regularly. Staff should also be adequately trained and provided with vaccinations and regular medical check-ups. Assemblies may establish licensing systems to facilitate enforcement.
Treatment and Disposal Systems	<p><u>On-site Systems:</u></p> <ul style="list-style-type: none"> Acceptable technologies include VIP latrines and septic tanks with soakaways or subsurface drain fields. For both the technologies mentioned, sludge must be periodically removed. This should be done by tanker service in the case of septic tanks and single pit VIPs. Where the user population is low, to allow sufficient time for sludge digestion prior to manual removal, alternating pit VIP (KVIP) can be used. <p><u>Off-site Systems:</u></p> <ul style="list-style-type: none"> Waste stabilisation ponds are the recommended technology for the treatment of large volumes of night soil and septage. Other methods such as ponding and co-composting with municipal solid waste may be considered for daily volumes of less than 50 cubic metres. Where there is no reasonable alternative, marine disposal of sewage shall be permitted, provided primary treatment to an acceptable standard is provided. “Conventional” sewage treatment technologies (eg. trickling filters, activated sludge, etc.) shall only be used where there are limitations on the use of waste stabilization ponds. District Assemblies shall adopt such systems taking due consideration of the capital and replacement costs, operation and maintenance costs and skilled manpower requirements.

Table 1.3: Strategic Interventions with direct impact on Faecal Sludge Management as indicated in NESSAP 2010.

Objective	Measure	Responsibilities	
		Lead Agency	Support Agencies
A1: To formally establish environmental sanitation as a sub-sector in the development planning system with clearly defined institutional mandates	<p>Reinforce the role of the private sector in service delivery</p> <ul style="list-style-type: none"> • Increase the proportion of public toilets provided by private sector through BOT, BOO from...toby 2015 • Implement full franchise management of all MMDAs built facilities by 2015 • Implement 100% private desludging services by 2015 • Support installation of bio-digesters and packaged plants by private operators 	MMDAs	MLGRD
B6: To enable effective community participation in the siting of environmental sanitation facilities	Develop participatory tools for identification and selection of sites (for excreta treatment and disposal) in accordance with strategic environmental assessment principles	MLGRD	Environmental Health and Sanitation Directorate (EHSD)/Environmental Protection Agency (EPA)
C1: To develop legislation in support of institutional structures required for managing environmental sanitation	Identify appropriate legislation on the acquisition of land (including expropriation) for treatment and disposal sites and develop procedures to facilitate site valuation, negotiation and payment of compensation	MLGRD	Ministry of Lands and Natural Resources (MLNR)
C2: To make available to all sector actors updated sector-wide standards, laws and regulations on environmental sanitation	Develop regulation to support waste reduction, re-use, recycling and recovery	MLGRD	EPA/Ministry of Trade and Industry (MoTI)
C3: To mainstream alternative uses of wastes (liquid and solid) through appropriate technologies and incentives	Enforce legislations/regulations/bye-laws prohibiting the dumping of wastes in wet lands and water courses (including drains), commencing from 2008	MLGRD	EPA/MLNR/Ministry of Water Resources Works and Housing (MWRWH)
D1: To ensure sustainable financing of environmental sanitation services	Apply direct cost recovery from all users as far as possible covering all operating and capital costs, for services such as liquid and solid waste collection, public toilets, issuance of permits etc.	MMDAs	MLGRD/Ministry of Finance and Economic Planning (MoFEP)
	MMDAs shall set tariffs with full participation of private sector service providers and users (to be revised once a year)	MMDAs	Private Operators/User-Groups
	MMDAs shall implement differential tariffs to ensure overall cost recovery	MMDAs	MLGRD/MoFEP

Objective	Measure	Responsibilities	
		Lead Agency	Support Agencies
E1: To effectively contain and decrease the negative impact from poor environmental sanitation	Ensure that the bulk of environmental sanitation services shall be provided by the private sector under regulation by the public sector agencies	MLGRD	MMDAs
	MMDAs shall maintain adequate capacity to intervene and provide the services in the event of failure of the private sector to deliver services due to industrial actions in their establishments or other reasons	MMDAs	EHSD
	Ensure that services meet the needs of specific target groups including vulnerable people, women and children and the poor	MMDAs	MLGRD/Town and Country Planning Department (TCPD)
	Ensure that sites for treatment and disposal of wastes (landfills, composting facilities, waste stabilization ponds, trickling filters, septage treatment plants , etc.) are located so as not to create safety and health hazards or aesthetic problems in the surrounding area	MMDAs	EPA
E2: To support adequate treatment and final disposal of all wastes	Ensure that development and siting of communal storage and transfer depots, treatment and disposal facilities (includes facilities for liquid waste management) conform to statutory land-use norms and regulations	MMDAs	MLGRD/TCPD
	Ensure acquisition of appropriate sites for treatment and disposal facilities (landfills, composting facilities, waste stabilization ponds, trickling filters, septage treatment plants, etc.) using participatory principles including SEA	MMDAs	MLGRD/EPA
	Ensure that treatment and disposal facilities are provided and used in accordance with prescribed standards including the preparation of Environmental Impact Assessments	MMDAs	MLGRD/EPA
E3: Ensure adequate systems for managing wastewater treatment, re-use and disposal	Ensure adequate systems for managing wastewater treatment, re-use and disposal	MMDAs	MLGRD/EHSD
		EPA	MLNR
E4: To support remedial strategies for all wetlands and water courses under threat from indiscriminate disposal of waste	Identify all environmentally sensitive areas such as wetlands and water courses prone to impact from waste-abuse	MMDAs	MLGRD/MWRWH-Water Resources Commission (WRC)
	Provide adequate targeted services in areas close to wetlands, water courses and other vulnerable water resources prone to waste-abuse	MMDAs	MoWAC (Ministry of Women and Children Affairs, now Ministry of Gender and Social
	Ensure adequate options of facilities are available for all segments of the population especially vulnerable and physically challenged	MMDAs	
E5: To meet the needs of vulnerable and			

Objective	Measure	Responsibilities	
		Lead Agency	Support Agencies
physically challenged individuals in provision of services	persons		Protection)/Ministry of Health (MoH)
F1: To develop an effective framework for capturing, reporting of sector statistics and performance to users at all levels	Examine and assess the capabilities of existing research and service institutions and provide appropriate support for research on environmental sanitation	MLGRD	Ministry of Education (MoE)/Institute of Local Government Studies (ILGS)
	Develop framework for tracking the volumes and types of waste streams generated from all segments of the economy	MLGRD	EHSD/Centre for Scientific and Industrial Research (CSIR)/Private Sector
G2: To strengthen capacity to implement M&E	Assess capacity for implementing M&E at all levels	MLGRD	EHSD/National Environmental Sanitation Policy Coordinating Committee (NESPoCC)
	Establish/strengthen structures for effective M&E including mechanisms for DA- and community-level monitoring		

From the above, MMDAs are to largely bear the responsibility of faecal sludge management with guidance from the ministry (MLGRD) and some support from other allied ministries and agencies. However, most MMDAs have been unable to adequately implement these policy directives and strategic actions mainly due to lack of funds.

1.3 Gender and Social Equity

Understanding of WASH needs of women and men plays a key role in developing solutions for more sustainable use of facilities and resources for improved health and well-being. This is due to the fact that women and men have different gender based needs, roles and responsibilities in their own lives, families/households and communities. For example, women by nature place more value on the security and privacy of where they access sanitation facilities as compared to men due to their vulnerability to sexual abuse. Women also find it demeaning and shameful having to defecate or urinate in the open more than men. Furthermore, as a result of their menstrual needs, they are in the most need for WASH facilities in order to maintain good hygiene. Females are generally by nature more hygiene conscious as compared to their male counterparts. These needs form the main drivers for their passionate concern for issues related to WASH facilities and services; and hence they having to bear the brunt of the burden of meeting the WASH needs of their households.

According to the World Health Organization, gender is a concept that refers to socially constructed roles, behavior, activities and attributes that a particular society considers appropriate and ascribes to men and women. In most parts of Ghana, especially rural areas and poor communities, certain roles and responsibilities have been socially and culturally accepted as the preserve of women and children. For example, fetching water for household use (see figure 1.1 below), cleaning up children/infants when they defecate and cleaning of WASH facilities. Women and children therefore have to travel long distances to access water in communities where water supply is very limited and in some cases, may have to bear the costs.

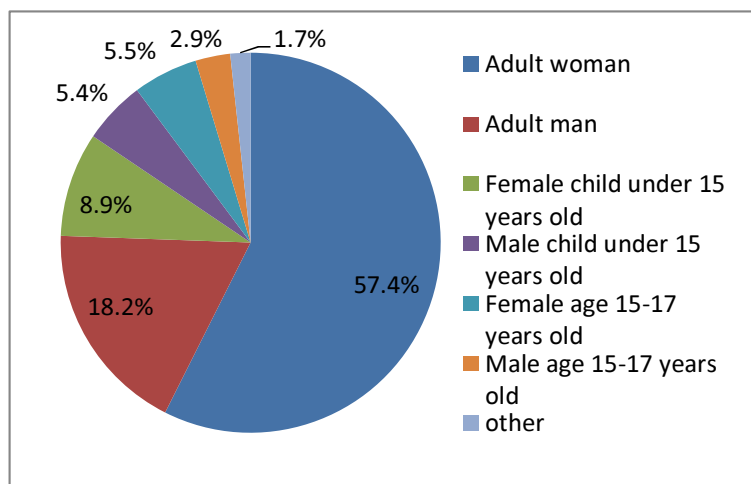


Figure 1.1: Burden of Fetching Water in Ghana, DHS 2008

As a result of these assigned roles and responsibilities, women have over the years accumulated a wealth of knowledge in the provision and efficient management of WASH facilities and services but are often sidelined in decision making and planning due to the socio-culture settings and norms (for. e.g. men are often perceived to be more knowledgeable as a result of being the household head) which limits the status of women.

Social equity with regard to access to WASH facilities and services may be observed from the following categories

- Rich/poor (e.g. slum dwellers)
- Physically challenged/disabled (e.g. blind, immobile, etc)
- Age
- Ethnic minority
- Caste
- Geographic - Rural/urban, etc.

In addressing such inequities, the United Nations (UN) Human Rights Council in 2010, recognized access to safe drinking water and sanitation as a human right- The UN Human Rights Council “recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human right” - resolution A/RES/64/292 to which Ghana is a signatory. However, the impact of this resolution is yet to be fully realized in especially developing countries.

In Ghana, the prominent form of social inequity with respect to WASH is seen between rich and poor; able-bodied and physically-challenged/disabled. Residents of some low income areas such as James Town, Chorkor and Bukom although within the city of Accra, continue to buy water from vendors at higher costs as compared to Ghana Water Company Limited (GWCL) charges due to their inability to afford the cost of connecting pipelines to their individual homes. Also, residents of slums like Agbogboshie (Old Fadama) due to their ‘illegal’ land tenure statuses are not entitled to many municipal services such as water and electricity even when they can afford the cost of services. The net effect of this is that, low-income populace pay more for these services compared to middle and high income earners in urban centers especially.

On sanitation, the poor or low-income earners mostly rely on public toilets for disposing of human excreta. Using a minimum cost of GHp 50.00 per facility use and average national household size of

4.4, each household spends not less GH¢ 2.20 per day on sanitation assuming they use the facility once a day. The projected monthly expenditure on sanitation alone thus comes to about GH¢ 66.00- an amount relatively expensive for even the rich or high income earners. Since most of the poor are unable to afford this, they resort to open defecation which poses a major health risk and a further expenditure on the treatment of sanitation related diseases such as Cholera. This phenomenon is common to both urban and rural areas although more severe in the rural and remote parts of the country which have very limited access to toilet facilities. The health impact (sanitation related disease outbreaks) is however more severe in the urban poor communities due to the high population density.

Although poverty may be identified as the root cause of this social inequity, a critical look is needed to ameliorate the impact on the poor if the right to safe and clean drinking water and sanitation is to be upheld as a human right.

Ghana according to the NPHC 2010 has an estimated 3% (representing 737,743) of its population have disabilities. Although Ghana's Building Codes recommends the necessary provisions to be made to cater for people with disabilities, little has been done in terms of sanitation facilities. Most public toilets for instance, neither have guard rails nor toilet cubicles specially designed for the disabled. The physically disabled persons will therefore most of the time rely on good 'Samaritans' to access toilet these facilities.

2 EXISTING SITUATION

2.1 Key Sanitation Habits Identified

The sanitation habits as used in this report generally refer to the day-to-day usage patterns of toilet facilities (for both household and public) where these are available and/or human excreta disposal practices. The sanitation habits assessed as part of the household survey for this study included:

- Toilet facility use
- Sharing of toilet facilities with other household
- Sharing of household toilet by males and females
- Disposal of child faeces
- Cleaning of household toilet facility
- Anal cleansing materials used and disposal
- Handwashing after using toilets

2.1.1 Access to Toilet Facilities

As shown in figure 2.1 below with the exception of Sibi Hill Top, not less than 19.7% (about a fifth) of the residents of the various communities use their own toilets and reflects the willingness of households to have their own facilities if they can afford. The very low figure (4.2%) obtained for Sibi Hill Top may be attributed to its relatively high poverty level as compared to the other communities.

As commonly practiced by many communities in Ghana, a significant proportion of the residents of the study communities rely on public toilets and thus defeating its original purpose of serving mainly transient population. Edina Essaman had the highest rate (72.2%) in terms of percentage and Dzodze the highest in terms actual population (11,143) representing (41.6%) of the population. The use of toilet facilities belonging to a neighbouring dwelling was identified in all communities with the exception of Sibi Hill Top which has only 4.2% of residents having their own household toilet. With the exception of Hemang (24.5% representing 2,321 people) and Adesu (15.2% representing 216 people), those who relied on a neighbour's facility formed less than 10% of the entire population of the remaining communities (see figure 2.1 below). No fees are charged for the use of a neighbour's toilet.

Apart from Edina Essaman, the practice of open defecation was observed in all the communities (See figure 2.1 below). It was also observed that for the communities with high levels of open defecation (i.e. Tikobo No.2 -48.1%, Dago -61.3%, Akateng- 25.5%, Donkorkrom- 17.7% and Sibi Hill Top- 95.8%), issues such as lack of public toilets, distant location of public toilets from residences and poor/untidy state of the public toilet were reported. In Sibi Hill Top for example, the community had only one (1) public toilet that is sited far away from the residences. Tikobo No.2 also had only (1) public KVIP whereas in Donkorkrom two (2) of the four (4) public facilities are functional.

In New Abirem only 12.5% of the households depend on public toilets. 80% of the households indicated having their own household facility. This trend may be attributed to the large scale gold mining activity in the community. In order to make their houses 'attractive' for rental to the large migrant population associated with mining and its related activities, most landlords are likely to build household latrines.

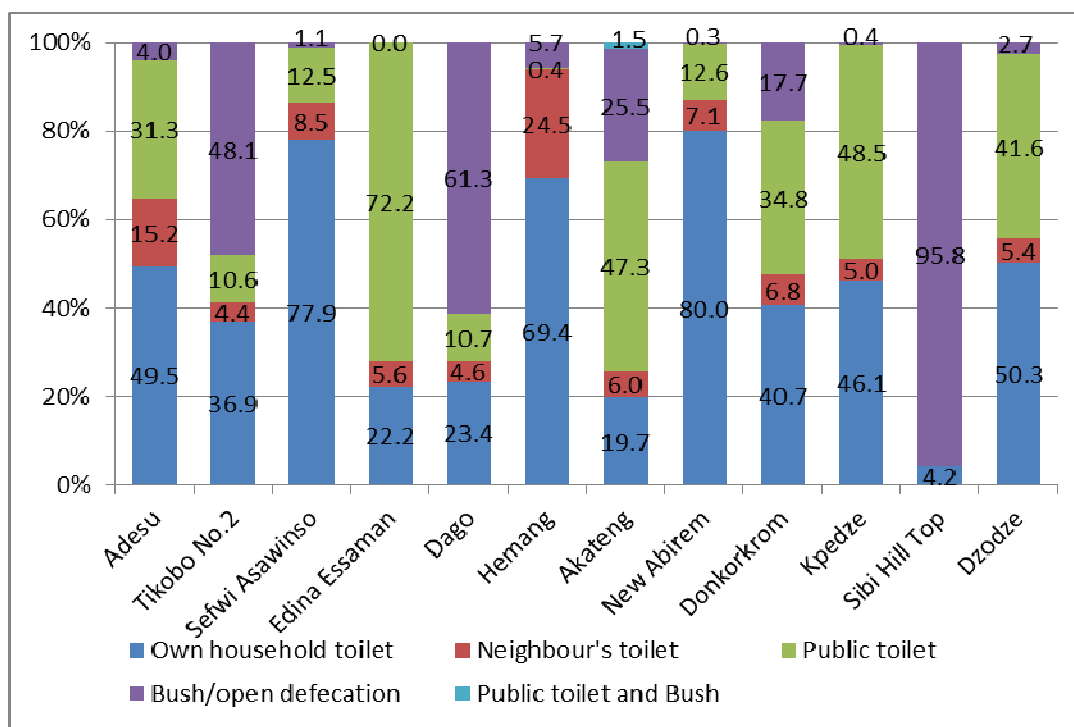


Figure 2.1: Access to Toilet Facility

2.1.2 Sharing of Toilet Facilities with other Household

Sharing of household toilet facilities with other households was observed in all communities. This common practice of sharing facilities is usually attributed to the compound housing system where a particular house has more than one household who are either related or not related. However, in some cases, the households are from neighbouring residences and not necessarily within the same residence. Sharing of household toilet facilities with other households was observed in all the communities. The percentage of households with their own toilets who indicated sharing with other households varied significantly among the study communities with the Tikobo No.2 having the least (10.3%) and Sibi Hill Top the highest (60%). No clear pattern in household data analysis or field information which may be useful in determining other possible factors influencing the sharing of household facilities in the communities was identified, hence the conclusion that the compound housing and communal lifestyle (which is common to most parts of the country be it rural or urban) is the major influencing factor. Figure 2.2 below presents a graphical representation of the rate of sharing in the study communities.

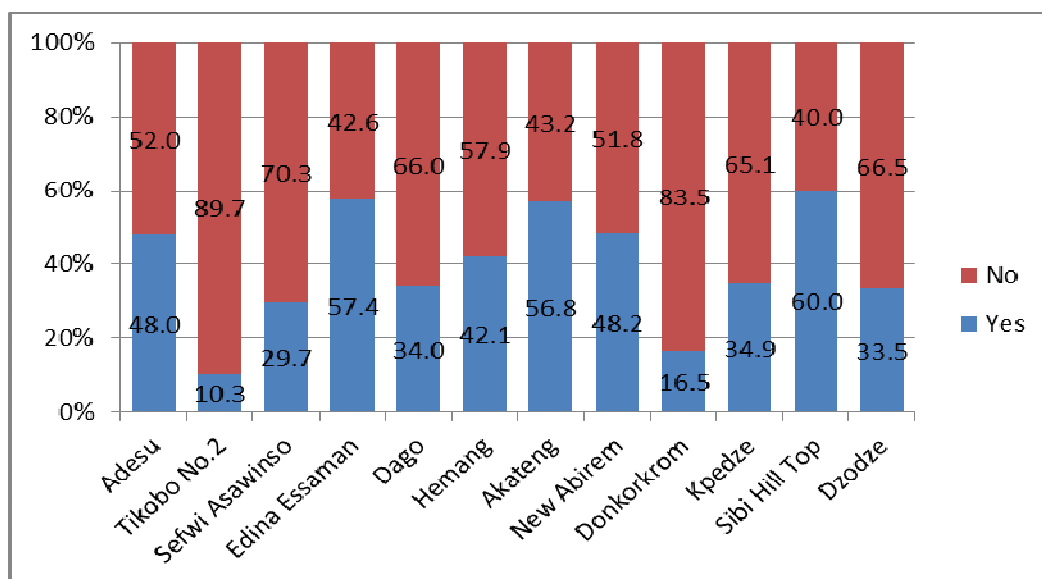


Figure 2.2: Sharing of Household Toilet Facilities with other Households.

2.1.3 Sharing of Household Toilets by Males and Females

As shown in figure 2.3 below, over 80% of households in all the study communities indicated both males and females are allowed to share the same facility and a good indication of gender equality in terms of toilet facility use. However, women and children are usually responsible for the cleaning and keeping the facilities tidy.

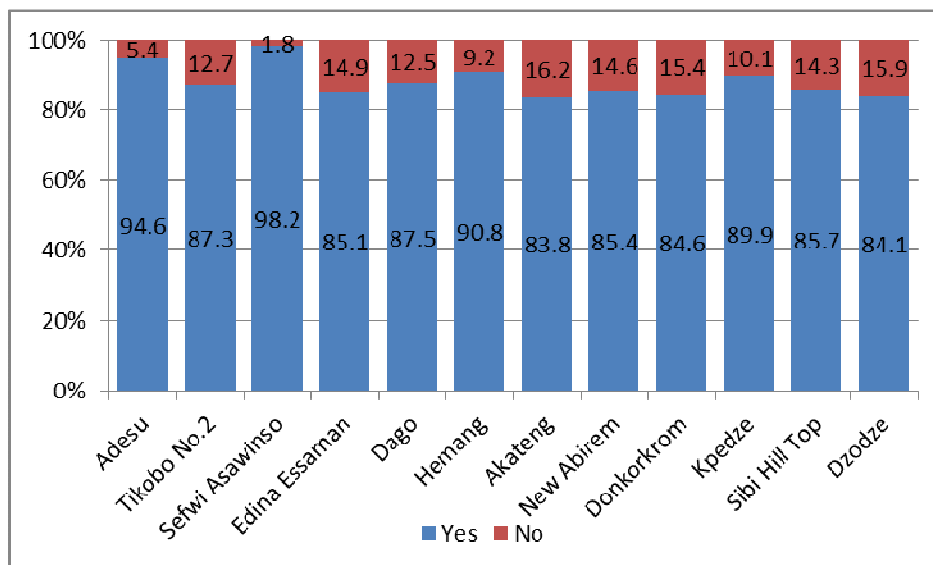


Figure 2.3: Sharing of Household Toilets by Males and Females

2.1.4 Disposal of Child Faeces

The perception of child faeces being of a lesser health threat (that is 'benign') as compared to adult faeces, often results in it being disposed of improperly. As shown in figure 2.4 below, over 30% of the households in all the communities dispose of child faeces into toilet facilities in the exception of Tikobo No.2, Dago, Akateng and Sibi Hill Top where a larger proportion of the households dispose of child faeces into the bush. This practice may be attributed to the high prevalence of open defecation in these communities (see figure 2.5). Very young children and are escorted by their parents (more often their mothers) or elder siblings to the bush/open spaces very close by to defecate

as issues such as privacy do not pertain to them. Moreover children are unable to ‘hold-on’ themselves for long upon ‘nature’s call’ and hence openly-defecate in close by areas/bushes.

The recent surge in the use of baby diapers has resulted in the disposal of child faeces as part of household or municipal solid waste. This practice poses a serious health threat to especially the solid waste service providers. The practice of disposing of child faeces into solid waste bins is observed in most of the study communities with Edina Essaman and Dzodze having high prevalence rates of 37.4% and 27.3% respectively.

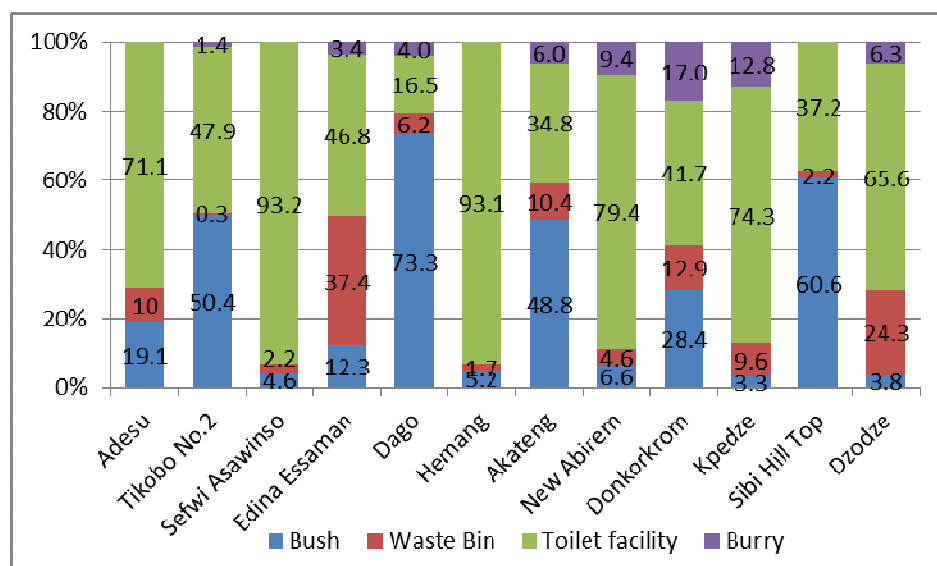


Figure 2.4: Disposal of Child Faeces

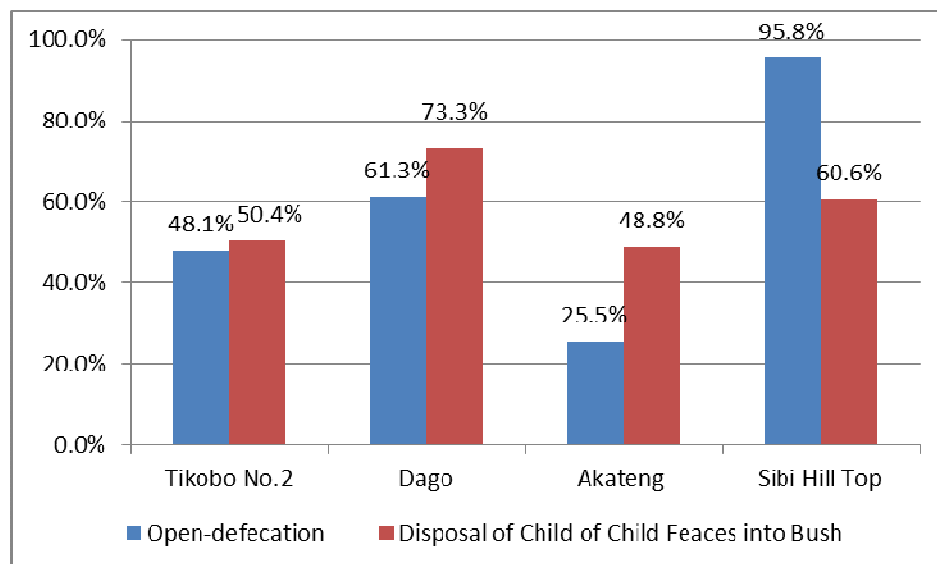


Figure 2.5: Relationship of Open-defecation and Disposal of Child Faeces into Bush

2.1.5 Cleaning of Household Toilets

In all the study communities, majority of the households with their own facilities interviewed indicated daily cleaning of the toilet (see figure 2.6 below). In the case of shared household facilities further inquiries from some respondents revealed that maintenance of the facilities is often a shared

responsibility of the individual households in the households. The toilet cleaning chore is shared on a rotational basis.

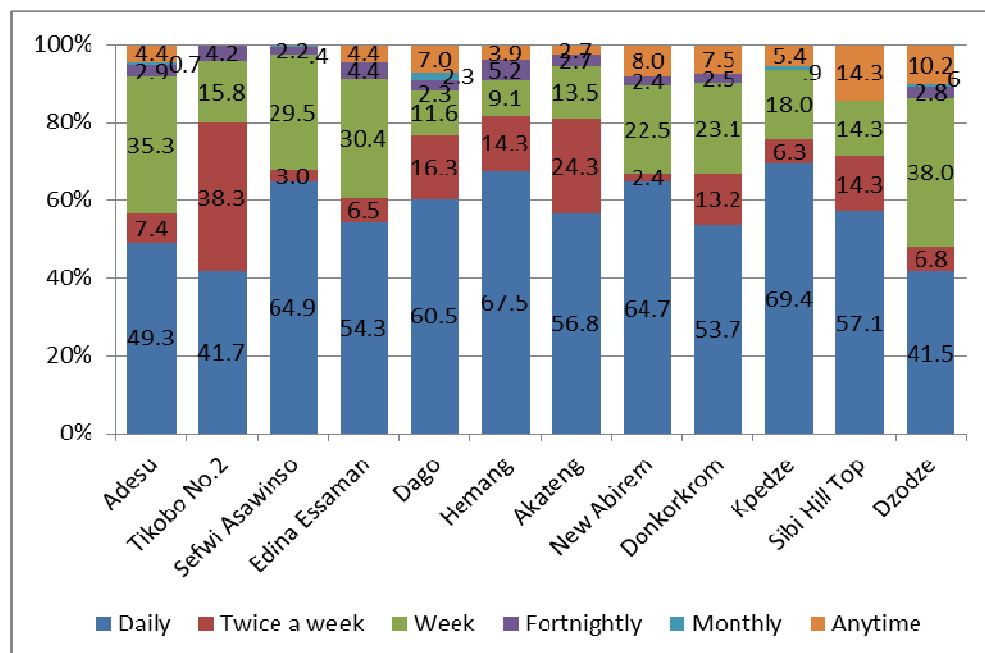


Figure 2.6: Cleaning of Household Toilet Facilities

2.1.6 Anal Cleansing Materials Used and Disposal

Materials used for anal cleansing included toilet rolls, paper (e.g. old newspapers), corncob, rags, leaves and water. Majority of the population in the various communities however use paper as the main anal cleansing material. Figure 2.7 below presents the prevalence in use of some anal cleansing materials used in each of the study communities. The use of water for anal cleansing is prominent among the Muslims. Burning was identified as the most common means of disposing of the anal cleansing materials and correlates with paper being the most used anal cleansing material (see figure 2.8 below). The burning is done usually in the early hours of day by the women or children.

However, for communities such as Sibi Hill Top and Tikobo No.2 where open-defecation is the most prevalent means of disposing human excreta (i.e. 48.1% and 95.8%); the materials used for anal cleansing are left at the site of open defecation. Use of leaves for anal cleansing is very common in Sibi Hill Top. It was also observed at some public toilets that, paper for anal cleansing was provided to the facility users upon payment of the user fees.

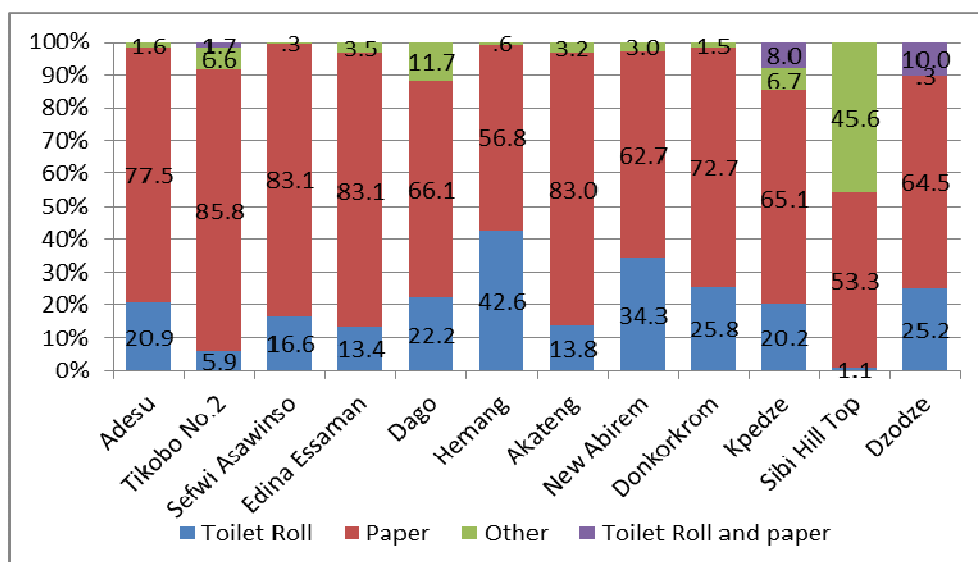


Figure 2.7: Prevalence in Use of Anal Cleansing Materials

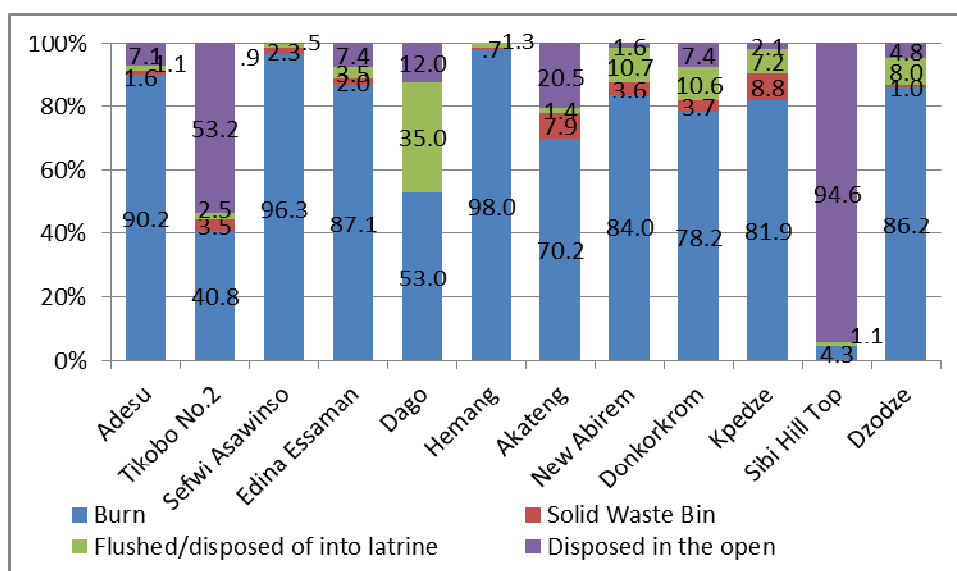


Figure 2.8: Disposal methods for Anal Cleansing Materials

2.1.7 Handwashing after Using Toilets

The household survey results indicates that, a majority of the respondents indicated they always wash their hands after using a toilet with the exception of Sibi Hill Top where only 18.4% wash their hands always after using the toilet; and Tikobo No.2 where 30.8% of households do not wash their hands after using toilet facilities (see figure 2.9 below). The relatively high prevalence of handwashing in almost all the communities is a reflection of the residents' awareness of good personal hygiene practices. This may be attributed to the CWSA's extensive nationwide handwashing campaign with emphasis on washing hands with soap under running water at critical times. However, intensification of behavioural change campaign is needed in most of the communities to inculcate the habit of regular hand washing with soap among all residents especially in Sibi Hill Top and Tikobo No.2.

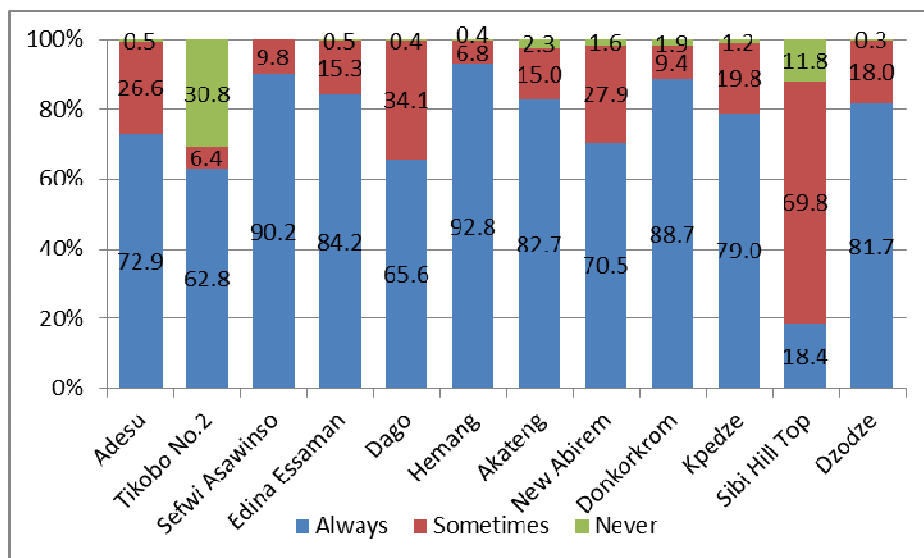


Figure 2.9: Handwashing Practice after Defecating/or using a Toilet Facility

2.2 Attitudes to Household (Private) and Public Toilets

2.2.1 Household Toilets

Typical of most rural and per-urban areas in Ghana, KVIP, VIP and Traditional/Simple Pit latrines were identified to be the most dominant household latrine types/technologies. As shown in Table 2.1 below, a similar trend in terms of prevalence in use (i.e. VIP-1st, Pit latrine-2nd, KVIP-3rd and WC-4th) is identified between the communities that have a population of less than 2,000 and those communities whose population were between >2,000-7,500. However, whereas in the first population band (<2,000) the difference in prevalence (in terms of percentage) between VIP and Pit latrine was only about 3.3%, a difference of about 23% is observed in the second population band (>2,000-7,500)-that is to say VIP becoming more prominent. Furthermore the prevalence in use of WC latrines decreased significantly (i.e. from 15.7% in the first population band to 3.5% in the second population band).

Among the larger and more urban communities (those in the third band), pit latrines (34.4%) are the most widely used, followed by KVIP (28%), VIP (26.5%) and WC (10.1%). VIP usage however decreased significantly from 52.4% in the second population band to 26.5% in the third population band. Corresponding increases were seen in KVIP and WC usage. This may be attributed to the natural trend of moving up the sanitation ladder as there is increase in wealth or social status. Hence, the more urbanized communities will tend to have more residents using facilities at the upper end of the sanitation ladder (i.e. WC and KVIP).

Pan latrines and other latrines types (e.g. vault chamber) are not common. Pan latrines for example have been banned in most municipal assemblies in Ghana although there are persistent isolated cases of use in few communities.

Generally, the absence of a clear pattern in use of the various facility types may reflect the fact that the choice of a particular facility type by a household is mainly a function of its ability to afford and maintain the facility type. However in some cases the choice is influenced by WASH project/programme interventions. In Donkorkrom for example, further investigation into the prevalence of KVIP as the main facility type (i.e. 75% usage) revealed that, some households were

assisted by a Non-governmental Organisation (NGO) in putting up the facility which was introduced to them by the same organization.

Table 2.1: Prevalence in Use of Household Toilet Facility Types.

Population Band	Household toilet facility type	WC	KVIP	VIP	Pit latrine	Pan/bucket latrine	Other
<2,000	Adesu	8.5	4.3	28.7	58.5		
	Edina Essaman	13.6	18.2	43.2	25.0		
	Akateng		43.2	35.2	21.6		
	Kpedze	40.5	13.5	26.1	18.9	1.0	
	Average	15.7	19.8	33.3	31.0	0.3	0.0
	Rank	4	3	1	2	5	6
>2,000-7,500	Tikobo No.2	2.0	6.9	38.6	52.5		
	Dago	4.0	30.0	42.0	24.0		
	New Abirem	7.9	22.2	41.7	28.2		
	Sibi Hill Top			87.5	12.5		
	Average	3.5	14.8	52.4	29.3	0.0	0.0
	Rank	4	3	1	2	5	5
>7,500	Sefwi Asawinso	4.4	4.4	27.0	63.8		.4
	Hemang	7.3	2.4	31.5	58.8		
	Donkorkrom	10.9	75.0	9.4	4.7		
	Dzodze	21.5	30.1	38.2	10.2		
	Average	11.0	28.0	26.5	34.4	0.0	0.1
	Rank	4	2	3	1	6	5
	Total Average	10.1	20.9	37.4	31.6	0.1	0.0
	Total Rank	4	3	1	2	5	6



Plate 2.1: Household VIP in New Abirem with vent pipe close to the roof of the facility



Plate 2.2: Household VIP in New Abirem with vent pipe extending from the base of the facility

Preference of Household Facilities to Public Facilities

In all the communities surveyed, over 85% of the households (see figure 2.10 below) preferred using household (private) toilet facilities to public toilets. Box 2. 1 below presents reasons cited by the respondents for their preference for household and public toilets.

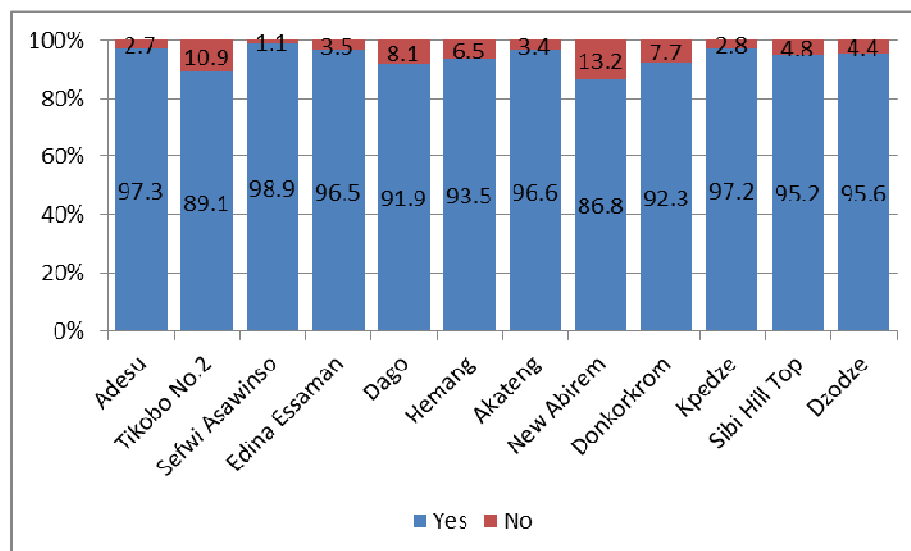


Figure 2.10: Preference of Household (Private) Toilets to Public Toilets.

Box 2.1: Reasons cited for Preference for Household (Private) and Public Toilets

Household (Private) Toilets

- Easy, convenient, saves time and always available
- No queues as with the public toilet
- Don't have to go to other people or neighbors' house to use toilet facility
- Offers more privacy
- People ease around and on the slab making the public toilet unclean
- Safer in terms of security (mainly cited by female respondents)
- Healthier and reduces chances of contracting diseases
- Good social status
- Public toilet is far and wastes money
- Lack of public toilet
- Can get fertilizer or biogas from private toilet
- Using public toilet is expensive
- It will stop open defecation
- Public toilet is for the public not households

Public Toilets

- People (tenants) don't like to pay for desludging
- Desire to avoid unpleasant smell in their homes
- Avoid conflicts likely to arise between tenants if others refuse to clean the toilets when it's their turn to do so or even pay for desludging.
- For some residents the public toilet is close to their residences.
- Private toilets are expensive to build and maintain

The over 85% of respondents' preference for household toilets and reasons cited indicate that, majority of households in the study communities are aware of the health/environment, social and economic benefits of using household toilets. Knowledge of these benefits however varies by community. Table 2.2 below groups the reasons cited into health/environment, social and economic

categories. Using public toilets will therefore only be considered as an alternative to the household latrines.

Table 2.2: Categorisation of Reasons Cited for Preference of Household Facilities

Health	Social	Economic
<ul style="list-style-type: none"> • People ease around and on the slab making the public toilet unclean • Healthier and reduces chances of contracting diseases • It will stop open defecation 	<ul style="list-style-type: none"> • Don't have to go to other people or neighbours' house to use toilet facility • Offers more privacy • Safer in terms of security (mainly cited by female respondents) • Lack of public toilet • Good social status • Public toilet is for the public not households • No queues as with the public toilet 	<ul style="list-style-type: none"> • Public toilet is far and wastes money • Can get fertilizer or biogas from private toilet • Using public toilet is expensive

When asked what they think are some of the challenges associated with a household having its own toilets, the responses given included:

- Offensive smell/bad odor (occasional)
- Contaminates the environment and attract flies
- High cost of desludging facility when full
- Improper usage by others (residents or household members) resulting into soiling of privy rooms
- Pressure on facility as a result of sharing with neighbours
- Other households (co-tenants) do not help in cleaning and maintaining the toilet
- No available services for desludging
- High water table within residence
- No water available

In addition to the reasons indicated for preference for public toilets, these challenges are likely to serve as potential barriers to the uptake of improved sanitation and hence must be considered in the design of any household sanitation marketing/promotion programme.

2.2.2 Public Toilets

Despite the high enthusiasm for household (private) toilets, significant percentage of the households without toilet facilities in the various communities rely on public toilets (see figure 2.11 below) although designed for transient (non-resident) people. The low patronage in some communities such as Sibi, Tikobo No.2 and Dago was attributed to lack of or inadequate public toilets, convenience (distance to facility) and deplorable state (in terms of physical structure and hygiene) of the existing public toilets.

In the case of Sibi Hill Top for example, although there is a public KVIP, the facility is unused due to its distant location resulting in all residents without household facilities resorting to open defecation. In the case of Dago, residents resort to open-defecation due to the deplorable and unhygienic state of the existing public toilets. For Hemang, most residents preferred to use a neighbour's household facility rather than public toilets due to the often untidy nature of the public toilet.

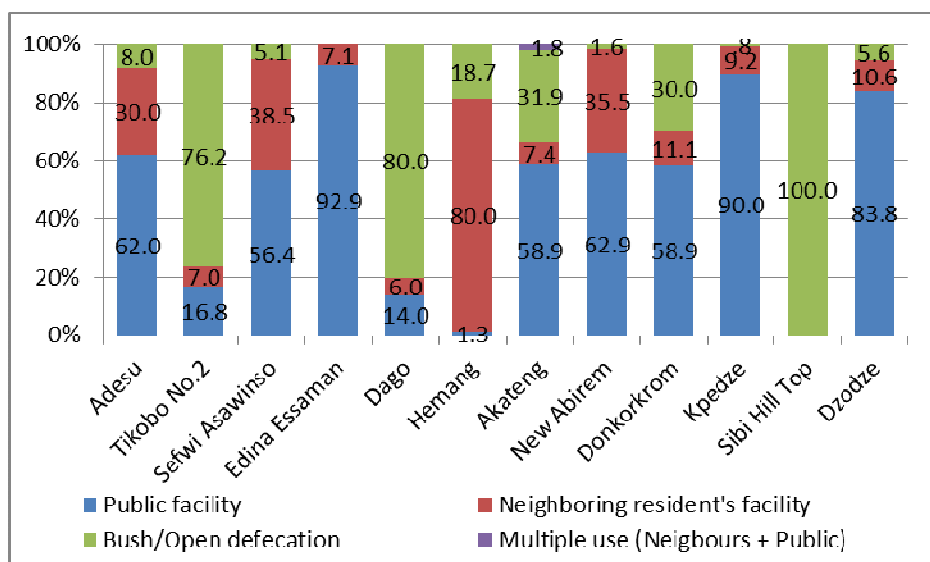


Figure 2.11: Facility Use by Households without Toilet Facilities

Interviews with some of the operators of the public facilities indicated very high attendance during the early hours of the day (5-8 am), with low attendance in the afternoon and slightly picking up at dusk. This pattern is very common in most parts of the country. People who rely on public toilets often visit the facility early in the morning before their morning bath. In market communities such as Akateng, there is a significant increase in attendance (about double the usual attendance) at the public toilets close to or within the market on market days. In all the communities, public toilet user fees are between GH 20p and GH 50p per use (visit).

2.3 Attitudes to Open-defecation

Based on household survey findings and discussions with some residents and Environmental Health Officers in the communities, open-defecation as a practice is mainly attributed to the following and unrelated to any social attitude or beliefs:

- Inability of the household to afford a household toilet
- Lack of/inadequate public toilets
- Unclean/unhygienic state of public toilets
- Long distance to public toilets

Figure 2.12 shows the prevalence of open-defecation (in percentage terms and actual population numbers, 2014) in the study communities. Table 2.3 below indicates the major factors that account for the high rate of open-defecation in Akateng, Dago, Tikobo No.2, Sibi Hill Top and Donkorkrom.

Table 2.3: Main Factors Influencing Open-defecation in the Study Communities

Community	Main Factor Influencing Open-defecation
Akateng	There are currently two KVIPs in this community. A 10-seater and 6-seater KVIP public toilet. The 10-seater KVIP is distant from the residents resulting in the overburdening of the 6-seater KVIP which is close to residents. Due to this, the 6-seater KVIP is usually untidy. Residents therefore resort to defecating along the vast bank of the Afram river.
Dago	Existing public facilities are in a deplorable state –hygienically and in terms of infrastructure. This community is located along the coast and resident defecate openly along the beach.
Tikobo No.2	The community has only one 10-seater KVIP and this is in a deplorable state.
Sibi Hill Top	There is an existing KVIP which is cited far from residents and so has never been used. Majority of residents in this community practice open defecation.
Donkorkrom	Two (2) out of the existing four (4) public toilets have been abandoned due to their deplorable state. The public facilities in use are a 10-seater KVIP owned by the district assembly and a privately owned 10-seater WC.



Plate 2.3: An abandoned Public Toilet in Donkorkrom

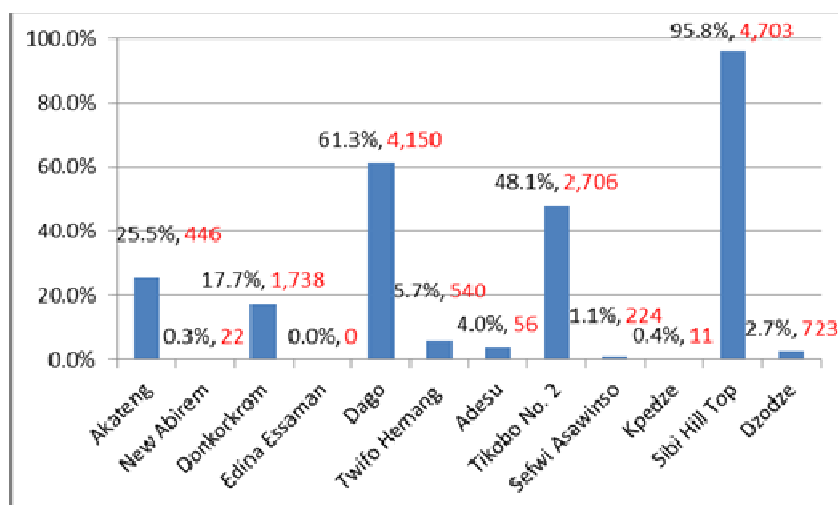


Figure 2.12: Prevalence of Open-defecation

Common places for open-defecation are in bushes, wetlands, along river banks, sea shore (in Akateng and Dago) and on open dumpsites. Interview with the Environmental Health Officers revealed the practice is usually in the early hours of the morning when it is still dark or at night. In other cases (especially the larger towns), to avoid walking long distances to defecate, some residents defecate in black polythene bags and dispose them at isolated vacant lots, drains and in communal refuse containers.



Plate 2.1: Crude dumping and open-defecation site close to Afram River at Akateng

When asked whether local authorities should prosecute people for practicing open defecation or dumping faeces at inappropriate places, over 80% of the respondents in all communities were in favour except for Sibi Hill Top where as much as 42.9% of the respondents indicated otherwise. The high percentage is thus an indication of residents being aware of open-defecation not only as a health risk but also an act prosecutable by law. In Sibi Hill Top, 100% of households without toilet facilities (represents about 95% of the total household population) practice open-defecation.

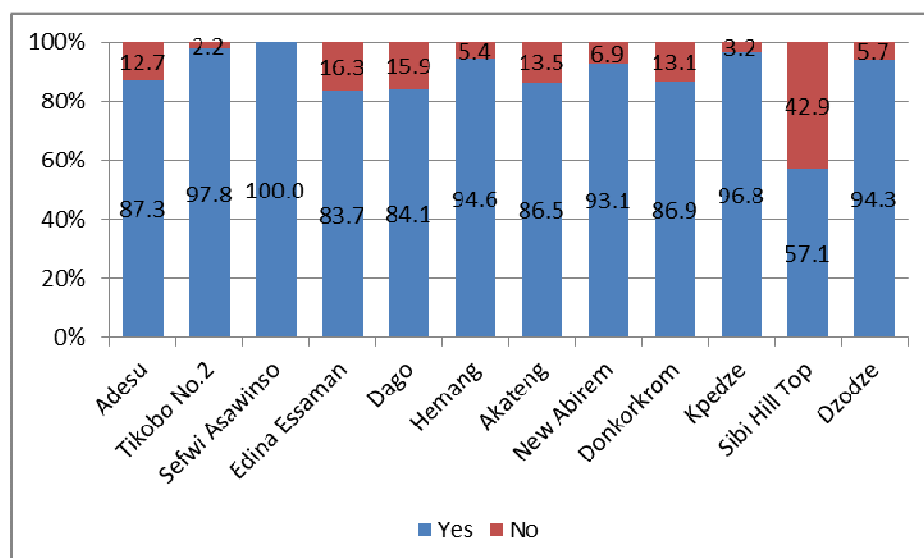


Figure 2.13: Prosecution of Open-defecation Defaulters by Local Authorities

2.4 Local Knowledge and Perceptions with Respect to Human Excreta Management

Based on the responses of residents on their preference for household toilet and the reasons they cited for their preference, it is evident there is a high level of awareness of the need for proper and hygienic disposal of human excreta in all the communities. However little attention is paid to how excreta from the public facilities and houses are disposed of. It is seen as the sole responsibility of the facility operators and the few households that own toilets. With majority of the household toilets being pit latrines, VIP and KVIP, most residents resort to manually digging-out the faecal sludge for burial or disposal at places they deem convenient. In the case of pit latrines, residents cover up the pit with soil when it is full. Residents with flush toilets rely on private and local assembly cesspit emptying service providers.

2.5 Land-Tenure and Land Acquisition

Acquisition and availability of land for sanitation has been identified to significantly affect demand and choice of sanitation facilities and faecal sludge treatment systems. Typical of rural and peri-urban communities, majority of the respondents either owned their residences or lived in a family house (see figure). Over 70% of the heads of households without toilet facilities preferred to have their own facilities and willing to make space available for the construction of these facilities. Some households although willing to have their own facilities, indicated the lack of space.

Common to most rural and peri-urban areas, the local chiefs have the allodial custody of the land. Generally, the communities showed no reluctance towards using available space or lands for sanitation facilities.

Discussions with some District Chief Executives, District Coordinating Directors and other opinion leaders in the community indicated the preparedness of the district assemblies and communities to release land for construction/or installation of public-type sanitation and faecal sludge management facilities if needed. In Dzodze, for example discussions with the District Environmental Health Officer, indicated some plans had been initiated for provision of a faecal sludge management facility to serve the whole district but had stalled due to unavailability of funds.

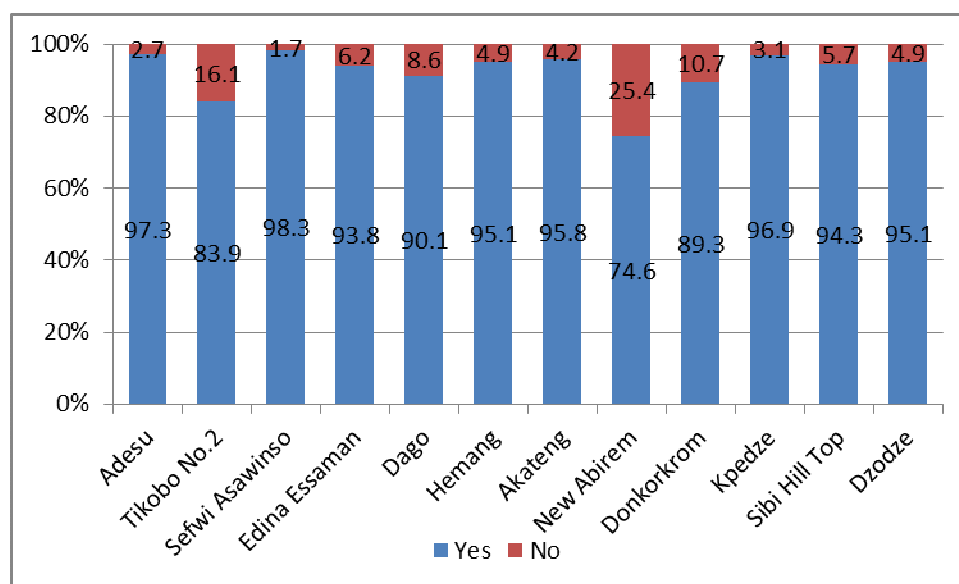


Figure 2.14: Preference of Household Toilets by Household Heads

3 MANAGEMENT AND SOCIAL ISSUES

3.1 The Role of the Private Individuals/Sector in Sanitation

Improving and sustaining access to sanitation facilities and services calls for the involvement of all stakeholders - facilities and service providers, regulators and beneficiaries. As indicated in the NESSAP 2010, in order to effectively contain and decrease the negative impact from poor environmental sanitation (Objective E1-Levels of Service), the bulk of environmental sanitation services (inclusive of sanitation and faecal sludge management) shall be provided by the private sector under regulation by public sector agencies. The private sector therefore plays a key role in improving access to sanitation facilities and services. Specific roles or areas of involvement of the private sector relevant to sanitation as recommended in the national policy are:

- (a) Provision and management of cesspit emptying trucks, on a fully commercial basis subject to licensing and the setting of maximum tariffs by the Assemblies;
- (b) Construction, rehabilitation and management of all public baths and toilets, subject to the supervision and setting of maximum tariffs by the Assemblies;
- (c) Cleansing of designated areas and facilities (streets, drains, markets, lorry parks, etc.) and maintenance of drains, under the agreements covering solid waste collection;
- (d) Provision and management of waste (includes liquid waste) treatment, recycling and disposal facilities, transfer stations and bulk waste transfer to disposal under contract, franchise, concession, BOT, BOO, BOOT or other arrangements;
- (e) Operation and maintenance of sewerage collection and treatment systems by contract, franchise or concession, supervised by the Assemblies;
- (f) Equipment leasing and maintenance/workshop services

According to the policy, the services shall be provided on full cost recovery basis. The policy also encourages the participation of private financial institutions in providing 'soft-loans' for constructing household latrines.

The roles currently being played by the private sector in the study communities are the management of public toilet facilities and provision of desludging services. Table 3.1 below presents a summary of the private sector involvement with regards to sanitation and faecal sludge management in the various communities. With the exception of Dzodze where the municipal assembly has designated a site outskirts of the community for disposal of faecal sludge and hence monitor the activities of private service providers, the activities of the private service providers are not monitored. Discussions with the heads of the District Environmental Health and Sanitation Departments (DEHSDs) who have direct oversight responsibility, revealed that monitoring the activities of private desludging service providers is very difficult since they are directly engaged by the households.

Table 3.1: Private Sector Engagement in Sanitation in the Study Communities.

Community	Current Areas of Private Sector Involvement in Sanitation and Faecal Sludge Management
Adesu	<ul style="list-style-type: none"> Private pit emptying service providers are from Wassa Akropong-(the district capital). The capital is 11km away. There is no private desludging service provider in the Adesu community. Some individuals are engaged in manual emptying of household pit latrines and VIPs. Individuals engaged in construction of household facilities-mainly pit and VIP latrines
Tikobo No.2	<ul style="list-style-type: none"> Private pit emptying service providers from Half Assini and Elubo. Some individuals (conservancy labourers) are engaged in manual emptying of household pit latrines and VIPs.
Sefwi Asawinso	<ul style="list-style-type: none"> Private cesspit pit emptying service providers from Kumasi and Bibiani. Management of public toilet on behalf of the district assembly under a franchise arrangement
Edina Essaman	<ul style="list-style-type: none"> Private desludging service providers within the district and from Cape-Coast (e.g. ZoomLion Cesspool Services and University of Cape Coast Waste Services) Management of the existing KVIP public toilet on behalf of the district assembly under a franchise arrangement.
Dago	<ul style="list-style-type: none"> Private cesspit emptying service providers from neighboring towns such as Winneba, Kasoa and Swedru Management of the existing KVIP public toilet on behalf of the district assembly under a franchise arrangement Rural banks (e.g. Akyimpim Rural Bank) engaged in providing soft-loans to residents for construction of household toilets
Twifo Hemang	<ul style="list-style-type: none"> Management of the existing KVIP public toilet on behalf of the district assembly under a franchise arrangement. The District Assembly provides cesspit emptying/desludging services. Some individuals (conservancy labourers) are engaged in manual emptying of household pit latrines and VIPs.
Akateng	<ul style="list-style-type: none"> Cesspit emptier service providers from Somanya, Begoro or Koforidua are engaged for desludging the public latrines Management of the existing KVIP public toilets on behalf of the district assembly under a franchise arrangement
New Abirem	<ul style="list-style-type: none"> Private desludging service providers within the community Management of the existing public toilets on behalf of the district assembly under a franchise arrangement.
Donkorkrom	<ul style="list-style-type: none"> Private desludging service providers from Koforidua Some individuals (conservancy labourers) are engaged in manual emptying of household pit latrines and VIPs.
Kpedze	<ul style="list-style-type: none"> Private desludging service providers from Ho Municipal Assembly Management of the existing public toilets on behalf of the district assembly under a franchise arrangement (see plate).
Sibi Hill Top	<ul style="list-style-type: none"> No private sector involvement identified
Dzodze	<ul style="list-style-type: none"> Private desludging service providers within Dzodze and Ho and Hohoe Municipal Assembly Management of the existing public toilets on behalf of the district assembly under a franchise arrangement.



Plate 3.1: Privately managed 10 seater vault-chamber toilet in New Abirem



Plate 3.2: Privately managed 8 seater WC Toilet at Kpedze market

3.2 Attitudes of People towards Individuals and Organizations which Work On Sanitation (Sanitation Service Providers)

Attitude is often a direct function of a person beliefs, norms and values and influences the individual's predisposition to certain opinions. Therefore depending on one's socio-cultural setting, knowledge and environment, one's attitude towards sanitation will vary. Generally, most people have a repulsive attitude toward sanitation and are of the view that faeces is something 'disgusting' that should not be associated with. People involved in the provision of services such as desludging and attendants at public toilets are sometimes looked down upon. There is however some evidence of a gradual shift from such attitudes and perception as people are becoming more conscious and aware of the health and economic benefits of proper human excreta/faecal disposal and treatment. With the exception of Dzodze and New Abirem who had some private desludging service providers within the community, the remaining communities had to rely on service providers from mostly the larger towns and therefore valued their services. Sibi however had no such services. Our field assessments also revealed a high level of awareness of the health and economic benefits of improved sanitation and faecal sludge management among residents which influences attitude and perception of people towards sanitation service providers.

3.3 Willingness and Ability to Pay for Sanitation Services

The assessment of community members' willingness and ability to pay for sanitation services were established using the following indicators;

- Share of the community's population willing to own their own household facilities
- Average cost for public facility use
- Share of population willing to pay higher fees for improved public toilets
- Income and expenditure levels;
- Community proposed user fees for improved public toilets
- Monthly income
- Dominant Economic Activity
- Unit costs of building and maintenance of the recommended household facility types
- Willingness to take a loan facility to build household toilets

The field survey reveals that community members are familiar with the concept of paying for sanitation services and welcome the essence of contributing financially towards provision and maintenance of sanitation facilities. Generally, most community members indicated willingness to contribute financially towards sustainable improved sanitation facilities (whether household or public) due to the fact that it has the tendency to resolve the environmental sanitation problems and its associated health-risks as well as create jobs thus reducing unemployment.

Considering the fact that majority of the communities are into peasant farming and a few into small scale trading (Akateng-market hub & Dago-fish processing and sale) as well as the reported monthly income ranges, majority of the households will find it difficult to make one-time payments for the capital cost of improved sanitation facilities. Table 3.2 below shows the capital and operation and maintenance costs of the various sanitation facility options.

In view of the national policy and strategy recommendation for the cease of providing subsidies towards the construction of household sanitation facilities, households were asked of their willingness to take loan facilities in pre-financing their household toilet facilities. The responses indicate a general willingness of households to finance their own facilities through loans. The least value was recorded in Akateng where 44.5% indicated their willingness to take loans.

Table 3.2: Capital and Operation and Maintenance (O&M) Cost for Sanitation Facility Options.

Facility Type	Capital Cost (2014) ¹	Capital Cost (2015) ²	Operation and Maintenance (O&M) Cost (2014)	Monthly O&M Cost (2014)	Monthly O&M Cost (2015)	Total
	GH¢	GH¢	GH¢	GH¢	GH¢	GH¢
Flush	4,000	8,422	1,208 (5yrs)	20	42	8,465
KVIP/VIP	1,000	2,106	503 (3yrs)	14	29	2,135
Improved Pit Latrine	300	632	150 (3yrs)	8	18	649

Adapted from: Nimoh et al, 2014: Households' Latrine Preference and Financing Mechanisms in Peri-urban Ghana (2014).

Tables 3.3 and 3.4 below show the willingness and ability to pay assessment or responses for each study community.

¹ US Dollar- Ghana Cedi Exchange rate 2013 (time of data computation): US\$1.00 = GH¢1.99

² US Dollar- Ghana Cedi Exchange rate at 15/06/2015: US\$1.00 = GH¢4.19

Table 3.3: Willingness to Pay for Improved Sanitation Services and Facilities

Community	Share of Population Interest to Own Household Toilet	Present Public Toilet User Fee	Share of Population Accepted to Pay Higher User Fee for Improved Public Toilets	Community Members Proposed User Fees for Improved Public Toilets						Willingness to Pay for Improved Sanitation System for	
	%	(Ghp)	%	Ghp0.00	Ghp50.00	Ghp75.00	GH¢1.00	GH¢1.50	GH¢2.00	Household Toilet	Public Toilet User Fee above Present Max. Fees
Edina Essaman	96.50%	20	15.60%	-	80%	20.00%	-	-	-	Yes	Yes
Dego	91.90%	20	53.50%	-	59.60%	10.50%	15.80%	-	14.00%	Yes	Yes
Twifo Hemang	93.50%	30 and 50	39.10%	-	85.70%	2.90%	5.70%	2.90%	2.90%	Yes	No
Adesu	97.30%	20 to 50	33.00%	-	82.90%	4.90%	7.30%	2.40%	2.40%	Yes	No
Tikobo No.2	89.10%	20 to 50	96.10%	4.00%	94.70%	1.30%	-	-	-	Yes	No
Sefwi Asawinso	98.90%	30	80.00%	-	91.60%	7.40%	-	-	1.10%	Yes	Yes
Akateng	96.60%	20 to 50	72.20%	-	67.20%	10.90%	9.20%	1.70%	10.90%	Yes	No
New Abirem	86.80%	20 to 50	39.50%	-	72.00%	12.00%	8.80%	0.80%	6.40%	Yes	No
Donkorkrom	92.30%	30	77.40%	-	77.70%	6.40%	7.70%	-	8.70%	Yes	Yes
Kpedze	97.20%	20 to 50	45.80%	-	64.20%	3.80%	7.50%	-	24.50%	Yes	No
Sibi Hill Top	95.20%	-	9.70%	-	80.00%	20.00%	-	-	-	Yes	³
Dzodze	95.60%	10 to 20	48.5%	-	86.90%	4.00%	6.10%	-	3.00%	Yes	Yes
Average				0.3%	78.5%	8.7%	5.7%	0.7%	6.2%		

³ No public toilet currently in use

Table 3.4: Ability to Pay for Improved Sanitation Services

Community	Dominant Economic Activity	Monthly Income Range (GH¢)						Ability to Pay for Improved Household Toilet (Capital Cost)	Share of Population Willing to take a Loan Facility for Pre-Financing of Household Toilet
		<100	100-200	>200-300	>300-400	>400-500	>500		%
Adesu	Farming (29.0%)	28.8%	14.7%	16.9%	13.6%	7.9%	18.1%	No	44.40%
Tikobo No.2	Trading (31.2%)	12.4%	22.1%	44.1%	15.2%	5.9%	0.3%	No	66.80%
Sefwi Asawinso	Farming (34.0%)	10.9%	19.3%	11.5%	28.1%	25.2%	5.0%	No	55.70%
Edina Essaman	Farming (43.2%)	10.3%	15.3%	17.7%	20.7%	16.3%	19.7%	No	44.60%
Dego	Farming (77.7%)	8.9%	18.9%	29.5%	11.6	12.2%	18.9%	No	97.40%
Twifo Hemang	Farming (62.3%)	39.2%	26.9%	8.5%	12.7%	8.5%	4.2%	No	89.40%
Akateng	Trading (33.0%)	18.9%	16.5%	16.0%	17.0%	12.3%	19.3%	No	79.90%
New Abirem	Farming (33.4%)	14.0%	38.1%	19.9%	7.8%	10.4%	9.8%	No	65.90%
Donkorkrom	Farming (35.9%)	27.2%	26.1%	15.4%	7.0%	17.3%	7.0%	No	83.80%
Kpedze	Farming (29.2%)	36.3%	29.1%	10.5%	5.9%	5.9%	12.3%	No	57.70%
Sibi Hill Top	Farming (93.5%)	34.0%	20.2%	10.8%	7.7%	20.6%	6.7%	No	61.90%
Dzodze	Farming (33.2%)	29.1%	18.9%	9.0%	9.0%	13.1%	20.9%	No	49.10%

4 ENVIRONMENTAL ISSUES

4.1 The Acceptability of Re-Use of Faecal Sludge Products

The application or re-use of sanitation/faecal sludge by-products in Ghana is more prominent in urban and peri-urban areas. This is as a result of the magnitude of the problem of improper disposal of faecal sludge in these areas. Most urban centres in the country are currently experiencing difficulty in properly managing the increasing volumes of faecal sludge generated by the rapidly growing population in these areas.

In assessing the acceptability of re-use of faecal sludge products the following questions were asked as part of the household survey:

- Are you aware of the safety and benefits in the application of treated sludge by-products?
- Would you use treated faecal sludge for pit humus to improve your farm or garden yield?
- Would you buy/eat any farm produce where treated faecal sludge was used as organic manure?
- Would you buy/eat any farm produce where treated wastewater/effluent is used in watering of crops?
- Would you buy/eat fish grown in treated effluent of wastewater or from ponds in which treated faecal sludge was used in fertilizing the pond?

Table 4.1 below presents the responses to the above questions.

Table 4.1: Acceptability of Re-use/Application of Faecal Sludge By-Products

	Western Region			Central Region			Eastern Region			Volta Region		
Question	Adesu	Tikobo No.2	Sefwi Asawinso	Edina Essaman	Dago	Hemang	Akateng	New Abirem	Donkorkrom	Kpedze	Sibi Hill Top	Dzodze
Are you aware of the safety and benefits in the application of treated sludge by-products												
Yes	56.5	27.0	60.8	50.0	36.0	62.0	42.0	29.8	44.8	63.0	6.3	74.8
No	43.5	73.0	39.2	50.0	64.0	38.0	58.0	70.2	55.2	37.0	93.7	25.2
Would you use treated faecal sludge or pit humus to improve your farm or garden yield??												
Yes	90.6	42.5	96.3	49.8	48.1	90.0	82.8	72.2	82.6	83.3	71.4	80.4
No	9.4	57.5	3.7	50.2	52.0	10.0	17.2	27.8	17.4	16.7	28.6	19.6
Would you buy/eat any farm produce where treated faecal sludge was used as organic manure?												
Yes	93.2	42.8	96.1	64.0	50.2	91.1	86.0	79.5	84.5	87.2	89.4	81.8
No	6.8	57.2	3.9	36.0	49.8	8.9	14.0	20.5	15.5	12.8	10.6	18.2
Would you buy/eat any farm produce where treated wastewater/effluent is used in watering of crops?												
Yes	77.0	42.1	69.3	68.5	48.5	90.7	85.6	78.7	83.8	88.0	86.8	82.1
No	23.0	57.9	30.7	31.5	51.5	9.3	14.4	21.3	16.3	12.0	13.2	17.9
Would you buy/eat fish grown in treated effluent of wastewater or from ponds in which treated faecal sludge was used in fertilizing the pond?												
Yes	76.7	42.6	96.0	62.1	50.8	89.1	77.7	82.1	83.8	86.0	86.2	81.6
No	23.3	57.4	4.0	37.9	49.2	10.9	22.3	17.9	16.2	14.0	13.8	18.4

Awareness of the safety and benefits in the application of treated faecal sludge by-products varied across communities. Sibi Hill Top had only 6.3% of the respondents indicating their awareness of the safety and benefits in the use of treated faecal sludge/human excreta products and treated wastewater/effluent. The very low level of awareness substantiates the earlier mentioned fact that the high prevalence of open-defecation in the study communities (e.g. Sibi Hill Top) is not related to any belief or perception. Beliefs like ‘open-defecation in the bushes/farms helps in fertilizing/enriching soil for good crop yields’ have been identified in some other communities to influence the practice of open-defecation. Low levels of awareness on the use of faecal sludge/sanitation by-products are also observed in Tikobo No.2 (73.0 %), Dago (64.0%) and New Abirem (70.2%). A public education on the safety in the use of these by-products is likely to positively influence uptake in the absence of any socio-cultural beliefs/perceptions which often times are the main barriers to the re-use/application of faecal sludge by products.

A high level of awareness is however seen in the large towns with Donkorkrom having the least of 44.8%, in this category.

As a follow-up question, respondents who indicated having knowledge on the safety and benefits of re-use/application of treated faecal sludge/sanitation by-products were asked to give same examples. Table 4.2 below presents the examples given and their frequency in the various communities.

Table 4.2: Frequency of Examples of Re-use/Application of Treated Faecal Sludge By-Products

Indicated examples of re-use/application of Faecal Sludge by-products	Biogas Generation (for cooking, lighting, Electricity, etc.)	Used as Organic Manure/Soil Conditioner	Treated Wastewater used in Irrigation/watering of crops	Biogas Generation and Use as Organic Manure/Soil Conditioner	Fertilization of fish ponds/feeding of fish with Treated Faecal Sludge	Biogas Generation, Use as Organic Manure/Soil Conditioner and Fertilization of Ponds
Community						
Adesu	10.4%	67.2%	1.5%	20.9%		
Tikobo No.2	0.0%	93.5%			4.3%	2.2%
Sefwi Asawinso	0.0%	100.0%				
Edina Essaman	3.1%	58.3%		38.5%		
Dago	5.7%	92.9%		1.4%		
Hemang	9.5%	55.4%		35.1%		
Akateng	12.7%	57.1%		30.2%		
New Abirem	27.0%	30.2%	23.8%	15.9%	3.2%	
Donkorkrom	12.8%	82.4%		4.8%		
Kpedze	18.9%	42.4%		38.6%		
Sibi Hill Top		100.0%				
Dzodze	13.1%	49.0%	0.4%	36.7%	0.8%	
Average	9.4%	69.0%	2.1%	18.5%	0.7%	0.2%

With the exception of Tikobo No.2, Edina Essaman and Dago, over 70% of the respondents in the remaining communities indicated their willingness to use treated faecal sludge/pit humus to improve their farm yields (refer to Table 4.1 above).

From the results indicated in Table 4.1 above, there is a general willingness to eat/use farm produce in which treated faecal sludge may have been used as organic manure or treated wastewater used for irrigating farmlands; as well as eat fish fed on treated faecal matter or fish from ponds “fertilised” with treated faecal matter. Some education is however needed in Tikobo No. 2 and Dago communities since the results indicate about half of the respondents are not willing to eat/use anything related to faecal sludge. The main reason cited by these respondents was related to health safety.

4.2 Environmental Assessment of the Existing Faecal Sludge Management System

The primary objective of an excreta disposal facility or system is to ensure the safe disposal of human excreta in terms of human health and environmental safeguard. The main facility types used in all the communities (i.e. WC connected to septic tank, KVIP, VIP and Traditional pit latrines) are on-site disposal systems-where human excreta is stored and partially or fully treated at the point of generation. The KVIP, VIP and pit latrines are dry systems. The main environmental concern with such on-site facilities often has to do with how the fully or partially treated excreta/faecal sludge, is disposed of without any adverse effect on the environment. However, the premises of most public toilets, based on the above mentioned technologies visited had foul smell. The faecal sludge disposal methods identified were common to all the study communities. Table 4.3 below shows the current disposal practices identified while Table 4.4 presents the related community specific environmental risks. Figure 4.1 to 4.2 also show the ‘Shit-Flow Diagram’ for the various communities.

Table 4.3: Faecal Sludge Disposal Methods

Toilet Type/Technology	Mode of Faecal/Sludge Disposal
WC connected to septic tank	Septic tanks (for both public and households) when full are emptied by private/public desludging service providers- using vacuum suction trucks within or outside the community. The collected faecal sludge is crudely disposed of at a designated (open field) site outskirts of the community without prior treatment or transported out of the community for disposal.
KVIP	Public KVIPs ⁴ are deslugged by private/public service providers and disposed of in a similar way as the WC facilities. Household KVIP are mostly manually emptied and disposed at a place deemed convenient. The collected sludge is sometimes buried and covered with soil
VIP	Faecal sludge is manually emptied by private (individual) service providers and either buried or disposed at a place deemed convenient.
Traditional Pit	Pits covered and new ones dug

⁴ The alternating pit mechanism in the use of most public KVIPs is often not properly adhered to. As a result of the large populations that rely on the public KVIPs, the pits get quickly filled up and have to be deslugged to allow for continuous usage. There is therefore no “gestation” or rest period for decomposition of pit contents into humus.

Table 4.4: Environmental Threats Associated with FSM in the Study Communities

Community	Related Environmental Threats
Adesu	<ul style="list-style-type: none"> • Mechanically desludged faecal sludge is crudely (without any prior treatment) disposed of at a designated wetland outskirts of the community. Likely wash-off of faecal sludge as part of surface run-off into nearby stream polluting it. • Disposal of faecal sludge from mostly household VIPs into open field/bush poses a potential health and environmental threat since the faeces is often not fully treated/decomposed as with KVIP in which when properly used, the faecal sludge decomposes during the fallow period (at least 1 year) resulting in the formation of hygienically and environmentally safe pit humus. • Faecal sludge from other surrounding villages is also disposed of at the designated site.
Tikobo No.2	<ul style="list-style-type: none"> • Mechanically desludged faecal sludge is crudely (without any prior treatment) disposed of at unknown/dispersed sites (mostly bushes) outside the community and therefore does not pose any immediate health and environmental threat to the community. It however still remains a significant threat to the communities close to the dispersed/unknown disposal sites.
Sefwi Asawinso	<ul style="list-style-type: none"> • Mechanically desludged faecal sludge is crudely (without any prior treatment) disposed of at unknown/dispersed sites (mostly bushes) outside the community and therefore does not pose any immediate health and environmental threat to the community. It however still remains a significant threat to the communities close to the dispersed/unknown disposal sites.
Edina Essaman	<ul style="list-style-type: none"> • Faecal sludge from the public toilets and individuals households is disposed of at dispersed disposal sites (bush) outside the community by private operators without prior treatment posing an environmental and health threat. The Edina Essaman Biomethanation and Sewage Treatment Plant which used to serve the community although was a pilot project, is currently not operating.
Dago	<ul style="list-style-type: none"> • Faecal sludge from the public toilets and individuals households is disposed of at dispersed disposal sites (bush) outside the community without prior treatment posing an environmental and health threat to the communities that may be located close to the site. • Manual emptying of household VIP and KVIP at places deemed convenient (often nearby bush) degrades the environment. Being a coastal town, the sludge is likely to be washed-off into the sea.
Hemang	<ul style="list-style-type: none"> • Faecal sludge from the public toilets and individuals households is disposed of at a designated disposal site (bush) outskirts of the community without prior treatment posing an environmental and health threat. The Hemang Municipal Assembly is also engaged in the desludging services. • Manual emptying of household VIP at places deemed convenient (often nearby bush) poses an environmental threat.
Akateng	<ul style="list-style-type: none"> • Faecal sludge from the public toilets and individuals households is disposed of at dispersed disposal sites (bush) outside the community without prior treatment posing an environmental and health threat. The 6-seater public KVIP close to the market area is however emptied manually in pits dug close by. This poses an environmental and health threat. The manually emptied faecal sludge still poses a threat to human health and environmental since the excreta is not given enough time to fully decompose into the environmental and hygienically pitting humus per the facility design.
New Abirem	<ul style="list-style-type: none"> • Crude disposal of faecal sludge from the public toilets and individuals households

Community	Related Environmental Threats
	at dispersed disposal sites (bush) outside the community. Potential health and environmental threat to communities which may be situated close to the disposal sites.
Donkorkrom	<ul style="list-style-type: none"> Faecal sludge from household facilities (WC and VIP) and the only functional public toilet is collected and disposed of at outside the community without prior treatment by private desludging service providers. Potential environmental and health threat to communities close to the disposal site. About a third of the households manually desludge KVIP and VIP toilets and bury them in pits dug at places deemed convenient. Environmentally safe if pits dug are well covered.
Kpedze	<ul style="list-style-type: none"> Faecal sludge from both public and household facilities (WC, KVIP and VIP) is collected by private desludging service providers and transported to a designated disposal site in Ho Municipal (35km away). No immediate environmental threat to the community.
Sibi Hill Top	<ul style="list-style-type: none"> Household VIP toilets manually dug out and disposed of into nearby bush (places deemed convenient when full). The major environmental and health threat in the community is the very high prevalence of open-defecation in the community. 95.8% of the population openly defecate in nearby bush
Dzodze	<ul style="list-style-type: none"> Faecal sludge from public and household facilities disposed of at a designated site (a wetland) outskirts of the community.



Plate 4.1: Faecal sludge disposed of into wetland at Dzodze without prior treatment

Although by design KVIPs are supposed to produce pit humus as a final output/ product after digestion/decomposition of the human excreta, this is often not the case for public KVIP toilets. The pits get quickly filled due to the often high attendance rates and hence little or no time to allow a filled pit to fully decompose into environmentally and healthily digested sludge. In some cases both alternating pits are used at the same time defeating its design purpose.

From table 4.4, it is evident that the final disposal practices of faecal sludge from the public facilities and households (especially those using WCs) in most of the communities, poses a major environmental and public health threat.

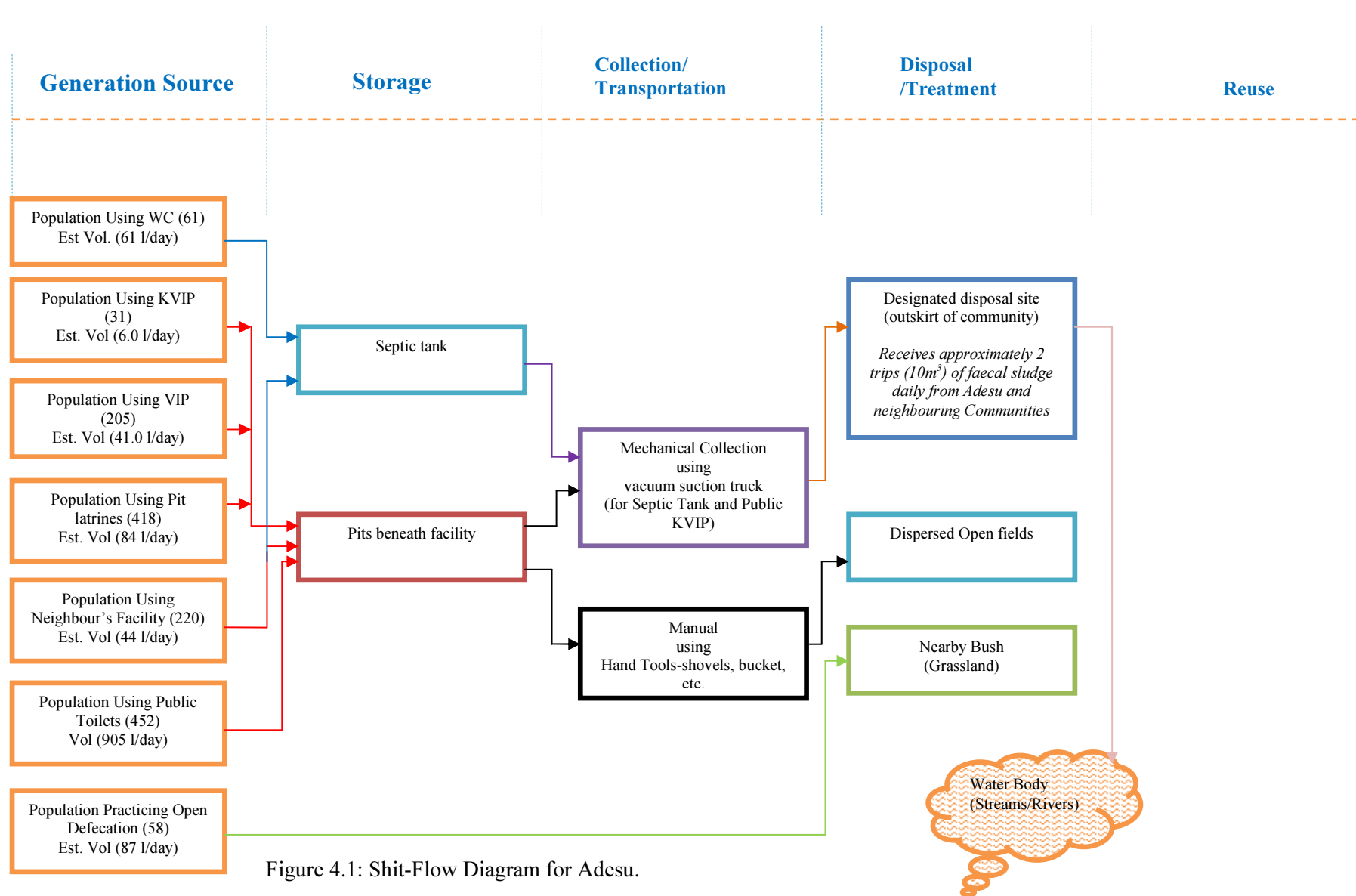


Figure 4.1: Shit-Flow Diagram for Adesu.

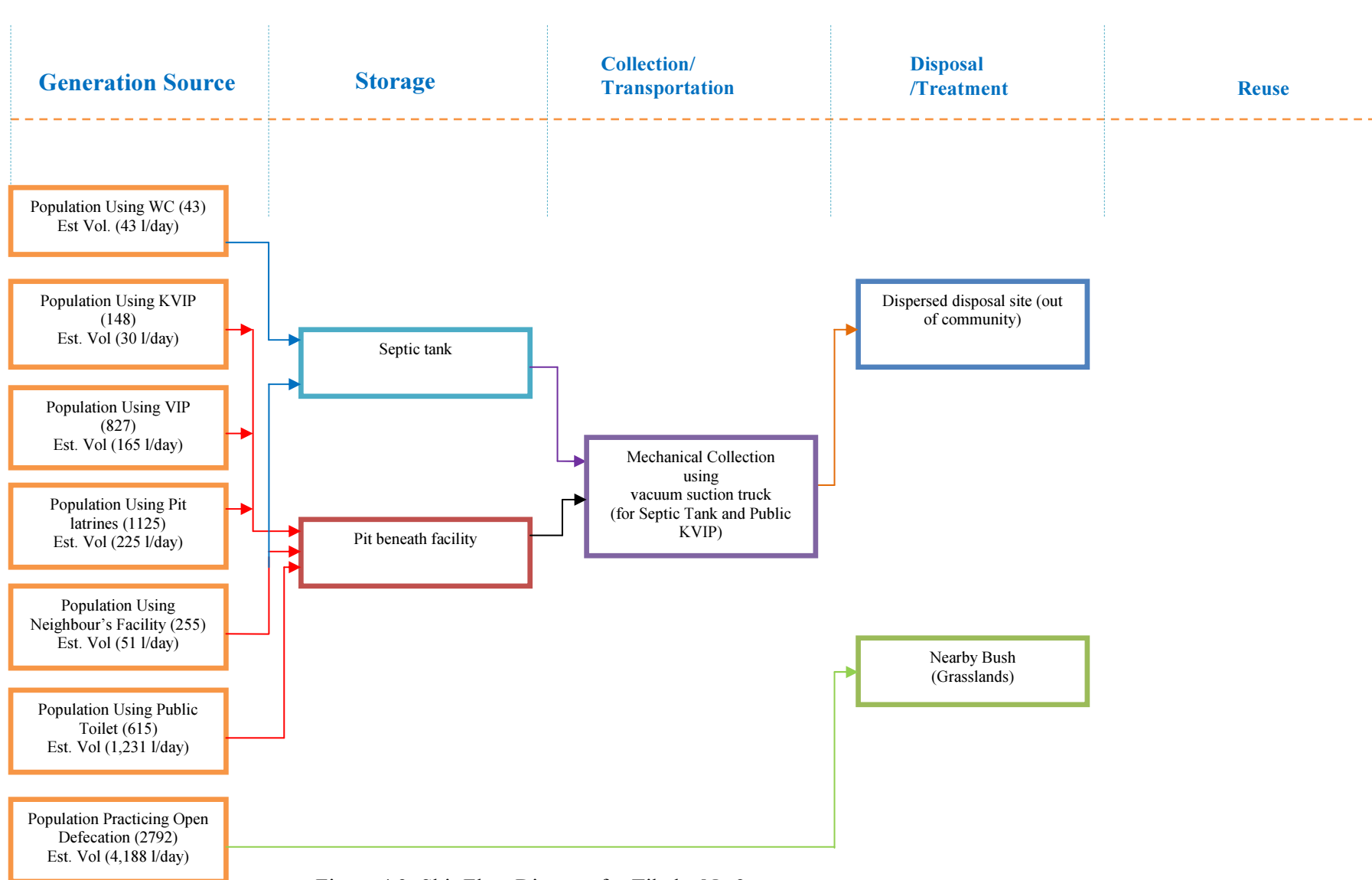


Figure 4.2: Shit-Flow Diagram for Tikobo No.2

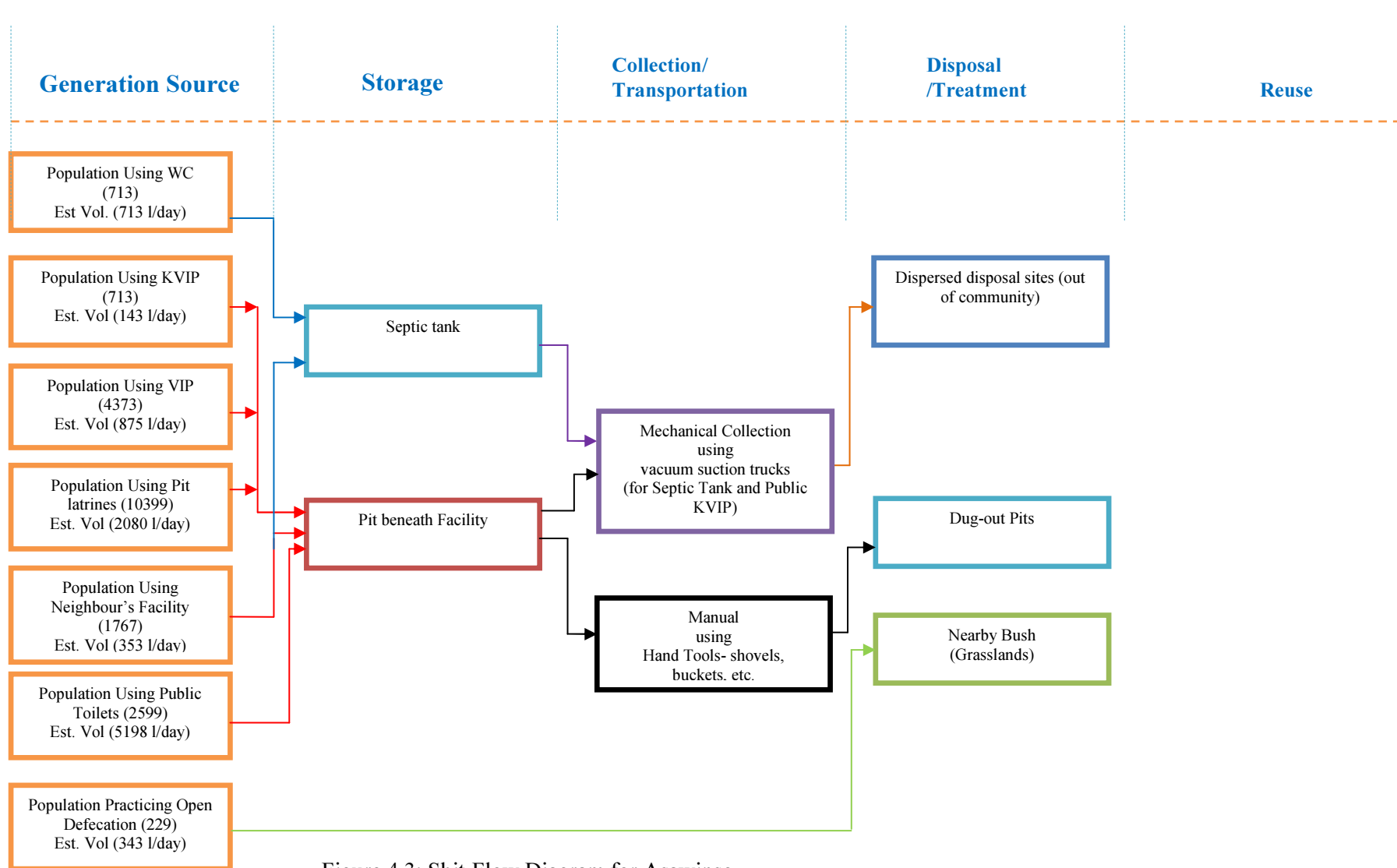


Figure 4.3: Shit-Flow Diagram for Asawinso

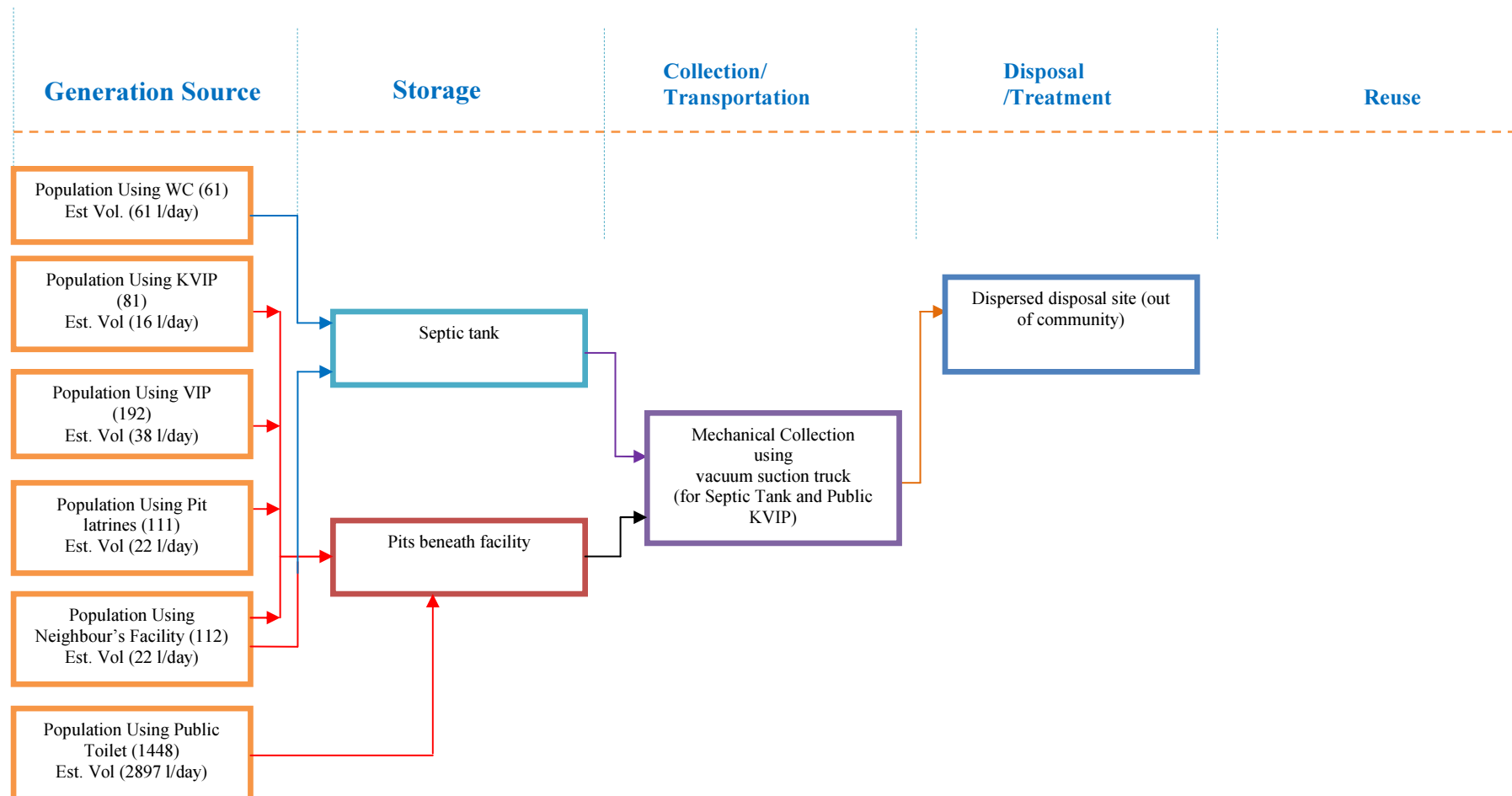


Figure 4.4: Shit-Flow Diagram for Edina Essaman.

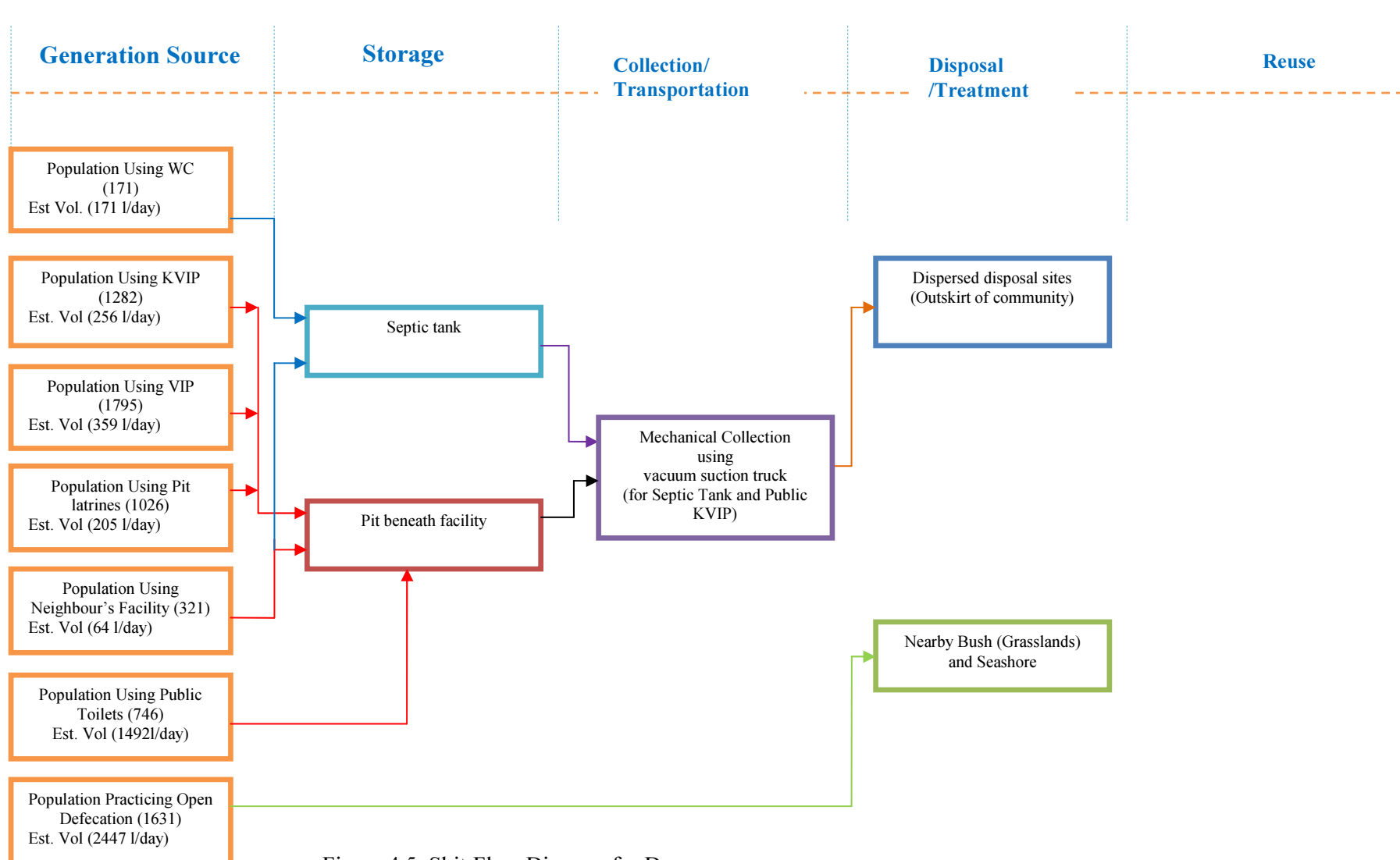


Figure 4.5: Shit-Flow Diagram for Dago

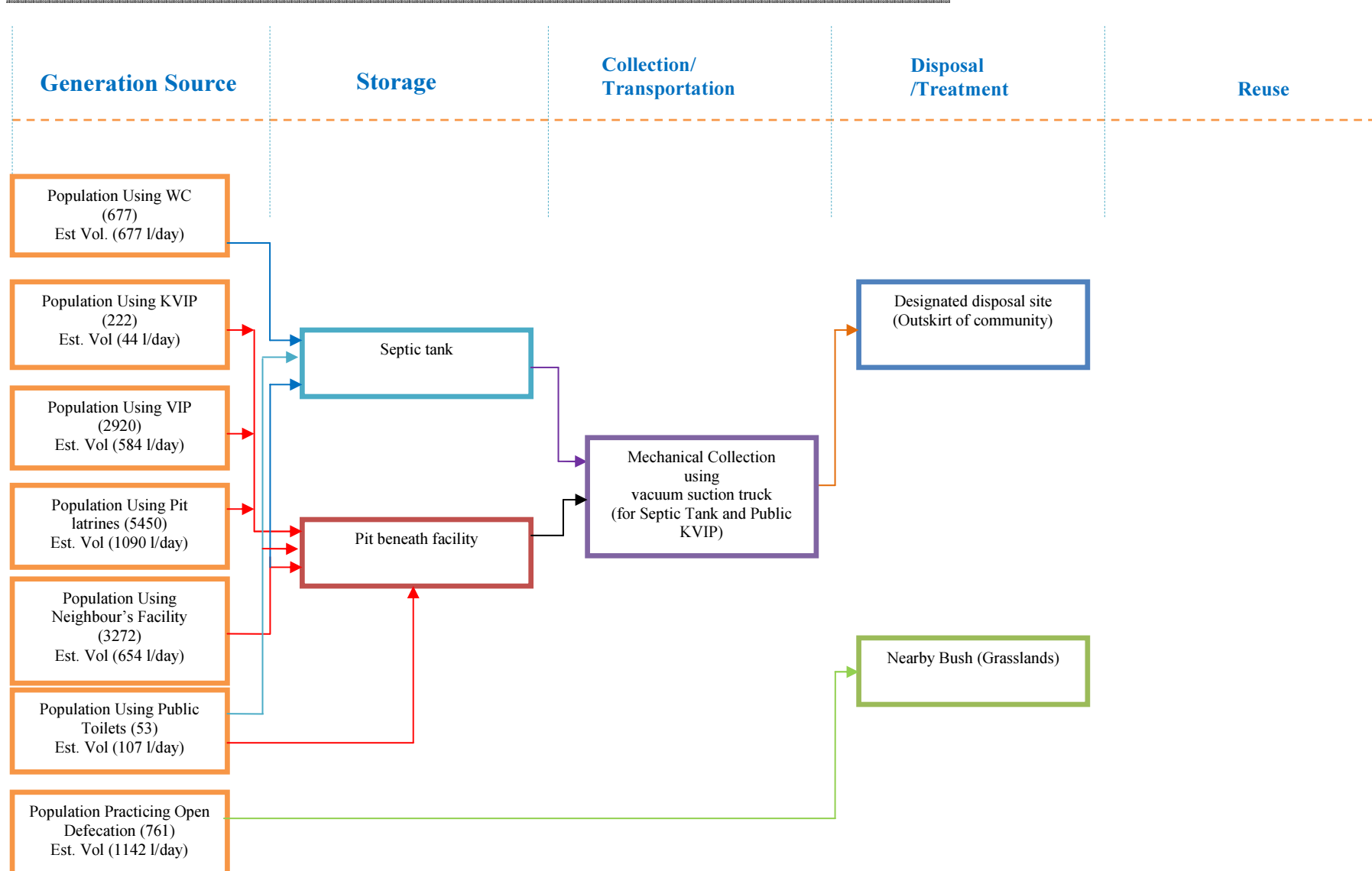


Figure 4.6: Shit-Flow Diagram for Hemang

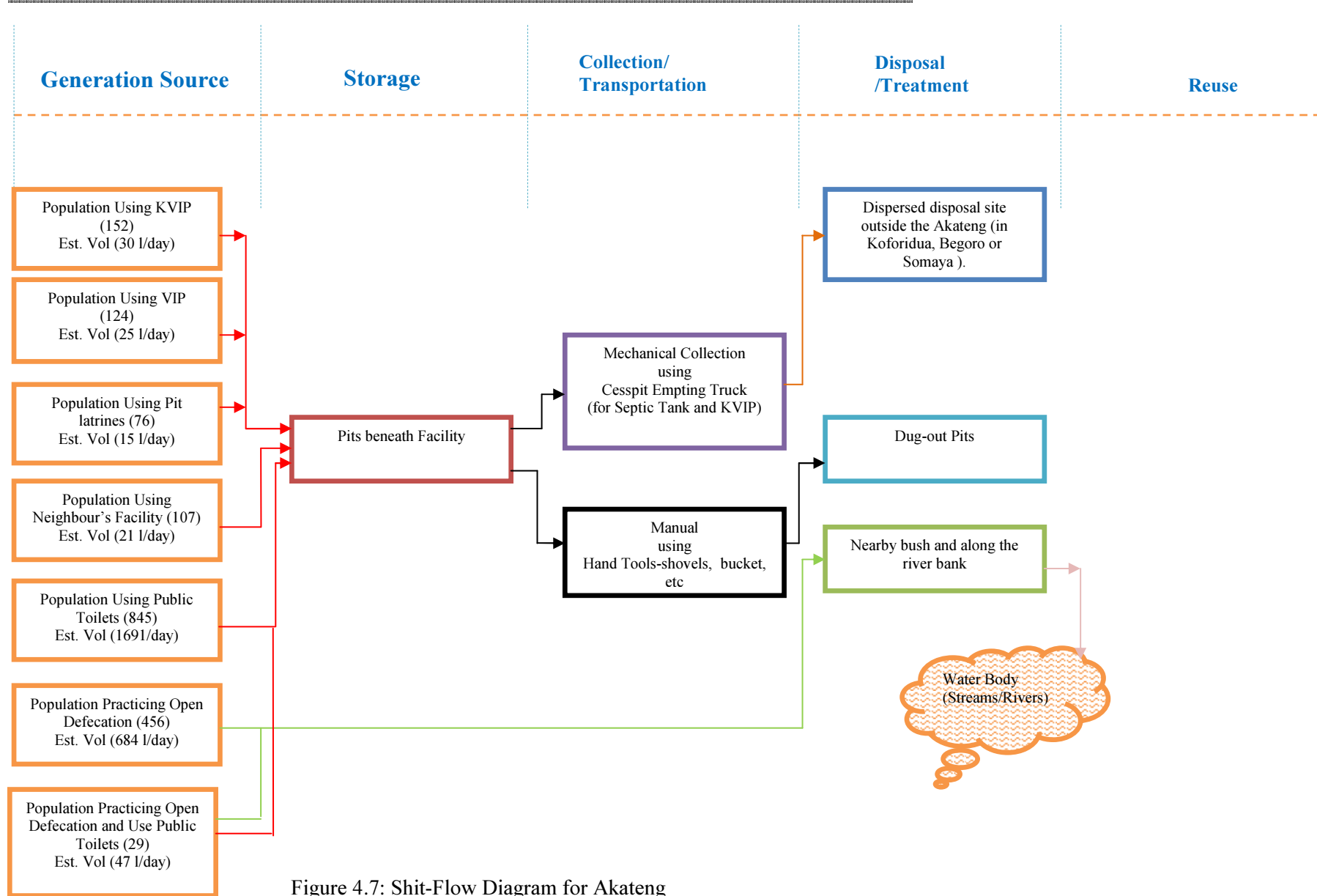


Figure 4.7: Shit-Flow Diagram for Akateng

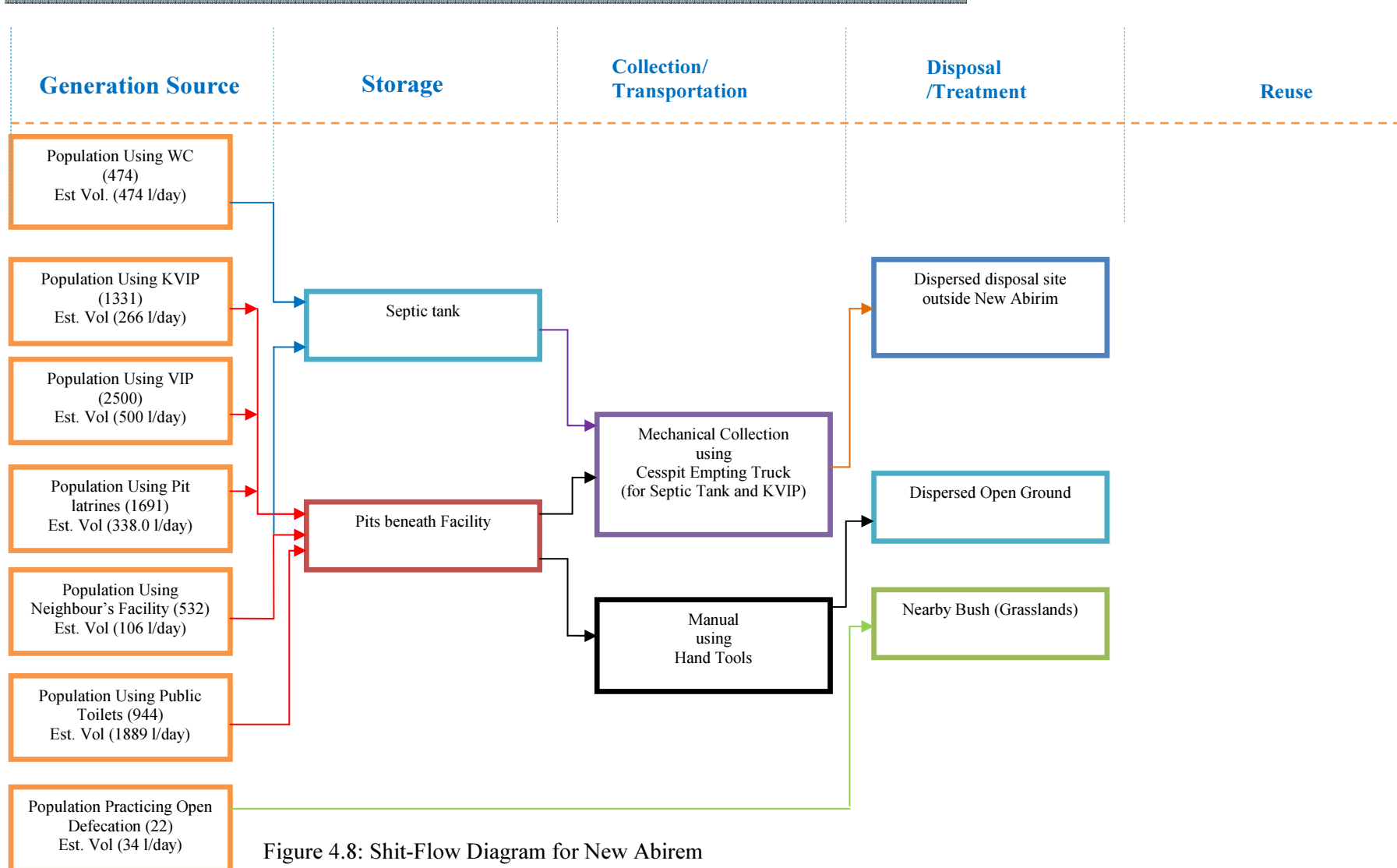


Figure 4.8: Shit-Flow Diagram for New Abirem

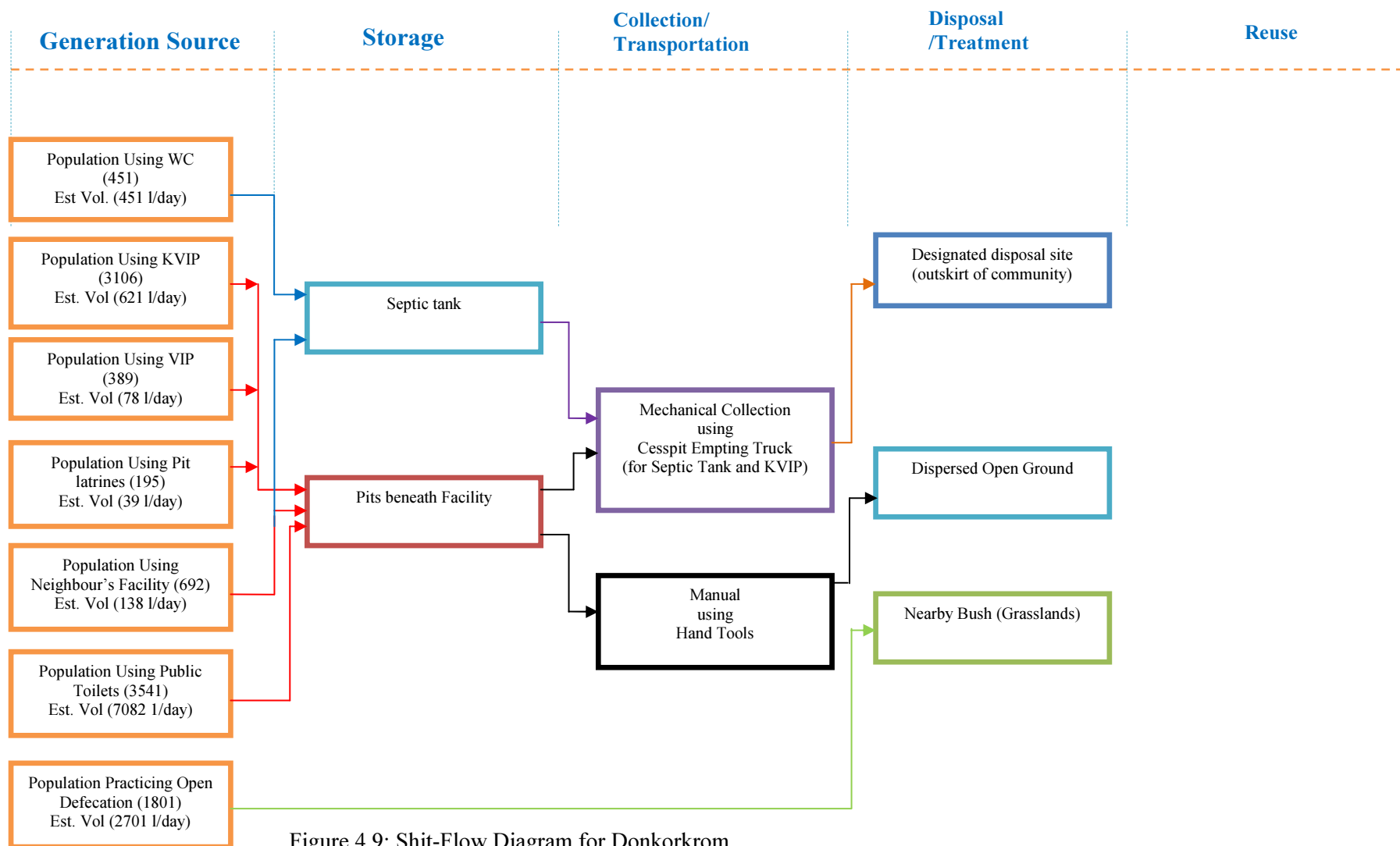


Figure 4.9: Shit-Flow Diagram for Donkorkrom

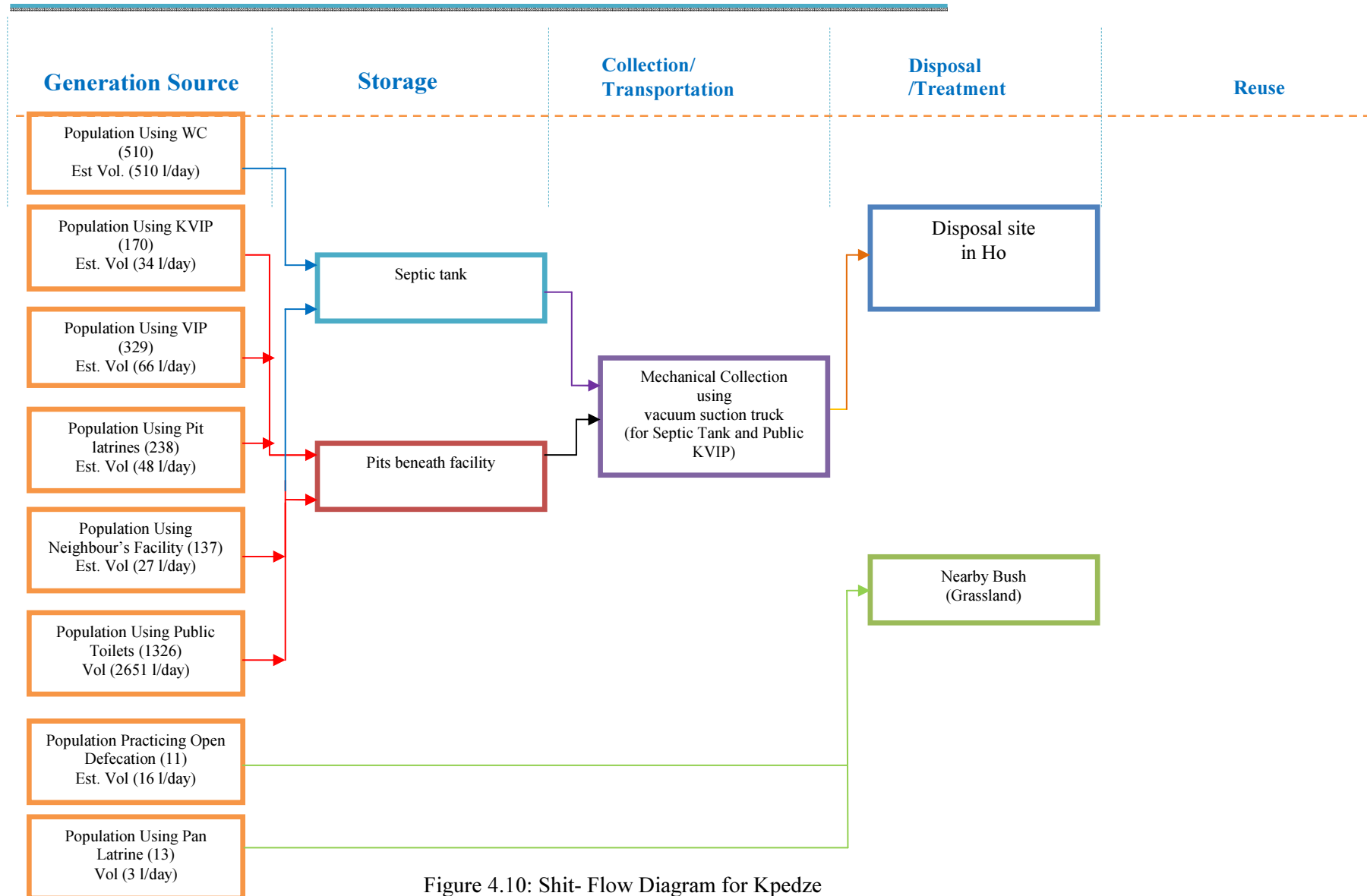


Figure 4.10: Shit- Flow Diagram for Kpedze

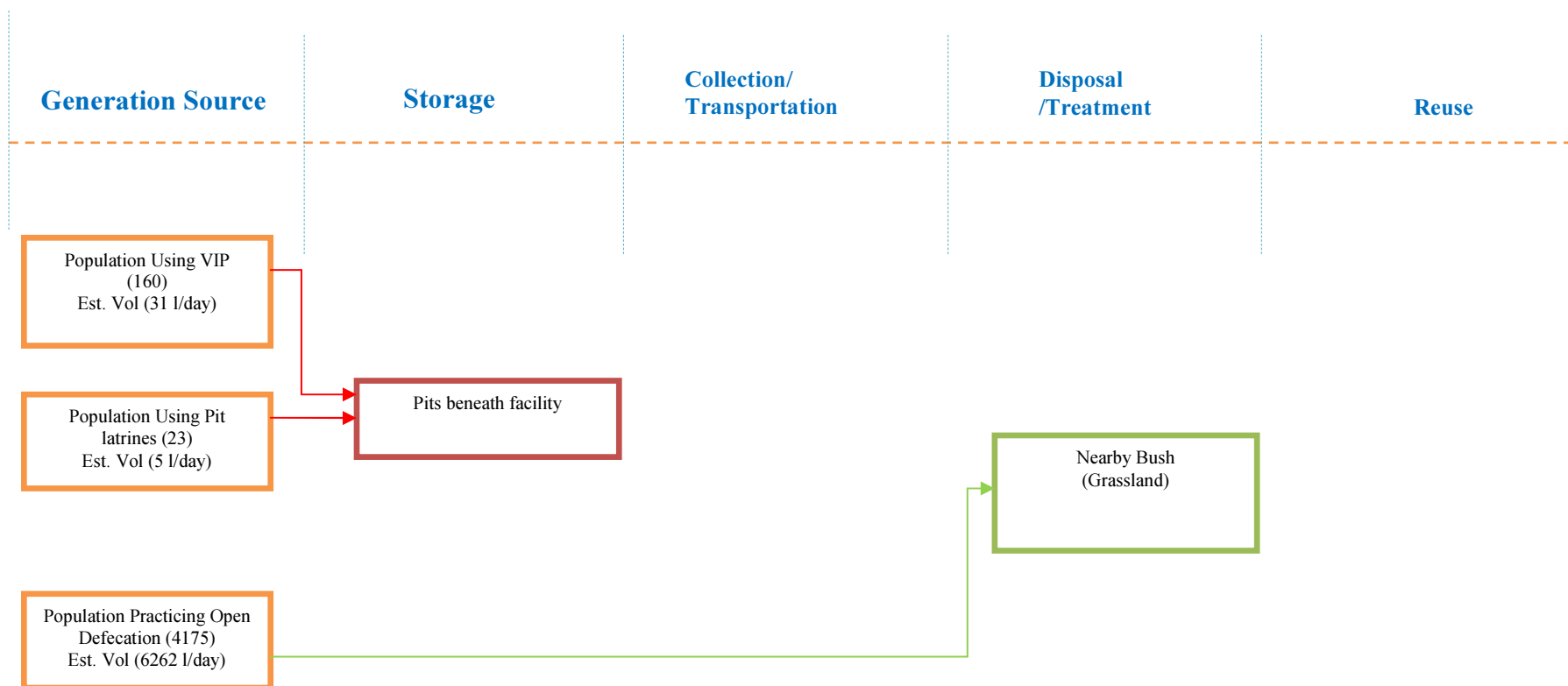


Figure 4.11: Shit-Flow Diagram for Sibi Hill Top

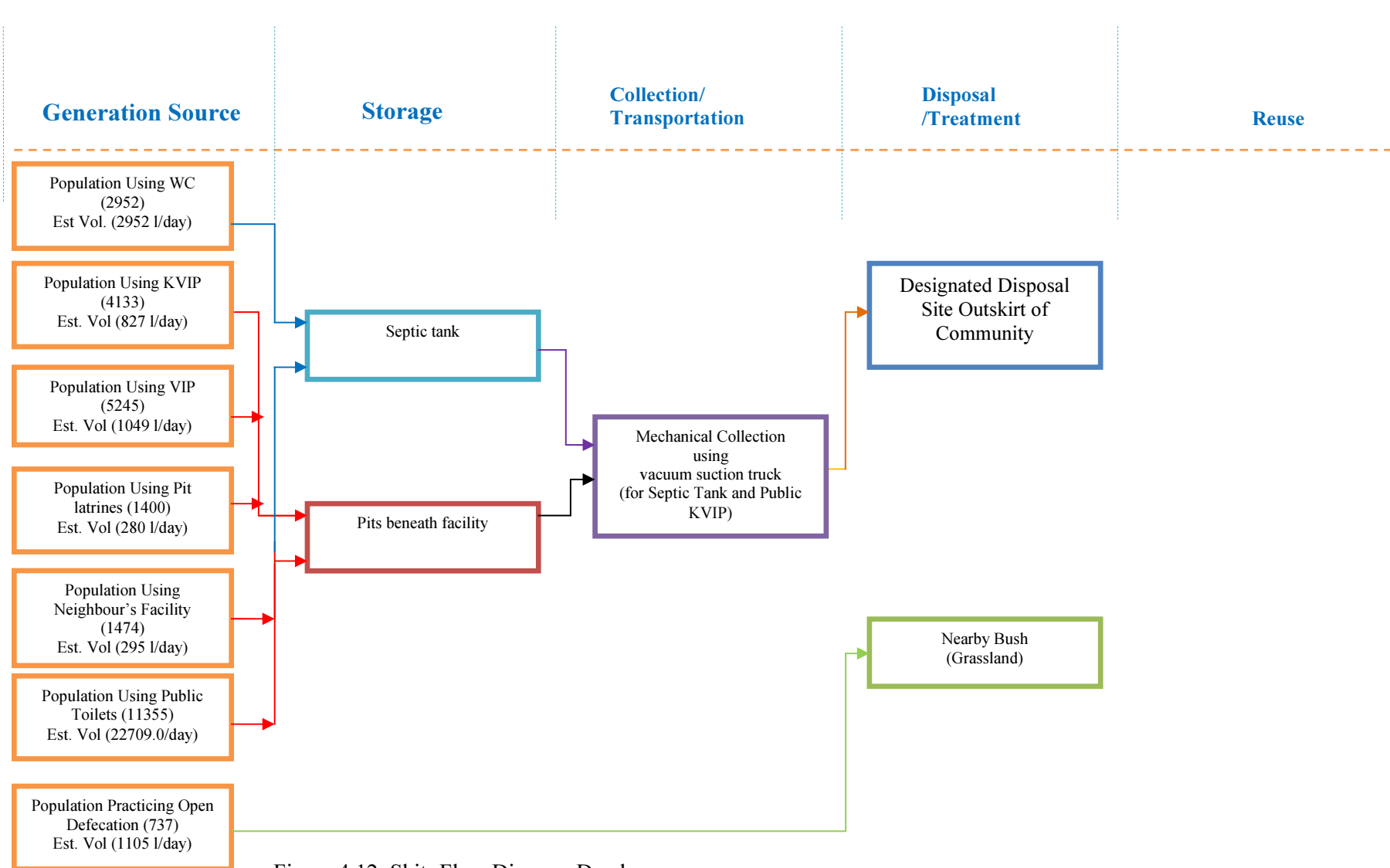


Figure 4.12: Shit- Flow Diagram Dzodze

4.3 Safety of Existing Faecal Sludge Collection and Transport Systems

The faecal sludge collection and transport methods identified were common to most of communities. Table 4.5 below presents the faecal sludge collection and transport methods identified and the associated environmental health and safety risks.

Table 4.5: Environmental Health Risk Associated with Existing Faecal Sludge Collection and Transport Mechanisms

Facility	Mode of Collection and Transport	Environmental/Health Risk
Household VIP, KVIP-dry latrines, Public KVIP ⁵	<p><i>Manual Desludging:</i></p> <ul style="list-style-type: none"> • Pit emptied manually using equipment such as; ✓ diggers/pick-axe or hoes for excavating hardened excreta/faecal sludge (common to dry pit latrines) ✓ shovels for removing the faecal sludge and putting it into containers ✓ buckets for collecting the faecal sludge out of the pits ✓ drums- sludge collected in emptied into drums • Some service providers (often individuals or gangs of 2-3 people) as part of personal safety and health measures put on personal protective equipment (PPE) including gloves, nose masks and safety boots • Small carts, wheel barrows or trucks are used to transport drums containing the sludge to the disposal site (often less 0.5km away from collection point) • Where pits have been dug nearby, the individual carry the sludge the disposal site 	<ul style="list-style-type: none"> • Spilling of faecal sludge within the house and on streets leading to disposal site is common and poses a major health risk to the household and also to the general public (pedestrians) • Increased exposure of the individual(s) to direct contact with highly pathogenic faecal sludge especially for individuals without who provide the service without any PPE • Bad odour nuisance
Public facilities (KVIP, WC, aqua privy) and a few household WC toilets	<p><i>Mechanical Desludging:</i></p> <ul style="list-style-type: none"> • The pit/septic tanks are emptied by vacuum suction trucks or tankers equipped with a pump and a storage tank (see plate 4.2 below) • The pump is connected to a hose, which is lowered down into a septic tank or pit, and the sludge is pumped up into the tank • Storage capacity of the vacuum suction trucks ranged from 6m³ to 15m³. • Generally, the storage capacity of a vacuum tanker ranges between 4 and 6 m³ • Interview with some of the public KVIP toilet operators revealed that, in cases where the faecal sludge become so hardened or dried-up, some water was introduced into the pits to make into slurry for easy suction/collection. • Service provider team mostly consist of the truck driver and 1-2 attendants/assistants • Some providers come with PPE • Vacuum suction trucks transport the collected sludge over very long distances from the collection point as most the service providers are outside the communities. 	<ul style="list-style-type: none"> • Spillage of faecal sludge at the collection site and along the access roads due to hose leakages (mostly at joints) and weak valves • Little contact exposure to direct contact with faecal sludge hence minimal health risk • Odour nuisance

⁵ Isolated case in Akateng- 6 Seater KVIP manually dug and disposed-off in pits dug nearby.



Plate 4.2: Cesspit Emptier (vacuum suction) truck owned by the Twifo Hemang Lower Denkyira District Assembly.

4.4 Safety of Existing Treatment/Re-use Options

With the exception of Edina Essaman where there is a Biothemanation and Sewage Treatment Plant for treatment faecal sludge and production organic manure and biogas as by-products, no existing case of treatment/re-use of faecal sludge was identified in the study communities. The safety of the treatment option as well as the products could however not be determined as the plant is currently not operational.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

For all the study communities, existing socio-cultural beliefs or norms were assessed to have little or no influence on the attitude and practices of residents with regard to sanitation facility use and services. For example, no taboo was identified to influence the practice of open defecation and the choice of household facilities. Key factors identified to influence the practice of open-defecation are the inability to afford household toilets, lack of public toilet facilities, unhygienic/deplorable state of public facilities and distant location of public toilets from residences. The choice of household technology type was mainly identified to be a function of the household's ability to afford the facility type.

The high reliance on public toilets in most of the communities is also attributable to the fact that most households are unable to afford their own facilities. Almost all the households preferred to have their own facilities and are willing to take loan facilities to finance the construction of the household facilities.

As practiced in most parts of the country, sharing of household facilities by multiple households was observed in all communities although rates varied considerably. The practice may be attributed to the prevalent compound housing system in Ghana. Gender equality in terms of use of sanitation facilities was observed in all communities although the females are mostly responsible for keeping the facility tidy. Paper was the identified to the common and most prevalent material for anal cleansing and often burnt. Its prevalence is attributed to it being much cheaper as compared to toilet roll.

In most of the communities, household latrines (mainly KVIPs and VIPs) are manually desludged by individuals or gangs. In most cases the activities of these individuals poses a significant health threat to they themselves as well as their clients. This is because the equipment/tools (e.g. buckets, shovels, ropes, pick-axe, etc.) and process used in desludging exposes them to direct contact with the highly pathogenic sludge. There is often spillage of faecal sludge within the compound or desludging site. The partly decomposed sludge is either buried or disposed of in nearby bushes or open-spaces. Whereas the burial may be environmentally and hygienically safe if done properly, disposal into nearby bushes or open spaces poses significant health and environmental threat. Pit latrines are simply covered with soil when full.

With regard to desludging of public toilets and few household WC toilets, the services of cesspit emptying (vacuum suction) trucks are engaged. With the exception of large communities (Dzodze, Twifo Hemang and New Abirem), private cesspit operators come from larger towns outside the community significantly influencing the fees charged and also their availability when their services are needed. The practice of disposing-off untreated faecal sludge into the open-bush and wetlands (either designated or dispersed) is common to most of the study communities. The practice poses a major health and environmental threat to residences or communities close to the disposal sites since the untreated sludge is mostly to be washed into nearby waterbodies during downpours polluting the waterbodies. The designated sites also present good breeding grounds for disease causing vectors such as houseflies.

Although mandated to monitor and regulate the activities of the private service providers, the District Environmental Health and Sanitation Department with oversight responsibility of the communities have been unable to play this role effectively. This is in part, due to the fact that most

of the district assemblies have not provided facilities for faecal sludge treatment/disposal as stipulated by the national policy.

The high level of awareness on the re-use/application of treated faecal sludge by-products and willingness to use the by-products in all the study communities is an indication of a potentially viable market for faecal sludge by-products and an opportunity to close the ‘nutrient-loop’.

5.2 Recommendations

Hygiene Promotion

In order to reduce or eliminate the practice of open-defecation and also promote good hygiene practices (e.g. regular washing of hands after use of toilets) in the study communities especially those with high prevalence of open-defecation, a Behavioral Change Campaign (BCC) is recommended. Both NESSAP and Rural Sanitation Model and Strategy (RSMS) propose Community-Led Total Sanitation Strategy (CLTS) as the recommended strategy for Hygiene Promotion and Behavioral Change Campaigns.

Household Toilet Promotion

The preference by majority of households in the study communities for their own household facilities and also their willingness to take loan facilities to pre-finance the construction of household facilities creates a conducive environment for Micro-Finance Institutions (MFIs) and business opportunities for the youth.

It is recommended that existing artisans (e.g. masons) should be engaged and trained in the construction and marketing of sanitation facilities. Whereas CLTS will create demand for household facilities, the ‘Sanitation Marketing (SanMark) strategy as recommended in the Rural Sanitation Model and Strategy (RSMS) should be adopted and implemented in the study communities as part of sanitation promotion.

Although the national policy recommends that, the choice of a particular household sanitation type shall be a prerogative of the household, it is recommended that households are well educated on the available sanitation facility types to help them make informed choices.

Disposal/Treatment of Faecal Sludge

With most of the study districts having no faecal sludge disposal/treatment facilities, it is recommended, in line with the national policy, that the district assemblies provide treatment/disposal facilities. Opportunities for Public-Private-Partnership should be explored by the district assemblies in providing these facilities.

In selecting the household sanitation facility and faecal sludge treatment/disposal options, the following safeguards should be considered in order to ensure sustainability in use and operation:

- Least environmental impact of facility (during construction and operational phases) and its by-products
- Impact on human health
- Social acceptability of the options (for household toilets)
- Financial (capital and operational costs, minimum cost residents to afford, etc)
- Potential for re-use of by-product to close the nutrient loop

Although the burial of faecal sludge from household VIP and KVIP and the covering of pit latrines may be environmentally acceptable if properly done, planting of trees or crops at the burial or latrine sites is recommended.

Reuse of Treated Faecal Sludge

Despite most of the households indicating their awareness of the safety in reuse/application of treated faecal sludge by-products, no case of reuse was identified in most of the study communities. As an initial step, households that rely KVIPs should be educated on its operation and maintenance as well as safe re-use/application of the humus soil produced after bio-decomposition.