



REPUBLIC OF GHANA

DANGME WEST DISTRICT ASSEMBLY

**TOWN ENVIRONMENTAL SANITATION DEVELOPMENT
PLAN
- ASUTSUARE -**

FEBRUARY, 2008.

EXECUTIVE SUMMARY

This Asutsuare Town Environmental Sanitation Development Plan (TESDP) provides a non-technical summary of the various remedial actions required to improve on observed poor environmental services.

This plan derives much of its information and data, and therefore its focus from the preliminary results of the Environmental Sanitation Assessment and Audit sponsored by the Community Water and Sanitation Agency –Greater Accra Region (CWSA-GAR) for four towns in three districts of the Greater Accra Region – Oyibi (Tema Municipal Assembly, TMA), Abokobi (Ga East District Assembly, GEDA), Dawa and Asutsuare (Dangme West District Assembly, DWDA).

The TESDP closely follows the generic format prepared for use by cities under the Urban Environmental Sanitation Project series (UESP-I and UESP-II), aspects of the Guidelines for Preparing Waste Management Plans published by the Environmental Protection Agency (EPA) and MLGRDE, and the Operational Manual for Planning, Budgeting, Monitoring and Evaluation, for Water and Environmental Sanitation prepared by the National Development Planning Council (NDPC) and the Community Water and Sanitation Agency (CWSA).

Following basic tenets of strategic planning, this initial TESD planning is a dynamic process and the plan will evolve as experience is gained and the required accompanying institutional structures improve.

This plan covers five main components of an integrated scheme for improving (i) storm-water drainage and sullage conveyance, (ii) excreta management, (iii) refuse collection and transport, (iv) wetland management and (v) management support for implementation.

The sub-projects to be considered under the first package of this plan form part of the iterative process of developing TESDP for Asutsuare. All sub-projects will be implemented by the DWDA through its relevant departments and units- the District Planning Coordinating Unit (DPCU and District Water and Sanitation Team, DWST) as well as the Environmental Health and Management Department (EHMD), and District Works Department (DWD) and the Asutsuare Area Council (AAC).

The pilot under Excreta Management will be facilitated by CWSA-GAR and the drainage scheme will be facilitated by DWDA with support from the Hydrological Services Department (HSD) with inputs from the Department of Feeder Roads (DFR).

The District-Based Water and Sanitation (DBWS) component of the GoG/Danida-Water and Sanitation Sector Support Programme Phase 2 (WSSPSII) will finance the pilot of Excreta Management up to US\$ 6,000 as part of CWSA-GAR's on-going work (see details in accompanying Summary of Sub-Projects and Financing Plan).

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1 INTRODUCTION

The purpose of this strategic Town Environmental Sanitation Development Plan (TESDP) for Asutsuare, which covers the period 2008-2015, is to set out a strategy for improving Asutsuare's environmental conditions by gradually and incrementally reducing the poor environmental burden due to indiscriminate disposal and littering of refuse. The focus and direction of this plan is influenced by the results of the environmental sanitation assessment and audit carried out in Asutsuare as part of preparatory activities. The TESDP is strategic in nature in the sense that it covers all the key categories of environmental sanitation and identifies the facilities needed to provide comprehensive services under each component; describes the implementation and financing arrangements for each component; and sets priorities for achieving the overall goal of the relevant sector policy, as well as plan and/or programmes of the Dangme West District Assembly (DWDA).

To implement this strategy the DWDA will (i) establish/strengthen its Environmental Health and Management Department, (ii) systematically improve data gathering for development planning; (iii) promote provision of services by the private sector, where viable; and (iv) secure financing to improve drainage and watershed management, refuse management as well as for a mix of household, and public facilities to serve the town. In all the interventions sustainable operations and management will be important considerations, particularly, ensuring payment for recurrent costs of services.

The plan differs from a traditional District Water and Sanitation Plan (DWSP) or a master plan in that it (i) tailors recommended technical options to each type of housing area in the town, (ii) considers user preferences and willingness-to-pay, (iii) uses a planning horizon of 10-15 years, while emphasizing actions that can be taken now, and (iv) breaks the overall plan into project components that can be implemented independently but which together provide the whole range of environmental sanitation services to achieve the overall aim of health improvement.

For this very first attempt at preparing a TESDP for Asutsuare, a planning frame of 2008 – 2015 is employed to be consistent with MDGs.

The intent is to gradually introduce a means of providing integrated interventions and begin to address the issues confronting Ghana's small and medium-large towns that have similar

Box 1.1: Strategic ESDP Elements

- Medium term planning horizon 10 – 15 years
- Strategic focus to meet overall goal of policy, plan or programme
- Focuses on integrated development of interventions
- Defines priority interventions over short term for remedial actions and improving on plan requirements e.g. *start-up years*' (1-3 years) projects, studies and institutional restructuring
- Considers all related sectors under environmental sanitation and requires inter-agency collaboration, coordinating unit or department in DA responsible for environmental sanitation

Box 1.2: DWSP Elements

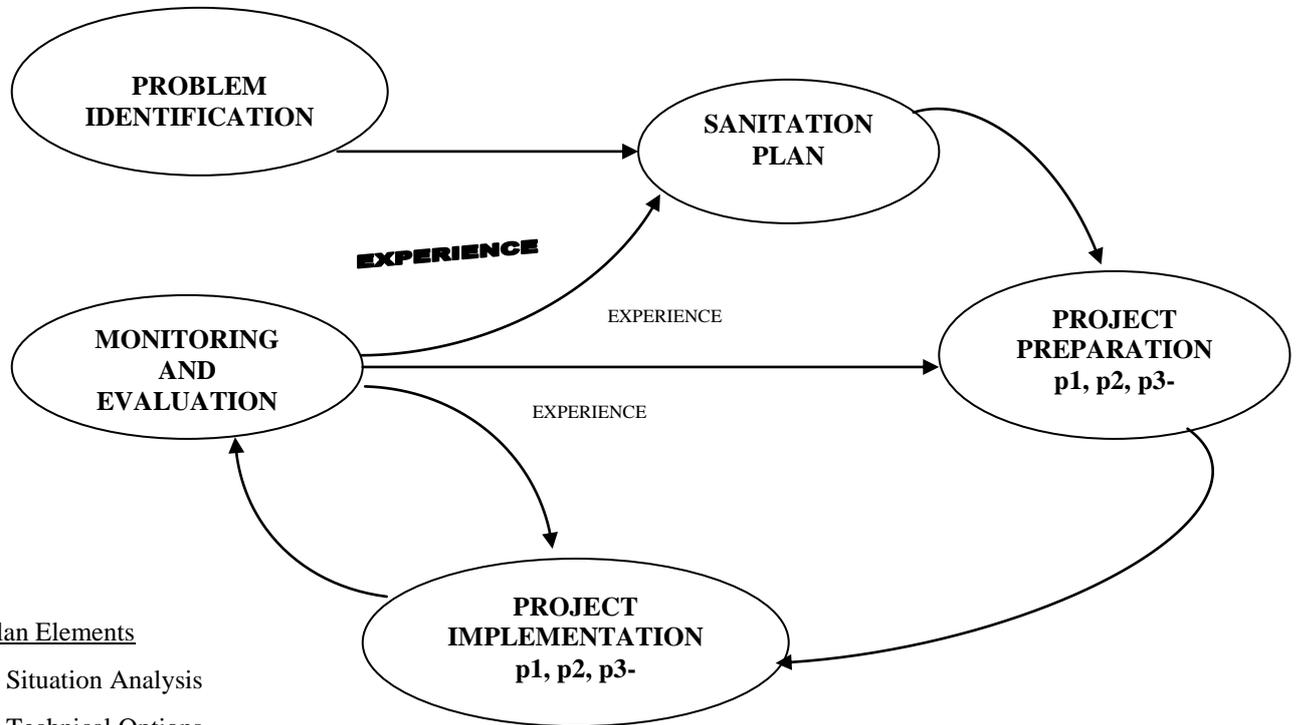
- Short-term planning horizon typically 1-3 years, with annual roll-over delivery
- Focuses on single facility (commodity) e.g. water and related hygiene and sanitation
- Developed/Facilitated by one sector agency to aid project specific outputs e.g. CWSA
- Project based and often end as plan for distribution of facilities based on demand
- Often Relies on project-type implementation for delivery of outputs e.g. DWST

Box 1.1 & 1.2: Comparison between elements of Strategic ESDP and DWSP

challenges as cities but hitherto do not receive adequate attention. The plan endorses the use of a range of proven technologies which address the needs of all segments of the urban population, recognizing resource constraints, and paying due attention to willingness and capacity of users to pay for improved services.

Priorities change with time and strategies will be redefined as experience is gained. Accordingly, the TESDP will be updated regularly with gradually improving data on services and coverage. This iterative process is shown in Figure 1.1.

Figure 1.1 THE STRATEGIC SANITATION PLANNING PROCESS



Plan Elements

- Situation Analysis
- Technical Options
- Financial Options
- Institutional Options
- Implementation Strategy

2 SITUATION ANALYSIS

PROFILE OF ASUTSUARE

2.1 Location

Asutsuare is located about 110km from Accra of the Tema - Akosombo highway and is the sixth largest town by population within the Dangme West District Assembly with a projected current population of about 3,764.

2.2 Institutions and Services

Institutions in Asutsuare include schools, a market, health post, rural bank, police station and post office (not functioning). Commercial activities in the town include retail shops, mini bars, and table-top vendors.

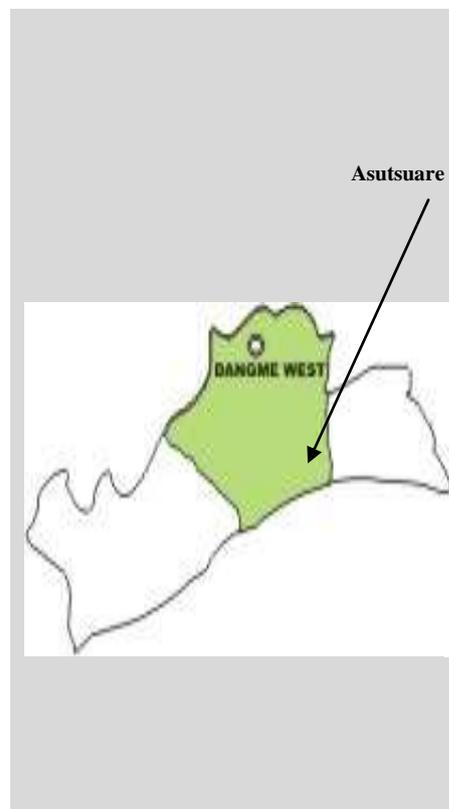


Table 2.1 Population Projection

Town	Growth Rate (%)	2000	2007	2015
Asutsuare	2.1	3,254	3,764	4,444

COMMUNITY PROFILING FORM ASUTSUARE

ENVIRONMENT CATEGORY	DESCRIPTION
WATER SHED MANAGEMENT	<ul style="list-style-type: none"> • Run-off and waste water pollution into Volta River • Improper land use e.g. Swine keeping, farming with pesticides and other chemicals. • Land degradation. e.g. sand and stone winning in Volta River basin. • Indiscriminate defecation and Dumping of solid waste on Volta River banks. • Improper siting of sanitary facilities e.g. pit latrines at the banks of Volta River. • Abandoned and dilapidated irrigation plant at the banks of Volta river • Navigation, fishing, washing and recreational activities (swimming) in Volta River.
WATER SUPPLY	<ul style="list-style-type: none"> • Inadequate pipe borne water supply from kpone water works • 8 standpipes provided in Asutsuare Town under the newly constructed Asutsuare water supply project (Danida Support) • Raw water consumption from Volta river
WASTE WATER DISPOSAL	<ul style="list-style-type: none"> • Improper household waste water management through earth channels which serve as breeding grounds for mosquitoes.
LIQUID WASTE DISPOSAL	<ul style="list-style-type: none"> • One 12 seater W/C public Toilet not commissioned due non-completion of plumbing works to allow flushing. • Two, 12 seater dilapidated public KVIPs. • Few household toilet facilities on dwelling premises. • Wide spread defecation in bush (<i>'free range'</i>)
SOLID WASTE DISPOSAL	<ul style="list-style-type: none"> • Crude dumping at the banks of Volta River (30 metres) and bare ground and around public Toilets behind dwelling premises and in bush etc.
STORM WASTE DISPOSAL	<ul style="list-style-type: none"> • Predominant erosion • Low lying topography and stagnation of runoff water. • Perineal flooding. • Inadequate drainage structures to convey storm water • Existing culverts and roadside drains were constructed with poor gradient hence worsening the flooding situation in the town.
PROMINENT FEATURES	<ul style="list-style-type: none"> • Abandoned Asutsuare sugar factory of which offices have now been turned into Osudoku Secondary Technical School premises • Kpone irrigation project assisting rice farmers • Outlived and abandoned old cemetery in the heart of the town.

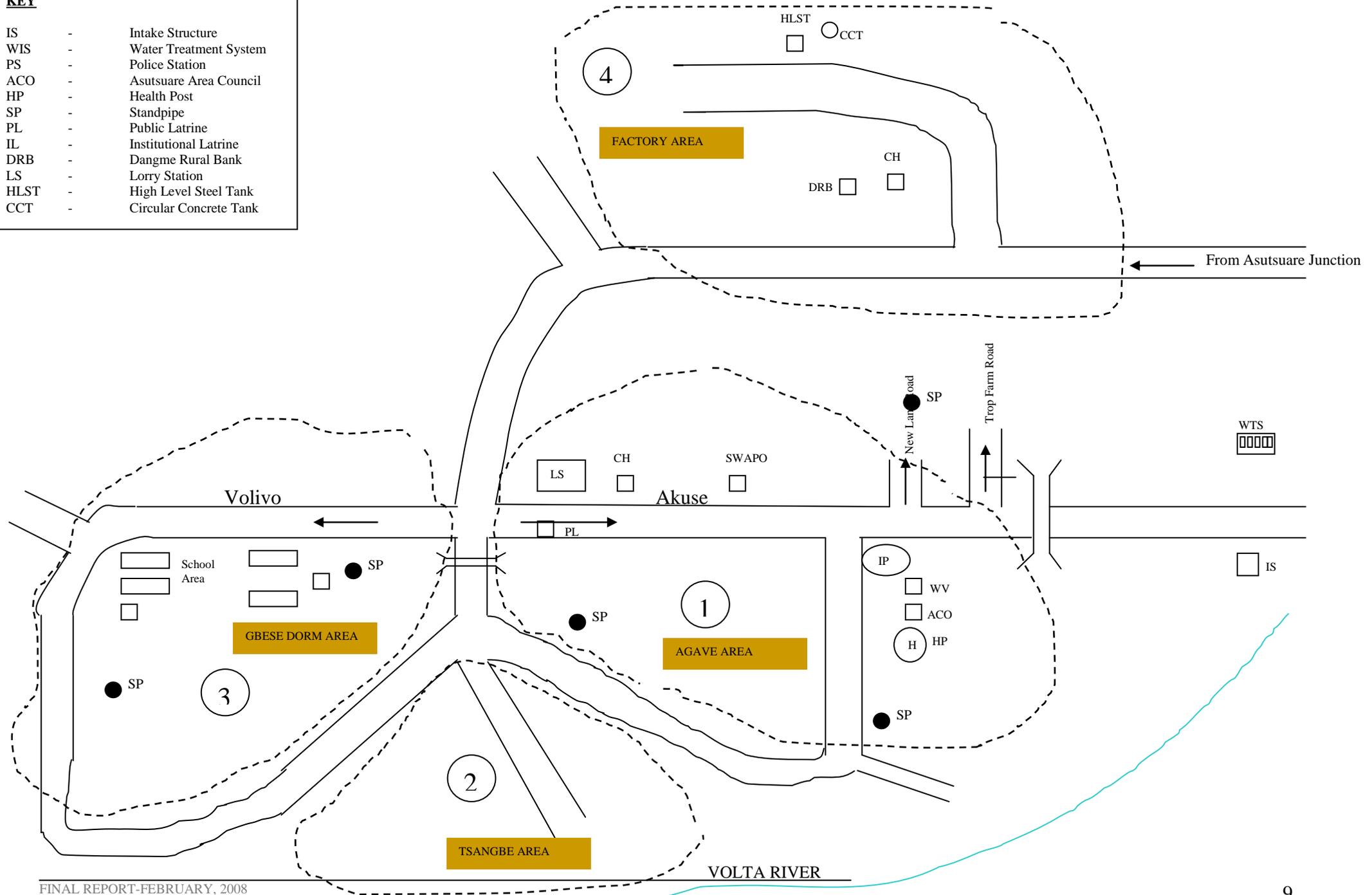
ENVIRONMENTAL SCAN ASUTSUARE COMMUNITY

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Area Council Status • Internally generated funds from rice millers. • Vibrant assembly Member. 	<ul style="list-style-type: none"> • Mass Unemployment due to close-down of Asutsuare sugar factory • Lack of community cohesion. • Poor road network dangerous and weak bridge • Poor lorry park • Low commercial activities (e.g. No market stalls). 	<ul style="list-style-type: none"> • Availability of public facilities and institutions such as police station, health centre, post office, lorry station, rural bank. • Kpong irrigation project • Fish ponds and fishing in Volta river • Connected to the national electricity grid • Osuwem tourist attraction <ul style="list-style-type: none"> (1) traditional/Perpetual water sources which flows all year round (2) Mysterious stone passage (walkway) • Availability of arable land for farming 	<ul style="list-style-type: none"> • High incidence of post harvest losses • High cost of fertilizers and other farming inputs • No government or D/A support for farmers and the youth • Extinction of endangered species and other species of aquatic life, e.g. Oyster due to the construction of the Akuse Dam

LAYOUT OF ASUTSUARE

KEY

- IS - Intake Structure
- WIS - Water Treatment System
- PS - Police Station
- ACO - Asutsuare Area Council
- HP - Health Post
- SP - Standpipe
- PL - Public Latrine
- IL - Institutional Latrine
- DRB - Dangme Rural Bank
- LS - Lorry Station
- HLST - High Level Steel Tank
- CCT - Circular Concrete Tank



3 OVERVIEW OF ENVIRONMENTAL SANITATION

3.1 Stormwater Drainage and Sullage (grey-water) Conveyance

One of the most pressing environmental sanitation problem, according to the elders, opinion leaders and residents of Asutsuare is the need for drainage infrastructure to improve drainage and sullage conveyance in the town. Poor drainage leads to perennial flooding and inundation of premises and causes damage to properties and loss of property. The lack of conveyance of sullage and refuse-choked ditches exposes inhabitants to putrefied and foul smelling wastewater every rainy season.

3.2 Excreta (Faecal liquid waste) Management

From the Environmental Sanitation Assessment and Audit, about 21.3% of residences in Asutsuare have home latrines. 70% percent of inhabitants resort to the bush, 1.8% use facilities of their neighbours and 6.9% use public toilets.

The two Public latrines in Asutsuare are in a deplorable state due to poor maintenance. This situation explains the resorting to defecating in the bush which if not checked will further aggravate the already unhealthy situation.

There is a new 20 seater W/C public toilet which is not in use because of lack of water connection for its proper functioning.

Public Sanitation Facilities: A unique feature of sanitation in Asutsuare, as in other small towns, is the reliance on public latrines, as some 78.7 percent of the population depends on these facilities.

School Sanitation: There a primary school (RC Primary A&B) and a junior secondary schools (RC/DA JSS) in Asutsuare. These schools have been provided with an 8 seater institutional KVIP and a handwashing facility.

3.3 Watershed Management

The lack of drainage and conveyance facilities and a means of effective management of debris and silt from the undulating terrain of Asutsuare mean that all surface runoff, sullage and faeces, leachate from nearby refuse dumps all end up finally in the Volta River. Most residence wash and bath directly in the Volta River.

3.4 Solid Waste Management

Institutional, technical and financial constraints hinder efficient solid waste management in Asutsuare. Uncontrolled



Plate 1: State of one of the existing public latrine.



Plate 2: Latrine built with local materials without a superstructure close to the banks of Volta River



Plate 3: Residence washing and bathing in the Volta River

dumping in gutters, along drainage channels and along the banks of the main wetland traversing the town, and in vacant lots is common. The formal system is based on communal collection using 15m³ refuse containers. Heaps of rice husk from small scale rice mills is dumped on sites abutting wetlands.



Plate 4: Uncontrolled dumping of refuse

3.5 Water Supply

For the purposes of completeness, the status of water supply situation is described here (as captured by the environmental sanitation audit) to provide the outlook of Asutsuare town supplies with expected improvement and the consequent wastewater that will be generated. The town depends on water from the Osudoku Area Water Supply Scheme. Communities and institutions within the supply area of the Osudoku Area Water Supply Scheme include Asutsuare town, KIP staff quarters, Osuwem Lanor and Osuwem Gbese.

Before the completion of this project, Asutsuare was served by GWCL 6 inch diameter pipeline from the Kpong Treatment Plant. The Kpong Irrigation Project (KIP) also constructed some reservoirs and layed new PVC distribution systems, including booster pumps, to supply water supply for their staff quarters. This system also relies on GWCL supply and has never been commissioned because pressure in the GWCL pipeline is not sufficient to fill the storage tank.

The source of raw water for the Osudoku Area Water Supply Scheme is the Volta River. At the intake, there is a submersible pump which pumps water to the treatment plant. The treatment plant consists of an aerator, upflow roughing filter and a clear water tank where treated water is stored and chlorinated before transmission. Two pumps have been installed to pump the treated water to a 400m³ reservoir, constructed by the KIP. Asutsuare town and the KIP area are supplied by gravity from the reservoir.

3.6 Environmental Burdens and Public Health Impact

The indiscriminate littering and disposal of garbage in depressions and wetlands contributes to flooding in low-lying areas of Asutsuare, while the upper areas experiences erosion. During the rainy season, the main drain through the town floods because of siltation. The above situation contributes to the high prevalence of malaria in the town.

4 SERVICES IMPROVEMENT PROGRAMME

4.1 Minimum Service Standards

The overall service goal is the provision of improved environmental sanitation facilities to serve the whole of Asutsuare. To reduce the environmental burden and enhance the quality of life of residents of Asutsuare, the following policies, guidelines and service standards as well as those to be developed by relevant authorities from time to time, will be adhered to:

Notes on Latrine Technology, October 1999, MLGRD

Environmental Assessment Regulations, LI1652, June 1999, EPA

Manual on Health Promotion, December 2001, MLGRD

Management of Environmental Sanitation Services Guidelines, March 2002, MLGRD

Manual on Prosecution, May 2002, MLGRD

Best Practice Environmental Guidelines Series No.1, Ghana Landfill Guidelines, July 2002, EPA/MLGRD

Best Practice Environmental Guidelines Series No.2, Guidelines for the Management of Health Care and Veterinary Waste in Ghana, July 2002, EPA/MLGRD

Best Practice Environmental Guidelines Series No.3, Manual for the Preparation of District Waste Management Plans in Ghana, July 2002, EPA/MLGRD

Manual on Environmental Health Inspections, October 2002, MLGRD

Management of Public Toilets Guidelines, January 2003, MLGRD

Environmental Sanitation Services Monitoring Guidelines, January 2003, MLGRD

Manual for the Operation of Septage Treatment Plants, May 2003, MLGRD

Operational Manual for Planning, Budgeting, Monitoring and Evaluation, Water and Environmental Sanitation, December 2004, NDPC/CWSA

Guidelines for Small Town Systems, 2005, CWSA

4.2 Drainage and Sullage (grey-water) Conveyance Improvement Scheme

In Asutsuare, the priority intervention is the construction of the main drain along the road that leads to Volivo and the correction of the gradient of the already constructed drains in the town.

From field observations one of the critical factors of the poor drainage situation in Asutsuare is the lack of maintenance. There is therefore the need to institute a community-level operation and maintenance management services for storm-water drainage. A limited study of possible remedial actions for improving drainage will be carried out.

4.3 Excreta Management (faecal liquid waste) Improvement Programme

The Town Environmental Sanitation Plan is a comprehensive plan for providing improved household sanitation services to the entire Asutsuare township covering homes, institutions and public facilities

Home Latrine Promotion Programme: house owners in Asutsuare are already making efforts to have their own toilets. Some number of houses within a small enclave come together to dig pits and construct simple pit latrines with local materials as shown in plate 2 above. The progress already made will be assessed so lessons learnt can be developed. Under this programme,

household latrine construction by home-owners will be intensified through marketing by trained latrine artisans. Awareness raising and hygiene education will be supported through the Sub-district Environmental Health Office.

Funds for the training of artisans and the construction of squat slabs will be generated from special sanitation promotion fund to be created by DWDA from DACF and other sources. Other avenues of raising funds such as sanitation surtax on water will be explored. It is essential that the methods used in previous interventions be studied to afford copying for replication.

The enforcement of bye-laws by DWDA, particularly, those concerning the construction of latrines by landlords will be appropriately applied.

School Sanitation and Hygiene Education: as part of this programme an assessment of the SHEP programme will be carried out to find out its effectiveness in schools. The SSHE programme is aimed at improving the conditions and reinforcing proper sanitation and hygiene behaviours and attitudes through use of improved facilities. Based on the assessment of SHEP effectiveness, Teaching and Learning Materials will be provided as part of re-orientation training of SHEP facilitators.

Public and Neighbourhood Facilities Improvement Programme: This programme is aimed at rehabilitating existing but dilapidated facilities and instituting efficient management of the facilities. To start, there is the need for the rehabilitation of the existing Two 20-Units KVIP toilet located in Asutsuare. This will be complemented by the establishment of private management franchises, as already practiced, for sustainable operation and maintenance management.

4.4 Solid Waste Management Improvement Programme

Currently, secondary storage facilities are not available in Asutsuare. To prevent indiscriminate littering and the widespread dumping that compounds the poor drainage situation there is need for provision of communal storage facilities.

The immediate intervention is to evacuate refuse from communal dump sites and identify appropriate sites for secondary facilities (communal containers). Site improvement will be carried out at each of these sites including restoration of wetland pits.

There is need for the siting of a communal disposal facility.

4.5 Improvement of Wetland Management

Most portions of the shallow green areas feeding into wetlands within Asutsuare have been filled with garbage. The effect of implementing the various programmes above will be to improve the ecological property of the wetlands.

4.6 Programme for Institutional and Management Support

The delivery of the various components of the Town Environmental Sanitation Development Plan and their management depends on improving the capacity of the front-line institutions responsible for the services. As a matter of strategy although financing of the various components may come from different sources, each of these sources will contribute to the implementation of a single, comprehensive and integrated capacity development programme anchored around the District Environmental Health and Management Department (EHMD) of DWDA, the District Works Department (DWD) and the Asutsuare Area Council.

The immediate support will be to strengthen and improve the EHMD in DWDA including provision of equipment and refurbishment of offices and the provision of targeted training to its staff.

Relevant staff of DWDA will be given specific training, including the following:

- Training in ESICOME, enhanced enforcement of environmental sanitation bye-laws and prosecution
- Training in Preparation of District Environmental Sanitation Strategies and Action Plans (DESSAPs)
- Health impact profiling and planning for environmental sanitation services
- Training in project management, etc.

PROGRAMME PACKAGES UNDER THE ASUTSUARE ESDP (2008-2015)

Component 1: Drainage Improvement Scheme

- Phase 1: - Desilting of existing drains and culverts within the town.
 - Provision of drain maintenance equipment
 - Construction of strategic secondary drains within the town
 - Promoting the construction of soakaway pits for sullage disposal
- Phase 2: - Construction of main drain along the road that leads to Volivo to improve storm water conveyance.

Component 2: On-site Sanitation Promotion Programme

Home latrines

- User education and enhancement of existing communal self-help mechanisms for promoting and constructing shared facilities.
- Training of artisans and provision of squat-slabs to eligible households.

School Facilities

- Provision of Teaching and Learning Materials (TLMs) for hygiene promotion
- Training of School SHEP facilitators

Public Facilities

- Connection of water to the newly constructed 20 seater WC public toilet.
- Rehabilitation of neighbourhood /public facilities (2 unit 20 Seater KVIP).
- Establishment of private management franchises for operation and maintenance and cost recovery.

Component 3: Solid Waste Management Improvement Programme

- Immediate evacuation of refuse from communal dump sites
- Identify appropriate sites for secondary storage facilities (communal containers) based on housing distribution;
- Provision of communal containers at selected sites;
- Identify and develop final disposal site for Asutsuare (and neighbouring communities)
- Establish improved collection scheme for parts of town (eg. KIP Quarters)

Component 4: Improvement of Wetland Management

- Community education and awareness raising on impact on water source due to washing bathing in the Volta River by residents, and the benefits of improved water scheme (health and environmental sanitation related)
- Tree planting (buffer zone/erosion control along banks)

Component 5: Management Support

- Provision of Office equipment to DEHO-DWDA
- Technical Assistance - including project(s) preparation
- Training
 - o Training in ESICOME, enhanced enforcement of environmental sanitation bye-laws and prosecution
 - o Training in Preparation of District Environmental Sanitation Strategies and Action Plans (DESSAPs)
 - o Health impact profiling and planning for environmental sanitation services
 - o Project Management etc.

5 INSTITUTIONAL ARRANGEMENTS

5.1 Dangme West District Assembly (DWDA):

In line with National Policy, the DWDA will gradually move away from direct provision of environmental sanitation services, and instead will promote active involvement of both communities and the private sector in their delivery. As part of its functions, the DWDA will refine and periodically update the TESDP, mobilise resources to implement it, supervise the design and construction of the facilities, oversee service contracts, and set and enforce regulations on waste discharges.

5.2 District Environmental Health and Management Department

In line with Local Government Act, 1993 (Act 462) and the Environmental Sanitation Policy the DWDA's Environmental Health and Management Department (EHMD) is responsible for Environmental Protection and Standards Enforcement, Food and Water Hygiene, Environmental Health Promotion, and Waste Management. The Liquid Waste section will manage the programmes for households (home latrine promotion), public facilities (neighborhoods, and commercial areas), and schools. And the solid waste section will manage the programme for solid waste improvement, sullage and drainage infrastructure. The responsibilities of the two section managers include planning, community liaison, monitoring and evaluation, and the supervision of service contracts. The environmental protection section will be responsible for improvement of wetland management while the environmental health promotion section handles hygiene education.

The District Planning Coordinating Unit (DPCU) will coordinate and liaise with CWSA, development partners, NGOs other external agencies and facilitate the rolling out of these programmes during the initial period. The District Water and Sanitation Team (DWST) will assist the EHMD with management of the relevant sub-components of the TESDP such as Excreta Management. Ultimately, all works will be managed by the DWD in cooperation with the EHMD.

5.3 Asutsuare Area Council (AAC)

The AAC will be the first-line institution responsible for dealing directly with the community. The functions, as stipulated, in the Establishment Instrument of the DWDA, will include:

Validating data and designs; community mobilization; identification of needs and appraisal of applications concerning latrine promotion activities; validating type of on-plot sanitation technologies and their suitability; soliciting community views and comments on capital and, O&M costs of facilities; responsible for managing franchises and quality of services by operators under guidance of EHMD; validate completion of projects and programmes; managing participatory monitoring and evaluation of programmes and projects.

5.4 Other Ministries, Departments and Agencies (MDAs)

In order to effectively coordinate the implementation of the various components of Asutsuare TESDP, there is need for the involvement of several agencies besides DWDA and CWSA-Greater Accra Region as initiators of this plan. As indicated under Section 5, the sources of financing for implementing the TESDP make this essential. The mandates and facilitation roles of CWSA-GAR, EHSD (MLGRDE), and Department of Feeder Roads, and the central implementation responsibility of DWDA and its departments need to be presented clearly.

6 IMPLEMENTATION PACKAGES

The facilities required to provide immediate interventions are set out in Table 6.1. As the TESDP evolves and more data becomes available the subsequent years interventions shall be defined to cover up to 2015. The facilities under the various components are grouped into financing packages; the first of which would be what CWSA-GAR will fund. The estimated cost of each package is also given in Table 6.3.

In summary, the total cost of the first package for the Asutsuare TESDP is estimated at US\$ 353,376 out of which 66.3% would be for remedial intervention to improve drainage and sillage conveyance, 3.1% for Excreta (liquid waste management) which includes Home Latrine Promotion (1.5%), neighbourhood and public facilities (1.4%), School Sanitation and Hygiene Education (0.2%). Of the remainder 17.8% will be for the Solid Waste Improvement Programme, 1.7% for improvement of wetland and 11.3% is for implementation and management support. It is expected that DWDA will seek financing through its share of DACF and HIPC fund, donor-supported programmes and internally generated funds including household levies.

Table 6.1 Facilities to be provided under the proposed TESDP Financing Packages

Component Description	Total	Package 1	Package 2	Package 3
1. Drainage and Sillage Improvement				
Construction of soakaway pits by houses	350	150	100	100
Construction of primary drain along the Volivo road	1,000	1,000		
Construction of secondary drains	2,000		1,000	1,000
2. Excreta (Liquid Waste) Management				
Home Latrine Promotion				
On-plot sanitation in high/medium density areas (No.)	300	75	125	100
Artisan Training and Support to Sanitation Marketing (No.)	5	2	2	1
School Sanitation and Hygiene Educ.				
Provision of TLMs for Hygiene Promotion (No.)	20	10	10	
Training of SHEP Facilitors (No.)	5	2	2	1
Public Facilities Programme				
Neighbourhood latrines (No.)				
Water connection and final works to newly constructed 20 seater WC public toilet	1	1		
Rehabilitate/Construct 1 unit 20 seater KVIP	1		1	
Commercial Area latrines (No.)				
Replace existing facilities				
Construct new facilities				
3. Solid Waste Management				
Develop improved collection programme (No. of Houses)	200	75	75	50
Provide Communal Containers (No.)	8	4	2	2
Upgrade Selected sites (No.)	4	2	1	1
4. Improvement of Wetland Management				
Putting in place mechanisms to stop further pollution to the Volta River				

6.1 DA-level Programme Management

While the TESDP is dedicated to Asutsuare Township there is need for close administration by the DWDA. For the timely updating and further improvement of the TESDP, the DWDA shall allocate program management resources to enable its departments bare the extra costs of managing the various components of the plan including hiring of specialist input for carrying out issue-specific studies, appraisals and timely technical and financial auditing. The DWDA will

ensure that institutional strengthening and capacity building is harmonized and comprehensive to allow specific programmes buy into it. An amount of \$40,000 is earmarked for the start-up phase (2008) of implementing the TESDP.

Table 6.2 DA-Level Management Support (US ‘000)

<u>Institutional Strengthening</u>	Total	2008	2009	2010
Project Mgt Support (incl. Consultants)	25	10	10	5
Development/Review of TESDP	30	5	15	10
Capacity Devp. & Training	25	5	10	10
Community Management Framework	15	5	5	5
Refurbishment of EHMD and Sub-District Office	20	10	5	5
Provision of Office Equipment (EHMD/MTC)	15	5	5	5
Total	130	40	50	40

Note: Development/review of TESDP include preparation of drainage plan, developing Community Management Framework (for the AAC) & other studies

Specific Studies: as part of the implementation of the first package of the TESDP, a number of issue-specific studies will be carried out. To respond to the immediate needs of Asutsuare the following studies will be carried out. In addition the status of the various facilities and amenities listed under Annexes A-E will have to be updated regularly by the team responsible for the oversight of the update of the TESDP:

- Artisan Training and Sanitation Marketing Programme
- Community-level management of Tricycle Refuse collection service and disposal site management
- On-going and planned programmes of the Water Resources Commission (WRC) on the Volta Basin (and also as part of initiatives under the Volta River Basin Authority).

To ensure proper ownership of the TESDP by DWDA, the Asutsuare Area Council and traditional authorities, it is essential that the gathering of data and update of the TESDP be done in a participatory manner involving all key stakeholders.

Table 6.3 Costs for Components Studies, Sub-projects, and Institutional Strengthening for Comprehensive Environmental Sanitation Coverage – Year 2015 (US\$ 752,597million)

Component Description	Total (US\$)	Package 1		Package 2	Package 3
		\$	%		
1. Drainage and Sullage Improvement					
Construction of soakaway pits by houses	19,126	8,197	2.3	5,464	5,464
Construction of primary drain along the Volivo road	218,579	218,579	61.9	0	0
Construction of secondary drains	185,792	0	-	92,896	92,896
Provision of Maintenance Equipment	22,500	7,500	2.1	7,500	7,500
<i>Sub-total</i>	445,997	234,276	66.3	105,861	105,861
2. Excreta (Liquid Waste) Management					
Home Latrine Promotion					
On-plot sanitation in high/medium density areas	15,000	3,750	1.1	6,250	5,000
Artisan Training and Support to Sanitation Marketing	3,250	1,300	0.4	1,300	650
School Sanitation and Hygiene Educ.					
Provision of TLMs	600	300	0.1	300	-
Training of SHEP Facilitators	1,250	500	0.1	500	250
Public Facilities Programme					
Neighbourhood latrines					
Water connection and final works to newly constructed 20 seater WC public toilet	5,000	5,000	1.4	-	-
Rehabilitate/Construct 1 unit 20 seater KVIP	22,500	-	-	22,500	-
Commercial Area latrines					
Replace existing facilities	-	-	-	-	-
Construct new facilities	-	-	-	-	-
<i>Sub-total</i>	47,600	10,850	3.1	30,850	5,900
3. Solid Waste Management					
Develop improved collection programme	6,000	2,250	0.6	2,250	1,500
Provide Communal Containers	20,000	10,000	2.8	5,000	5,000
Upgrade Selected sites	100,000	50,000	14.1	25,000	25,000
<i>Sub-total</i>	126,000	62,250	17.6	32,250	31,500
4. Improvement of Wetland Management					
Putting in place mechanisms to stop further pollution to the Volta River	6,000	6,000	1.7	-	-
<i>Sub-total</i>	6,000	6,000	1.7		
5. DA-Management Support					
	130,000	40,000		50,000	40,000
<i>Sub-total</i>	130,000	40,000	11.3	50,000	40,000
	755,597	353,376	100	218,961	183,261

6.2 DBWSC Financed Sub-Projects

As part of the District-Based Water and Sanitation (DBWS) Component of the second-phase of Danida Water and Sanitation Sector Programme Support (WSSPSII), the CWSA-Greater Accra Region will provide US\$ 6,000 of the first stage implementation over a three year period to cover provision of aspects of home latrine promotion including artisan training. Counterpart funds for this include US\$ 6,000 from the DWDA.

The DBWSC financed sub-projects will be carried out as part of on-going programmes by CWSA-GAR and the actual sub-project items will be finalized with DWDA and actual work commenced during 2008. A separate report “*Summary of Sub-projects and Financing Packages*” presents the proposed items to be financed. The subprojects and activities related to the Excreta Management Component (home, school and public facilities) will be completed by the

DWDA with the assistance of local consultants. CWSA-GAR will facilitate the implementation process following the national procurement guidelines and CWSA's procedures.

6.3 Human Resources Development

The Environmental Health Management Department (EHMD): The EHMD, Asutsuare Area Council and private service operators are at the center of the TESDP. Consequently, it is important that the EHSD, Town councilors (including Assembly-members) and private operators (including artisans) are trained to carry out their responsibilities in implementing town-wide programmes.

Through the implementation of first stage sub-projects under Package 1, staff of EHMD, DPCU (and DWST) and private operators will gain experience in all aspects of managing and implementing the proposed TESDP. Key areas of specialization and resource persons for the component(s) will be identified and linked to DWDA staff (EHMD, DPCU and DWST) responsible, so they can obtain ongoing support from local experts. Key areas of specialisation for which the DWDA departments (with EHMD as the focus) are responsible and for which resource persons are needed include:

- Monitoring, evaluating and refining the TESDP.
- Financial management of the EHMD and accounting.
- Management of service/construction contracts.
- Management of the TESDP funds.
- Management and training of on-site construction contractors and inspectors.
- Management and training of service franchise managers for public latrines
- Monitoring wastewater discharges.
- Sanitation marketing and user education.

On-site sanitation construction artisans, contractors and inspectors: Artisans and selected contractors will be given the opportunity to participate in periodic workshops so that they can learn to build all types of household sanitation systems including single and twin-pit VIP latrines, pour flush toilets, septic tank systems, and treatment and disposal units. In addition they will be trained to market their services to individual households, to prepare design sketches and quotations, and to keep appropriate records. Staff of EHMD responsible for administering the funds for delivering of TESDP will be trained to review design proposals and cost estimates, process loan requests and inspect construction of household VIP latrines, public and neighbourhood facilities, and drainage systems.

- Public latrine managers: franchise managers of public and neighbourhood facilities will be trained to operate and maintain the facilities, to collect revenues, and to keep technical and financial records.
- Homeowners and residents: Households will be informed of the technical options, encouraged to upgrade their household facilities, and information provided on use and maintenance of facilities through meetings organized by the Asutsuare Area Council (AAC) and through local radio.
- School children: Selected teachers and health education extension workers will be trained in participatory/interactive training techniques and appropriate training and teaching materials provided. User education will focus on the proper use of latrines, including cleansing materials and hand washing, and procedures for keeping latrines clean. Hygiene education material to be produced will cover environmental cleanliness; excreta, sullage and solid waste disposal; personal hygiene and food hygiene. Special workshops will also be organized through Parent and Teacher Associations to encourage proper use and maintenance of school and household facilities.

6.4 Monitoring and Evaluation

Monitoring and evaluation is an important part of strategic environmental sanitation planning, since it is the means by which the TESDP is refined and updated. In the initial stages monitoring and evaluation will focus on implementation arrangements and quality control, but in the long run it must also include forward looking planning to ensure that the TESDP keeps up with changing circumstances in Asutsuare and that future financing is arranged well in advance. Monitoring and evaluation is the responsibility of the EHMD supported by the DPCU (and DWST), as each must track progress of the component for which the respective units (including DWD when it becomes established and functional) are responsible, identifying strengths and weaknesses of implementation strategy and modifying the approach as required. DWDA departments will be assisted in this by local consulting firms that specialise in urban environmental sanitation planning, the CWSA-GAR's MOM unit, and by the EHSD (MLGRDE). The framework for Environmental Sanitation Assessment and Audit will be updated as elements become clearly defined through its routine application. In addition to ongoing involvement by each of these groups, it is important that periodically (e.g. every two years) the TESDP and its focus be appraised to bring emerging international experience to bear on implementation arrangements. The implementation packages of the TESDP need to be monitored and evaluated periodically, including the following:

Public latrine programme

- Performance of franchise operators including condition of facilities, sludge levels, rehabilitation/repair work required, general operation and maintenance, record keeping, and feedback from operators and users.
- Performance of septage hauling operations, quantities of sludge collected, dumping practices, and costs of operations including treatment and disposal
- Revenue collection, record keeping, and payments to AAC and DWDA.
- Periodic estimate of revenue and assessment of the financial viability of the franchise operator's business.
- Performance of twin versus single pit facilities, WC systems and user preferences for each.

Home latrine programme

- Quality of construction of each licensed artisan
- Contracting and construction management.
- Operation and maintenance of facilities.
- Number of persons using the facilities.
- Nuisance problems like flies and odors.
- Marketing and user feedback.
- Cost reducing measures.

School sanitation program

- Quality of construction.
- Operation and maintenance of facilities including condition of facilities, sludge levels, nuisance problems, and repair work required.
- User training and hygiene education.
- Number of pupils using the facilities.
- User feedback.

Environmental Health and Management Department

- Management capability and progress of each component.
- Accounting system and financing plan.

ANNEX A: SANITATION TECHNOLOGY OPTIONS

Description of Facilities

The strategic sanitation planning process emphasises mix of different types of technologies and levels of service instead of the selection of a single technology for the entire town. In reviewing options for selection, the following range of technologies was considered;

KVIP

WC/Septic Tank

Pour/flush toilet

Aqua privy

Vault chamber

Ecological sanitation options (including Van's Biological Toilet – VBT, etc)

Ventilated Improved Pit Latrines

A ventilated improved pit (VIP) latrine is a traditional latrine to which a vent pipe covered with a screen has been added to minimize odour and fly problems. In urban areas where available land is limited, an offset, double-pit design, fitted with either a squat plate or seat (KVIP), is recommended. Such a design can easily be retro-fitted into an existing house and is almost maintenance-free. When a pit is full, it is sealed for 18-24 months during which wastes undergo decomposition and pathogens are destroyed. The decomposed pit contents can then be removed manually without health risks and used as a soil conditioner.

The offset pit can be sized according to the number of users and enlarged at a later time if necessary. The usual usage population is 25-30 person or 5-6 households for a single-seater alternating twin-pit KVIP latrine and around 15 persons or 3 households for the ordinary VIP latrine. KVIP latrines are advantageous because no water is required for flushing and all kinds of anal cleansing materials can be used without threat of blockage. In addition, they can accommodate the water needed for anal cleansing if that is preferred. Wherever, a property has sufficient space to allow a detached latrine to be constructed and then moved when filled with solids, a single, deep-pit model will yield major savings as it is one-third the price of a twin-pit latrine.

Septic Tank and Drain Field Systems

Low volume flush toilets (WCs) with septic tanks are a relatively expensive but good option. Wastewater flows from the home by gravity to a septic tank which is usually a double-chambered, watertight, concrete tank where heavier solids settle to the bottom and accumulate as sludge, and grease and lighter particles rise to the surface and form a scum. The clarified effluent then flows to a drain field. Septic tank systems are particularly advantageous as they can accommodate both excreta and sullage. A properly designed system can provide many years of good service, however, the tank will become blocked with solids if it is not cleaned out every 3-4 years and wastewaters will surface if the drainfield is not large enough to accommodate the wastewater flow. It is important that drainfields (either seepage pits or gravel filled trenches) are sized to provide one square meter of infiltration area for every 10 to 25 liters/day of wastewater, depending on the soil permeability. A simple percolation test can be used to determine the proper design factor.

Factors that affect household choice of improved sanitation facilities

In reviewing the mix of technologies to match housing segments, each option is evaluated in terms of relevant technical, financial, social-cultural and institutional factors:

Technical considerations include the type of housing, water supply facilities, geological conditions and operations and maintenance requirements. Where premises connections of water supply is high (more than 85%), in *high housing -density areas* simplified sewerage may be the viable option, as there is insufficient open space for WC/septic tank drainfields,

inadequate room on ground floors of buildings for VIP latrines. In the *medium-density indigenous area* household latrines (VIP and pour flush) and WC/septic tanks are viable technologies, sewers are not possible at this time because of low-levels (less than 60%) of households with water in-house supply connections. In the *estate* and *low-density, newly developing area* all technologies are viable (considering water-dependent options).

Financial considerations included construction cost, operations and maintenance cost, and willingness-to-pay. Costs are location specific, and from costs comparisons carried out as part of Willingness to Pay for Improved Sanitation in Kumasi, generally sewer costs are inversely proportional to the population density; on a per capita basis construction costs of simplified sewers have been estimated to be between \$25-30 in the high housing-density areas with multi-storey buildings, \$35 in the medium-density areas with compound houses, \$80-95 in typical Estate-type areas, and \$230-250 in the low-density high-cost areas. Thus the capital cost of sewers in the low-density, high-cost area with large plots (50m x 50m) is nearly 10 times the cost of sewers in the high housing-density areas. These conclusions should be checked against user preference and willingness-to-pay, and to the extent possible various options made available to individual households.

Socio-cultural considerations are based on user preference. The results of the household survey conducted as part of Environmental Sanitation Assessment and Audit showed that the majority of people using WCs, and pit latrines rate them as good or fair in terms of cleanliness, privacy and convenience and are satisfied with them. However, people are not satisfied with the privacy and convenience provided by public latrines. Those people that prefer the VIP latrines usually do so because WCs require water that is expensive and sometimes unreliable, and because WCs might break or clog. In the estate and newly developing areas all houses are currently served by either individual or household WC/septic tank systems. They consider their current system to be satisfactory.

The above are only indicative to aid developing financing cost implications of what will be adopted. All home-owners are free to use the technologies of their preference, provided they meet guidelines for the construction of sanitation facilities issued by the MLGRDE.

ANNEX B: SCHOOL SANITATION FACILITIES

List of schools and inventory of existing sanitary facilities in schools

- Name of school
- Facility ID number
- Location (sub-metro area or sector)
- Type of school (primary, junior secondary)
- Cluster (ID number of adjacent schools)
- Number of students
- Type of sanitation facility (WC, aqua-privey, pan latrine)
- Number of cabins
- Condition

ANNEX C: PUBLIC SANITATION FACILITIES

List of Public Facilities in Neighborhood

- Facility ID
- Location (sub-metro area or sector)
- Type (WC, aqua-privey, pan latrine)
- Number of cabins
- Average number of users
- Condition

List of Public Facilities in Commercial Areas

- Facility ID
- Location (sub-metro area or sector)
- Type (WC, aqua-privey, pan latrine)
- Number of cabins
- Average number of users
- Condition

Inventory of sites should also cover user analysis and scheduling of implementation of sub-projects under Packages.

- Sample Design of facilities and block layouts.
- Preparation of contract document for franchise operation of the public facilities and program to train franchise operators.