Ministry of Local Government, Rural Development and Environment

REPUBLIC OF GHANA

ENVIRONMENTAL SANITATION DIRECTORATE

FRAMEWORK FOR THE PREPARATION OF THE NATIONAL ENVIRONMENTAL SANITATION STRATEGY AND ACTION PLAN (NESSAP)

HANDBOOK
For
Preparation of District Level Environmental Strategies and Action Plans (DESSAPs)

OCTOBER 2007

Preface

Environmental sanitation is a basic and powerful driver of human development as it affects quality of life. It cuts across all sectors of the economy including those that concern health, environmental protection, improvement of human settlements and services, and general productivity of all sectors of the economy.

The current status of environmental sanitation is so poor that it is a sector already in crisis. The Growth and Poverty Reduction Strategy (GPRSII) has emphasised the sector and has recommended the use of "environmental sanitation" so we focus on all aspects of services and not narrowly on "sanitation" often equated to "hygienic disposal of human excreta". As Ghana aspires to middle-income status by 2015, a healthier and wealthier population will tend to generate more of all wastes types (domestic, commercial, institutional, health-care, industrial and hazardous). There is, therefore, need for urgent action based on a clear national strategy (policies, plans and programmes) to manage this trend, supported by sustainable financing.

In order to remedy the past neglect of the sector, this time round the Revised Environmental Sanitation Policy calls for the development of a National Environmental Sanitation and Action Plan (NESSAP) and an accompanying Strategic Environmental Sanitation Investment Plan (SESIP).

In accordance with our decentralised governance and implementation management, national policies take effect at district level and so strategies, plans, programmes and projects to meet policy objectives are based on and derived from the aspirations of local actors at district level. That is the main principle behind this Handbook for preparing District Environmental Sanitation Strategy and Action Plan (DESSAP).

The DESSAP will be prepared by District-level actors with facilitating support by Regional-level actors, and the resulting regional perspectives will inform the preparation of the national-level NESSAP.

Properly done the DESSAPs, the regional perspectives and NESSAP will provide the basis for systematic investment and thus incremental progress in environmental sanitation in Ghana. The Handbook derives a lot of its material from existing documents (see List of references) put in a format that when completed over a period provides all the necessary information for preparing a DESSAP. The main chapters follow those that District Planning Coordinating Units normally follow in preparing Medicum-Term District Development Plans (MTDDPs) and so are familiar.

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LIST OF ABBREVIATIONS

CWSA - Community Water and Sanitation Agency
DANIDA - Danish International Development Assistance
DP - Development Partners
DPCU - District Planning Coordinating Unit
DWSP - District Water and Sanitation Plan
EHSD - Environmental Health and Sanitation Directorate
EPA - Environmental Protection Agency
ESSA - Environmental Sanitation Assessment and Audit
FGD - Focus Group Discussion
GPRSII - Growth and Poverty Reduction Strategy
GoG - Government of Ghana
GWCL - Ghana Water Company Limited
IEC - Information, Education and Communication
IWRM - Integrated Water Resources Management
KPI - Key Person Interview
MDG - Millennium Development Goal
MLGRDE - Ministry of Local Government, Rural Development and Environment
MMDA - Metropolitan, Municipal and District Assembly
MOFEP - Ministry of Finance and Economic Planning
M & E - Monitoring & Evaluation
MOES - Ministry of Education and Sports
MOFA - Ministry of Food and Agriculture
MWRWH - Ministry of Water Resources, Works and Housing
NDPC - National Development Planning Commission
NCWSP - National Community Water and Sanitation Programme
NGO - Non- Governmental Organisation
PMMS - Policy Monitoring and Management Support
PPPPPs - Policies, Plans, Programmes, Projects and Products
PURC - Public Utilities Regulatory Commission
RCC - Regional Coordinating Council
RNE - Royal Netherlands Embassy
RPCU - Regional Planning Coordinating Unit
RWST - Regional Water and Sanitation Team
SESIP - Strategic Environmental Sanitation Investment Plan
TOR - Terms of Reference
UNICEF - United Nations Children Fund
WD - Water Directorate
WRC - Water Resources Commission
WSSPSII - Water and Sanitation Sector Programme Support, Phase 2

1.0 Introduction

1. This Handbook is to help Metropolitan, Municipal and District Assemblies and their District Environmental Health Offices and various staff dealing with planning and environmental sanitation services by providing them with information needed to prepare a District Environmental Sanitation Strategy and Action Plan (DESSAP). [revisit to include more material]

1.1 Background

2. The Growth and Poverty Reduction Strategy (GPRSII) which is Ghana's current development framework is based on three pillars: Private Sector competitiveness, Human Resources Development ands Good Governance and Civic Responsibility. The summary effect of the GPRS is to increase wealth and the well being of all Ghanaians and achieve middle-income status by 2015. A healthier and wealthier population will tend to generate more of all waste types (domestic, commercial, institutional, industrial and hazardous). In view of this, The GPRS has prioritised environmental sanitation to ensure that real "Quality of life" is attained.

3. Currently, as far as the management of environmental sanitation is concerned, Ghana can be described as a nation facing "sanitation crisis". This is due to a long period of neglect of the sector and the lack of attitudinal change that did not accompany economic development. Increasing urbanization and non-adherence to planning schemes has resulted in unauthorized location of buildings along flood plains and reservations. Inadequate drainage facilities for sullage and storm water conveyance causes flooding in many localities every rainy season. This is made worse by the increasing area of the built environment which reduces percolation into the soil. The lack of effective refuse collection from premises has also led to the use of drains as refuse disposal receptacles further compounding the problem with drains turned into open sewers with putrid smells.

4. These factors have a serious health impact (more than half of all reported diseases are related to poor environmental sanitation), with attendant social and economic costs. Flooding causes major damage to public infrastructure and private property. Pollution of water resources increases the technical difficulty and cost of providing water supplies. In addition, the sight and smell of inadequately managed wastes constitute a major discomfort to citizens and visitors to Ghana.

5. These trends are increasing with population growth, modernisation and changing life-styles. Within a period of a decade-and-half food wrapping and packaging has changed from bio-degradables like leaves to paper, to thin-film plastics, and now to more dense styro-foam and plastics. Similarly, drinking water vending has evolved from "bucket-and-cup", to thin-film plastics, and now to more dense plastics of sachet and bottled 'mineral' water.

6. In pursuance of addressing these challenges, the Environmental Sanitation Policy (1999) has been revised to refocus the priorities of the sector. The National Environmental Sanitation Strategy and Action Plan (NESSAP) is being developed to provide a comprehensive framework for managing environmental sanitation on a sustainable basis. The NESSAP lays the basis for working towards achieving the Environmental Sanitation Policy objectives.

7. The preparation of the comprehensive NESSAP follows a bottom-up approach consistent with participatory planning within a decentralised democratic environment. It is therefore based on the preparation of District Environmental Sanitation and Strategic Action Plans (DESSAPs) derived from

district-level data and situational analyses. The DESSAPs will ensure effective participation and ownership at the district level where the plans and programmes will be implemented.

1.2 The Purpose of DESSAP

8. The main purpose of DESSAP is to establish the framework for developing an effective and locally feasible environmental sanitation strategy and action plan. The DESSAP will also take into account the availability of sufficient institutional capacity for the implementation and practical operation of environmental sanitation facilities and systems at the local level.

9. The DESSAP will be prepared using information such as the following::

- Evaluating the existing level of sanitation facilities and services
- Providing information about current sanitation aspects and identify future needs
- Identifying the sanitation problems to be solved and to provide a foundation for a systematic and effective way of solving the problems

1.3 Objectives and targets of the DESSAP

10. The DESSAP has a general objective of providing a locally applicable sanitation strategy and action plan that is in line with national policy. The specific objectives are:

- To identify the sanitation needs of the district;
- To identify priority interventions taking into consideration the available financial resources and institutional capacity at the local level;
- To build the capacities of the local institution to be able to identify, initiate and strategically plan and develop programmes to address sanitation problems at the local levels;
- To ensure that locally developed sanitation systems complies with policies, targets and initiatives at the national level and also in alignment with plans of other sanitation related institutions both at the local and national levels;

11. The DESSAP will provide a structured framework for further in-depth planning of environmental sanitation, with inputs from all key local stakeholders (the District Planning Coordinating Unit, NGO's, traditional authorities etc.) to contribute to the formulation and realisation of environmental sanitation programmes in the district.

1.4 Content of the Handbook

12. The Handbook presents the steps in preparing a DESSAP: – data collection, DESSAP strategic projections, costing and funding plans, preparing annual action plans, implementation, monitoring and evaluation framework.

13. Data collection, analysis and strategy formulation and action planning will cover the whole range of environmental sanitation services under the following broad components:

- Solid Waste Management

- Liquid Waste Management
- Storm Water Drainage and Sullage Conveyance
- Environmental Sanitation Education and Enforcement Management
- Health-Care and Special Industrial Wastes

14. In addition to this, data will be collected and analysed for institutions and their linkages and historical data (preceding 5 years) on expenditures and investments on environmental sanitation.

2.0 Organisational Management and Planning

2.1 Organisational Management

15. This section describes how the process for the preparation of the DESSAP will be organised and managed to ensure timely delivery of outputs.

16. The process will be managed at two levels:

17. At the *Regional* level, the Regional Environmental Health Unit (REHU) will be the lead institution assisted by key collaborating institutions including:

- Regional Planning Coordinating Unit (RPCU)
- Regional Environmental Protection Agency (EPA)
- Regional Hydrological Services Department (HSD)
- Town and Country Planning Department
- Ghana Health Service (GHS)
- Ghana Education Service (GES)
- Ghana Statistical Service (Regional Office)
- CWSA – Regional Office
- Ghana Tourist Board

18. The range of stakeholders at the regional level will depend on the availability of the relevant agencies and their capacity to engage in effective facilitation of MMDAs and harmonisation of DESSAPs.

19. At the *District* Level, the District Environmental Health and Sanitation Unit will be the lead department with support from the expanded District Planning Coordinating Unit (DPCU).

20. For the purposes of preparing this DESSAP, sub-metropolitan assemblies will be treated as districts. Staff of Waste Management Departments in Metropolitan Assemblies will join the regional collaborating agencies in providing quality assurance and supervision. Other identifiable stakeholders such as NGOs and private sector operators will be co-opted to provide inputs.

21. The appropriate sub-committee of MMDAs shall be actively involved in each district/sub-metro assembly.

For each region, the membership of the regional team should be established using the format below:

Table 2.1: Membership of Regional Collaborating Team

No.	Name	Institution	Position

22. Each district will establish expanded District Planning Coordinating Unit, using the format below.

Table 2.2: Membership of Expanded District Planning Coordinating Unit

No.	Name	Institution	Position

2.2 Workplan for District-level Activities

Each district will draw up an action plan for data gathering. The format in Table … and Table…will be used.

Table 2.3: Activity Schedule

No.	Activity	Period		Output	Responsibility
		Start Date	End Date		

Table 2.4: Time Chart

No.	Activity	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6

3.0 Content of the DESSAP

23. This section of the handbook details the steps to be followed in completing the DESSAP, the outline and the content of each chapter are presented in detail below. To aid the completion of each chapter various instruments will be used. The instruments are presented at the end of this section.

3.1 Outline of the DESSAP

Table 3.1 lists the Chapters and their corresponding contents. The team responsible for preparing the DESSAP will following this generic Table of Contents and complete the sections to reflect specific local conditions.

Chapter	Title	Content	Instrument to be used
1	Introduction	Background information, membership of expanded DPCU, general remarks	Secondary data
2	District Profile	Current socio-economic data and ecological information	Data sourced from district planning data base
3	Environmental Sanitation Baseline	Data on environmental sanitation components	Household Questionnaire Special Forms for Data Gathering Profiling form ESICOME Handbook
4	Analysis and Assessment of Needs	Detailed analysis of components, levels of service, institutional arrangements, issues and constraints	Policy objectives and targets of NESSAP
5	Strategies for Environmental Sanitation	Goals, Objectives and Basis for overall strategy and specific strategies for each component	Guidelines from Interim NESSAP
6	Implementation Plan	Action plans – short, medium, long term, institutional management	
7	Monitoring and Evaluation	M&E plan, targets, indicators, roles and responsibilities.	

3.2 Description of the Chapters

3.2.1 Chapter 1 – Introduction

24. In this section, write the need for preparing the DESSAP and the procedures followed. List the membership of those who participated in the preparation. If there were any special difficulties or problems encountered state them. Information justifying the need for preparing the DESSAP could be obtained from this Handbook and the Revised Environmental Sanitation Policy (2007).

3.2.2 Chapter 2 – District Profile

25. Describe physical, social, economic, and ecological characteristics of the district.

a. **Physical**: a brief description of the physical features namely geographical boundaries and political jurisdiction, topography, soil, and climatic conditions.
b. **Socio-cultural**: describe the demographic characteristics- population size, growth rate, spatial distribution, density, household characteristics, sex composition etc. It is important to identify all important cultural and religious characteristics
c. **Economic**: describe the structure of the local (district) economy in terms of major economic activities e.g. mining, farming, fishing etc. Also include the income and expenditure patterns of the households.
d. **Ecological**: describe the significant vegetational cover (including forest reserves, if any), water resources, wildlife.

26. Information for this Chapter would generally be obtained from the district Medium-Term Development Plan (DMTDP, 2006).

3.2.3 Chapter 3 – Environmental Sanitation Baseline

27. This chapter deals with the basic data needed for the preparation of the DESSAP. Data will be collected for each of the five main components of environmental sanitation listed under section 1.4. In addition to this, data will be gathered on institutions responsible for environmental sanitation services and historical data (for the preceding 5 years) on expenditures and investments on environmental sanitation.

Various tools (i.e. forms, worksheets, questionnaires) have been developed to assist in gathering and analysis of data to be gathered for components of environmental sanitation. Table 3.1 is a generic data gathering form used for collecting data as part of ESICOME.

a. Solid Waste

Generation and Composition:

- Household waste amounts/composition: use existing information on unit-generation (e.g. kg/capita/day and/or kg/household/day)
- Markets (no. of full containers (size?) per market-day and/or per week)
- Slaughterhouses (no. of animals etc.)
- Institutions and companies (school-kitchens, military barracks, hospitals, offices etc.)
- Hotels / guesthouses (annual no. of guests)
- Restaurants (waste volume per week)
- Others??
- Composition (percentage division on main components (organics, glass, metal, plastic etc.))

Collection/Transfer/Transport:

- Operators on waste collection (list private/public companies/organizations collecting household waste. Include information on the composition/staff levels, no. and types of vehicles, containers and bins used etc.)
- Level of service: Within each community: describe coverage of collection, percentage of households covered, means of collection (from each household/from common containers servicing no. of households). Evaluation of service quality – user satisfaction.
- Transport distance from waste generation centers to final disposal site (km, return-travel-time).

Recovery/Treatment/Disposal:

- Re-use/recycling: description of formal/informal schemes for collection at source of recyclables from household waste (plastic, paper etc.). Estimated amounts. Describe the next stage(s) of processing/treatment (recycling industries etc.).
- Final waste disposal (dumps, landfills): No., location, size (area and volume), management practices (e.g. bulldozing, covering with soil etc.). Years of operation. Expected additional volume/lifetime.
- Status on implementation of any planned modern landfills (site already selected? Acquired ? Planning/design/construction ongoing?)

Costs and Cost-recovery:

- How are services paid for (user payment? District Assembly revenues ? Government subsidies?)
- Fee-structure, level of household payment, fee-collection efficiency (%)
- Annual costs (administrative costs, collection costs, costs for landfill/dumpsite operation)

Local legal framework regulations:

- By-laws, decrees etc.

28. The tool for data gathering on solid waste management services is provided in General Information Form 3.1 and Form 3.2.

Form 3.1: FORM FOR AREA/TOWN COUNCIL/COMMUNITY PROFILE																
Name of Area/Town Council or Community																
Population																
A. NO. OF PREMISES																**TOTAL**
1. Residential																
2. Drinking																
3. Eating																
4. Schools																
5. Industrial																
6. Others																
B. NO. OF LATRINES																
(I) Private																
1. WC																
2. KVIP																
3. VIP																
4. STL																
5. PAN																
6. PIT																
7. ALL OTHERS																
(II) Public																
1. WC																
2. KVIP																
3. VIP																
4. STL																
5. PAN																

Form 3.1: FORM FOR AREA/TOWN COUNCIL/COMMUNITY PROFILE																
6. PIT																
7. OTHERS																
(III) School																
1. WC																
2. KVIP																
3. VIP																
4. STL																
5. PAN																
6. PIT																
7. OTHERS																
(IV) Industrial																
1. WC																
2. KVIP																
3. VIP																
4. STL																
5. PAN																
6. PIT																
7. OTHERS																
C. TYPE and No. OF BATHHOUSES																
1. Inside the house (No.)																
2. Outside the house (No.)																
3. Shared by a few houses (No.)																
4. Public (No.)																
SULLAGE DISPOSAL METHOD																
(a) Sewer (Length, m)																
(b) Soakage pit (No.)																
(c) Gutter (m)																
(d) Ditch (m)																
(e) Vacant lots, open spaces, bush																

Form 3.1: FORM FOR AREA/TOWN COUNCIL/COMMUNITY PROFILE																
D. NO. OF REFUSE DUMPS																
a. Public																
i. Approved																
ii. Unapproved																
b. Institutional																
1. School																
i. Approved																
ii. Unapproved																
2. Industrial																
i. Approved																
ii. Unapproved																
METHOD(S) OF REFUSE DISPOSAL (LIST)																
a.																
b.																
c.																
d.																
E. SOURCES OF WATER																
Dug out																
Ponds																
Stream																
River																
Spring																
Hand dug wells																
Boreholes																
Pipe born (stand pipes)																
F. NO. OF SLAUGHTER FACILITEIS																
Stabs																
Houses																
G. NO. OF MEAT SHOPS																

Form 3.1: FORM FOR AREA/TOWN COUNCIL/COMMUNITY PROFILE																
Hygienic																
Unhygienic																
ANNEX C(X) -2																
H. LABOUR (UNSKILLED)																
No. Available																
No. Needed																
I. STAFFING																
NO. OF ACEHO																
PEHO																
SEHO																
EHO																
EHO																
PEHA																
SEHA																
EHA																
EHT																
AEHT																
EXTRA NO. OF STAFF NEEDED (BY																
1																
2																
3																
4																
5																
6																

FORM 3.2Area/Town Council/Community - Characterisation of Environmental Sanitation Services -

Name of Area/Town Council or Community:

A. Solid Waste Management

Sources, generation and composition													
	No.	HH. Size/Capacity	**Composition (% by volume)**								**Vol. of Storage Facility**		
Domestic			Organic	Paper	Plastics	Glass	Metal	Textiles	Wood	Misc.			
Households - Rural													
Households – LI													
Households – MI													
Households – HI													
New Developing Areas (Fringe)													
Communal Containers													
Commercial													
Shops (Trade premises)													
Hotels													
Restaurant/Chop Bars													
Markets													
Slaughter Slabs, Houses, Abattoirs													
Lorry Stations													
Other													
Institutional													
Schools													
Police/Army/Prison Barracks													
Prison Complex													
Offices													
Other													

FORM 3.2Area/Town Council/Community - Characterisation of Environmental Sanitation Services -

Collection, Transfer, Transport, Street Cleansing

Category of Service Operators	No.	Staff		Vehicles			Containers (m^3)			Street & Drain Cleansing			
		Office	Field	Compactor	Skip-Loader	Tipper	8 - 10	10 - 15	> 15	No. Staff	Street Length (km)	Length of Drains (km)	Length Cleansed (km)
Private													
Assembly													
Other (Police, Army, etc)													

Levels of Service	No.	Coverage	Service Quality										
			Low	Medium	High								
House-to-House													
Block													
Communal Collection													
Distance to Final Disposal(km)													

Re-use/Recycling/Treatment/Disposal

Re-used Material (Container) - Tick	Plastic	Glass	Paper	Metal	Wood	Textile							

Recyclable Material	Plastics			Glass	Paper	Metal	Wood	Textile					
	Thin-film	PET Bottle	Dense										
Indicate (Tick) if applicable													
Estimated Quantity (tons)													
Estimated Quantity (vol./m^3)													
No. of Recycling industries													
Capacity (tons/day)													

Disposal Sites (facilities) - Locate on map & pictures	No.	Size (ha)	Management practices				Years in Use	Remaining Years	Littering				
			Compaction	Fencing	Weigh-bridge	Covering			High	Medium	Low	Wide-spread	
Sanitary Landfill													
High-Density Aerobic													
Improved Dump													

FORM 3.2Area/Town Council/Community - Characterisation of Environmental Sanitation Services -

Open Dump													
Planned Development			Stage of Implementation										
			Site Selected	Site Acquired	Plan/Design Completed	Construction							
Cost Recovery													
Who pays for Services ?	Users (Customers)	MMDA	Central Govt.										
Collection, Transfer, Transport													
Disposal Site Management													
Proportion of Costs													
Level of Fee Collection (%)													
Cost build up (Annual)	Admin	Collection	Disposal	Total									
Cost per ton													
Legal & Regulatory Framework													
Bye-laws available	Yes	No											
Sanitation Court	Yes	No											

b. Excreta (liquid Waste) Management

Household facilities:
- For each community: list no. and types of toilets, latrines, percentage of coverage

Public facilities:
- For each community: No. and types of toilets, latrines. No. of persons using each facility.

Institutions:
- Schools:
- Hospitals:
- Hotels, guesthouses etc.

Costs and Cost-recovery:

29. For each type of facility describe the incidental costs for capital expenditure, operation and maintenance and administrative costs and who is responsible for these costs;
- Beneficiary payments, District/Central Government?
- Fee-structure, level of household payment, fee-collection efficiency (%)
- Annual costs (administrative costs, collection costs, disposal)

Local legal framework regulations:
- By-laws, decrees etc.

30. The tool for data gathering on excreta management services is provided in General Information Form and Form 3.3.

FORM 3.3 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES -

Name of Area/Town Council or Community:

B. Excreta Management

Facility type, No. and coverage														
	No.	HH. Size/Capacity	**Facility Type/No.**											
Domestic			Pit	VIP	KVIP	WC	Pan	Septic Tank	Ecosan	Sewer				
Indegenous (Compound)														
Multi-Storey (Compound)														
Estates														
High Cost														
New Developing Areas (Fringe)														
Shared Facilities														
Communal (Neighbourhood)														
Public														
Markets														
Lorry Stations														
Commercial														
Hotels														
Restaurant/Chop Bars														
Slaughter Slabs, Houses, Abattoirs														
Other														
Institutional														
Schools														
Police/Army/Prison Barracks														

FORM 3.3 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES -

Prison Complex														
Health Facilities (hospital, Clinic, maternity etc)														
Offices														
Industrial Premises														
Haulage, Treatment and Disposal														
Type of Service Operators - Cesspit Emptying		Staff		Vehicle Capacity (m^3)										
	No.	Office	Field	5 - 8	8 - 10	> 10								
Assembly														
Private														
Other (Police, Army, etc)														
Treatment/Disposal (locate on map & pictures	WSP*	Septage TF*	ASP*	Land	Sea	River								
No.														
Capacity (m^3/day)														
Distance to Final Disposal(km)														
Planned Development			Stage of Implementation											
			Site Selected	Site Acquired	Plan/Design Completed	Construction								
Re-use/Energy Recovery	Compost	Land Application	Biogas											
Cost Recovery														
Who pays for Services ?	Users (Customers)	MMDA	Central Govt.											

FORM 3.3 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES -

Facility Construction														
Household latrines														
Communal/Public Toilets														
Institutional latrines														
Treatment Site Management														
Proportion of Costs														
Payment for Sewerage Mtce.														
Sewerage Maint. Cost (GH¢)														
Level of Fee Collection (%)														
Cost build up (Annual)	Admin	Emptying	Treatment	Total										
Legal & Regulatory Framework														
Bye-laws available	Yes	No												
Sanitation Court	Yes	No												

Notes:
WSP - Waste Stabilisation Pond
STF - Septage Treatment Facility
ASP - Activated Sludge Plant

c. Storm Water Drainage and Sullage Conveyance:

c.1 Storm Water Drainage:

General description of available drainage systems:
- Primary, secondary, tertiary drains (length, size, coverage)

Flood prone areas:
- For each area council: list/describe areas that have been flooded within the last 5 years (location (on map), area (size in ha.), type of area (marshy, river course etc.)
- Reasons for flooding (blocking of drains and natural run-offs, etc.)

Planned or ongoing schemes for drainage control
-

Costs:
- Current budgets for drainage (construction of new drainage facilities, and annual maintenance costs)

Overall assessment:

c.2 Sullage Conveyance:

General description of current situation:
- The predominant mode of sullage disposal – soakage pits, gutters (small drains from premises), ditches, etc.

Coverage of water supply:
-

Major public sources:
- Bathhouses (No., size, no. of users, discharge of sullage, etc.)
- Major institutions (schools, military, hotels etc.)

Planned or ongoing schemes for sullage conveyance control
-

Costs:
- Current budgets for sullage conveyance control (construction of new systems, and annual maintenance costs)

Overall assessment:

31. The tool for data gathering on drainage and sullage conveyance services is provided in General Information Form and Form 3.4.

FORM 3.4 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES

Name of Area/Town Council or Community:

C. Drainage and Sullage Assessment Form

C1. Drainage	Channel Type (tick)			Dimensions (m)			Channel Lining (tick)			
List of Drains (by location)	Primary	Secon-dary	Tertiary	Length	width/ diameter	depth	Earth	Concrete	Stone-pitch	Name of Drain Outfall (Stream)

FORM 3.4 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES

C2. Sullage Conveyance	Type and No. of Bathhouse				Sullage Disposal Method				
Name of Locality	Inside House	Outside House	Shared	Public	Sewer	Soak-pit	Gutter	Ditch	Open Space
Total (No. or Length)									

d. Environmental Sanitation Education and Enforcement Management:

d.1 Environmental Sanitation Education:

32. In this section information about planned and implemented activities for all aspects of environmental sanitation education shall be provided.

Description of current sanitation education programmes:
- Target groups
- Subject areas
- Coverage (do all citizens have access to the information)

Costs:
- Current budgets for programmes

d.2 Enforcement management:

33. Data for this section will be extracted from records of Premises Inspection Log-books. These will be aggregated into the respective District and Regional Summary Forms (Form 3A and 3B of ESICOME Programme and Implementation Guideline, 1999).

Description of current enforcement management activities:
- Nature / type of offences
- Punishment / penalties prescribed
- Prosecution efficiency (how many cases taken to court? How many have been won?)
- Fines / revenue collected (within the last 3 years)

Overall assessment:

e. Health-care and Special Industrial Wastes:

34. In this section information about the main categories of sources of health-care waste and industrial wastes shall be provided.

e.1 Health-care waste:

Sources:
- *No. and size / capacity of health-care facilities (hospitals, clinics, health-centres, traditional birth attendants etc.)*

Waste Generation:
- Waste amounts/composition:)

Collection, Transportation?:
- Is the Waste collected and transported elsewhere or is it treated on site? (describe)

Treatment/Disposal:

- Hospital Waste Incinerators (no., standard, being operated?)
- Final waste disposal (dumps, landfills): Is the waste disposed off at separate disposal cells or is it dumped together with other waste types?).

Costs:
- Budget

Local legal framework regulations:
- By-laws, decrees etc.

Overall assessment

35. The tool for data gathering on health-care waste services is provided in Form 3.5.

FORM 3.5 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES:

Name of Area/Town Council or Community:

e1. Health-Care Waste

Sources, generation and composition														
	No.	Size/Capacity (No. of beds/attendance)	**Composition (% by volume)**											
Domestic-type (Normal)			Organic	Paper	Plastics	Glass	Metal	Textiles	Wood	Misc.	**Total (m^3)**			
Hospital														
Clinics														
Health Center/Post														
Laboratory														
Mortuary														
Pharmacies and Chemists														
Other														
Clinical/Special waste			Infectious	Sharps	Patient/ Animal	Culture Specimen	Pathological	Hazardous	Pharmaceutical	Photo/ Chemical	Radio-active	Laboratory	Incinerator Ash	
Tertiary /Teaching/ Specialist Hospital														
Regional Hospital														
District Hospital														
Health Centres/Clinic														
Community Clinic														
Private Clinic														
Alt. Health Care Provider														
Mortuaries, Funeral Home														
Private Laboratory														

FORM 3.5 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES:

Pharmacies and Chemists														
Research Facilities														
Veterinary Clinics														
Other														

Collection, Transfer, Transport

Category of Service Operators	No.	Staff		Vehicles			Containers (m^3)			**Street & Drain Cleansing**				
		Office	Field	Compactor	Skip-Loader	Tipper/Side Loader	8 - 10	10 - 15	> 15	No. Staff	Street Length (km)	Length Swept (km)	Length of Drains (km)	Length Cleansed (km)
Private														
Assembly														
Other (Own-service, etc)														
Treatment and Disposal	On-site	Off-Site	Landfill Co-disposal	Incineration	Septic Tank	Burial	Landfill Cell							
Tertiary /Teaching/ Specialist Hospital														
Regional Hospital														
District Hospital														
Health Centres/Clinic														
Community Clinic														
Private Clinic														
Alt. Health Care Provider														
Mortuaries, Funeral Home														
Private Laboratory														
Pharmacies and Chemists														
Research Facilities														
Veterinary Clinics														
Other														

FORM 3.5 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES:

Planned Development of Treatment & Disposal facility			Stage of Implementation											
	Type	Capacity	Site/Equip Selected	Site/Equip Acquired	Plan/Design Completed	Construction/Installed								
Cost Recovery														
Who pays for Services ?	Internally Generated Fees	Central Govt.												
Collection, Transfer, Transport														
Disposal Site/Equip Maintenance														
Proportion of Costs														
Cost build up (Annual)	Admin	Collection	Disposal	Total										
Cost per ton														
Legal & Regulatory Framework														
Bye-laws available	Yes	No												
Sanitation Court	Yes	No												

e.2 Special Industrial Waste:

36. In this section the main categories and sources of Industrial waste (of hazardous nature) will be described.

Sources:
- *No. and size / capacity of industries, factories*

Waste types and amounts:
- *For each major industry/factory: List types and amounts of waste generated*

Current waste management:
- Is the Waste collected and transported elsewhere or is it treated on site? (describe)

Treatment/Disposal:
- Describe any pre-treatment carried out at the source
- Final waste disposal (dumps, landfills): Is the waste disposed off at separate disposal cells or is it dumped together with other waste types?).

Fees and cost recovery:
- Current fees (if any) for disposal of industrial wastes.
- Do industries pay waste disposal (if yes: how? Fee-size?)

Local legal framework regulations:
- By-laws, decrees etc.

Overall assessment:

37. The tool for data gathering on industrial waste is provided in Form 3.6.

FORM 3.6 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES:

Name of Area/Town Council or Community:

e2. Special Industrial Waste

Sources, generation and composition														
	No.	Size/Capacity (No. of employees)	**Waste Type (volume)**											
Type of Industry			Oils	chemical	heavy metals						**Total (m^3)**			
Mining and Processing														
Textile														
Wood Processing														
Chemical														
Oil Refinery & Petroleum														
Thermal Plant														
Food and Beverage														
Plastic and Rubber														

FORM 3.6 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES:

Collection, Transfer, Transport

Category of Service Operators	No.	Staff		Vehicles			Containers (m^3)			**Street & Drain Cleansing**				
		Office	Field	Compactor	Skip-Loader	Tipper/Side Loader	8 - 10	10 - 15	> 15	No. Staff	Street Length (km)	Length Swept (km)	Length of Drains (km)	Length Cleansed (km)
Private														
Assembly														
Other (Own-service, etc)														
Treatment and Disposal	On-site	Off-Site	Landfill Co-disposal	Incineration	Septic Tank	Burial	Landfill Cell	Discharge to public drain	Effluent Treatment	catalytic treatment				
Mining and Processing														
Textile														
Wood Processing														
Chemical														
Oil Refinery & Petroleum														
Power Generation (Thermal Plant)														
Food and Beverage														
Plastic and Rubber														
Other														

Planned Development of Treatment & Disposal facility	Type	Capacity	Stage of Implementation			
			Site/Equip Selected	Site/Equip Acquired	Plan/Design	Construction/Installed

FORM 3.6 AREA/TOWN COUNCIL/COMMUNITY - CHARACTERISATION OF ENVIRONMENTAL SANITATION SERVICES:

					Completed									
Management Costs														
Collection, Transfer, Transport														
Disposal Site/Equip Maintenance														
Cost build up (Annual)	Admin	Collection	Disposal	Total										
Cost per ton														
Legal & Regulatory Framework														
Bye-laws available	Yes	No												
Sanitation Court	Yes	No												

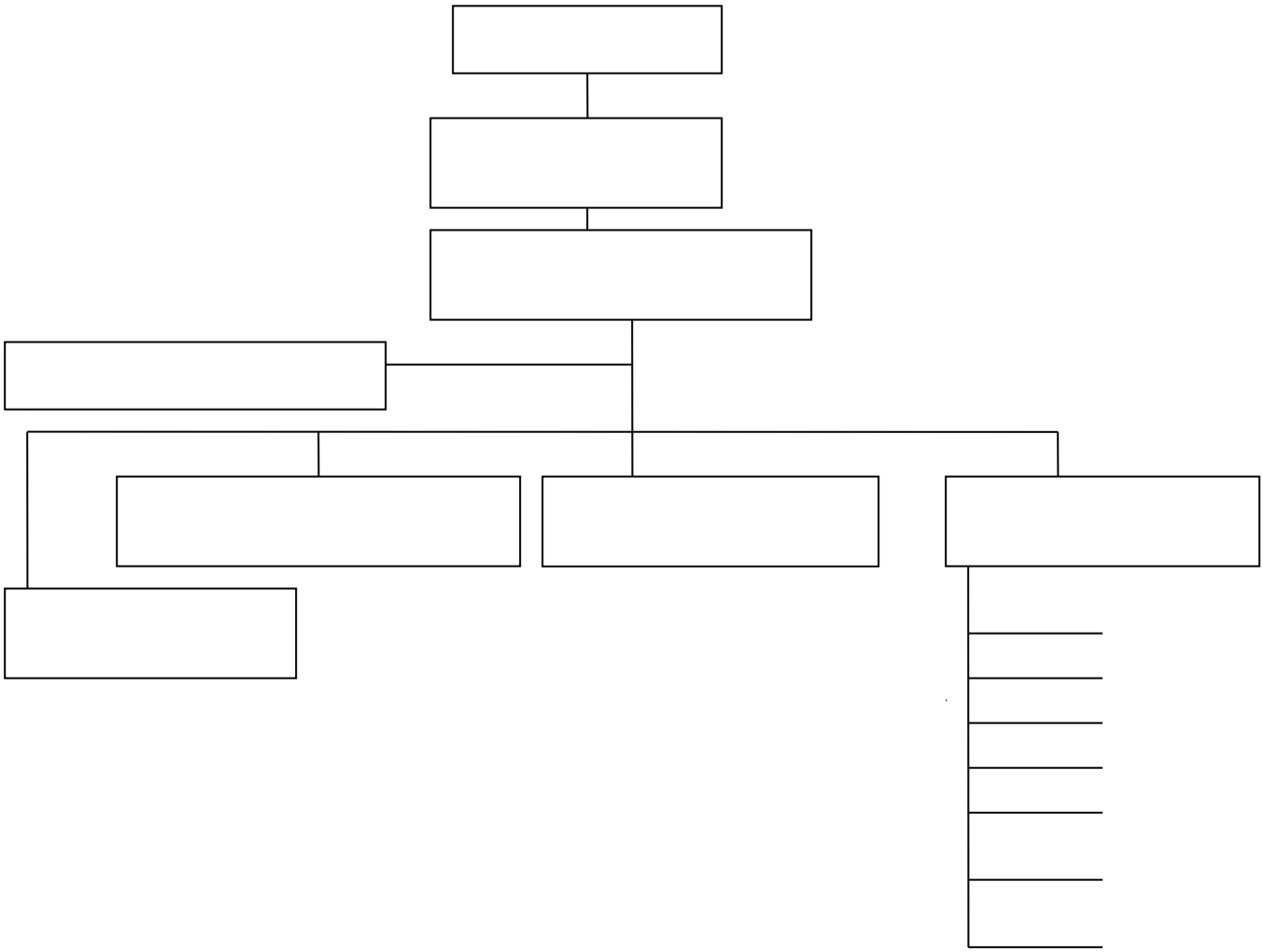
f. Institutional Framework and Linkages:

38. In this section the existing institutional arrangements shall be described and the organogram of Waste Management Department (in the case of Metropolitan/Municipal Assemblies) and/or that of the District Environmental Health Department (for all MMDAs) provided. The main stakeholder institutions/organisations shall be indicated.

Current institutional arrangements:

- What is the structure at district level? (department for environmental health, positions, ranks, etc., prepare organogram (showing the positions / ranks)
- Allocation of environmental health staff across the district (zones, area councils)

Fig…: Existing Organogram of EHSU – District Level



Linkages:

- Stakeholder institutions for Environmental Health Management and Sanitation Services (EPA, FDB, TCPD, etc.)
- For each institution: Area of responsibility? Their level of cooperation with the Waste Management and Environmental Health Departments?
- Costs/financial implications

Overall assessment:

g. Financial Situation:

39. In this section information on the level of expenditure for environmental sanitation services will be provided and the share of costs borne by Internally Generated Funds (IGF) and by the consolidated funds and other Central Government sources indicated.

District budget and costs for environmental sanitation:

- Provide budgets for the last 5 years (include breakdown on different finance sources (user fees, district budgets, government support etc., donors)
- Indirect funding (by NGOs etc.) that was not organized through the DA.
- Estimate the real costs for environmental sanitation

Revenue Pattern

Revenue Head	**2004 Amount**		**%**	**2005 Amount**		**%**	**2006 Amount**		**%**
	EHD	Total District		EHD	Total District		EHD	Total District	
INTERNAL									
Rates & Precepts									
Lands									
Fees & Fines									
Licenses									
Rent									
Investment									
Miscellaneous									
Sub-Total									
EXTERNAL									
Common Fund									
Salaries									
Sub-Total									
Grand Total									

Source:

Expenditure Pattern

Expenditure Head	2004 Amount		%	2005 Amount		%	2006 Amount		%
	EHD	Total District		EHD	Total District		EHD	Total District	
Personal Emolument									
Traveling & Transport									
General Expenditure									
Maintenance & Renewals									
Miscellaneous									
Sub-Total									
Assembly Fund									
Common Fund									
M P's Common Fund									
Sub-Total									
Grand Total									

3.2.4 Chapter 4 - Needs Assessment and Analysis

40. There will be two levels of needs assessment to be carried out in this chapter. The first will be to assess existing services in relation to population and then the current needs determined. The second level will entail the projected needs based on population growth, economic development and planned improvements in levels of service. The assessment will be done for each component.

41. For each component use the appropriate standards (Table 4.1) and levels of service to determine current needs (See Form 4.1). The results will be presented in the format shown in Table 4.2.

FORM 4.1 NEEDS ASSESSMENT

Categroy of Service	Current Status		Projected Need	
	Service Level	Gap (Minimum level)	2010	2015

Table 4.1: Standards of Environmental Sanitation Facilities/Services

1. Solid Waste Management								
Facility/Service	**Standard**							
	Minimum		**Comfortable**			**Amenity**		
A. Collection	**Storage Facility**	**Frequency**	**Source Separation**	**Storage Facility**	**Frequency**	**Source Separation**	**Storage Facility**	**Frequency**
House-to-House	240 litre	1 x weekly	2 Bin	120 litre x 2	1 x weekly	3 Bin	120 litre x 3	2 x weekly
Block Collection	60 litre	2 x weekly	2 Bin	45 litre x 2	2 x weekly precollection			
Communal Collection	10 - 15 m^3 @ 150 m Radius	1 x weekly	NA	60 Litre x 1	1 x weekly precollection			
B. Transport								
House-to-House	Tipper with Tarpaulin		Compaction Truck (15 m^3)			Compaction (10 m^3)		
Block Collection	Tipper with Tarpaulin		Compaction Truck (20 m3)					
Communal Collection	Skip Loader		Skip Loader					
C. Treatment & Disposal								
Treatment	Composting of BoF		Recycling, Composting			MBT, Composting, Energy recovery, Carbon Credit		
Disposal (see attached Table 3.2, 3.3 and 3.4 of Landfill Guidelines)	Improved dumping - manual		High Density Aerobic (bioreactor)			Sanitary Landfill		

2. Liquid Waste Management			
A. Household Facilities	**Minimum**	**Comfortable**	**Amenity**
Indegenous (Compound)	VIP,K-VIP, Ecosan	VIP, KVIP, Ecosan, Pour Flush, WC-ST	VIP, KVIP, Ecosan, Pour Flush, WC-ST, simplified sewerage
Multi-Storey (Compound)	Pour Flush,WC-ST	Ecosan, WC-ST, Simplified sewerage	Ecosan, WC-ST, Simplified Sewerage
Estates	Ecosan, WC-Septic Tank (ST)	Ecosan, WC-ST, Simplified sewerage	Ecosan, WC-ST, Simplified Sewerage
High Cost	Ecosan, WC-Septic Tank (ST)	Ecosan, WC-ST, Simplified sewerage	Ecosan, WC-ST, Simplified sewerage
New Developing Areas (Fringe)	Ecosan, WC-Septic Tank (ST)	Ecosan, WC-ST, Simplified sewerage	Ecosan, WC-ST, Simplified Sewerage
B. Communal (Neighbourhood)			
Public			
Markets	Pour Flush,WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage

Lorry Stations			
C. Commercial			
Hotels	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
Restaurant	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
Slaughter Houses, Abattoirs	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
Other			
D. Institutional			
Schools	KVIP, Pour flush	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
Police/Army/Prison Barracks	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
Prison Complex	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
Health Facilities (hospital, Clinic, maternity etc)	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
Offices	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
E. Industrial Premises	WC-ST	WC-ST, Small Bore sewerage	WC-ST, Simplified sewerage
F. Haulage & Conveyance	mechanised desludging and haulage (mds)	mds, sewer	mds, sewer
G. Treatment & Disposal	STP, WSP, Biodigester	FSTP, WSP, Biodigester	FSTP, WSP, Biodigester, ASP
3. Drainage Improvement			
Primary drain	ditch	stone pitched	stone pitched, concrete lining
Secondary/Tertiary	ditch	stone pitched - open, concrete-lined-open	covered drains

4. Clinical/Special Hazardous Wastes - Storage, Treatment and Disposal

	Minimum		**Comfortable**		**Amenity**	
	Storage/ Transport	**Treatment/Disposal**	**Storage/ Transport**	**Treatment/ Disposal**	**Storage/ Transport**	**Treatment/Disposal**
General Waste	Black plastic bag	Bury	Black plastic bag	Landfill		
Infectious						
Sharps	Containers[1]	Bury/Incinerate	Containers	Bury/Incinerate	puncture resistant yellow bags/containers	steam disinfection/incinerate
Patient/ Animal	Containers	Bury/Incinerate	Containers	Bury/Incinerate	puncture resistant yellow bags/containers	Incinerate

Culture Specimen	Containers	Sterilise/Incinerate	Containers	Sterilise/ Incinerate	puncture resistant yellow bags/containers	Sterilise/Incinerate
Pathological Hazardous	Thick Plastic Bag	Bury/ Incinerate	Thick Plastic Bag	Incinerate	puncture resistant yellow bags/containers	steam disinfection/incinerate
Pharmaceutical	Containers	Incinerate	Containers	Incinerate	puncture resistant brown bags	Incinerate
Photo/ Chemical	Containers/re-use	Incinerate	Containers/re-use	Incinerate	puncture resistant brown bags	recycled, re-used and neutralised
Radioactive	xxx	xxx	Containers/ with radioactive symbol	Decay storage and disposal	Brown containers with appropriate symbol	decay storage, immobilse
Laboratory	Containers	Dilute, neutralise and drain into septic tank	Containers with appropriate labels/Heavy metal label	Dilute, re-used, or neutralised and drain into septic tank	Brown containers with appropriate symbol	Dilute, re-used, or neutralised and drain into septic tank
Incinerator Ash/Sludge	Containers	Bury	Containers with appropriate labels	Landfill	puncture resistant yellow bags/containers with appropriate labels	Inert Landfill

Table 4.2: Analysis of Current and Projected Needs

Category of Service	Current Status	Projected	Remarks

42. The second level of analysis will be based on the following:

(a) Population projection:

43. The most commonly used formula for computing population growth rate is the Geometric Method. The Geometric Method assumes a *constant* change rate over time. It is used for short-to-medium term projections and planning.

44. The formula is given as:

Geometric Method of Calculation of Population Growth

$$P_1 = P_0 (1+r)^t$$

Where :
P_1 = the population for the planned year (future)
P_0 = the present (base) population
1 = constant factor
t = time period (years) between the present and the future
r = Rate of growth

How to Calculate Population Growth Rates

Example: The District "A" population for year 2000 is 143,206 and grows at 2.5% per annum. What will be the population of District "A" in 2015? See Example below.

Calculating the population of District "A" using the Geometric Method:

P_1 = the anticipated population in 2015 (to be calculated)
P_0 = 143,206 (base year 2000)
t = 15 i.e. (2000-2015)
r = 2.5%

$$P_1 = P_0 (1+r)^t$$

Substituting the values in the formula, P_1 is worked out as follows:

P_1 =143,206 $(1+2.5\%)^{15}$

=143,206 $(1+2.5/100)^{15}$

=143,206 $(1 +0.025)^{15}$

=143,206 $(1.025)^{15}$

The implication of $(1.025)^{15}$ is that 1.025 is multiplied by 1.025 fifteen times, that is:

= (1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025 x 1.025)

= 1.448298)

Multiply this figure by the population

=143,206 (1.448298)

P_1 =207,405

The population in 2015 will therefore be **207,405**

Computing population growth can easily be done in Microsoft Excel by keying in the following formula in the Formula bar of Microsoft Excel.

$$= P_0 \text{ X } (1+r)^t$$

In value terms, we will have the following:

=143,206*(1+0.025) ^15

(b) Evaluation of planned developments: referring to the District Medium-Term Development Plan (DMTDP), identify all planned programmes and projects including industries, schools, hospitals, new housing developments and their implications for improving environmental sanitation services.

(c) Determine environmental sanitation services to be upgraded: using the standards in Table 4.1, estimate the requirements for upgrading to the "next level" of service beyond the current levels (minimum), Table 4.2.

3.2.5 Chapter 5 - Strategies for Environmental Sanitation

45. The goal of the DESSAP should be the same as that of the NESSAP which is in turn derived from the Revised Environmental Sanitation Policy (2007): to develop a clear national strategy for environmental sanitation as an *essential* social service and a major determinant for improving health and quality of life in Ghana (District).

Objectives and basis for strategy

46. First and foremost objectives are SMARTT (specific, measurable, agreed to be feasible, realistic, time-bound and targeted). Each district shall adapt the objectives of NESSAP to suit its local conditions. Appropriate objectives shall then be defined for each component and sub-components. It must be noted that an objective that can be achieved without any effort is not worth setting.

> Example: Component – Solid Waste. Improving Level of Service for solid waste collection.
>
> Interim **NESSAP objective** (national): to improve collection from current 5% to a minimum of 50% of households by 2015.
>
> **District Objective**: to improve collection from current x % to 50% by 2015. Where x percent is the level of collection (house-house, block and communal container) determined from field data.

Component-specific strategies

47. For each objective develop the strategies that can lead to the attainment of that particular objective.

3.2.6 Chapter 5 -Implementation Plan

48. Implementation plan shows how the whole strategy will be implemented over the plan period. Table 6.1 presents the framework for the Implementation Plan. For each component list the objective and its related strategies and indicate the location, time, implementing agency and the estimated cost for each strategy.

3.2.7 Chapter 7 -Monitoring and Evaluation

49. An important aspect of the DESSAP is to be able to assess whether strategies achieve their stated objectives. In order to carry out effective M&E, the following must be carried out:
a. Each district will have to set up a participatory M&E team;
b. The team should develop relevant indicators for each strategy;
c. Develop an M&E plan to show who will be responsible for what, when and how each indicator will be assessed; and
d. The plan should indicate the reporting lines and show how the findings will influence the next stages of implementation.

Table 6.1: Membership of District M&E Team

Example: Level of Service strategy to meet above objective
Interim NESSAP **strategy** (**national**): adopt the minimum and affordable collection service (see standards) to attain 50% minimum collection for solid waste.

District Strategy (ies): each district will consider the mix of service options that will lead to attaining minimum of 50% collection.

Please note: strategies could include improving enforcement and compliance management, improving revenue collection etc.

No.	Name	Department/Organisation	Position

Key Performance Indicators

50. The Team should develop key performance indicators that will be monitored. The indicators include;

- ***Input*** – that is personnel and material that will be needed to carry out the strategy;
- ***Output*** – quantitative and qualitative measures of activities, work-products or actions (e.g. " x" no of cases successfully prosecuted);
- ***Intermediate Outcome*** – changes in knowledge, behaviour, or condition that results from activities needed to achieve the end outcome (e.g. improved level of refuse collection)
- ***End Outcome*** – the ultimate outcome of implementing the strategies (e.g. noticeable reduction in littering and open dumps).

51. For each strategy and for each stage of implementation, the M&E Team will determine the key indicators for assessing performance of the strategy.

Annexes 1

References

Expanded Sanitary Inspections and Compliance Enforcement (ESICOME) Programme, May 1999, MLGRD
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
Trainers Note for Training on Landfills, June 2002 MLGRD/EPA
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

Annex 2: Additional Forms

Annex 2.1

INTERDEPARTMENTAL COORDINATION FOR ACTION PLAN IMPLEMENTATION

ACTION PLAN GOALS	Municipal Department / Agency Tasks				
	Public Works	Health and Social Services	Transportation	Housing	City Administrator

INTERDEPARTMENTAL COORDINATION FOR ACTION PLAN IMPLEMENTATION

The Worksheet of Annex 2.1 can be used to help stakeholders identify which responsibilities each municipal department must take to implement each Action Plan Goal. It can also be used to identify which municipal department will take the "lead," or coordinating role, for each Goal.

To use the Worksheet, write the Action Plan Goals on the left, vertical axis of the Worksheet under the heading "Action Plan Goals." Write the names of the different municipal departments on the top, horizontal axis of the Worksheet.

In each box of the matrix, write the responsibility that each department will need to take to achieve each Goal. On the basis of this division of responsibilities, indicate in the lower right hand corner of each box which department will take on the coordinating role for achieving each Goal. In addition to their implementation responsibilities, these lead departments would also be give primary responsibility for documenting and reporting on the activities undertaken to achieve each Goal, and for monitoring indicators and evaluating trends related to each Goal.

COORDINATION OF ACTION PLAN IMPLEMENTATION WITH STATUTORY PLANNING PROCESS

Annex 2.2

ACTION PLAN GOAL	ar																			
	I	II	III	1V	I	II	III	1V	I	II	III	1V	I	II	III	1V	I	II	III	1V
IMPLEMENTATION TIME FRAME																				
INPUTS INTO STATUTORY PROCESSES																				

STATUTORY PLANNING PROCESSES	Year																			
	I	II	III	1V	I	II	III	1V	I	II	III	1V	I	II	III	1V	I	II	III	1V

CRITICAL MILESTONES																		

COORDINATION OF ACTION PLAN IMPLEMENTATION WITH STATUTORY PLANNING PROCESS

The Worksheet of Annex 2.2 is provided to prepare a time schedule for implementing strategies related to each Action Plan Goal, and for linking these strategies with the time schedules of existing statutory planning processes.

To use the Worksheet, enter the relevant Action Plan Goal in the top left corner. List the relevant statutory planning and political processes on the left, vertical axis of the Worksheet. Indicate the time schedules for each of these processes in the appropriate row (see the sample Worksheet). Based upon the critical conjunctions of these statutory and political processes, mark with an "x" the "critical milestones" at the bottom of the Worksheet. Use these critical milestones to prepare a schedule for the implementation of the Action Plan. The schedule should allow stakeholders to provide necessary inputs into statutory processes and to arrange for the timely launching of public education and advocacy campaign

Annex 2.3

IMPLEMENTATION STRATEGY FOR ACTION PLAN TARGETS

ACTION PLAN TARGET				RELATED TRIGGER(S)			
Actions Required to Achieve Target	Strategy	Responsibility	Time Frame	Progress Check	Required Resources	Monitoring Documentation Record	Performance Evaluation (Indicators)

IMPLEMENTATION STRATEGY FOR ACTION PLAN TARGETS

The Worksheet of Annex 2.3 is provided to prepare a detailed implementation strategy to achieve each Action Plan Target.

To use the Worksheet, write the Action Plan Target in the upper left hand corner and the related Trigger(s) in the upper right hand corner. On the left, vertical axis of the Worksheet, write each of the specific actions that will be required to achieve the target. Then complete the Worksheet, specifying the strategies, responsibilities, time frame, reporting deadlines, resource requirements, and performance indicators related to each