



GOVERNMENT OF GHANA

**MINISTRY OF LOCAL GOVERNMENT AND
RURAL DEVELOPMENT**

**ENVIRONMENTAL
SANITATION
POLICY**

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ABBREVIATIONS

AMA	Accra Metropolitan Assembly
BOO	Build, own, operate
BOOT	Build, own, operate, transfer
BOT	Build, operate, transfer
CSIR	Council for Scientific and Industrial Research Department
OUR	of Urban Roads
EPA	Environmental Protection Agency
GPRTU	Ghana Private Road Transport Union
GWSC	Ghana Water and Sewerage Corporation
HSED	Human Settlements and Environment Division of
MEST	MLGRDE Ministry of Environment, Science and
MLGRD	Technology Ministry of Local Government and Rural
MoH	Development Ministry of Health
MWH	Ministry of Works and Housing
NESPCC	National Environmental Sanitation Policy Co-ordination
	Council
SESP	Strategic Environmental Sanitation Plan

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PREFACE

This National Environmental Sanitation Policy was prepared on the personal directive of H.E. The President by the Ministry of Local Government and Rural Development, in extensive consultation with stakeholders.

It was approved by Cabinet at its meeting held on Thursday 8th April, 1999, and on the advice of the Cabinet Social Sector Sub-Committee under the Chairmanship of RE. the Vice President, with the following additional directives:

A National Environmental Policy Co-ordinating Council be established immediately to expedite implementation of the Policy.

Land for treatment and disposal of waste should be properly acquired and protected against encroachment.

Developers, both public and private sector, should always factor waste management into their development proposals so as to facilitate waste collection, intermediate storage, treatment and disposal.

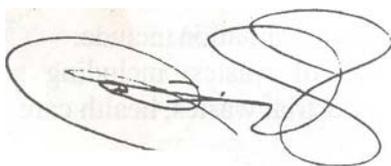
The mode of payment for sanitation services should be revamped and streamlined to generate funds to meet the cost of sanitation services.

All households should be strictly required to provide domestic toilet facilities.

Standardisation and bulk procurement of environmental sanitation equipment should be vigorously pursued.

An Environmental Sanitation Day be established to be celebrated once every year to involve all citizens in cleansing and other environmental protection activities.

Metropolitan, Municipal and District Assemblies
Metropolitan, Municipal and District Assemblies are required to take action to make appropriate bye-laws to regulate environmental sanitation and prevent pollution within their areas of jurisdiction.



KWAMENA ARWOI
MINISTER FOR LOCAL
GOVERNMENT AND RURAL
DEVELOPMENT

12th May, 1999

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1. ENVIRONMENTAL SANITATION: BASIC PRINCIPLES

1.1 Context

Environmental sanitation is an essential factor contributing to the health, productivity and welfare of the people of Ghana. It is identified in Ghana's programme of economic and social development set out in "Vision 2020" as a key element underlying health and human development. The programme also identifies environmental protection and the improved management of human settlements as key factors in rural and urban development.

The Government's National Environmental Action Plan for 1991-2000 also places a high priority on environmental sanitation, as well as the establishment and implementation of environmental and health standards.

Against this background, and in recognition of its importance to national development, greater emphasis must be placed on environmental sanitation in the allocation of national development resources. This environmental sanitation policy seeks to define a systematic approach and framework within which those resources can be used most efficiently.

1.2 Objectives of Environmental Sanitation

Environmental sanitation is aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the population. It comprises a number of complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation.

The principal components of environmental sanitation include:

- (a) Collection and sanitary disposal of wastes, including solid wastes, liquid wastes, excreta, industrial wastes, health care and other hazardous wastes;
- (b) Storm water drainage;
- (c) Cleansing of thoroughfares, markets and other public spaces;

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- (d) Control of pests and vectors of disease;
- (e) Food hygiene;
- (f) Environmental sanitation education;
- (g) Inspection and enforcement of sanitary regulations;
- (h) Disposal of the dead;
- (i) Control of rearing and straying of animals;
- (J) Monitoring the observance of environmental standards.

These services must be provided reliably and continuously to mitigate the negative effects of social and economic activity in human settlements.

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2. PROBLEMS AND CONSTRAINTS

The current environmental sanitation status of Ghana leaves much to be desired. Less than 40% of urban residents are served by a solid waste collection service, and less than 30% by an acceptable household toilet facility. Rural dwellers are even less well served. Even in those cases where wastes are removed, most are disposed of in an unsanitary manner, posing serious risks to human health and the environment, including the country's dwindling water resources. Stormwater drainage is inadequate or absent in most settlements, and flooding is common.

At the household level, poor hygienic practices by individuals and communities are compounded by insufficient and ineffective hygiene education. Vector-borne diseases such as malaria and bilharzia are rife due to the virtual absence of pest and disease vector control programmes.

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.

Some of the underlying causes of this situation have been identified as:

- (a) Lack of a clear national goal or vision of environmental sanitation as an essential social service and a major determinant of the standard of living;
- (b) Lack of a formally constituted environmental sanitation sub-sector in the governmental system of sector development planning;
- (c) Lack of a comprehensive policy assigning responsibilities for environmental sanitation to the relevant Ministries and agencies, resulting in overlaps, gaps and poor co-ordination in the management of programmes and services;
- (d) Lack of technical capacity in MLGRD to orient and support the District Assemblies in the provision of environmental sanitation

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services;

- (e) Attempts to transfer to the Assemblies environmental sanitation functions performed by Ministries and central Government agencies, without transferring the accompanying budgets, personnel and equipment;
- (f) Weak and/or outdated and poorly enforced environmental sanitation legislation;
- (g) Inadequate allocation of resources for environmental sanitation services, both nationally and at district level;
- (h) Lack of adequate professional manpower including engineers, planners and administrators, for planning, management, policy formulation and research.

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3. STRATEGIC OBJECTIVES

3.1 A Strategy for Environmental Sanitation

The basic elements of a strategy to respond to the objectives and problems outlined above and to promote accelerated development of the sector include:

- (a) Formal establishment of environmental sanitation as a sub-sector within the national development programme;
 - (b) Rationalisation of institutional objectives and functions at all levels, including delineation of responsibilities and the establishment of inter-agency linkages;
 - (c) Establishment of a National Environmental Sanitation Policy Coordination Council within the Ministry of Local Government and Rural Development;
- (d) Establishment of a National Environmental Sanitation Day to be observed one day in a year by all citizens;
- (e) Development and strengthening of the community's role in environmental sanitation;
- (f) Development of human resources and strengthening institutional structures for managing environmental sanitation;
- (g) Assigning delivery of a major proportion of environmental sanitation services to the private sector through contract, franchise, concession and other arrangements;
 - (h) Development of a strong legislative and regulatory framework, and capacity for supervising environmental sanitation activities and enforcing standards;
- (i) Promotion of research to review sanitation technologies;
- (j) Identification and dissemination of cost-effective, appropriate, affordable and environmentally friendly technologies to address environmental sanitation needs;
- (k) Adoption of the cost recovery principle in the planning and management of environmental sanitation services.

3.2 Outputs and Targets

By adopting the above strategies it is intended that by the year 2020 the following should have been achieved:

- (a) National Environmental Sanitation Day is established by legislation and observed regularly;

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- (b) The National Environmental Sanitation Policy Co-ordination Council is established within the Ministry of Local Government and Rural Development;
- (c) Environmental sanitation technologies are under regular review and continuous improvement;
 - (d) All solid wastes generated in urban areas are regularly collected and disposed of in adequately controlled landfills or by other environmentally acceptable means;
- (e) All excreta are disposed of either in hygienic on-site disposal systems or by hygienic collection, treatment and off-site disposal systems;
- (f) All pan latrines are phased out (by 2010);
- (g) At least 90% of the population has access to an acceptable domestic toilet and the remaining 10% has access to hygienic public toilets;
- (h) Hygienic public toilets are provided for the transient population in all areas of intense public activity;
- (i) Active sanitary inspection and vector control programmes are in place and the incidence of malaria, bilharzia and other vector-borne diseases is falling;
- (j) Environmental standards and sanitary regulations are strictly observed and enforced;
- (k) The majority of environmental sanitation services are provided by the private sector.

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4. ROLE OF THE COMMUNITY

Environmental sanitation is a public good. Improper waste disposal by one individual affects all community members; mosquitoes that breed in one place may bite people in another; contamination of foodstuffs will affect all who consume them, not just the seller. Ensuring good sanitation is therefore the responsibility of all citizens, communities, private sector enterprises, NGOs and institutions of Government. All these actors have an essential part to play in maintaining a high standard of environmental sanitation, so that domestic and commercial activities have no prejudicial effect on the health or the living and working environment of others.

4.1 Individual Responsibilities

Every individual, establishment or institution shall be responsible for: (a)

Cleansing within and in the immediate environs of the property

they occupy, including access ways and the drains and roads abutting the property;

(b) Temporary storage of wastes within the property and disposal thereof outside the property, as may be directed by the competent authority;

(c) Taking measures to prevent the breeding of disease vectors within and in the immediate environs of the property they occupy;

(d) Ensuring that the wider environment is not polluted or otherwise adversely affected by their activities;

(e) Hygienically disposing of all wastes they generate in public areas by use of an authorised public toilet or solid waste container as appropriate;

(f) Participating in all communal environmental sanitation exercises organised by the community or its representatives.

Where individuals, establishments or institutions fail to discharge these responsibilities, the competent authorities shall take any necessary remedial action at the expense of those in default. The competent authorities shall also assume responsibility for the maintenance of specified public areas in a sanitary condition and charge fees for the use of such areas.

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4.2 Collective Responsibilities

4.2.1 Community Programmes

Every community shall:

- (a) Establish community environmental sanitation norms in line with National sanitation policy;
- (b) Undertake community sanitation and hygiene education to create awareness of environmental sanitation issues;
- (c) Maintain a clean, safe and pleasant physical environment in their settlement;
 - (d) Under the leadership of the unit committees and Urban/Town/Area Councils, organise participatory neighbourhood cleansing once every two months on dates fixed by the District Assemblies;
- (e) Mobilise all citizens to participate in observing National Environmental Sanitation Day (ENSADA) once every year on a date to be fixed by Government;
 - (f) Sanction citizens who fail to participate in neighbourhood cleaning exercises or ENSADA, or who omit or commit acts contrary to community sanitation norms;
- (g) Take the necessary steps to develop appropriate environmental sanitation infrastructure such as domestic and public toilets and waste disposal sites;
- (h) Prevent soil, water' and air pollution.

4.2.2 Community-Based Organisations

Community-based organisations and NGOs shall:

- (a) Assist communities in community mobilisation;
- (b) Assist the District Assemblies, Town Councils, Unit Committees and communities in the planning, funding and development of community sanitation infrastructure for the safe disposal of wastes and the prevention of soil, water and air pollution.

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5. INSTITUTIONS, THEIR ROLES AND RESPONSIBILITIES

The institutions concerned with implementing environmental sanitation policy have been divided into the "principal sector agencies" with direct responsibility for aspects of environmental sanitation, and the "allied sector agencies" which play a supporting role. Under these arrangements, some existing responsibilities will be transferred from one institution to another. In most cases, human resources capacity will have to be developed within the institutions to enable them to meet their responsibilities effectively.

5.1 Principal Sector Institutions and their Functions

5.1.1 Ministry of Local Government and Rural Development

MLGRD shall be the lead sector agency. Its functions shall include:

- (a) Co-ordination and formulation of environmental sanitation policy;
- (b) Developing and issuing technical guidelines on environmental sanitation services and their management;
- (c) Promulgation of national legislation and model bye-laws;
- (d) Direction and supervision of the National Environmental Sanitation Policy Co-ordination Council.

The *National Environmental Sanitation Policy Co-ordination Council* (NESPCC) shall include representatives from relevant Government agencies\ NGOs and private sector groups, and shall be responsible for co-ordinating policy and ensuring effective communication and co-operation between the many different agencies involved in environmental sanitation, within the context of a coherent national programme. The NESPCC shall expedite implementation of the national environmental sanitation policy.

Within *MLGRD*, the *Human Settlements and Environment Division* (HSED) shall play the leading role in supporting environmental sanitation. It shall be divided into a Human Settlements Unit an Environmental Health and Management Unit and a Public Health Engineering Unit. The functions of the latter two shall include:

I *MLGRD*, HSED (secretariat), Metropolitan and District Assembly representatives, MEST, EPA, CSIR, MWH, MWH Hydrology Division, GWSC, Ministry of Roads and Transport, DUR, Ministry of Education, Ministry of Health.

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- (a) Provision of guidance to MLGRD on environmental sanitation sector planning, policy and legislation;
- (b) Provision of technical assistance and training to District Assemblies and service providers;
- (c) Planning and assisting human resources development for the sector;
- (d) Co-ordinating and disseminating the results of research in the environmental sanitation field.

In order to ensure that policy and technical inputs best match actual needs, these functions must be combined in a single core institution, which should draw as and when necessary on specific outside expertise, but always maintain a "critical mass" of in-house capacity and institutional memory. To enable HSED to perform this role, its establishment will be modestly increased.

5.1.2 Metropolitan, Municipal and District Assemblies

a) internal organisation

Generic organisation charts are attached in Annex 1. These are intended not as blueprints, but rather as a guide for Assemblies in the establishment of structures tailored to their own individual situations. When setting up these structures, effective mechanisms must be established for co-ordinating waste management with the other aspects of environmental sanitation, and to allow for effective monitoring of environmental sanitation activities with respect to environmental quality standards.

The Assemblies shall carry out four distinct functions with respect to environmental sanitation, as follows:

(i) Waste Management (see 1.2 (a) to (c) above)

Waste management shall be carried out by a Waste Management Department, within Metropolitan and Municipal Assemblies, or a Waste Management Unit, within the Environmental Health and Management Departments of District Assemblies. They may provide the services directly, or indirectly through private contractors or franchisees. The Assemblies shall in all cases maintain an in-house capacity to provide at least twenty (20) per cent of the services directly.

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(ii) Public Health Management (see 1.2 (d) to (i) above)

All other environmental sanitation tasks within Metropolitan, Municipal and District Assemblies, comprising the public health management functions, shall be carried out by an Environmental Health and Management Department with private sector inputs where appropriate.

(iii) Environmental Monitoring (see 1.2 0) above)

Within the Environmental Health and Management Department, the Environmental Monitoring Section of the Environmental Protection and Standards Enforcement Unit shall, in collaboration with the EPA, be responsible for monitoring and enforcing environmental standards and regulations set by the EPA and other national regulatory agencies, and for organised and continuous public education on safeguarding the environment. This includes responsibility for monitoring the environmental impact of Assemblies' own waste management activities.

iv) Planning, Monitoring and Public Relations

As well as providing environmental sanitation services, the Assemblies shall also monitor their effectiveness, take action to resolve any problems identified, make short term and strategic environmental sanitation plans to respond to community needs and wider environmental considerations, and ensure good public relations. In smaller Assemblies, these functions may be undertaken by the head of the Environmental Health and Management Department, whilst in larger Assemblies, a small specialised unit may be established under the Waste Management Department.

b) Functions of District Assembly Sub-Divisions

Some aspects of environmental sanitation services need to be provided and managed at the local level, within the Assembly's subdivisions. Whenever possible, operational sub-divisions for service provision should be coterminous with the political-administrative sub-divisions. Responsibilities to be exercised at these levels include:

i) Sub-Metro/Zonal Urban Councils

These entities should be assigned responsibility for selected common services best rendered from the sub-district office, such as:

- a) Food hygiene and other inspection work;
- b) Environmental sanitation education;
- c) Cleansing;
- d) Supervision of contractors;
- e) Co-ordination, support and supervision of services within the sub district.

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ii) Town/Area Councils

These provide services for the towns and adjoining villages, including: (a)

- Supervision of Assembly workers;
- (b) Supervision of the performance of contractors and franchisees;
- (c) Operation of facilities not franchised or contracted to the private sector;
- (d) Community mobilisation and fee collection;
- (e) Promoting clean up and self-help programmes.

iii) Unit Committees

These support service delivery by the Assembly and represent residents in each neighbourhood. Their functions include:

- (a) Community mobilisation, customer registration and fee collection;
- (b) Participation in planning and implementing projects and programmes;
- (c) Monitoring environmental sanitation services at the neighbourhood .

5.2 Allied Sector Institutions and their Functions

5.2.1 Ministry of Environment, Science and Technology

MEST is responsible for setting standards and guidelines for environmental quality.

The *Environmental Protection Agency* (EP A) is the regulatory agency for environmental quality and effluent standards.

The *Council for Scientific and Industrial Research* (CSIR) and its member institutions shall support and undertake research and development activities related to environmental sanitation.

The *Department of Town and Country Planning* is responsible for supporting the physical planning activities of the Assemblies, which has wide implications for environmental sanitation management.

5.2.2 Educational Institutions

The Ministry of Education and the tertiary education institutions are responsible for hygiene education in schools, universities and technical institutions respectively.

5.2.3 Ministry of Health

MoH is responsible for managing and providing health data, supporting hygiene education activities, and contributing to regulation and standard-setting for environmental sanitation services. The Ministry may also use environmental sanitation information to contribute to disease prevention and control.

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5.3 Private Sector

The bulk of environmental sanitation services shall be provided by the private sector, including NGOs and community based organisations under the supervision of the Public Sector, especially the Metropolitan, Municipal and District Assemblies.

The public sector shall maintain adequate capacity to provide not less than 20% of the sanitation services and reserve the right to take measures to intervene and provide the services in the event of failure of the private sector to deliver the services due to industrial actions in their establishments or other reasons.

The private sector shall operate within policies, regulations, supervisory and licensing arrangements set up by the public sector to promote efficiency and competitiveness.

No single private sector organisation shall be given monopoly in the delivery of sanitation services in anyone human settlement except in settlements with a population of 15,000 or less. In all other settlements, the town/city shall be zoned for purposes of sanitation services delivery.

5.3.1 Services to be provided by the Private Sector

Where possible, environmental sanitation services shall be provided by the private sector on a full cost recovery basis, under franchise or concession agreements. Where full cost recovery is not possible the Assemblies may enter into contracts with service providers. The following services shall be undertaken by the private sector:

- (a) Provision and management of septage tankers, on a fully commercial basis subject to licensing and the setting of maximum tariffs by the Assemblies;
- (b) Construction, rehabilitation and management of all public baths and toilets, subject to the supervision and setting of maximum tariffs by the Assemblies;
- (c) Solid waste collection from individual institutional or domestic customers, subject to the supervision and setting of maximum tariffs by the Assemblies;
- (d) Solid waste collection from communal containers under contract to the Assemblies, Unit Committees or community groups or as part of a franchise covering both high and low income areas;
- (e) Cleansing of designated areas and facilities (streets, drains, markets, lorry parks, etc.) and maintenance of drains, under the agreements covering solid waste collection;

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5.3.2 Role of the Public Sector

- (a) Government and the Assemblies shall establish an enabling environment at all levels by enacting appropriate legislation, harmonising byelaws governing environmental sanitation service and developing standard contract and franchise documents;
- (b) Contracts, leases, franchises etc. Must be clearly defined and awarded transparently and in such a way as to ensure active and fair competition;
- (c) Strong and effective supervisory, licensing and performance measurement systems shall be implemented by the Assemblies;
- (d) Assemblies must closely monitor costs (both internally and in the private sector), including the full cost of replacing capital equipment, so as to ensure the fixing of realistic and economically viable tariffs;
- (e) The assemblies shall carry out public education campaigns to raise the status of environmental sanitation, public awareness of the costs involved and understanding of the need to pay for it;
- (f) The Assemblies shall enforce public participation in franchised services such as solid waste collection which have an impact on community well-being.
- (g) The Assemblies shall establish hire purchase arrangements for the transfer to the private sector of the environmental sanitation plant and equipment they own;

Government shall revise the investment code to facilitate the import and reduce taxation of capital equipment for environmental sanitation.

5.4 Functions to be Transferred to the Assemblies

In order to enable effective co-ordination with other environmental sanitation activities, *all storm water drainage, sanitary sewerage* and other functions related to environmental sanitation and presently assigned to Central Government agencies must be transferred to the District Assemblies.

When these functions are transferred, the corresponding Capili and operating budgets, personnel and equipment should also be transferred. Budgets to be transferred to the Assemblies shall in addition exist Central Government subventions from all sources. They shall be transferred by permanently increasing allocations made through the District Assemblies' Common Fund.

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5.5 Human Resources

The provision of adequate environmental sanitation services is critically dependent on the availability of sufficient numbers of suitably qualified sanitary engineers and specially trained technical staff. Waste management in the Metropolitan, Municipal and larger urban areas requires an experienced sanitary engineer or other professional backed by at least one other engineer, Environmental Health Technologists to act as unit heads and appropriately qualified supporting staff. In smaller Districts, Environmental Health Officers or Technologists may be in charge of waste management, but must have the requisite specialised knowledge and experience.

Similarly, public health management requires a fully qualified professional (Medical Officer specialised in public health, public health engineer or equivalent) and an Environmental Health Technologist or high grade Environmental Health Officer to manage the Environmental Health and Management Department, backed by an appropriate number of more junior officers with a range of specialised skills. There is a particular need for staff specialised in environmental quality management, where currently available skills fall far short of requirements.

A revised scheme of service shall be developed, so as to retain and motivate capable public sector staff and to reflect their increasing levels of responsibility.

An increasing proportion of environmental sanitation will be undertaken by the private sector. It will therefore be necessary to ensure that adequate numbers of personnel with the requisite qualifications and knowledge are available to private sector service providers, and to assist them in carrying out personnel training and the planning of services.

The HSED shall be responsible for tracking human resource requirements and ensuring that appropriate training courses are available, including collaborating with training institutions on curriculum development. Training arrangements for environmental sanitation professionals, sub-professionals and junior personnel shall be maintained and strengthened, so as to ensure a constant supply of qualified staff. Specialised training shall also be provided, especially in the areas of environmental protection, contract management and supervision, planning, public relations, monitoring and evaluation.

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6. ENVIRONMENTAL MANAGEMENT AND PROTECTION

6.1 Control and Ownership of Wastes

No hazardous wastes (as defined in Annex 1) shall be imported into Ghana.

All waste deposited in the public domain shall be the property of the District Assembly. The District Assembly may also direct generators of waste to dispose of or surrender such waste to the District Assembly in a manner and at such times and places as may be approved by the District Assembly.

The District Assemblies shall ensure the availability of adequate sites for the present and future storage, treatment and disposal of wastes by identifying, acquiring, demarcating and protecting suitable areas.

6.2 Responsibility for the Environment

District Assemblies are responsible for managing and protecting the environment so as to prevent hazards to human health, conserve natural resources and maintain pleasant surroundings. They shall achieve this through public education, provision of environmental sanitation services and the application and enforcement of environmental regulations. The Assemblies shall designate a Unit of the Environmental Health and Management Department to ensure that these functions are carried out properly.

The District Assemblies and MLGRD shall cooperate with the EP A and any other institutions involved in environmental protection.

The EPA and other relevant organisations shall assist MLGRD to Mobilise adequate resources and train District Assembly staff for environmental management. The EPA shall monitor the District Assemblies' performance in environmental management and protection and provide backup when necessary.

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6.3 Environmental Control of Development Activities

The District Assemblies' Environmental Health and Management Departments, supported by the EPA, shall ensure that all developments or activities likely to have a substantial impact on the environment are subject to Environmental Impact Assessment. They shall also monitor and enforce compliance with the impact statements. Developers shall be required to prepare and submit environmental management plans in accordance with the provisions of the Environmental Protection Agency Act 490, 1994.

All developers, from both public or private sectors, shall make adequate provision to facilitate collection, intermediate storage, treatment and disposal of waste.

6.4 Prevention of Pollution

The Assemblies shall:

- (a) Prevent all kinds of pollution of the environment;
- (b) Ban defecation and urination in places other than toilets and urinals;
- (c) Ban the use of pan latrines by the year 2010;
- (d) Promote and enforce the use of domestic toilets in accordance with approved standards and ensure that surface and subsurface water used by communities shall not be polluted by the technology chosen;
- (e) Provide adequate and modern public toilets and urinals mainly for the transitory and floating population and at places where public gatherings take place e.g. markets, shopping areas, transport terminals, etc.

Sanitary inspection programmes undertaken by the Assemblies shall be expanded and strengthened to include the monitoring of all activities with potential for pollution of water resources, air and soil, and institute appropriate action for the prevention of pollution. Such action should include not only enforcement and the application of sanctions, but also active collaboration with major polluters to resolve their own and other community-wide environmental problems in the most mutually beneficial manner.

These regulatory functions shall also cover waste management activities, whether undertaken directly by the Assembly or the private sector.

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Environmental sanitation education shall be integrated into other public education programmes undertaken by the Assemblies and other agencies. It shall also be included in the basic school curriculum.

6.5 Protection of Water Resources

One of the most important aspects of environmental management and protection is the protection of water resources. These are highly susceptible to pollution and depletion by industrial, agricultural and domestic activities, as well as by inadequate waste management practices (particularly as regards the siting and operation of waste treatment and disposal facilities).

Assemblies should therefore take the utmost care to minimise any negative effects of such activities on their own water resources or those used by communities downstream, including underground aquifers. In particular, waste treatment and disposal facilities and industrial effluent discharges must be sited so as to avoid contaminating water resources used by others. Leachate and effluents must be rigorously monitored and compliance with EPA standards strictly enforced.

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7. LEGISLATION AND LAW ENFORCEMENT

7.1 National Legislation

MLGRD shall develop legislation to address:

- (a) Establishment of any new institutional structures required for managing environmental sanitation;
- (b) Establishment of conditions enabling the private sector to provide and charge fees for environmental sanitation services;
- (c) Establishment of incentives and of regulation, licensing and monitoring arrangements for private sector service providers;
- (d) Control and ownership of wastes;
- (e) Arrangements for budgeting and financing environmental sanitation services in the District Assemblies;
- (f) Any other legislation required to establish and maintain acceptable standards of environmental sanitation.

In addition, MLGRD shall co-ordinate the harmonisation of individual District Assemblies' bye-laws, including the development of model bye-laws where necessary. MLGRD shall also develop and promulgate technical guidelines on environmental sanitation services.

The judiciary shall establish and empower Community Tribunals to prosecute offenders against sanitary bye-laws and regulations.

7.2 Bye-laws

District Assemblies shall promulgate bye-laws addressing:

- (a) Establishment of zones for the provision of environmental sanitation services;
- (b) Enforcement of public participation in critical environmental sanitation services;
- (c) Designation of areas and facilities for the disposal of wastes;
- (d) Adequate provision by developers for the collection, intermediate storage, treatment and disposal of solid and liquid waste;
- (e) Licensing and monitoring of environmental sanitation service providers;
- (f) Tariffs for environmental sanitation services and their collection by contractors, franchisees etc.;
- (g) Ownership of wastes;
- (h) Storage of wastes on the premises of waste generators;
- (i) Management and disposal of hazardous wastes;

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- (G) Individual and communal recycling of wastes;
- (h) Allowable toilet systems and excreta disposal methods;
- (I) The handling, preparation and sale of foodstuffs, beverages and other items for human consumption;
- (j) The activities and behaviour of individuals and institutions which cause or are likely to cause environmental pollution or vector breeding;
- (k) Burial and cremation of the dead;
- (l) Rearing and straying of animals and pets;
- (m) Any other matters that demand local regulation to achieve and maintain a clean and healthy environment.
- (n) Enforcement of construction/provision of domestic toilets in every residential, commercial and industrial property.
- (o) Inclusion in development permits of conditions to prevent over crowding, pollution, blockage of drainage channels, blocking of easement and encroachment on building reservation areas.

7.3 Enforcement

The first line of enforcement shall be the Health Inspectorate (Environmental Health and Management Departments of the District Assemblies), working by a combination of education and persuasion. The objective should be to make the community understand and accept its responsibilities with regard to environmental sanitation.

Where such non-coercive action fails, legal action may be taken through the courts. In the first instance (except for serious cases) infractions against environmental sanitation legislation would be taken to the Community Tribunals. To this end, District Assemblies shall establish capacity to prosecute cases in the Community Tribunals. Where cases cannot be resolved at this level, they would be brought before a higher judicial institution. If necessary, the police may be requested to arrest offenders so that they can be brought to justice.

Due to the major importance of controlling pollution resulting from improper disposal of human excreta, bye-laws compelling households to construct domestic toilets shall be strictly enforced.

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8.CRITERIA FOR SPECIFYING SERVICES AND PROGRAMMES

The provision of environmental sanitation services and programmes is a legal responsibility of the District Assemblies, in line with the national goal of providing such services to all residents of urban and rural communities. The minimum service level is that required for the protection of health and the environment. Higher service levels may be considered subject to consideration of affordability and sustainability, in accordance with the prevailing level of socio-economic development.

This section sets out the basic criteria to be satisfied by environmental sanitation services. Outline specifications of the services themselves are given in Annex 2. MLGRD, through HSED or any other agency it may designate, shall from time to time issue technical guidelines on these services, setting out approved options, design criteria and operational procedures.

8.1 Basic Programmes and Services

From amongst the full range of environmental sanitation programmes and services comprising the National Environmental Sanitation Programme, some components have been selected on the basis of their importance or potential impact on health. These "Basic Programmes and Services" are mandatory and must be provided by District Assemblies to all communities without exception, whilst being adapted to the particular needs of each community. They comprise:

- (a) Domestic waste (refuse) collection and disposal;
- (b) Nightsoil and sewage (liquid waste) collection and disposal;
- (c) Promotion of household toilets and the phasing out of pan latrines;
- (d) Provision of public toilets in heavily used areas such as markets and stations;
- (e) Cleansing of streets and drains;
- (f) Cleansing of open spaces (e.g. parks, beaches, river banks, markets etc.);
- (g) Control of insect infestation (e.g. mosquitoes, flies);
- (h) Inspection of foods (meat, fish, etc.);
- (i) Inspection of eating/drinking establishments and food premises;

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- G) Environmental sanitation education;
- (k) Provision and operation of cemeteries;
- (l) Enforcement of sanitary regulations;
- (m) Inspection of premises and issuing certificates of habitation;
- (n) Control of the rearing and straying of animals.

8.2 Strategic Planning

To; guide the implementation of these programmes and services, District Assemblies shall develop Strategic Environmental Sanitation Plans (SESPs). The SESP should address the needs of all segments of the population through application of a range of service types appropriate to the different areas within the District, whilst recognising resource constraints. Priorities change over time and strategies must be refined as experience is gained. Accordingly, the SESP is not static but rather updated regularly. It should:

- (a) Identify the facilities needed to provide comprehensive services, tailoring the recommended technical options to each type of area to be served;
- (b) Consider user preferences and willingness to pay;
- (c) Break the overall plan into components that can be implemented independently but which together provide full service coverage, and set priorities;
- (d) Describe the implementation and financing arrangements for each component, including private sector participation;
- (e) Use a relatively short planning horizon (10-15 years), emphasising actions that can be taken immediately.

8.3 Planning Principles

8.3.1 Sustainability

Design of programmes and services and the selection of technology must take sustainability explicitly into account as a design criterion. Aspects to be considered during pre- feasibility studies include:

- (a) *Recurrent costs*: Will the Assembly or tariff-paying users be able to provide sufficient and reliable funds to operate and maintain the service?
- (b) *Complexity of operation*: Can the service be operated with the

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- (c) *Spare parts and technical backup*: Can these be obtained locally and within a reasonable time?
 - (d) *Technical appropriateness*: Much equipment and technology was developed in other countries for different situations. Is the planned service adapted to the local situation (e.g. type of waste, quality of electricity supply, etc.)?

8.3.2 Cost Recovery

This shall be treated as a major factor for achieving sustainability where the services can be designed to earn revenue. However, tariffs should be set at levels that will not discourage the use of the services, especially where this would create health risks.

8.3.3 Technology Choice

The selection of technologies for waste treatment and disposal shall be governed by technical guidelines to be issued from time to time by MLGRD or its designated agency. Basic principles to be adopted include:

- (a) Recycling of waste for industrial, agricultural and other uses shall be practised wherever it produces a net cost reduction or positive environmental impact;
- (b) Waste disposal methods shall, as far as practicable, utilise waste to achieve environmental improvement, including land reclamation, use of treated effluents for afforestation, use of compost for soil improvement, etc.;
- (c) The promotion of waste reduction shall be an integral part of waste management;
- (d) Technology shall be technically, operationally and financially appropriate to the conditions where it will be employed;
- (e) Technology shall be adapted to respond to the needs of service beneficiaries, rather than being imposed upon them;
 - (f) Environmental pollution and health risks shall be minimised as far as possible whilst still consistent with providing universal and affordable services.

To ensure the best possible quality of waste management, concerted action shall be taken to search for, test, adapt and adopt appropriate technologies. HSED will co-ordinate this effort by the systematic monitoring and evaluation of technologies in use locally.

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Where research needs or promising foreign technologies are identified, local universities and research organisations shall be charged with conducting studies, reviews and adaptation of technologies. Annual grants shall be provided to fund these research activities.

When suitable technologies are to be adopted or unsuitable ones discontinued, MLGRD or its designated agency shall issue and circulate technical guidelines providing descriptions, design criteria, operational procedures and requirements and any other relevant information.

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9. FUNDING

9.1 Basic Principles

Regularity and reliability are a fundamental aspect of environmental sanitation services. Affordable services which are consistently provided will almost always yield better results than more expensive services provided sporadically. It is thus of paramount importance that environmental sanitation services are economically appropriate and that mechanisms for funding them are sustainable.

Direct cost recovery from users should be applied where it is possible to charge a full commercial price covering all operating and capital costs, for services such as liquid and solid waste collection, public toilets, issue of permits etc.

Assemblies are to encourage private sector service providers to participate in the setting of tariffs for services which are to be provided on a cost recovery basis.

Where full direct cost recovery is not possible, the shortfall or the cost of any services not charged for shall be subsidised by the Assembly, from additional revenues generated in other sanitation zones or from other revenues of the Assemblies. The Assemblies shall actively pursue the establishment of systems to generate sustainable revenue to cover the costs of sanitation services. Amongst options to be considered are the inclusion of an element to cover environmental sanitation in other fees, rates or other charges levied by the Assembly; direct levies on producers of pollutants, especially non-biodegradable pollutants such as plastics; the use of a reasonable proportion of the Assemblies' share of the District Assemblies' Common Fund to subsidise the cost of I sanitation services.

District Assemblies should establish active co-operation with other support agencies (CBOs, NGOs etc.) working in the environmental sanitation sector and examine ways of developing partnerships between

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their programmes and those of the Assembly for mutual benefit. This might include joint training activities, provision of equipment, etc. Clearly defined environmental sanitation programmes and a framework for their implementation at national and district levels will be developed. These can be expected to facilitate and stimulate the participation of external donors.

Private sector investment shall be encouraged by a flexible approach to public-private partnership arrangements and by ensuring fair competition between private sector service providers and between the public and private sectors.

Sanctions against polluters shall follow the "polluter pays" principle. Such payments should correspond to the costs of restoring any damage done to the environment. The mechanisms adopted must ensure that the cost of pollution increases progressively with the amount of pollution emitted, and that the cost of mitigating measures is lower than the cost of payment for the amount of pollution that is mitigated.

9.2 Public Sector Funding

To facilitate funding the recurrent costs of environmental sanitation services and the upkeep of facilities and equipment, the District Assemblies shall establish separate budget lines for environmental sanitation, broken down into its constituent programmes and services. Revenues from environmental sanitation services shall be separately managed and exclusively used for expenditure directly related to these services.

District Assemblies shall allocate the additional funds needed for the provision of environmental sanitation programmes and services from their general revenues. They may also decide to fix a proportion of all District Assembly revenues to be reserved for this purpose.

In order to further protect such funds, each Assembly shall establish a District Environmental Sanitation Fund for all revenue and other funds to be used for environmental sanitation. Payments would only be made from such funds with the authorisation of the department or unit concerned in addition to the Assembly's usual scheduled officers.

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Central Government shall provide funding for environmental sanitation to the Assemblies through a number of channels:

- (a) **Development Funds:** Such funds, including the District Assemblies' Common Fund or specific development credits and grants, may be used to cover investments in environmental sanitation equipment and infrastructure. Recurrent expenditure on selected environmental sanitation services shall also be eligible for financing in this way, as it constitutes such a high proportion of District Assembly expenditure.
- (b) **Major Projects:** Projects such as major drainage works or waste treatment and disposal facilities, may be submitted for Central Government grants.
- (c) **Transferred Services:** Budgets previously allocated for functions related to environmental sanitation should be transferred from Central Government departments to the Assemblies. The resulting increases in District Assemblies' Common Fund allocations should be permanently consolidated.
- (d) **Ceded Revenues:** Fines for environmental sanitation offences, allocations from the EPA's Environment Fund, taxes on pollution and polluters (eg. discharge licences, taxes on plastic packaging, etc.) shall be wholly or partially ceded to the Assemblies to finance environmental sanitation activities.
- (e) **Support Services:** Items such as human resource development and operational research will be funded through Central Government departments as well as through the Assemblies' own budgets.

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10. EQUIPMENT AND SUPPLIES

Environmental sanitation services rely in part on certain items of specialised plant and equipment. Many of these are expensive as well as having to be imported, thus making procurement of equipment and supplies a major operational issue. The provision of some services by the private sector will allow for the mobilisation of extra financial resources and more streamlined procurement procedures. However, there will still be a need for equipment and supplies in the public sector, as well as potential advantages to be gained by standardisation and bulk procurement.

10.1 Essential Equipment and Supplies

The following have been identified as critical requirements for the efficient operation of environmental sanitation services and programmes:

- (a) **Vehicles:** Refuse trucks, vacuum tankers, refrigerated vans, vehicles for general use, high pressure jetting gear etc. ;
- (b) **Plant:** Sewage and faecal treatment plants, incinerators, cremation plant, recycling equipment etc. ;
- (c) **Equipment:** Bulldozers, compaction bulldozers, pay loaders, excavators, drag line excavators, dumpers, tractors, lawn mowers, audio-visual equipment etc. ;
- (d) **Spraying Equipment:** Manual pressure sprayers; motorised sprayers, fogging machines etc. ;
- (e) **Storage Containers:** Domestic dustbins, communal refuse containers etc.;
- (f) **Tools:** Wheelbarrows, shovels, spades, brooms, brushes, pick axes, cutlasses etc. ;
- (g) **Protective Clothing:** Masks, gloves, boots, overalls etc.;
- (h) **Chemicals:** Disinfectants, detergents and other appropriate chemicals.

10.2 Standardisation and Procurement

Equipment and supplies to be procured for use by the Assemblies and the private sector shall be standardised to facilitate and reduce the cost of operation and maintenance. Externally funded procurement shall as far as possible conform to published standards.

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HSED, in consultation with the Assemblies, private sector and other relevant agencies, shall develop standard specifications and selection criteria for equipment and supplies. These shall include requirements for the local availability of spare parts and technical support services. They shall be issued periodically by MLGRD as national guidelines. Consideration shall be given to an annual prequalification of suppliers to be undertaken by MLGRD.

MLGRD, the Assemblies and the private sector shall make arrangements, through a co-ordinating body fairly representing all stakeholders, for the joint procurement of essential equipment and supplies for environmental sanitation service providers. Whilst the service providers (Assemblies or private sector) shall have primary responsibility for procurement, subject to the guidelines on specification and selection issued by MLGRD, joint procurement arrangements will be more effective for large purchases or imported items. The co-ordinating body shall agree on occasions when joint procurement is to be preferred.

MLGRD, Ministry of Finance and the District Assemblies shall establish mechanisms whereby central Government funds destined for the Assemblies can be diverted into joint procurement procedures.

HSED shall continuously monitor and make projections of national equipment and supplies requirements, and any shortfalls that may arise despite the efforts of the District Assemblies and the private sector. On this basis, it shall take appropriate action to ensure the availability of equipment and supplies as needed.

10.3 Equipment Maintenance

The stock of equipment used in providing environmental sanitation services represents a substantial investment of scarce capital resources. In order to make best use of these, efficient arrangements for repair and maintenance are essential.

a) Planning

Each Assembly shall prepare and continuously update maintenance schedules for all equipment. Adequate provision for maintenance shall be made in the Assembly's annual budget for environmental sanitation, and maintenance funds shall be established to ensure the ready availability of funds when needed.

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b) Spare Parts

The availability of spare parts will be at least partly assured through the standard specifications issued by MLGRD. However, the Ministry, along with the District Assemblies and private sector service providers, should maintain a continuous dialogue with the spare parts suppliers to ensure constant availability.

c) Maintenance Facilities

In general, private sector workshops are to be preferred for equipment maintenance. If public sector workshops are proposed to be used, they should be selected only in open competition with the private sector.

It is, however, recognised that there is no competitive market for maintaining certain special types of equipment, such as compactor trucks for refuse collection. In these cases, special arrangements will have to be made, possibly along the lines of creating a financially independent subsidiary of the Waste Management Department, operated along commercial lines.

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ANNEX 2

OUTLINE SPECIFICATIONS FOR ENVIRONMENTAL SANITATION SERVICES

1. Solid Waste Management

Solid wastes comprise all solid waste material generated by households, institutions, commercial establishments and industries, and discharged from their premises for collection; all litter and clandestine piles of such wastes; street sweepings, drain cleanings, construction/demolition waste, dead animals and other waste materials.

Hazardous wastes comprise those wastes that are toxic, flammable, corrosive, radioactive, explosive or otherwise dangerous as defined by the EPA. They also include motor oil, diesel fuel, gasoline (petrol), paint, solvents, dry cell and vehicle batteries, pesticides, infectious or medical wastes from hospitals and clinics, metallic and/or oily sludges or solvents, and asbestos materials.

Primary responsibility for solid waste management rests with the Assembly. However, in general, the private sector shall be invited to provide the actual services under contract or franchise, as appropriate. In the case of franchise, the franchisee may propose services above the minimum specified standard, as long as the users' willingness and ability to pay can be relied upon. The franchisee may also propose tariffs and subsidy levels, subject to final approval by the Assembly.

1.1 Storage and Collection Services

The District Assembly shall require all premises to have primary storage facilities (dustbins) which shall meet the approval of the District Assembly with regard to size, material and capacity. The District Assembly shall, in consultation with each community, prescribe the minimum standard of collection service (including the sorting of refuse if applicable) taking into account household incomes, housing pattern, and the infrastructure in the service area. The collection service shall be rendered on the basis of cost recovery. In deprived areas where ability to pay may be low, service charges may be related to the recovery of operation and maintenance costs only.

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1.2 Communal Storage Sites

In communities where house-to-house collection is not appropriate, the Assembly shall designate communal storage sites where solid waste can be discharged into a fixed or moveable container. These sites shall be formally acquired and suitably developed for the purpose. Civil works at the sites shall be such as to contain the wastes dumped and maintain the sanitary condition of the surrounding area. The containers should be readily accessible to those dumping wastes, including children.

1.3 Transportation and Transfer Stations

The collection and removal of wastes from individual premises and communal storage sites shall be effected at frequencies sufficient to prevent undue accumulation and decomposition of wastes. In general, wastes shall be collected at least twice a week. To this end the District Assembly shall arrange for a transportation system with appropriate equipment and planned vehicular movement in the service areas. For sustained and cost-effective service delivery the use of intermediate transfer stations may be considered where haulage distances are uneconomical.

1.4 Waste Treatment and Disposal

1.4.1 Site Acquisition

Sites for treatment and disposal of wastes (landfills, composting facilities, waste Stabilisation ponds, trickling filters, septage treatment plants, etc.) shall be located so as not to create safety and health hazards or aesthetic problems in the surrounding area. In order to ensure adequate provision of such sites, all District Assemblies shall be required to:

- (a) Produce medium and long term plans for the provision of treatment and disposal site's, including the preparation of Environmental Impact Assessments;
- (b) Acquire sufficient land and secure title with payment of due compensation for the land for immediate and future use and protect such acquisitions by proper demarcation, fencing, etc.;
- (c) Ensure that the sites are managed so as to satisfy approved environmental protection standards.

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Sites should be acquired by lease or purchase, with agreement on rehabilitation measures to be taken when the site is full. Due attention must be paid to the feelings of local residents (in addition to chiefs and landowners) when acquiring sites.

Relevant legislation on the acquisition of land for treatment and disposal sites shall be reviewed and legislative and administrative provisions established to facilitate site valuation, negotiation and payment of compensation by District Assemblies.

1.4.2 Technology

The recommended technologies for solid waste disposal are:

(A) *Sanitary Landfill:*

This is internationally recognised as one of the most cost-effective methods of solid waste disposal and is recommended for use by Metropolitan and Municipal Assemblies.

(b) *Controlled Dumping with Cover:*

This represents the most basic method of solid waste disposal to meet minimum requirements, and is recommended for all other District Assemblies.

(c) *Incineration:*

This shall be considered as a treatment option only for health care and other hazardous or noxious wastes (eg. dead animals). Only simple, easily maintained incinerators shall be used. Incineration may be carried out with or without energy recovery; however, the technology used must be consistent with sustainable operation under the prevailing conditions. Adequate control of emissions shall be provided.

(d) *Composting:*

This shall be practised at both municipal and domestic levels where possible, but large-scale capital-intensive composting plant with high operation and maintenance costs shall not be employed. Composting shall be carried out using simple methods and on a decentralised basis, as near as possible to the point of waste generation. It shall only be carried out if it results in net savings to the Assembly in terms of reduced transport and landfill requirements and possible revenue (estimated with due regard to the limited market for compost).

(e) *Recycling:*

This shall be encouraged for all items such as plastics, bottles, paper, metals, glass etc. as inputs for production.

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1.5 Hazardous and Health Care Waste

All health institutions shall establish an institutional waste management system for the primary storage of wastes. They shall be required, where possible, to pretrial health care waste (eg. by autoclaving) prior to storage. Domestic type waste shall be stored separately from health care wastes (infectious or hazardous hospital wastes). Similar procedures shall be followed by other generators of hazardous wastes.

Separate collection of hazardous and health care wastes shall be provided by all District Assemblies or by other arrangements approved by the Assembly. Transportation of such wastes shall be in closed no compaction vehicles, which shall be cleaned and/or disinfected at the end of every collection day. The wastes shall be incinerated and/or buried in designated sections of landfills or other approved waste disposal sites, in accordance with MLGRD guidelines.

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2. LIQUID WASTE MANAGEMENT

District Assemblies shall ensure the availability of facilities for the safe

handling and disposal of human excreta (Nightsoil and sewage), industrial waste, animal manure, industrial sewage and I domestic/commercial wastewaters. These include excreta disposal facilities and systems for the conveyance (sewerage, vehicular, manual), treatment and final disposal of liquid wastes.

The District Assemblies shall have authority to regulate, control, and coordinate the activities of all agencies involved in liquid waste management services. MLGRD shall issue technical guidelines from time to time specifying which technologies may be used, including design parameters and recommended operating procedures.

2.1 Excreta Disposal Facilities

Recommended technologies are the water closet (WC), the pour flush latrine (where water is used for anal cleansing), the ventilated improved pit latrine (VIP), the aqua privy, the chemical toilet (for emergency or temporary usage) and any other proven technologies recommended by MLGRD. Bucket (pan) and open trench latrines are actively discouraged and must be phased out as they do not meet minimum sanitary standards.

District Assemblies shall regulate technologies for domestic toilets by legislation and application of the building code. Assemblies shall arrange for the provision of public facilities in central business districts, major commercial and light industrial areas, local markets and public transport terminals (lorry/bus stations). Public (communal) facilities shall also be provided in low income; high-density neighborhoods where domestic toilets are not provided in individual residential premises. However, District Assemblies shall promote the construction and use of household toilets, including the conversion of pan latrines to one of the approved types.

District Assemblies shall transfer management and maintenance of all public toilets to the private sector, either by franchising existing facilities or granting concessions for the construction and operation of new ones. The Assemblies shall establish minimum design and operational standards and monitor their implementation.

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2.2 Sewerage, Drainage and Septage Removal

District Assemblies shall ensure the hygienic transfer of liquid wastes from the point of generation to the point of treatment and disposal. Where appropriate, they shall provide and maintain sewerage and Stormwater drainage systems. Desludging of septic tanks and VIPs shall be regulated by the Assemblies, but in general carried out by the private sector.

2.2.1 Sewerage Systems

The sewerage of entire urban areas shall not generally be considered as a liquid waste management option in view of its high cost. However, small scale sewerage systems may be provided for high density areas where other options are not technically feasible, institutions (schools, colleges etc.), and small estate developments. The simplified sewerage concept may be applied to such limited scale developments. The use of combined sewers (carrying both sanitary sewerage and storm water) shall not be permitted for both economic and sanitary reasons.

2.2.2 Stormwater Drainage

In order to limit sanitary nuisances, vector breeding and the physical hazards of flooding, District Assemblies shall ensure that communities are provided with adequate and consistently functioning drainage works in accordance with nationally defined design standards issued by MLGRD. The Assemblies shall ensure, through appropriate bye-laws and control mechanisms, that faecal and solid wastes are not discharged into Stormwater drainage systems.

2.2.3 Septage Removal

The hygienic desludging of septic tanks and VIP latrines is an essential service. However, experience shows that this is one area where services are impossible to sustain when provided by the public sector, due to the way revenues are used and the lack of any system for making provision for the purchase of new equipment. New equipment should therefore be purchased by or on behalf of an Assembly only if it can be clearly shown that there is no private sector interest in providing the service, or if no backup or competition for a private service exists.

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In order to ensure adequate hygienic standards, equipment and protective clothing for staff should be inspected regularly. Staff should also be adequately trained and provided with vaccinations and regular medical check-ups. These matters should be regulated and enforced by the '

Assembly's Environmental Health and Management Department. Assemblies may establish licensing systems, to facilitate enforcement.

2.3 Treatment and Disposal Systems

2.3.1 On-Site Systems

Acceptable technologies include VIP latrines and septic tanks with soakaways or subsurface drain fields. District Assemblies, however, shall decide on the acceptability and extent of use of VIP latrines in urban areas.

For both the technologies mentioned, sludge must be periodically removed. This should be done by tanker service in the case of septic tanks and single pit VIPs. Alternating pit VIP latrines should only be used where it can be guaranteed that the user population will allow sufficient time for sludge digestion prior to manual removal.

2.3.2 Off-Site Systems

Waste Stabilisation ponds are the recommended technology for the treatment of liquid wastes, where the volume of Nightsoil and/or septage collected and conveyed per day is above 50 cubic metres. Where the daily volumes hauled are less than 50 cubic metres, other methods such as ponding and co-composting with municipal solid waste may be considered.

Where there is no reasonable alternative, marine disposal of sewage shall be permitted, provided primary treatment to an acceptable standard is provided

"Conventional" sewage treatment technologies (eg. trickling filters, activated sludge, etc.) shall only be used where there are limitations on the use of waste Stabilisation ponds. District Assemblies shall only . adopt such systems if they can meet their high capital, operation and

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3. INDUSTRIAL WASTES

Industrial wastes of significant importance include wastes from sawmills, food processing factories (canneries, etc.), breweries, metal works, etc. These wastes may be classified as solid, liquid or gaseous wastes.

3.1 Solid Wastes

The disposal of solid wastes specific to an industry shall be carried out in compliance with the standards and procedures prescribed by the EPA and any other relevant regulatory agencies. The industrial houses shall undertake or arrange for the conveyance of their wastes to an approved disposal site.

3.2 Liquid Wastes

Liquid industrial effluents shall be pre-treated by the industry to prescribed standards before discharge into the environment, i.e. land, public drains, sewers, water courses and other receiving water bodies.

3.3 Gaseous Wastes

Gaseous emissions from industrial activities and processes which may have adverse effects on the environment shall be treated to the prescribed standards specified by the relevant regulatory agencies.

3.4 Toxic, Radioactive and Other Special Wastes

All generators of toxic, radioactive and other special wastes shall be required to comply with the standards prescribed by the relevant regulatory agencies for storage, collection, transportation and final disposal.

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4. PUBLIC CLEANSING

District Assemblies shall ensure the provision of public cleansing services to maintain a clean environment within the District, covering all facilities used by the general public, ego lorry parks, markets, public gardens, streets, public beaches, drains, river banks etc. In general, public cleansing shall be carried out by the same agency responsible for solid waste collection in a given area.

The heavy human traffic and commercial activities at markets and transport terminals (lorry and car parks) generate large quantities of solid and liquid wastes, thus exposing the public to health hazards and inconveniences. District Assemblies shall give priority to the maintenance of a clean and pleasant environment at these public places. Whilst retaining overall responsibility for cleanliness at these places, the Assembly (or designated contractor or franchisee) shall discuss cleaning activities with the main interested parties (market associations, GPRTU etc.) and, if possible, levy direct charges for recovering costs.

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5 VECTOR AND PEST CONTROL

5.1 Control of Insect Infestation

District Assemblies shall make arrangements, both directly and through the private sector, for the effective and continuous control of insect vectors and pests, especially mosquitoes and flies. This shall include the provision of infrastructure and services (eg. drainage, waste management etc.), public education and action campaigns, and the application of chemicals or other control measures to critical sites.

5.2 Control of Rodents

The District Assemblies' primary concern shall be given to the control of rats and mice in the markets where they threaten food storage and property. The Assemblies shall allow private participation in this and other pest control services and make bye-laws for the registration and control of private pest control operators.

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6. FOOD HYGIENE

6.1 Prepared Foods

District Assemblies shall run programmes to control the sale of prepared foods, including the specification of utensils and display containers. Effective mechanisms for monitoring and enforcing standards shall be put in place, and appropriate bye-laws shall be enacted to support the programmes.

6.2 Eating and Drinking Establishments

The District Assembly shall register all eating establishments and food premises and specify the standards to be observed. Effective mechanisms for inspection, monitoring and the enforcement of standards shall be put in place, and appropriate bye-laws enacted to support them.

6.3 Slaughtering Facilities

-District Assemblies shall ensure that all communities that need slaughtering facilities have access to them, either as public or private facilities. These are to be registered and regularly inspected by the District Assembly. The District Assembly shall undertake regular inspection of meat and fish.

6.4 Markets

District Assemblies shall ensure the availability of suitable and hygienic market facilities. The private sector shall be encouraged to build and manage such facilities. Provision for the handling, display and preservation of meat, fish and other perishable foods shall be such as to prevent contamination and decomposition. District Assemblies shall make bye-laws allowing for the development of markets by the private sector and providing for their control.

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7. ENVIRONMENTAL SANITATION EDUCATION

Environmental sanitation education should be seen as an integral element of all environmental sanitation activities. Whilst it is not in itself sufficient to ensure improvements in environmental sanitation, neither is the provision of sanitary infrastructure and services unless they are properly used. Environmental sanitation education is similarly complementary to regulation, which is ineffective unless coupled with explanation and persuasion.

There is an unfortunate tradition in Ghana of hygiene and environmental sanitation education as a didactic one-way process in which the target group is considered as part of the problem rather than part of the solution. Improved approaches based on problem-solving and active participation by the target groups must be developed and implemented.

7.1 National Level Programmes

MLGRD shall conduct environmental sanitation education programmes at the national level, with the co-operation of other relevant agencies, using both the mass media and local structures., It shall also co-ordinate training, materials development and research to support both local and national programmes.

7.2 Local Level Programmes

District Assemblies shall carry out environmental sanitation education programmes within their districts, directly related to the introduction or improvement of environmental sanitation services, or to specifically targeted issues. These programmes shall be co-ordinated with those of other Government agencies, NGOs, churches, social groups, etc. Community based organisations shall also be involved as an aid to achieving coverage in all communities.

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8. SANITARY INSPECTION AND LAW ENFORCEMENT

Given the prevailing high level of illiteracy and low level of public awareness of acceptable hygienic practices, sanitary inspection and the enforcement of sanitary regulations are necessary to the maintenance of a hygienic environment. Sanitary inspection and law enforcement programmes shall be operated in all communities by the District Assemblies. These shall be backed up by education and information campaigns, and technical assistance to help with building design, latrine construction, etc.

8.1 Inspection of Premises

The Environmental Health and Management Department of the District I Assembly shall inspect the plans of all new buildings to ensure that they conform to sanitary regulations, and approve issue of the Certificate of Habitation when the buildings are completed.

All premises (residential, commercial, institutional and industrial) shall be periodically inspected, with the frequencies of inspection determined to ensure that the provisions of the relevant laws and the building code are observed by occupants.

8.2 Public Open Spaces

All undeveloped lands within the Assembly's boundary, as well as public parks, gardens, beaches, recreational areas, etc. shall be inspected periodically. The District Assembly shall ensure that environmental health hazards thus identified are neutralised as soon as possible.

8.3 Enforcement of Sanitary Legislation

All District Assemblies shall enact appropriate sanitary legislation and by-laws to facilitate the inspection programmes and empower the relevant officers to perform their functions effectively.

ENVIRONMENTAL SANITATION POLICY

9.DISPOSAL OF THE DEAD

District Assemblies shall regulate the burial and cremation of the dead and the provision of all facilities and services related to the handling, transportation and preservation of the dead. There shall be national and local legislation empowering District Assemblies to perform the said functions.

9.1 Burial Legislation

All District Assemblies shall make adequate and appropriate arrangements for the registration of deaths and the control of burials and cremations as specified in the Registration of Births and Deaths Act.1965 (Act 301) and any relevant legislation subsequently enacted.

9.2 Cemeteries

District Assemblies shall ensure that all communities have approved cemeteries as well as making provision for the approval of private burial grounds. Standard specifications for the siting of cemeteries and works for the protection, drainage, and beautification of the cemeteries and provision of access roads shall be issued by MLGRD. Appropriate national legislation shall be enacted to facilitate the acquisition of lands for public cemeteries.

9.3 Crematoria

The provision of crematoria by the District Assemblies shall not be mandatory. However, the Assembly shall be responsible for regulating the provision and operation of such facilities in accordance with the national legislation in force. Private organisations shall be allowed to provide and operate crematoria.

9.4 Private Mortuaries and Funeral Homes

The provision and operation of private mortuaries shall be allowed subject to the provisions of relevant legislation enacted by national Government.

ENVIRONMENTAL SANITATION POLICY

10. CONTROL OF REARING AND STRAYING OF ANIMALS

District Assemblies shall make and enforce regulations to control the rearing and straying of animals, so as to protect humans from the health hazards and sanitary nuisances arising there from.

10.1 Rearing of Animals

The applicable regulations shall prohibit the rearing of specified animals in designated areas of a community or limit the number of animals to be allowed.

10.3 Control of Dogs and Other Pets

District Assemblies shall make and enforce bye-laws to control the keeping of dogs and other pets. Existing legislation shall be reviewed and strengthened.

10.2 Control of Straying Animals

There shall be appropriate legislation or bye-laws to control the straying of animals with adequate penalties for offences.