Chapter 21 Environmentally sound management of solid waste and sewage-related issues

The incorporation of the chapter on environmentally sound management of solid wastes within Agenda 21 is in response to General Assembly resolution 44/228, section I, paragraph 3, in which the Assembly affirmed that the Conference should elaborate strategies and measures to halt and reverse the effects of environmental degradation in the context of increased national and international efforts to promote sustainable and environmentally sound development in all countries, and to section I, paragraph 12 (g), of the same resolution, in which the Assembly affirmed that environmentally sound management of wastes was among the environmental issues of major concern in maintaining the quality of the Earth's environment and especially in achieving environmentally sound and sustainable development in all countries. Programme areas included under the present chapter are closely related to the following programme areas of other chapters of Agenda 21:

a Protection of the quality and supply of fresh water resources (chapter 18);

b Promoting sustainable human settlement development (chapter 7);

c Protecting and promoting human health conditions (chapter 6);

d Changing consumption patterns (chapter 4).

Solid wastes, as defined in this chapter, include all domestic refuse and non-hazardous wastes such as commercial and institutional wastes, street sweepings and construction debris. In some countries, the solid wastes management system also handles human wastes such as night-soil, ashes from incinerators, septic tank sludge and sludge from sewage treatment plants. If these wastes manifest hazardous characteristics they should be treated as hazardous wastes.

Environmentally sound waste management must go beyond the mere safe disposal or recovery of wastes that are generated and seek to address the root cause of the problem by attempting to change unsustainable patterns of production and consumption. This implies the application of the integrated life cycle management concept, which presents a unique opportunity to reconcile development with environmental protection.

Accordingly, the framework for requisite action should be founded on a hierarchy of objectives and focused on the four major waste-related programme areas which are interrelated and mutually supportive and must therefore be integrated in order to provide a comprehensive and environmentally responsive

framework for managing municipal solid wastes. The mix and emphasis given to each of the four programme areas will vary according to the local socio-economic and physical conditions, rates of waste generation and waste composition. All sectors of society should participate in all the programme areas.

A Minimizing wastes

Basis for action Unsustainable patterns of production and consumption are increasing the quantities and variety of environmentally persistent wastes at unprecedented rates. The trend could significantly increase the quantities of wastes produced by the end of the century and increase quantities four to fivefold by the year 2025. A preventive waste management approach focused on changes in lifestyles and in production and consumption patterns offers the best chance for reversing current trends.

Objectives

a To stabilize or reduce the production of wastes destined for final disposal, over an agreed time-frame, by formulating goals based on waste weight, volume and composition and to induce separation to facilitate waste recycling and reuse;

b To strengthen procedures for assessing waste quantity and composition changes for the purpose of formulating operational waste minimization policies utilizing economic or other instruments to induce beneficial modifications of production and consumption patterns.

Governments, according to their capacities and available resources and with the cooperation of the United Nations and other relevant organizations, as appropriate, should:

a By the year 2000, ensure sufficient national, regional and international capacity to access, process and monitor waste trend information and implement waste minimization policies;

b By the year 2000, have in place in all industrialized countries programmes to stabilize or reduce, if practicable, production of wastes destined for final disposal, including per capita wastes (where this concept applies), at the level prevailing at that date; developing countries as well should work towards that goal without jeopardizing their development prospects;

c Apply by the year 2000, in all countries, in particular in industrialized countries, programmes to reduce the production of agrochemical wastes, containers and packaging materials, which do not meet hazardous characteristics.

Management-related activities Governments should initiate programmes to achieve sustained minimization of waste generation. Non-governmental organizations and consumer groups should be encouraged to participate in such programmes, which could be drawn up with the cooperation of international organizations, where necessary. These programmes should, wherever possible, build upon existing or planned activities and should:

a Develop and strengthen national capacities in research and design of environmentally sound technologies, as well as adopt measures to reduce wastes to a minimum;

b Provide for incentives to reduce unsustainable patterns of production and consumption;

c Develop, where necessary, national plans to minimize waste generation as part of overall national development plans;

d Emphasize waste minimization considerations in procurement within the United Nations system.

Financial and cost evaluation The Conference secretariat suggests that industrialized countries should consider investing in waste minimization the equivalent of about 1 per cent of the expenditures on solid wastes and sewage disposal. At current levels, this would amount to about $6.5 billion annually, including about $1.8 billion related to minimizing municipal solid wastes. Actual amounts would be determined by relevant municipal, provincial and national budget authorities based on local circumstances.

B Maximizing environmentally sound waste reuse and recycling

Basis for action The exhaustion of traditional disposal sites, stricter environmental controls governing waste disposal and increasing quantities of more persistent wastes, particularly in industrialized countries, have all contributed to a rapid increase in the cost of waste disposal services. Costs could double or triple by the end of the decade. Some current disposal practices pose a threat to the environment. As the economics of waste disposal services change, waste recycling and resource recovery are becoming increasingly cost-effective. Future waste management programmes should take maximum advantage of resource-efficient approaches

Working the Sante Fe refuse dump in Mexico City sifting rubbish for items to sell and food to eat. As the cost of waste disposal increases recycling becomes a more attractive and viable alternative - but not at the cost of human health.

Above: Fresh Kills Landfill in New York City, the world's largest landfill site, covers an area of 3,000 acres.

to the control of wastes. These activities should be carried out in conjunction with public education programmes. It is important that markets for products from reclaimed materials be identified in the development of reuse and recycling programmes.

Objectives

a To strengthen and increase national waste reuse and recycling systems;

b To create a model internal waste reuse and recycling programme for waste streams, including paper, within the United Nations system;

c To make available information, techniques and appropriate policy instruments to encourage and make operational waste reuse and recycling schemes.

Governments, according to their capacities and available resources and with the cooperation of the United Nations and other relevant organizations, as appropriate, should:

a By the year 2000, promote sufficient financial and technological capacities at the regional, national and local levels, as appropriate, to implement waste reuse and recycling policies and actions;

b By the year 2000, in all industrialized countries, and by the year 2010, in all developing countries, have a national programme, including, to the extent possible, targets for efficient waste reuse and recycling.

Management-related activities Governments and institutions and non-governmental organizations, including consumer, women's and youth groups, in collaboration with appropriate organizations of the United Nations system, should launch programmes to demonstrate and make operational enhanced waste reuse and recycling. These programmes should, wherever possible, build upon existing or planned activities and should:

a Develop and strengthen national capacity to reuse and recycle an increasing proportion of wastes;

b Review and reform national waste policies to provide incentives for waste reuse and recycling;

c Develop and implement national plans for waste management that take advantage of, and give priority to, waste reuse and recycling;

d Modify existing standards or purchase specifications to avoid discrimination against recycled materials, taking into account the saving in energy and raw materials;

e Develop public education and awareness programmes to promote the use of recycled products.

Financial and cost evaluation The Conference secretariat has estimated that if the equivalent of 1 per cent of waste-related municipal expenditures was devoted to safe waste reuse schemes, world-wide expenditures for this purpose would amount to $8 billion. The secretariat estimates the total annual cost (1993-2000) of implementing the activities of this programme area in developing countries to be about $850 million on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, *inter alia*, the specific programmes proposed by international institutions and approved by their governing bodies.

C Promoting environmentally sound waste disposal and treatment

Basis for action Even when wastes are minimized, some wastes will still remain. Even after treatment, all discharges of wastes have some residual impact on the receiving environment. Consequently, there is scope for improving waste treatment and disposal practices such as, for example, avoiding the discharge of sludges at sea. In developing countries, the problem is of a more fundamental nature: less than 10 per cent of urban wastes receive some form of treatment and only a small proportion of treatment is in compliance with any acceptable quality standard. Faecal matter treatment and disposal should be accorded due priority given the potential threat of faeces to human health.

Objectives The objective in this area is to treat and safely dispose of a progressively increasing proportion of the generated wastes.

Governments, according to their capacities and available resources and with the cooperation of the United Nations and other relevant organizations, as appropriate, should:

a By the year 2000, establish waste treatment and disposal quality criteria, objectives and standards based on the nature and assimilative capacity of the receiving environment;

b By the year 2000, establish sufficient capacity to undertake waste-related pollution impact monitoring and conduct regular surveillance, including epidemiological surveillance, where appropriate;

c By the year 1995, in industrialized countries, and by the year 2005, in developing countries, ensure that at least 50 per cent of all sewage, waste waters and solid wastes are treated or disposed of in conformity with national or international environmental and health quality guidelines;

d By the year 2025, dispose of all sewage, waste waters and solid wastes in conformity with national or international environmental quality guidelines.

Management-related activities Governments, institutions and non-governmental organizations, together with industries, in collaboration with appropriate organizations of the United Nations system, should launch programmes to improve the control and management of waste-related pollution. These programmes should, wherever possible, build upon existing or planned activities and should:

a Develop and strengthen national capacity to treat and safely dispose of wastes;

b Review and reform national waste management policies to gain control over waste-related pollution;

c Encourage countries to seek waste disposal solutions within their sovereign territory and as close as possible to the sources of origin that are compatible with environmentally sound and efficient management. In a number of countries, transboundary movements take place to ensure that wastes are managed in an environmentally sound and efficient way. Such movements observe the relevant conventions, including those that apply to areas that are not under national jurisdiction;

d Develop human wastes management plans, giving due attention to the development and application of appropriate technologies and the availability of resources for implementation.

Financial and cost evaluation Safe waste disposal programmes are relevant to both developed and developing countries. In developed countries the focus is on improving facilities to meet higher environmental quality criteria, while in developing countries considerable investment is required to build new treatment facilities.

Estimated average total annual cost about $15 billion, including about $3.4 billion from the international community on grant or concessional terms.

D Extending waste service coverage

Basis for action By the end of the century, over 2 billion people will be without access to basic sanitation, and an estimated half of the urban population in developing countries will be without adequate solid waste disposal services. As many as 5.2 million people, including 4 million children under five years of age, die each year from waste-related diseases. The health impacts are particularly severe for the urban poor. The health and environmental impacts of inadequate waste management, however, go beyond the unserved settlements themselves and result in water, land and air contamination and pollution over a wider area. Extending and improving waste collection and safe disposal services are crucial to gaining control over this form of pollution.

Objectives The overall objective of this programme is to provide health-protecting, environmentally safe waste collection and disposal services to all people. Governments, according to their capacities and available resources and with the cooperation of the United Nations and other relevant organizations, as appropriate, should:

a By the year 2000, have the necessary technical, financial and human resource capacity to provide waste collection services commensurate with needs;

b By the year 2025, provide all urban populations with adequate waste services;

c By the year 2025, ensure that full urban waste service coverage is maintained and sanitation coverage achieved in all rural areas.

Management-related activities Governments, according to their capacities and available resources and with the cooperation of the United Nations and other relevant organizations, as appropriate, should:

a Establish financing mechanisms for waste management service development in deprived areas, including appropriate modes of revenue generation;

b Apply the "polluter pays" principle, where appropriate, by setting waste management charges at rates that reflect the costs of providing the service and ensure that those who generate the wastes pay the full cost of disposal in an environmentally safe way;

c Encourage institutionalization of communities' participation in planning and implementation procedures for solid waste management.

Financial and cost evaluation $7.5 billion, including about $2.6 billion from the international community on grant or concessional terms.