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Waste management

Note by the Executive Director

Summary

The annex to the present note sets out an annex to the waste management report prepared pursuant to Governing Council decision 24/5 of 9 February 2007 on waste management and reiterated in decision SS.X/1of February 2008. It contains information on the activities and programmes of international organizations, including the Asian Development Bank, the European Bank for Reconstruction and Development, the Organization for Economic Cooperation and Development, the secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal , the United Nations Development Programme, the United Nations Environment Programme, the United Nations Human Settlements Programme, the United Nations Industrial Development Organization and the World Bank, as provided by the respective organizations. It also contains a compilation of success stories. The information set out in the annex to the present note should be considered as illustrative and not necessarily comprehensive. The annex is being circulated without formal editing.

* UNEP/GC.25/1.

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Annex

Waste management

Contents

I. Programmes and activities on waste management

A. Asian Development Bank (ADB)

1. Policy and regulatory

1. Activities in promoting the 3Rs

(a) The Asian Development Bank (ADB) is supporting the 3R Initiative, which was adopted at the G8 Summit in 2004 and officially launched at the 3R Ministerial Conference in Tokyo in 2005 to promote the importance of reduce, reuse, and recycle (3Rs) in sustainable development., ADB has been contributing to this Initiative in the following ways:

Asia 3R Report: ADB is finalizing a report on the implementation of the 3Rs throughout Asia. The report, titled "Toward Resource-efficient Economies for Asia and the Pacific – Reduce Reuse, and Recycle", aims to provide a better understanding on how 3R principals and practices are currently being used in the region and how they can be applied region-wide. The report not only deals with solid waste materials, but also water and energy for resource efficiency improvement that are essential resources in poverty reduction. The report reviews options for pursuing resource-efficient economic growth and also provides guidelines to help decision makers identify appropriate strategies, policies, and public and private sector investments. While this report focuses on Asian experience and options, the principles described are being used globally.

Subregional Dialogues: ADB also hosted a pair of subregional dialogues—one for South Asia nations in Nepal, 2006, and another for East and Southeast Asian nations in Manila, 2007—in partnership with United Nations Environment Programme (UNEP), United Nations Centre for Regional Development (UNCRD) and Institute of Global Environmental Strategies (IGES). These consultations allowed for the sharing of experiences and knowledge on key issues relating to resource efficiency and effective waste management. Included topics were: waste management in industry, health, rural and agricultural, urban and post-consumer waste; investment demands for improved waste management; international trade in secondary products; and local, national, and international responses. Participants were key stakeholders from government agencies; private sector; nongovernment agencies; and international, regional, and subregional organizations.

3R Knowledge Hub (3RKH): ADB supports the 3R Knowledge Hub (3RKH), which was launched in 2006 and is jointly hosted with UNEP and the Asian Institute of Technology (AIT). Located on the AIT campus in Bangkok, 3RKH will seek to mainstream new concepts in innovation, science, technology, management development, and fields related to the 3Rs. To promote and disseminate sustainable production and consumption through the 3Rs, the knowledge hub's three main functions are: (i) to create, collect, and capture 3R knowledge; (ii) to share and enrich 3R knowledge; and (iii) to disseminate 3R knowledge for the benefit of countries and research networks in the region. (See http://www.3rkh.net/)

The 3RKH was founded upon the unique and complementary knowledge and roles of the hosting organizations. AIT can contribute much in the way of education, research, and outreach, as well as a strong network of institutions that collaborate in 3R research in the region. UNEP, as the United Nations' environmental conscience of, can provide support for policy formulation and capacity building. ADB is not only a source of financing 3RKH, but is also a knowledge resource in 3Rs. Further, the 3RKH will build on strong partnerships with other international organizations, such as UNESCAP. All of these roles are essential for promoting and mainstreaming 3Rs across the region.

2. Activities in promoting cleaner production

(a) ADB has been a strong promoter of "cleaner production" in industrial processes, having supported a variety of policy and technical measures in a number of developing member countries (DMCs) through its confessional loans and technical assistances (TA). Project objectives have ranged from relatively simple improvements in industrial housekeeping to the introduction of energy efficiency and process modification measures, some of which have resulted in the recovery and reuse of highly valuable inputs. While many have centered on large industries—often organized through chambers of commerce or industry associations—some have also encouraged small and medium enterprises (SMEs) to adjust their practices.

(b) From 1996 to 2002, ADB funded 10 grant and TA projects worth nearly $9.5 million that could be mainly characterized under the heading of industrial cleaner production (see table 1). This

does not include projects worth over $30 million that promoted energy efficiency, renewable energy, and use of the Clean Development Mechanism (CDM).

Table 1: Industrial cleaner production grants and TAs (1996–2002)

Year	Project Title	Amount $'000
India		
2000	Environmental Management at the State Level	500
Indonesia		
2002	Improving the Performance of SMEs by Promoting Cleaner Production	500
Malaysia		
1997	Industrial Pollution Control Management	588
Philippines		
1996	Evaluation of Environmental Standards for Selected Industry Subsectors	400
2002	Promotion of Cleaner Production	775
PRC		
1997	Improvement of Environmental Management in Shaanxi Province	935
1998	TA Cluster to the PRC for the Promotion of Clean Technology	3,500
Regional		
1999	Promotion of Cleaner Production Policies and Practices in Selected DMCs	600
Sri Lanka		
2001	Integrating Cleaner Production into Industrial Development	800
Thailand		
2000	Capacity Building for Regional Environmental Management	900
TOTAL		**9,498**

DMC = developing member country, PRC = People's Republic of China, SME = small and medium-sized enterprise, $ = US dollars.
Source: ADB

3. ADB has considerable experience supporting policy frameworks to promote integrated solid waste management. From 1995 to 2006, ADB funded 19 grant and TA projects worth nearly $10 million with the promotion of national or local policy frameworks as a main activity.

Table 2: Grants and TAs focused on policy frameworks for improved waste management

Year	Project Title	Amount ($'000)
India		
2004	Capacity Building for Kerala Sustainable Urban Development	500
2004	Karnataka Urban Development III	400
2004	North Eastern Region Urban Development	1,000
2004	Preparation of the Jammu and Kashmir Urban Infrastructure Development Project	500
Indonesia		
1997	Strengthening of Urban Waste Management Policies and Strategies	600
Maldives		
2005	Promoting Sound Environmental Management in the Aftermath of the Tsunami Disaster	400
Nepal		
1999	Urban Environmental Improvement	750
Pakistan		
2005	Rawalpindi Environmental Improvement (Supplementary)	70
Philippines		
2002	Metro Manila Solid Waste Management	1,250
PRC		
1997	Improvement of Environmental Management in Shaanxi Province	935
2000	Strengthening Urban Solid Waste Management	600

2004	Guangxi Nanning Urban Infrastructure Development	560
2005	Hefei Urban Environment Improvement Project	750
Regional		
1998	Regional Training Course on Solid Waste Management in DMCs	75
Thailand		
1995	Solid Waste Management Sector Plan	400
1997	Capacity Building for Waste Management Program Administration	300
2000	Solid Waste Management Sector	150
Tuvalu		
2003	Effective Waste Management and Recycling Project	150
Viet Nam		
1996	Hazardous Waste Management	600
TOTAL		**9,990**

$ = US dollars.
Source: ADB

2. Technical

4. ADB uses knowledge management and best practices dissemination to help mainstream environmental considerations. ADB released several key publications over the past 2 years to increase ADB and DMC staff knowledge on emerging environmental issues. Foremost among these was the Asian Environment Outlook (AEO) 2005—Making Profits, Protecting our Planet: Corporate Responsibility for Environmental Performance in Asia and the Pacific. This publication, along with the forthcoming Toward Resource-efficient Economies for Asia and the Pacific—Reduce, Reuse, and Recycle, stress that governments can combine market-based instruments and voluntary measures, backed by stronger enforcement of core environmental regulations, to help shape a predictable and fair environmental policy regime in the spirit of public-private partnership.

5. 3RKH described in page 1 as well as some of grants and TA in Table 2 also have provided these functions.

6. ADB is looking to offer increased support of demonstration projects, especially on efforts to capture energy from trash, including waste-to-energy facilities and methane capture systems.

Table 3: Waste management grants and TAs promoting demonstration projects (1996–2002)

Year	Project Title	Amount ($'000)
Indonesia		
2004	Gas Generation from Waste	250
PRC		
2004	Waste Coal Utilization Study	400
TOTAL		**650**

PRC = People's Republic of China, $ = US dollars.
Source: ADB

3. Financial

7. ADB has financed projects across Asia and the Pacific to improve urban waste management-primarily the collection and disposal of municipal and industrial solid wastes. From 1995 to 2006, ADB provided 21 loans worth nearly $1.5 billion for projects with waste management components. Very often these investments had been part of integrated urban development programs covering entire municipalities or sections of major cities, and in many cases, had also involved the capacity building of national and local officers.

8. ADB assistance has helped support commercialization and private sector participation in solid waste management. In recent projects, there has been a greater reliance on market mechanisms for the delivery of solid waste management infrastructure and services, particularly in large cities. Successful private sector participation in water supply and solid waste management in some DMC cities indicates the potential for wide-scale development of public-private partnerships in these and other urban services.

Table 4: Waste management loans (1995–2006)

Year	Project Title	Amount ($ million)
Bhutan		
2006	Urban Infrastructure Development	24.6
Cook Islands		
2001	Waste Management Project	2.2
Federated States of Micronesia		
2004	Omnibus Infrastructure Development	14.2
India		
1998	Rajasthan Urban Infrastructure Development	250
2000	Calcutta Environmental Improvement Projects	250
2005	Kerala Sustainable Urban Development	221.2
Indonesia		
1995	Sumatra Urban Development	130
1995	West Java Urban Development	70
Lao PDR		
1995	Vientiane Integrated Urban Development	20
1997	Secondary Towns Urban Development	27
Maldives		
2005	Regional Development Project – Phase II: Environmental Infrastructure and Management	6
Mongolia		
2006	Urban Development Sector Project	28.2
Nepal		
2002	Urban and Environmental Improvement Project	30
Pakistan		
2003	Southern Punjab Basic Urban Services	45
2006	Mega City Development	10
PRC		
1999	Shanxi Environment Improvement	102
2002	Efficient Utilization of Agricultural Wastes	33.1
2005	Fuzhou Environmental Improvement Project	55.8
Samoa		
2003	Sanitation and Drainage	8
Viet Nam		
1999	Ho Chi Minh City Environmental Improvement	70
2006	Central Region Small and Medium Towns Development	53.2
	TOTAL	1,450.5

Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China, $ = US dollars.
Source: ADB

9. From 1996 to 2002, ADB also provided 4 loans worth $373 million to promote cleaner production.

Table 5: Industrial cleaner production loans (1996–2002)

Year	Project Title	Amount ($ million)
Indonesia		
1996	Industrial Technology and Human Resources Development	80
PRC		
1996	Anhui Environmental Improvement-Industry	112
1997	Xian-Xianyang Environment	156
Thailand		
2000	Thailand SME Investment and Restructuring Fund	25
TOTAL		**373**

PRC = People's Republic of China, SME = small and medium enterprise, $ = US dollars.
Source: ADB

4. Social

10. Since 2002, ADB has provided nearly $5 million for grants and TA projects that have focused on the social/poverty aspects of solid waste management.

Table 6: Grants and TAs focused on social/poverty aspects of waste management (2002–2006)

Year	Project Title	Amount ($'000)
Cambodia		
2002	Income for the Poor Through Community-Based Environmental Improvements in Phnom Penh (through Japan Fund for Poverty Reduction)	1,000
Lao PDR		
2003	Solid Waste Management and Income Generation for Vientiane's Poor (through Japan Fund for Poverty Reduction)	1,000
Kiribati		
2002	Community Development and Sustainable Participation	421
Philippines		
2003	Supporting On-Site Integrated Urban Upgrading for Vulnerable Slum Communities Project (through Japan Fund for Poverty Reduction)	1,000
2005	Smokey Mountain Remediation and Development Project (through the Poverty and Environment Program)	347
Viet Nam		
2004	Expanding Benefits for the Poor through Urban Environmental Improvements (through Japan Fund for Poverty Reduction)	1,000
	TOTAL	**4,768**

Lao PDR = Lao People's Democratic Republic, $ = US dollars.
Source: ADB

B. European Bank for Reconstruction and Development (EBRD)

11. The work of EBRD in the field of solid waste management encompasses a range of services covering solid waste collection, landfill development and operation, other disposal methods including incineration, recycling, and specialist waste businesses including hazardous waste handling and disposal.

12. EBRD operations have been based on the following policy and operational considerations:

(a) Waste collection and disposal sectors are generally suitable for full cost recovery approaches and therefore commercialised structures based on full cost recovery for operations and maintenance can be applied. As a result, credit structures can benefit both from the expectations of sufficient cash flows generated at sector level and the support from local authorities or national authorities by way of financial guarantees or performance undertakings.

(b) Focus on commercialisation – good environmental and corporate governance make solid waste projects suited as vehicles to implement transition oriented project structures that support improved and sustained service delivery.

(c) Safe and effective treatment of solid waste helps meet international environmental standards and avoids health hazards to the population.

(d) Solid waste projects depend critically on developing a political consensus at central government (with respect to establishing a National Waste Strategy) and at a regional or local level (to support and implement the Strategy through enforcement of environment laws and regulations).

(e) Commercially oriented institutional structures are needed which allow commercial operators to emerge and succeed. For example, new landfills are not commercially viable unless illegal and non-compliant existing landfills are closed and all parties deliver to the new, approved and compliant site.

(f) The complexity and political sensitivity of solid waste projects is both an opportunity and a challenge for the bank.

13. The EBRD's portfolio comprises 9 waste management projects . These include 4 regional programmes.

C. Organization for Economic Cooperation and Development (OECD)

14. The OECD Environmental Strategy, adopted by Environment Ministers in May 2001, clearly outlines the need for governments to look for integrated solutions such as SMM, to address current environmental concerns.

1. Sustainable Materials Management (SMM)

15. For the last 25 years the OECD has been developing and promoting international policies aimed at minimising waste generation and managing the residues in an environmentally sound manner. It has become evident that waste minimisation policies which address only end-of-life products and materials are not effective in reducing waste generation associated with increasing economic activity and material consumption. This accentuates the need for creative and far-sighted solutions, using life-cycle thinking to reduce the negative environmental impacts of materials and products in a cost-effective manner.

16. As a response, the OECD has introduced work on Sustainable Materials Management (SMM), having emphasis on integrated material, product and waste policies and addressing environmental impacts over the whole life-cycle of materials and products.

17. This work started in 2005 with a workshop which explored current understanding and status of activities aiming at sustainable materials management in OECD countries, developed a working definition for SMM and determined the most pressing areas for future work. Workshop report can be found at: http://www.oecd.org/env/waste.

18. The second SMM Workshop was held in 2008, taking stock of existing initiatives taken by business, OECD and non-OECD countries, international organizations and NGO's that are related to SMM, identifying possible barriers and challenges when developing SMM strategies and policies and exploring what role the OECD could play in supporting this process. The Workshop report and other relevant documentation can be found by the end of 2008 at: http://www.oecd.org/env/waste.

19. The 2009-2010 work on SMM will focus on three areas: i) Polic**y i**nstruments for SMM**; ii) Case studies on priority materials; and iii) Organisation of the 3rd international workshop on SMM** The work on SMM policy instruments would identify, analyse and recommend policy principles and instruments that are useful for promoting SMM. Case studies will be undertaken of priority materials (e.g. metals, transport, food, building, materials). The goal of the cases studies would be to explore policy opportunities and barriers for SMM, as a way of demonstrating the utility of the SMM concept for policy-making. The 3rd SMM Workshop will be organised in 2010 focusing on "policies for implementing SMM" (in priority sectors, materials, and products).

2. Environmental Outlook to 2030

20. A Meeting of OECD Environment Ministers in 2003 requested a new OECD Environment Outlook to be developed for the Environment Ministerial in 2008. This "OECD Environmental Outlook to 2030" was published in 2007 and can be accessed at: http://www.oecd.org/document/20/0,3343,en_2649_34305_39676628_1_1_1_37465,00.html

21. While it built on the first Outlook (2001), it was done in a different way and includes more consideration of policy simulations and policy shocks through economic and environmental modelling,

and required more work of an analytical nature than the first Outlook. . The chapter dealing with waste is titled: “Waste and Material Flows” and links together the OECD work on waste, material flows and sustainable materials management.

3. Environmentally Sound Management (ESM) of Waste

22. In late 1990s it was recognised that the level of environmental safety varies widely between recovery facilities, even within OECD member countries. Therefore, the Organisation decided to start working towards international ESM guidelines to improve and harmonise the environmental protection of waste management facilities in OECD countries. The main output of this project was the Council Recommendation on ESM of waste.

23. In June 2004, OECD countries adopted Council Recommendation C(2004)100 on Environmentally Sound Management (ESM) of Waste, which includes a set of 11 policy recommendations for governments and a set of six “core performance elements” (CPEs) to be implemented by waste management facilities. In addition, member countries recognised that it would be useful to provide practical guidance for the implementation of the recommendations and CPEs. It was therefore decided to produce a Guidance Manual to help member governments in the implementation of ESM by providing explanations on the meaning and implications of the policy recommendations and CPEs included in the 2004 Council Recommendation.

24. The Guidance Manual for the Implementation of OECD Council Recommendation on ESM of Waste was published in 2007 and can be accessed at: http://www.oecd.org/env/waste. The OECD CPEs have also been incorporated by the Bureau of International Recycling into a Guidance Manual on ESM for the World’s Recycling Industry (http://www.bir.org/pdf/GuideESM.pdf).

4. Transboundary movements of waste

25. Following indiscriminate and uncontrolled traffic in hazardous wastes which resulted in adverse effects on human health and the environment (e.g. Seveso dioxin barrels), OECD member countries decided in 1984 that exports and imports of hazardous waste should be controlled. For that purpose, the OECD developed eight Council Acts between 1984 and 1990 that were adopted by member countries. These Acts also formed the basis for the Basel Convention and several European Community directives.

26. In addition, due to the volume and value of recoverable wastes, OECD developed in 1992 a control system to enhance economically efficient and environmentally sound management of waste. This control system is designed to facilitate trade of wastes destined for recovery operations within the OECD area.

27. The work on transboundary movements of wastes cannot be qualified as “a project” *per se* but rather as a continuous work necessary to keep up-to-date and improve the international regulatory framework put in place by the OECD. In addition, the “harmonisation” of the OECD Control System with the Basel Convention, has called for substantial revisions of the system in 1999-2000 and the issuance of an amended Council Act [C(2001)107/FINAL]. The harmonisation process is still continuing.

D. Secretariat for Basel Convention (SBC)

1. Introduction

28. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was adopted in March 1989 and came into force in May 1992. As of October 2007, a total of 170 states and the European Community are Parties to the Convention. The main goal of the Convention is to protect human health and the environment against the adverse effects that may result from the generation, transboundary movement and management of hazardous wastes and other wastes. To achieve this goal a number of interrelated objectives must be fulfilled, such as reducing the transboundary movement of hazardous wastes, minimizing the quantity and hazardousness of wastes generated and ensuring their environmentally sound management, and assisting developing countries in environmentally sound management of hazardous wastes and other wastes.

29. Since its inception, the Basel Convention has established systems to regulate and restrict the export and import of hazardous wastes and other wastes through the notification and prior informed consent procedures. In addition, the Convention does not permit the exports or imports of hazardous wastes or other wastes between a state Party and a non-Party, provided the countries involved have concluded a bilateral or regional agreement pursuant to Article 11 of the Convention. For the export of

hazardous wastes from OECD to non-OECD countries, in 1995 the Basel Convention adopted a decision to amend the Convention that when fully enforced would ban the export of hazardous wastes from Annex VII (OECD, EC and Liechtenstein) to non-Annex VII countries. Although the Ban Amendment has not yet entered into force, it has been implemented by many countries such as those Parties that are members of the European Community.

30. Environmentally Sound Management (ESM) is a central policy instrument of the Basel Convention. The objective is to protect human health and the environment by minimizing hazardous waste production wherever possible. ESM addresses the issue through an "integrated life-cycle approach", which involves strict controls from the generation of a hazardous waste to its storage, transport, treatment, reuse, recycling, recovery and final disposal. To this end, in 1999 Parties to the Convention adopted the Basel Declaration on Environmentally Sound Management. The life-cycle approach is integrated into the work under the Convention and its 10-year Strategic Plan for the implementation of the Basel Convention.

31. Recognizing the importance and global dimension of the problem, the theme for the eighth meeting of the Conference of the Parties to the Basel Convention, held from 27 November to 1 December 2006, was "Creating Innovative Solutions through the Basel Convention for the Environmentally Sound Management of Electronic Waste". The Nairobi Declaration on the Environmentally Sound Management of Electrical and Electronic Waste and decision VIII/2 were adopted by the Conference of the Parties at its eighth meeting. In relation to the mandate given by decision VIII/2, the Open ended Working Group beginning at its sixth session in September this year considered a work plan for adoption by the Conference of the Parties at its ninth meeting in June 2008.

2. Basel Convention Regional Centres

32. Transfer of know-how, environmentally friendly technologies or processes is essential for a global recycling society. Under the Convention, Regional Centres for training and transfer of technologies as a vehicle for the implementation of the Convention were established. Today, 14 such Centres are carrying out training and capacity building activities in Africa, Asia and the Pacific, Eastern and Central Europe and Latin America and the Caribbean (see http://www.basel.int/centers/centers.html). In this connection, greater support is required to enable these centres to be an effective delivery mechanism at the regional level in the implementation of the Basel Convention.

3. Strategic Plan

33. The conference of the Parties (COP6) defined the elements of the Strategic Plan of the Convention until 2010 for the implementation of the Ministerial declaration on ESM (1999). The convention further identified the main focus areas to be considered in the context of the implementation of the Strategic Plan. These focus areas include, but are not limited to, used oils, health care waste, PCBs, POPs waste (pesticides), used lead acid batteries, ship-dismantling, e-waste, and municipal waste. COP8 also considered mercury and asbestos waste as two additional main focus areas for action under the convention

34. In this context, the Secretariat of the Basel Convention has facilitated the implementation of several PCB related activities in parties to the convention from different regions, including national pilot inventories, regional programs for the ESM of PCBs, and the preparation of guidance manuals and decision supportive tools (databases). Leveraged by the implementing process of the Stockholm Convention, these activities have even become more progressive and more dynamic. SBC, BCRCs and UNEP (GEF Unit) are significantly strengthening their cooperation in this matter. During the 2007-2008 biennium, BCRC-Senegal has executed with success the first GEF funded medium-size project (US$1.3 million) to be executed by a BCRC. The full size project proposal currently under preparation has an estimated budget of around US16 million for a four year period. It will aim at putting in place in West Africa a regional facility for the decontamination of electrical equipment containing PCBs and the export of liquid PCBs for destruction in specialized facilities in Europe. It is expected that this initiative under the NEPAD Environment Action Plan will be able to assist in developing a long-term approach on the ESM of PCBs in the region in the context of the coordinated implementation of the Basel Convention and the Stockholm Convention. Additional project proposals on the ESM of PCBs and other POPs for submission to the GEF or/and financial institutions are currently being developed.

35. With the objectives of the Bali Strategic Plan in mind, and mindful of the special contribution of the Basel Convention to the international normative framework for the ESM of POPs as waste that would also be applicable to other related MEAs, the secretariat has initiated the preparation of decision supportive material on environmentally sound technologies and processes. This preliminary work is

already being used by other international organizations such as in the context of the African Stockpile Project. In 2008, a World Bank funded project will help the secretariat develop guidance and training tools to enhance further the coordinated implementation of the Technical Guidelines for the ESM of POPs as Waste and the Stockholm Convention BAT/BEP Guidelines.

36. In the context of the implementation of the Ministerial Declaration on ESM, several activities in different regions relating to the environmentally sound management of used lead acid batteries have been undertaken with the participation of governments, industrial partners, academia and the civil society. In the Caribbean, a program aimed at undertaking national ULAB national action plans in nine countries was carried. A regional strategy for the ESM of ULAB was further developed through an enlarged consultation process involving governments, academia, industry and the civil society and adopted in 2006. The strategy advocates, *inter alia*, the coordinated development of national ESM policies on ULAB and the setting up of a regional monitoring system for the ESM of ULAB.

37. Under the mercury waste programme, the Conference agreed, in cooperation with UNEP, to work to raise awareness on avoidance, use, storage and disposal of mercury wastes and to develop capacity-building and technical assistance programmes to reduce and prevent pollution from mercury. SBC is developing guidelines on environmentally sound management of mercury wastes with emphasis on the development of long-term storage, sound disposal and remediation practices. A regional project on ESM of mercury-containing products is being initiated in Central and South American countries in partnership with the United States Environmental Protection Agency and other donors.

38. Several pilot activities have been initiated with local and central authorities in different regions based on the concept of integrated waste management. The aim is, through enhanced collaboration with industrial partners, to facilitate the development of integrated programs and policies for the ESM of specific waste streams commonly found in municipal waste, such as used oils and used tyres, and the promotion of efficient use of resource and energy conservation.

4. Partnership programme

39. Recognizing and sharing their concerns regarding the unprecedented growth in the generation of hazardous wastes and the challenge posed by countries and regions in managing these wastes in the environmentally sound manner, the theme for the seventh meeting of the Conference of the Parties (COP7) of the Basel Convention held in October 2004 was “Partnership for Meeting the Global Waste Challenge”. In the Ministerial Statement adopted by the Conference of the Parties the following aspects were emphasized:

(a) To promote a fundamental shift in emphasis from remedial measures to preventive measures such as reduction at source, reuse, recycling and recovery;

(b) To promote actively sustainable patterns of consumption and production;

(c) The need for close cooperation with other relevant international organizations and conventions in the field of chemicals and waste, bearing in mind the importance of life-cycle approach;

(d) To enhance and strengthen efforts to further reduce the amount of transboundary movements of hazardous and other wastes.

40. At the seventh meeting of the COP in October 2004, the Basel Convention Partnership Programme Work Plan for 2005–2006 was adopted with the following objectives: initiation and oversee practical projects in priority areas, with particular regard to the generation, movement and environmentally sound management of waste and active promotion of the transfer and use of cleaner technologies, broadening the resource and support base of the Convention, and improving stakeholder participation and communication.

41. A practical area of involvement for the Basel Convention in recent years has been the establishment of a mechanism for engaging industry and non-governmental organizations more closely: the Basel Convention Partnership Programme (see http://www.basel.int/industry/index.html). Electrical and electronic wastes (“e-wastes”) are a high priority within the Basel Convention Partnership Programme, where the early focus has been on end-of-life mobile phones and personal computers. This new partnership initiative demonstrates the Basel Convention’s commitment to practical environmental outcomes in collaboration with industry and broader civil society in the area of electronic and electrical wastes.

5. Mobile Phone Partnership Initiative

42. The Mobile Phone Partnership Initiative (MPPI) was established in 2002. It brings together mobile phone manufacturers, telecommunications operators, countries, the recycling and refurbishment industry, environmental non-governmental organizations and industry associations. The objectives of the partnership are to achieve better product stewardship; influence consumer behaviour towards more environmentally friendly actions; promote the best disposal, recycling and refurbishing options; mobilize political and institutional support for environmentally sound management; and create an initiative that could be replicated to build new public/private partnerships for the environmentally sound management of hazardous and other waste streams (see http://www.basel.int/industry/mppi.html).Since the start of the Initiative, five guidelines have been completed that address the refurbishment of used mobile phones, recovery and recycling of end-of-life mobile phones, raising awareness on design considerations for mobile phones and on the collection and transboundary movement of used mobile phones.

6. Partnership for Action on Computing Equipment

43. The Partnership for Action on Computing Equipment (PACE) will begin to take form in 2007. The primary focus of the global partnership would be on the environmentally sound management of used and end of life computing equipment, taking into consideration the entire product life cycle (see http://www.basel.int/meetings/oewg/ oewg6/docs/20e.doc). In the partnership's first phase, personal computers (in particular CPUs), CRTs and printers will be addressed.

7. Transfer of technology

44. The control system for export and import of hazardous and other wastes, that is the core of the Convention, is meant to provide the necessary information, transparency and common procedures for every Party to achieve environmentally sound management of these wastes. It is not an end in itself, but a powerful and adequate system towards ensuring a level-playing field for all concerned stakeholders. The technical guidelines on specific waste streams and on disposal and recycling adopted by the Conference of Parties provide Parties with the direction they need to fulfil their obligations of environmentally sound management under the Convention. The Convention provides for international co-operation, which represents a critical factor to achieve environmental sound management.

8. Conclusions

45. Since the entry into force of the Basel Convention, Parties have come a long way in putting together the appropriate control system at the global level in order to implement the Convention. In addition, the Basel Ban Amendment was adopted in 1995 with the view of putting the plug to the illegal movements of hazardous wastes from developed to developing countries and countries with economies in transition. However, there are still many unsolved issues in meeting the goal of the Convention such as how to implement environmentally sound management of wastes in developing countries and enhancing waste minimization and cleaner production efforts with the aim of prevention of hazardous waste production and ensuring their proper management. Furthermore, in the context of the life cycle management approach and the mandate given to it by parties, the Basel Convention is developing further synergies and cooperation with other conventions and programmes related to chemicals production, use, trade and disposal.

E. United Nations Development Programme (UNDP)

46. Solid waste management in urban areas, including environmentally and socially responsible collection, treatment and disposal is a challenge for most developing and transitional countries. While appropriate technological solutions are often available, they can not be applied without instituting cost-effective arrangements, which would ensure effectiveness and financial sustainability. In most developing countries local governments provide solid waste management services. As urban populations grow, it becomes more of a challenge to handle increasing quantities of waste in more congested cities. UNDP supported a number of waste management projects over the years and now continues to work with the partner countries on the development of sound solid waste management frameworks and strategies. Some of work on waste management that is being carried out by UNDP are as follows:

1. UNDP waste management project in the Maldives (2006-2011)

47. UNDP launched a project on National Framework for Solid Waste Management in the Maldives in June 2006 to improve solid waste management in the country. The cornerstone of the project is the

development of the country's first ever National Solid Waste Management Policy (NSWMP). Unlike previous studies which have focussed on waste disposal in specific regions, the NSWMP will act as a national charter on preventing, reducing and disposing of waste throughout the Maldives. In addition to the National Policy, a number of other elements form the project. They are the strengthening of institutions, raising public awareness of the issue, identifying appropriate investments in waste management infrastructure, and encouraging the participation of the private sector.

2. "Waste Management – through Practical Action-ITDG" in Kenya

48. With the support from UNDP-Kenya, ITDG Practical Action in collaboration with University of Nairobi is exploring innovations for polythene recycling. University of Nairobi is offering technical advice in the design of a machine that will recycle plastics wastes into useable items. The machine dubbed 'transextruder' is designed to mould plastics into commercially viable products such as plastic bowls, buckets etc. So far several established groups have shown interest in this machine.

49. In July 2005, the pilot project on sustainable plastic waste management in Nairobi was launched. The project aims at lobbying for a ban on plastic shopping bags that are less than 30 microns in thickness (plastic bread bags are 6-7 microns). It also aims at consumer awareness and anti-littering campaign, promotion of voluntary schemes such as a national code of practice retailers, plastic bag levy collected from suppliers and development of an environmentally friendly alternative bags amongst many things.

50. Through the support from UNDP-Kenya, Practical Action facilitated the registration of a Plastic Co-operative Savings and Credit Society. Prior to registration, the nominated members were trained on requirements of a Co-operative as stipulated in the Co-operative Societies Act. The Co-operative has been active in the collection of used flimsy plastics. This is also purchased from community members at ksh.5 per kg. The used plastic will be cleaned and supplied to Green Loop Company for recycling at an agreed price of ksh.10 per kg. More than 20 tonnes of flimsy plastics have been collected and stored by individual CBOs at their yards. The Jomo Kenyatta University has designed a plastic washing machine for the Co-operative.

3. Rural solid waste management system in Iran

51. UNDP-GEF/SGP and the Municipalities & Rural Municipalities Organization (MRMO) will support mutual activities for empowerment of the local communities and increasing their participation in improvement and development of rural solid waste management system.

52. The two-year agreement will aim to develop an integrated rural solid waste management system, and improve environmental health conditions in four pilot villages through participatory approaches and creating effective links among decision makers and community members.

53. The pilot projects will be limited to carrying out waste source separation, recycling, collection, transportation, sanitary solid waste disposal, cleaning the streets, animal waste management, environmental training and empowerment of rural municipalities and local communities.

54. The goal of the initiative is to address the issues of poverty, environmental sustainability, health promotion, job creation and empowerment of disadvantaged groups (especially women). By so doing, it will help to achieve some of the key milestones of the country's National Development Plan and the Millennium Development Goals (MDGs), in particular goals 1 and 7, Eradication of Poverty and Ensuring Environmental Sustainability.

F. United Nations Environment Programme (UNEP)

55. The issue of 3R (Reduce, Reuse and Recycle) has become a significant policy approach for sustainable development with the priorities placed on it by the World Summit on Sustainable Development (WSSD) and one of its key outcome documents – the '10 Year Framework Programme on Sustainable Consumption and Production'. Also, Para 22 of the WSSD Joint Plan of Implementation specifically endorses the 3R policy approach as a means to achieve sustainable consumption and production.

56. The 3R approach, focusing on reduce, reuse, and recycle, essentially aims to set up a sound material cycle society within the concept of a life-cycle economy, where consumption of natural resources is minimized and the environmental load is reduced, as much as possible.

57. The seventh special session of the Governing Council/Global Ministerial Environment Forum review of international environmental governance identified the need for an intergovernmental strategic

plan for technology support and capacity building to improve the effectiveness of capacity building, and to address the gaps identified by assessments of existing activities and needs. The resulting document, the Bali Strategic Plan, calls for provision of systematic, targeted, long and short-term measures for technology support and capacity building.

58. Various activities have been carried out as a part of the follow-up to WSSD and the 10-Year Framework Programme for Sustainable Consumption and Production (the 'Marrakech Process'). Activities such as Sustainable Consumption, Cleaner Production, and the Life Cycle Initiative, Integrated Waste Management are at the heart of UNEP's contribution to the Framework.

59. UNEP has carried out several projects and started several initiatives to support the implementation of 3R in developing countries. Some salient highlights are given below:

1. Key initiatives

60. UNEP runs a 'Life Cycle Initiative' in partnership with the Society of Environmental Toxicology and Chemistry (SETAC) that promotes dialogue among experts from academia and consultancy and governments, industry entities and consumer organizations to share information and exchange experiences in order to put lifecycle approaches into practice.

61. Through the International Programme on Cleaner production, which is jointly promoted and implemented with UNIDO, UNEP has been building capacities on reduction and/or prevention of the generation of waste at the source in industries. This covers the whole range of intervention from reduction to reuse and recycling.

62. UNEP is working with local governments and business in cities in the Asia-Pacific region and Africa to develop eco-towns through Integrated Solid Waste Management approach in order to facilitate environmentally sound industrial development, focused on the 3R concept.

63. UNEP has established a partnership with an International Panel for Sustainable Resource Management whose overall objective is to provide independent, coherent and authoritative scientific assessments of policy relevance on the sustainable use of natural resources and in particular their environmental impacts over the full life cycle and to contribute to a better understanding of how to decouple economic growth from environmental degradation. Topics addressed include for instance authoritative assessment studies on the global flows of metals. The ultimate goal is to increase resource-efficient economic growth globally, and to catalyze resource efficient innovation.

2. Pilot/demonstration projects

64. Under the Norway-supported umbrella project on Promoting Sustainable Consumption and Production, UNEP is implementing the project on development and implementation of Integrated Waste Management Plan and/or Waste Exchange Systems in five cities: Wuxi New District (WND), China; Maseru, Lesotho; Pune, India; Penang, Malaysia and Nairobi, Kenya. The overall objective of the project is to provide capacity building and technology support for Integrated Solid Waste Management (ISWM) based on 3R principles. The projects include development of tailor made ISWM Plans for each city and identification of Environmentally Sound Technologies to support the implementation of ISWM Plan. The projects in Pune and in Maseru have already been completed and that in Wuxi is in final stages of completion.

65. With Support from EU, UNEP is implementing project on demonstrating technologies for reuse/recycle of construction and demolition debris at Banda Aceh, Indonesia (DEBRI project). The project first aims to take care of the debris resulted from the Indian Ocean Tsunami but will subsequently also be applied to day-to-day debris.

66. 3R Policy studies is being implemented in three countries of South East Asia (Malaysia, Philippines, and Thailand) to assist the governments with the analysis of 3R status and the development of national 3R strategies.

67. UNEP supports Design for Sustainability (D4S) studies in various countries such as Vietnam and Fiji and provides regularly an award to selected pilot projects, in which life cycle approaches are applied.

3. Capacity building and information dissemination

68. UNEP is preparing intensive training package on Integrated Waste Management to build capacity in local governments on development and implementation of Integrated Waste Management Plans with focus on 3R. The experience gained from demonstration projects will be made use of in

developing these packages. The package will consist of guidance manuals, and an interactive computer based exercise to give the trainees practical hands-on experience.

69. UNEP is preparing a Compendium of technologies for utilization of agricultural biomass waste both as a source of energy as well as materials.

70. UNEP has prepared two manuals related to the subject of E-waste Management; E-waste Assessment Manual & E-waste Management Manual. The latter manual will have special focus on 3R.

71. UNEP is preparing a Compendium of Technologies for Converting Waste Plastics into Fuel.

72. UNEP is using training material on Life Cycle Assessment and Management as well as on Design for Sustainability (D4S) in training events in selected countries like China, Costa Rica and South Africa.

73. 3R Knowledge Hub was established with the joint cooperation of UNEP, Asian Institute of Technology (AIT), and Asian Development Bank (ADB) in November 2006. The knowledge hub has three major functions aimed at promoting and disseminating sustainable production and consumption activities through 3R: (i) to create, collect and capture 3R knowledge; (ii) to share and enrich 3R knowledge; and (iii) to disseminate 3R knowledge and research networks in the Asia and the Pacific region.

G. United Nations Human Settlements Programme (UN-HABITAT)

1. Introduction

74. Human settlements within urban centres are faced with myriads of challenges that undermine their sustainability and suitability for human habitation. More of this is pronounced in the developing world cities and towns that are currently faced with a rapidly growing population due to high level of rural urban migration and the resulting needs for housing, leading to wide spread of slum settlements. Consequentially, there has been a continuous decrease in the capacity of the towns and city authorities to provide adequate basic services with waste management being one of the worst hit sectors.

75. The effects of poor provision of waste management in developing countries has led to households throwing out waste indiscriminately into the streets and industries dumping wastes into the environment unsupervised, with the dire consequences of surface water contamination, ground water pollution, soil pollution and blockage of drains. There is a greater implication to this inefficiency in waste management: the increased proportion of hazardous waste from households/ small industries/ medical clinics that is discharged uncontrolled into the environment and/or dumped in landfills which do not have the capacity to store such waste. This not only poses a significant environmental hazard but is also a hazard for waste management workers and to those living in close proximity to the disposal facilities and those who might derive their income from such sources.

76. In developing countries it is the urban poor who are most affected by this uncontrolled management of waste disposal. As a means of sustenance the poor are often involved in waste collection and recycling activities. The ramification therefore of working in areas of hazardous waste disposal sites is the impact on health and the income lost as a result of poor health.

77. UN-HABITAT is one of the UN agencies that have been in the fore front through demonstrated initiatives to help the towns and city authorities to address the problems. The initiatives have been designed with the following as key guiding principles:

(a) Taking cognisance of the social, technical and financial capacity of the targeted urban centres

(b) Stakeholder driven to enhance local capacity and ownership for sustainability

(c) Linkages of basic service delivery and income generation i.e., local economic development

(d) Tailor made as opposed to conventional donor approach which in most cases are not sustainable

78. Some of the on going UN-HABITAT waste management activities are:

(a) Lake Victoria Water and Sanitation Initiative (LVWATSAN) a regional programme covering Kenya Uganda and Tanzania (Ruanda and Burundi have also joined the programme)

(b) Kibera Integrated Water Sanitation and Waste Management (K-WATSAN) Kibera slums of Nairobi

(c) UN-HABITAT Vacutug development Initiative, a tailor made latrine pit exhausting system for thickly populated settlements. The initiative is being implemented in Africa and Asia

2. The UN-HABITAT Initiatives

2.1 Lake Victoria Water and Sanitation Initiative (LVWATSAN)

79. The Lake Victoria Water and Sanitation initiative (LVWATSAN) includes design and improvement of solid waste management (SWM) systems for the targeted secondary towns along the Lake Victoria Catchment Areas in Kenya, Tanzania and Uganda. The targeted towns are of populations ranging between 20,000 and 200,000 and the towns are relatively isolated from each other. This means that the waste quantities in each town are quite small at the moment but is projected to increase rapidly in the coming years as a result of rapid urbanisation experienced in the developing world.

80. Efficiency of basic service provision by any local authority depends on revenue it is able to collect from businesses and population within its jurisdiction. Because the targeted local authorities in this programme are relatively small, this equally translates into a meagre economic power but which has to be shared to provide all the basic services that include solid waste management. Conventional donor support to local authorities have however failed in many places due to luck of cognisance of the afore said facts, leading into establishment of systems that are economically incongruent.

81. It is in this cognisance that the LVWATSAN solid waste management system have been developed as a tailor made approach which apart from introducing specially designed economically viable equipment, it is also recognises the role of local communities through promotion of low cost waste recycling activities as part of local economic development.

2.1.1 The strategy

82. Waste hauling distances from the towns to final disposal sites are all quite short, (typically 3km to 10 km) and where haul distances are short tractors have proven to be much more cost effective than trucks due to their lower capital and operating costs, lower fuel and maintenance costs and longer life expectancy. Typically it has been found in developing countries that tractors are more efficient than trucks where there are haul distances of up to 20 km, or even in some situations 30 km. In the same way the life of a final disposal site depends on the volume it receives each day, in this regard the strategy in this programme have included:

(a) Tractor trailed systems manufactured by Farm Engineering Industries Limited (FEIL) at Kisumu in Kenya to a designs and specifications provided by UN-HABITAT such as LOW LOADING HEIGHT TRAILERS and CONTAINER PICK UP TRAILERS.

(b) A Little Pickup (Ndume Little pick-up), manufactured by NDUME Engineering of Gilgil in Kenya that uses a two wheeled tractor as a power source and has been modified to suit UN-HABITAT's requirements.

(c) Promoting the participation of organised community groups in developing low cost waste collection and recycling enterprise.

(d) Development and/or improvement of final waste disposal sites

Low Loading Height Trailer

83. Conventional trailers being used in many towns within the region have high loading heights and small capacities with limited manoeuvrability due to their large turning circles. The large turning circle is dictated by the conventional trailer drawbar hitting the tractor wheels on full lock. Non-tipping trailers have lower loading heights but are slow to unload resulting in reduced vehicle and trailer daily collection rates. Thus conventional trailers are inefficient and unhygienic due to their slowness in loading, small capacity and wastes falling back on to the workers during loading.

84. Greatly improved hydraulically tipped trailers are provided which have a larger capacity than a conventional trailer and with a lower loading height, (and consequently faster and more hygienic loading) as the body projects down between the trailer wheels instead of having all the body above the wheels. They also have greatly improved manoeuvrability due to their "swan neck" drawbar which enables the tractor wheels to pass underneath the trailer drawbar during tight turns.

85. These trailers are loaded by hand from waste bins at the houses or businesses and are also used to collect from heaps of wastes around the towns.

86. For markets or other places where large volumes of wastes are concentrated at a single location the tractor can drop off an empty low loading height trailer and carry out other duties before returning to pick up the full container later.

High Tipping Container Pick up Trailer System

87. Tractor trailed container system are used in many countries for picking up, transporting and emptying large containers of wastes and have proved to be much more efficient than truck container systems where there are short to medium length haul distances between the collection areas and the disposal sites. UN-HABITAT has introduced a HIGH TIPPING CONTAINER PICK UP TRAILER for the LVWATSAN region with a number of advantages over conventional container trailers as follows:

(a) For residential areas containers are provided within easy reach of each house to which the residents will bring their own wastes. These containers are emptied at least every two days to prevent problems with odours and insects.

(b) Typically 3.0 m³ of waste is the daily output of around 400 households so that with a collection every two days each container should service 200 households.

(c) The container pick up trailer are able to pick up both 4.0 m³ low side and 10.0 m³ capacity high side containers. With its high tipping facility it is able to empty the small containers into the nearest large container and when that large container is full it transports a 4,000 kg / 5,000 kg load to the disposal site. This reduces the number of tractor trips to one quarter of that otherwise required and maximise the efficient use of the tractor with a corresponding reduction in fuel and labour costs and in the number of tractors required.

88. The key element of this new system is to get householders to use the containers provided and it is important to note that the introduction of the container system is accompanied by a very regular collection service. If the containers are not collected every two days the wastes will start to decompose causing smells and attracting flies and other insects. Each container is located on a concrete slab large enough to accommodate two containers so that the tractor can drop off an empty container before picking up the full one. The slab is swept every day so that the tractor is placing the empty container on a clean surface and cockroaches and other insects are discouraged. The sides of the slab are extend at least 25cms below ground level or fitted with steel mesh to prevent rats from burrowing underneath.

Ndume Little Pick-up

89. The Ndume Little Pickup has a flat deck body with a very low loading height. The flat body carries eight bins of wastes which are lifted on or off by hand. In six of the seven towns these little pickups are used to provide a primary collection service collecting bins of wastes from the businesses and some residential premises and transporting these wastes for a transfer into large containers or low loading height trailers which are then transported to the disposal site. The Little Pickup should be carrying a full load each trip with 300 kg to 500 kg per load.

90. For emptying the bins into the large containers or tractor trailers the operators stands on the flat deck of the Little Pickup so that they do not have to lift the bins high. Each bin is at least within the lifting capacity of one worker.

91. In one particular town, Mutukula the amount of wastes is so small and the haul distances are so short that the Little Pickups is able to provide a total waste collection service collecting the wastes from both residential and business areas and bringing them directly to the disposal point.

The role of communities in solid waste management

92. Inclusion of the role of community based organisations in the design of a SWM system in any given urban setup has the following advantages:

(a) Promotes source separation, minimises haphazard dumping practices and reduces the risk of polluting land, air and natural water bodies by waste

(b) Encourages resource recovery and income generation through waste recycling and collection services

(c) Minimises the volume of waste delivered for disposal, hence lengthening life of the final disposal site

(d) A means to developing a responsible society that cares for cleanliness and aesthetics of their neighbourhoods (solution to "Outside my door syndrome").

93. Organised community based organisations in the towns are supported to engage in waste collection and recycling activities by enhancing their capacities through training in low cost recycling and hygienic waste handling methods. They are also equipped with appropriate waste handling tools and machineries to establish cortege industries as part of the programme's aim of enhancing local economic development.

Project status

94. LVWATSAN waste management component have achieved the following:

(a) Base line studies completed, design and development of the waste collection equipment complete and should be delivered to the participating towns in the next month

(b) Capacity building courses for equipment operators and technicians completed

(c) Community based organisations identified to undertake waste collection and recycling. The groups have been linked to other waste recycling organisations in the region for marketing of their products

2.2 Kibera Integrated Water, Sanitation and Waste management

95. The aim of Kibera Integrated Water, Sanitation and Waste Management Project is to contribute towards improving the livelihoods of the urban poor in Soweto East village of Kibera slums, by supporting small-scale community based initiatives in water, sanitation and waste management. This project is a direct component of Kenya Slum Upgrading Programme (KENSUP), a collaborative initiative between Government of Kenya and UN-HABITAT.

96. The project, as part of Water for African cities (WAC II) Programme, is addressing problems in Soweto village relating to Pro-poor Governance and follow-up investment, Sanitation for Urban Poor and Advocacy, Awareness raising and information exchange. Waste management component of the initiative is undertaken by Soweto Youth Group, one of the organised community based organisations in the village. The strategy includes:

(a) Door to door waste collection as a small scale business for the youth group. So far about three hundred households are paying a small fess for the service

(b) Waste segregation at household level. Households are provided with two garbage collection bags for ease of segregation and the bags collected to the waste receptacles where further sorting is done to get the recyclable. Unwanted waste given out to Nairobi city council for onward transfer to final disposal site

(c) The group trained on hygienic waste handling and low cost recycling technologies and as well provided with appropriate equipment to manage the process.

97. The project has created employment for 20 youths and is spreading to cover more households in the village.

2.3 UN-HABITAT Vacutug development Initiative

98. Started in 1999 as a pilot project in Kibera slums of Nairobi to provide alternative and acceptable low cost latrine pit exhausting services within a slum settlement, the UN-HABITAT Vacutug Development Initiative was design provide the needed services where conventional systems had failed. The design took cognisance of the mode of transport widely used in the slum and this was either modified wheel barrows or handcarts. The eight horsepower Honda Engine operated machine with a tank capacity of 500lts, the Vacutug moves at a speed of five Km /h with the operator trailing. It has pump with capacity to suck fro up to 30mts. It is licensed by local authority like any conventional exhausters to empty the sludge into the nearest sewerage manholes.

99. It is donated to organised community groups who run it as an enterprise. The initiative is currently working in seven different cities in Africa and Asia

2.4. Other upcoming initiatives are:

(a) Mirera Karagita Water and Sanitation Initiative in Naivasha Kenya, which its implementation has started through an international organisation; "The Water Sanitation for Urban Poor

(WSUP)". It will implementing and integrated waste management system for the peri urban poor of Naivasha

(b) Improving Capacity for Solid Waste Management in Managua; Nicaragua South America. Initial missions have been made in which baseline study reports have been produced. UN-HABITAT is currently processing the contractual to develop local capacity to initiate the project.

H. United Nations Industrial Development Organization (UNIDO)

100. **UNIDO's Strategic Long-term Vision Statement** strongly reaffirms the calls by the United Nations General Assembly through Millennium Declaration (and subsequently codified into Millennium Development Goals) and World Summit on Sustainable Development (WSSD). It states that in the long run the focus of UNIDO activities in the thematic programme "Environment and Energy" should be to bring about fundamental changes in both product design and technology, which provide for resource sustainability. As outlined in the Strategic Long-term Vision Statement, resource sustainability involves **four steps**:

- continuing to reduce the usage of materials and energy through **cleaner production processes** to enhance production efficiency and reduce effluents of hazardous and toxic chemicals;
- moving towards circular flows of materials by promoting more strongly their **continued reuse and recycling**;
- shifting from nonrenewable to **renewable sources of energy**;
- changing the emphasis from selling products to **supplying services**.

101. Few now doubt that the continuing **degradation of the natural environment** poses one of the **greatest challenges to modern societies**. All human, but in particular all industrial, activities create a burden on the environment although paradoxically at the same time the revenues gained from these activities create the basis for our well-being. Major **problems** include global warming, loss of biodiversity, water and air pollution, releases of persistent organic pollutants (POPs) and other toxic substances, and land degradation including coastal erosion. The institutions and industries of developing countries and countries with economies in transition face several constraints in combating the loss of natural environmental resources at the national level and emerging environmental issues of a transboundary, regional and global nature. It is well established that there is an intimate relationship between poverty and the potential exposure to toxic substances, pollutants and wastes. Furthermore, **eliminating the dangers caused to human health** and the environment by **POPs** and persistent toxic substances **(PTS)** contributes to a sustainable growth in productivity and, within the proper framework conditions, leads to a sustained and more equitable economic development.
The **services provided** by UNIDO on environmental management are:

- Cleaner and sustainable production (CP);
- Water management; and
- Persistent Organic Pollutants (POPs) and Persistent Toxic Substances (PTS)

102. UNIDO has always recognized that attention needs to be given to the wastes generated by industry, in order to reduce their environmental and health impacts. Much of the waste-related work that UNIDO has done in the past has been through the joint UNIDO-UNEP National Cleaner Production Centre (NCPC) programme.

103. While a preventive approach can go a long way to reducing the wastes and other pollution that enterprises generate, it is often very difficult and costly for enterprises to completely eliminate all wastes and pollution they generate. In addition, global trends in environmental policy are to making enterprises responsible for the environmentally correct management of their products once these have been discarded by consumers (extended producer responsibility). An environmental services sector is therefore an indispensable element to the proper implementation of national environmental policies promoting industrial environmental management. Even the most environmentally responsible enterprises need external support. They need enterprises that can build and install the on-site end-of-pipe treatment technologies they must have (e.g., wastewater treatment plants, air pollution control equipment). They need enterprises that can that can take away and properly manage the process wastes they generate (e.g., recovery and recycling companies, landfilling companies). And more and more, they need enterprises that can collect and properly manage the products they have manufactured once they become waste (e.g., discarded electric and electronic goods, discarded white goods, used cars, used solvents, used oil, …).

104. At the same time, the growth of an environmental services sector permits the development of new enterprises and the creation of new jobs, especially in the developing countries. While environmental services exist in the developing countries, especially in the field of waste recycling, they are often undertaken in an artisanal fashion, under improper health and safety conditions, and in ways that are actually deleteriously impacting the environment. The promotion of a modern environmental services sector will help in the creation of modern enterprises and safe jobs.

105. The environmental services industry is currently a multi-billion dollar industry worldwide. However, it is largely absent or weak in many of UNIDO's client countries. As a result, in its new Green Industries initiative, UNIDO is focusing on flanking its preventive work through cleaner production with the development of new activities that will promote the growth of environmental services sectors in its client countries. Recognizing that the growth of this industry sector is very much driven by the existence of, and effective enforcement of, environmental laws and regulations, and further recognizing that this pressure is weak in many of its client countries, UNIDO's efforts in this area will initially focus on the recovery and recycling industries. In these industries, the win-win concept that has been so successful in the NCPC programme can be replicated, increasing the chances of producing impact.

I. World Bank (WB)

World Bank Solid Waste Portfolio Activity Summary (does not include the Bank's IFC private sector activity or its MIGA private sector guarantees):

106. The World Bank has been actively involved in solid waste investments for 4 decades. Initially, in the 1970's, the work focused on replicable pilot projects in cities, to determine how best to improve solid waste collection in slums, followed by city-wide replication as part of the Bank's slum upgrading programs. In the 1980's, the work involved city-wide solid waste improvements to collection systems and fleet maintenance, with upgrading of open dump conditions to improved interim landfill conditions. In the 1990's, as cities grew in size and traffic congestion, the work involved implementation of waste transfer systems to help rationalize collection operations and enable implementation of new safe disposal in areas more distant from city centres. Also, in the 1990's, numerous efforts to introduce private sector participation by partial outsourcing through contracts, franchises, subscription and concession agreements were implemented. In the new millennium, projects saw an increased focus on safe disposal and carbon reduction, together with significant support from carbon finance for emission reduction. Social inclusion of informal sector waste reclaimers and recyclers, as well as service providers, is a routine part of these projects and gender issues are being considered. The animal disease outbreaks brought in a new arena of solid waste work with projects focused on wastes from live markets and slaughterhouses, as well as carcass disposal efforts as part of emergency SARS and HPAI outbreak control projects.

107. With regard to knowledge development, the World Bank has regularly contributed to the global knowledge base. There were materials developed on cost-effective waste system development and integrated waste resource recovery during the 80's. There were studies on private sector participation, landfill and composting design, incineration viability, anaerobic digestion, and landfill gas recovery in the 90's. In the new millennium, there has been knowledge development on medical wastes, livestock wastes, disaster debris, bioreactor landfilling, landfill gas recovery, composting, carbon reduction, social inclusion, and holistic decision-making among solid waste systems. Over the past four years, new knowledge presented to Bank staff as part of the Bank's internal capacity building, together with project case studies, have been posted on its external website for the use by clients, consultants, other agencies, and the general public.

108. In the last four decades, the World Bank had 431 projects with solid waste as one of the main components. By 1990, the Bank portfolio had only 19 projects had solid waste components; by 2000, an additional 83 had solid waste components. In the last 8 years, since 2000, there have been 318 projects added, of which 57 projects are in the pipeline of development. Most of the recent projects are under $US 100 million. About 10% are over $US 100 with an upper boundary of $US 400 million; and the total amount spent on the components for solid waste have an upper boundary of $100 million. Safe disposal and green house gas emission reduction are key elements of most of these projects, and solid waste collection and transfer improvements are included in many, while some focus on environmental remediation and disease outbreak control.

109. The Bank's active solid waste projects focus on investment loans for operations, as shown on the public website above, but also include regional and global economic and sector knowledge projects. The projects are categorized as follows, based on their primary type of funding:

(a) Investment loans - 216

(b) Technical assistance (non-lending) – 67

(c) Carbon offset - 60

(d) Economic and sector analytical work – 40

(e) Global environmental fund – 27

(f) Special funding (as in emergency project grants) – 9

(g) Recipient executed activities – 8

(h) Institutional development funds – 3

(i) Sub National finance - 1

110. The projects are categorized as follows, based on whether they originate from the central staff of the Bank or whether they originate from the regions:

(a) East Asia/Pacific - 100

(b) Europe/Central Asia - 75

(c) Middle East/North Africa - 68

(d) Africa – 65

(e) Latin America/Carribean – 59

(f) South Asia - 43

(g) World Bank Institute – 7

(h) Central staff - 14

111. The projects are categorized relative to the departmental sector or theme of origin as follows:

(a) Urban - 166

(b) Environment – 152

(c) Water/Sanitation - 56

(d) Agriculture - 16

(e) Social Protection - 11

(f) Health - 6

(g) Energy – 5

(h) Finance Sustainability – 5

(i) Public Governance – 5

(j) Transport – 5

112. Project development is shifting from focus on only single large cities to encompassing regions and whole countries. Rather than outlining a pre-determined set of investments, many new projects are taking a more programmatic national approach that provides a framework for local governments to prepare to participate in the project time frame by meeting criteria of reform progress and implementation readiness. Output based incentives are included from the Bank, as well as inter-governmental financial supports from the client.

113. The projects show considerable flexibility regarding government level, client focus, and jurisdictional boundaries for solid waste activities. For a perspective of how the project boundaries are defined, the following list indicates places where different boundaries have been set for project development:

(a) National projects

- Argentina, Republic of Bosnia and Herzegovina, Benin, Ghana, Mexico, Turkey, Caribbean Islands, Burkina Faso, Tunisia, Morocco, Brazil, Colombia

(b) Province projects

- Pakistan, China, India

(c) River Basin projects

- China, Kazakhstan, Romania

(d) City projects

- Nigeria, China, Mexico, Ghana, Mexico, Turkey, Afghanistan, Brazil

(e) Facility projects – carbon finance

- Uruguay, Peru, Brazil, S. Africa, India, Chile, Indonesia, Egypt, China, Vietnam, Pakistan, Argentina, Philippines, Latvia

114. The development of 318 projects since 2000, compared to 113 projects in the previous 3 decades, shows that the Bank's portfolio in solid waste management is growing significantly. The Bank's priority emphasis on carbon offset is partially due to this growth, as is the new emphasis on livestock waste management. But, most importantly, this growth reflects the Bank's renewed emphasis on infrastructure lending.

115. Downturn in the 90's mirrored overall Bank downturn in infrastructure lending worldwide, based on the Donor view that many infrastructure sector investments would be financed by the private sector if we focused on supporting improved investment climates (e.g., governance, revenues, rule-of-law, transparency, competitive tendering). That vision did not materialize for many infrastructure sectors, such as solid waste, livestock processing, and sanitation where there are significant public good features and environmental externalities and full cost recovery is a reasonable expectation. Even though there was significant entry of medium-scale domestic private sector into infrastructure services during the 90's, the desired investment from large-scale domestic and foreign firms did not occur in most countries. The Bank's new infrastructure strategy embraces the lessons learned and is actively growing investment portfolio in those neglected sectors that did not improve during this time.

116. Global knowledge development undertaken in the past two years: a global study on holistic decision modelling of solid waste systems in 7 cities of 7 regions, with comparison to one US and one Japanese city; a global study on livestock waste recycling and disposal from live markets and slaughterhouses in 5 cities of 5 regions; training materials for medical waste management; global review of financial arrangements for recovery of solid waste management costs; a global review of feed additives used in livestock production and how they might excrete and persist in the environment; state of knowledge on bioreactor landfilling; issues of disaster debris management; review of landfill gas carbon finance projects and their performance. Regional knowledge development has been undertaken in a wide range of countries, including Kenya, Pakistan, China, Argentina, and Brazil. Regional sector knowledge focuses on understanding regional problems and needs and studying a wide range of potential technical, institutional, financial and private sector approaches to address regional conditions.

117. On a global level, much of the technical knowledge is now well developed and available to the Bank staff, clients, consultants and general public through its external website: http://www.worldbank.org/solidwaste . By mid-2008, the Bank had attained a regular monthly visitation of about 5,000 to this external website, as solid waste practitioners learned that it well populated with free solid waste guidance material and case examples.

118. There are, however, knowledge gaps in two major areas, as discussed below, and now underway:

(a) Upcoming knowledge development will emphasize social inclusion of waste reclaimers and informal sector waste service providers. Vulnerable populations and gender issues will be

specifically addressed. Social inclusion trust funds are being arranged in four countries within four regions for bottom-up examination of potential project supports and replicable examples. This work builds on the existing Bank social inclusion toolkit for solid waste (http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2005/10/17/000090341_20051017144826/Rendered/PDF/337810socialassesstoolkit.pdf) , on the experiences of NGO's working valiantly and well on this issue, and also the excellent global survey work done recently by GTZ.

(b) Upcoming knowledge development will also emphasize livestock wastes, because of the persistent, toxic and antibiotic resistant pollutant contributions being made significantly through this much-overlooked waste category. Recent outbreaks of livestock and Zoonotic diseases show a clear link to how livestock excreta, slaughter wastes, and carcasses are managed (http://go.worldbank.org/9PQROPFBG0). Recent food safety problems have also show a clear link to application of antibiotic use and resistance development within livestock production and application of excreta to crop lands and fish ponds. Studies show that feed additives of arsenicals, heavy metals, antibiotics, and hormones are largely excreted intact and remain persistent within receiving environments. The new interagency collaborative effort will conduct analytical work to enable development of global reform toward sustainable livestock production and processing systems and related regulatory and trade frameworks. As a part of this collaboration, an partnership is anticipated with the private sector, including international grocers and restaurant chains, related livestock production and processing companies, and NGO's focused on support to consumers, environmental protection, small livestock holders, "one world one health" and animal welfare.

II. Successful examples on waste management

A. Asian Development Bank (ADB)

1. Policy and regulatory

119. Activities in promoting 3Rs: See Asian Development Bank's Recent Work in Waste Management

120. Activities in promoting cleaner production

(a) A regional technical assistance (RETA) for the "Promotion of Cleaner Production Policies and Practices in Selected Developing Member Countries" was initiated in 1999. The RETA achieved its designed objective to assist participating countries develop national cleaner production (CP) policy and strategies. Thailand and Viet Nam adopted the draft national action plans with some modifications, while India, Indonesia, and Philippines improved their national capacity for implementing national CP actions. In addition, an advisory TA on cleaner production was implemented in four Asian countries (see table 1).

Table 1: ADB's advisory TAs on cleaner production

Technical Assistance	Activities	Outputs
India – Environmental Management at the State Level approved (approved in 2000)	A TA Cluster was implemented to help meet the CP objectives of the Environmental Action Program of India. The main objective was to provide alternative solutions and programs for industry to comply with the environmental standards other than end-of-pipe technologies.	Outputs included: (i) development of an integrated CP model, which was informed by an institutional structure review and barrier analysis; (ii) development of three financial models for financing CP activities of SMEs; (iii) action plan for implementing a nationwide CP program; and (iv) three training programs and national-level workshop.
Indonesia – Improving the Environmental Performance of Small and Medium Enterprises (SMEs) by Promoting Cleaner	As an integral element of its program to support of the SME sector, the TA worked with SMEs, SME associations, business development services, and government agencies to improve the environmental performance of SMEs, particularly those in casting and electroplating industries.	Outputs included: (i) provision of assistance to 12 SMEs in three industry sectors, as well as local governments and business development services; (ii) a CP toolkit that contained: protocols for waste and financial audits, a CP operations manual, and a performance-based monitoring system; and (iii) policy and action plans for national and local governments, industry associations, and other organizations.

Production (2002)		
Philippines – Promotion of Cleaner Production (2002)	The TA helped build the capacity of industries and government agencies (esp. DOST) to promote cleaner production and assisted SMEs to adopt an environment management systems and practices through training and demonstration programs. The TA also helped industries to identify, evaluate, select, and acquire cost-effective technologies for CP.	Outputs included: (i) provision of three-level support program (consisting of group training, individual on-site training, and continuous technical monitoring) with 17 SMEs; (ii) guidelines and tools for local industries to facilitate their adoption of CP practices; (iii) technical manuals on cleaner production for specific industry sectors; and (iv) a 5-year Business Plan for the Industrial Technology Development Institute (ITDI) of DOST to guide development of the activities, partnerships, services, and marketing methods.
People's Republic of China – *Promotion of Clean Technology* (1998)	The TA cluster consisted of six subprojects, namely, (i) Policies for Promotion of Clean Technology; (ii) National Network for Clean Technology Transfer; (iii) Legislative Support for Clean Technology; (iv) Clean Technology Development; (v) Environmental Management for Clean Technologies in Township and Village Enterprises (TVEs); and (vi) Financing Mechanism for Clean Technologies in TVEs.	The broad objectives of the project were: (i) to develop policy and regulatory frameworks that facilitate the introduction and adoption of CP in a cost effective manner; (ii) to build the capacity of the relevant governmental agencies for improving environmental management; and (iii) to finance a portion of environmental investments, including CP development. One important outcome, at least in partly attributable to the TA, was the adoption of the Law on Promoting Cleaner Production in June 2002 by the 9th National People's Congress.

CP = country partnership, DOST = Department of Science and Technology, TA = technical assistance
Source: ADB

(b) As an example of an ADB loan project, the Acid Rain Control and Environmental Improvement Project financed investments to improve air quality in the People's Republic of China's (PRC) southern part of Anhui province, specifically in the cities of Guichi, Huangshan, Tongling, and Wuhu. The investments promoted cleaner production, energy efficiency, and waste minimization in six industrial enterprises. The project is expected to reduce sulphur dioxide (SO2) emissions by 31,300 tons per year and acid rain frequency by 50% in the selected cities. Carbon dioxide emissions are expected to decline by 476,800 tons per year.

121. **PRC: Strengthening Urban Solid Waste Management (2000)**—This advisory TA was intended to support the Government's ongoing institutional restructuring, refine the draft National Guidelines on Solid Waste Tariffs, and formulate development strategies and plans for urban SWM. The TA was formulated to increase the level of SWM services with the goal of improving environmental health, upgrading living conditions, and reducing urban poverty. The TA also aimed to identify measures to support municipal governments and agencies in delivering financially sustainable urban SWM services in a phased manner and to ensure that tariffs are affordable to low-income households. In addition, the TA assisted the Government in strengthening public-private partnerships (PPPs) in urban SWM. The study included developing a PPP model and demonstrating it in a case study city.

122. The major output was a detailed National Strategy for Strengthening Urban Solid Waste Management, which provides the framework for reforms to enhance and streamline the management system and services required over the next 20 years. The Strategy includes recommendations covering the strengthening and reform of the integrated components necessary to support a sustainable system for SWM, including (i) institutional development and reform; (ii) legislative reforms, amendments, and enforcement strengthening; (iii) economic and financial management and reform, including tariff charging for waste services; (iv) operational practice developments, including gradual marketing of waste services; and (v) public awareness raising, education, and training.

123. **Indonesia: Strengthening of Urban Waste Management Policies and Strategies (1997)**—The TA's objective was to assist the Government to strengthen and improve its existing policies and strategies for urban waste management through (i) the establishment of a clear line of responsibility and coordination between local, provincial, and central governments; (ii) involving all stakeholders in the planning, design, and financing of urban waste management services through sustained awareness raising campaigns and public participation; (iii) strengthening the local governments' ability to plan,

finance, operate, and maintain physical facilities on a sustainable basis; (vi) strengthening the regulatory framework to encourage usage of urban waste management systems and willingness to pay; and (v) facilitating PPPs in the financing and operation of physical facilities.

124. **Philippines: Metro Manila Solid Waste Management (2002)**—This project is providing assistance to selected local government units (LGUs) to implement the Ecological Solid Waste Management Act of 2000. This Act requires, among other things, (i) mandatory segregation and recycling of solid waste at the community (barangay) level; (ii) formation of solid waste management (SWM) boards at the provincial, city, and municipality levels to formulate and implement 10-year SWM plans; (iii) diversion of 25% of all solid waste by 2006 through reuse, recycling, and composting; and (iv) establishing reclamation and buy-back centres for recyclables.

125. The TA is providing planning, design, training, and other assistance to develop and strengthen an integrated SWM system for Manila. This includes:

(a) direct support to LGUs in implementing provisions of the Act, including formulating local solid waste management plans;

(b) improving medical waste management;

(c) capacity building for National Solid Waste Management Commission (NSWMC), Metro Manila Development Authority (MMDA), and LGUs with specific implementation support for key provisions of the Act; and

(d) assistance to develop integrated interim and long-term solid waste treatment and disposal solutions.

126. As head of the NSWMC, the Department of Environment and Natural Resources is the executing agency, with the Department of Health as an additional implementing agency.

127. **Thailand: Capacity Building for Waste Management Program Administration (1997)**—The TA's main objective was to build program administration and project management capabilities for provincial, regional, and national agencies that would eventually be responsible for managing major urban waste management infrastructure throughout Thailand. A secondary objective was to support cooperation between agencies involved in the sector, particularly in joint training exercises and coordination of decision making for investments in waste management practices. In 1998, and in response to a request from the Government, a supplementary objective was incorporated to establish planning procedures and implementation mechanisms by which ineffective waste management systems can be rehabilitated and brought back in to sustainable operation.

128. **Thailand: Solid Waste Management Sector (2000)**—The objectives of the TA are to (i) develop project preparation and implementation plans for the establishment of sustainable solid waste management operations; (ii) develop and test planning mechanisms such that the operations will be beneficial to the community; (iii) develop and test institutional frameworks for local governments and civil society to work together on the planning, implementation, and operation of solid waste management; (iv) develop and test cost recovery frameworks including an analysis of relevant private sector participation options; and (v) test the effectiveness of existing government legislation and regulations in ensuring solid waste management activities do not adversely impact on the environment.

2. Technical

129. **PRC: Efficient Utilization of Agricultural Wastes (2002)**—ADB and Global Environment Facility (GEF) provided financial support to the PRC for the promotion and adoption of biomass-based renewable energy systems. The project aimed to improve the environment and promote economic growth in the rural areas of Henan, Hubei, Jiangxi, and Shanxi provinces by helping establish on-farm biogas digesters and biomass gasification plants to generate clean, renewable energy. Funding was provided to small household farms through the development of an integrated farm production system by expanding livestock, vegetable, fruit, and other crop production. Agricultural wastes from crops and animals fuel the biogas digesters and biomass gasification plants. Technical support and training were provided to promote and improve biomass technology, and to establish adequate service infrastructure to ensure sustainability and biomass system development in rural areas.

130. **PRC: Waste Coal Utilization Study (2004)**—The purpose of this TA was to help the Government of Shanxi Province (GSP) mitigate the environmental impact of waste coal and conserve energy by assessing waste coal utilization and developing a waste coal utilization strategy and action plan. Outputs of the TA included: (i) a waste coal utilization strategy; (ii) an implementation plan; (iii) a

framework for medium- and long-term cooperation between the GSP and ADB; and (iv) a field study report.

131. **Indonesia: Gas Generation from Waste (2004)**—This TA project with the Government of Indonesia aimed to improve integrated waste management practices in the palm oil industry and evaluate the potential of palm oil mill (POM) waste as a renewable and commercially viable source of clean energy. The project would: (i) establish a waste management framework for the industry, (ii) conduct a technical and economic assessment of different alternatives for energy recovery and conversion from POM waste, (iii) develop a sustainable plan for effective waste management and energy capture for a cluster of public and private sector POMs, (iv) evaluate the potential social and environmental benefits of improved waste management practices, and (v) assess the need for further ADB support for energy generation from waste.

3. Financial

132. **Bhutan: Urban Infrastructure Development (2006)**—Through this loan project, the ADB is helping the city of Thimphu: (i) rehabilitate the existing landfill site and provide a compactor to increase capacity; (ii) operationalize the existing Serbithan Pilot Composting Plant; (iii) construct a sorting and recycling centre to enable waste separation and recycling; and (iv) purchase waste collection equipment to allow the separation of waste at source and minimize the need for waste disposal at the landfill. The project will also help facilitate the involvement of households and communities in waste separation and recycling through public awareness programs.

133. **PRC: Efficient Utilization of Agricultural Wastes (2002)**—A component of this project is focused on funding for renewable energy generation and eco-environment development. This component is a viable, sustainable, and replicable financing model that involves providing credit through subloans to households and medium-scale enterprises to help them adopt biomass-based renewable energy systems integrated with existing farming practices. The objective is to reduce long-term negative environmental and health impacts from the current practices of burning agricultural crop residues, spreading untreated manure on fields, and using coal and firewood with high ash and sulphur content for cooking. The project will also bring about significant benefits to the rural environment by converting large quantities of agricultural wastes (crop residues, livestock solid and liquid wastes, domestic wastes, etc.) into organic fertilizer and biogas.

134. **Cook Islands Waste Management Project (2001)**—This is a typical intervention that combines the three principal thrusts of policy improvement, capacity building, and investment in physical facilities. The physical components include construction of a fully engineered, environmentally sound landfill site; construction of septic tank sludge treatment lagoons adjacent to each landfill; and supply of operating equipment for each landfill and for recycling waste materials.

135. The outputs of the project included (i) efficient waste management systems; (ii) an institutionalized recycling program; (iii) improved waste collection systems; (iv) improved institutional framework to allow contracting out of waste management services; (v) cost recovery systems; and (vi) remediation strategies for existing waste disposal sites. In Rarotonga and Aitutaki, the ultimate beneficiaries are the economy or the community. Improved solid waste management services will shore up further development of tourism, which is the principal engine of local employment and economic growth.

136. **Mongolia: Urban Development Sector Project (2006)**—An important feature of this loan project is the promotion of ecologically sound, on-plot sanitation to reduce urban waste and convert it into a useful and potentially marketable resource. This activity will contribute to improved sanitation techniques through eliminating pit latrines and pollution of groundwater, reducing the infrastructure burden on public authorities, and turning human waste into a marketable commodity. This approach will be piloted first and expanded later when the approach is confirmed to be feasible.

4. Social

137. **Cambodia: Income for the Poor Through Community-Based Environmental Improvements in Phnom Penh (2002)**—The community-based solid waste management and income generation component will establish comprehensive community-based solid waste management practices through an innovative method to generate income from garbage collection, segregation, recycling, composting, and transportation. Also, new method of waste collection using communal storage containers, mobile pick-up points, and various recycling and composting methods will be implemented.

138. **Lao People's Democratic Republic: Solid Waste Management and Income Generation for Vientiane's Poor (2003)**—This project highlights the importance of improving employment and working conditions of vulnerable sections of society. The proposed project will improve the living conditions of the poor households and waste pickers in Vientiane through an improved sanitary environment, better access to waste collection services, and improved standards of living through acquisition of entrepreneurial skills. It will (i) improve and sustain solid waste collection practices, transportation, and disposal services in poor communities; (ii) build the planning capacity and implement sustainable community-based solid waste management; and (iii) generate income and promote employment opportunities for waste pickers and poor households.

139. **Philippines: Smokey Mountain Remediation and Development Project (2005)**—This project aims to improve the quality of life and livelihood of 30,000 residents in the Smokey Mountain by developing employment and livelihood opportunities for the poor through the activities associated with the establishment of the materials recovery facilities.

140. **Viet Nam: Expanding the Benefits for the Poor through Urban Environmental Improvements (2004)**—This project aims to reduce poverty and improve the quality of life and livelihood of poor communities through (i) greater access to environmental infrastructure and services; (ii) community participation and improved skills for planning, implementing, and operation and maintenance of community infrastructure; and (iii) cooperation and intermediation between poor communities and local institutions for sustainable environmental infrastructure. A component of the projects aims to increase solid waste service coverage for approximately 3,700 households previously unserved and 15 tons of additional daily waste collection.

B. European Bank for Reconstruction and Development (EBRD)

141. EBRD has several local and regional waste management programmes. These include:

(a) ZGOS – Zagreb Solid Waste Programme

(b) Adjara Solid Waste Management Project

(c) Bacau Solid Waste Management Project

(d) Duboko Solid Waste Project

(e) Dushabe Solid Waste Management

(f) Primorsko – Goranska Regional Waste Project

(g) Istria Regional Waste Management Programme

(h) Rijeka Regional Waste Management Programme

(i) Arges County Regional Solid Waste Project

C. Organization for Economic Cooperation and Development (OECD)

1. Extended Producer Responsibility (1994-2006)

142. Extended Producer Responsibility (EPR) is a concept where manufacturers and importers of products should bear a significant degree of responsibility for the environmental impacts of their products throughout the product life-cycle, including upstream impacts inherent in the selection of materials for the products, impacts from manufacturers' production process itself, and downstream impacts from the use and disposal of the products. Producers accept their responsibility when designing their products to minimise life-cycle environmental impacts, and when accepting legal, physical or socioeconomic responsibility for environmental impacts that cannot be eliminated by design.

143. The OECD project on EPR takes a focused look at ways to minimise the municipal waste stream by reducing or ending the traditional local government subsidy, while transferring substantial or complete financial responsibility to private sector enterprises for managing their products also at the post-consumer phase. The main product of this project was the Guidance Manual for Governments that was published in 2001.

144. Since OECD began its work on EPR in 1994, almost every member country has implemented one or more EPR programmes. These programmes vary considerably due to a number of factors, such as the difference in the products or waste streams covered, instruments (instrument mixes) used and how the responsibility is shared among the players in the product chain. However, it seems evident that EPR will continue being part of product and waste policies in OECD countries. More information at: http://www.oecd.org/env/waste.

2. Environmentally Sound Management (ESM) of Waste (1999-)

145. In late 1990s it was recognised that the level of environmental safety varies widely between recovery facilities, even within OECD member countries. Therefore, the Organisation decided to start working towards international ESM guidelines to improve and harmonise the environmental protection of waste management facilities in OECD countries. The main output of this project was the Council Recommendation on ESM [C(2004)100] of waste. A Guidance Manual for the implementation of the Council Recommendation C(2004)100 was published in 2007.

146. This Recommendation applies to waste, whether imported or domestically generated, and to activities which collect, dispose, eventually store, and recover wastes. It recommends that facilities have an environmental management system, be audited in terms of environment, health and safety measures, and monitor and record their emissions and waste generation. Other measures are recommended to protect not only the environment but also the health of workers. To this end, facilities should ensure a safe and healthy occupational environment, adequately train the personnel to avoid unnecessary risks, and have an adequate emergency, closure and after-care plan for emergency situations or definite cessation of activity.

147. When implemented, the Council Recommendation on Environmentally Sound Management (ESM) of Waste is expected to improve the environmental performance and level the playing field among the waste management industry within the OECD area. It includes not only general policy recommendations for governments, but also practical “core performance elements” (CPEs) to be implemented by the waste management facilities. OECD recommendations are not legally binding, but there is an expectation that member countries will do their utmost to fully implement Recommendations.

3. Waste Prevention and Minimisation (1994-2004)

148. Over the past two decades, OECD governments, the private sector and others have spent considerable resources on environmental protection and waste reduction. Yet, waste generation is still on the rise. To help OECD governments address the increase of waste and associated pollution, new policy ideas and concepts have been investigated and developed that could result in longer-term solutions and increase resource efficiency. Waste minimisation policy is one broad approach, among others, being examined by OECD. The policy guidance and information provided under the waste minimisation programme give governments an additional tool to help them tackle key environmental challenges such as waste and pollution.

149. The OECD work programme on waste minimisation began in 1994. The initial step was to compile information on existing policies and tools for waste minimisation in OECD countries. In 1995, the U.S. Government co-hosted with Canada and Mexico OECD’s first waste minimisation workshop in Washington D.C.

150. The second phase of the OECD Waste Minimisation Programme focused on the development of a common understanding of waste minimisation and its components (strict prevention, reduction at source, product re-use, recycling, and, when appropriate, energy recovery). The German government hosted this workshop in 1996.

151. The two phases of work resulted in a series of OECD publications covering specific waste streams, tools and policy approaches. A general waste minimisation evaluation, as well as national waste minimisation profiles of OECD countries, were published in 1998.

152. During the third and final phase of the project, the OECD focused its efforts more squarely on the prevention component of waste minimisation. Since wastes are generated throughout the life of economic activities, this phase of work added a resource flow perspective to the initial waste minimisation approach and will comprise waste prevention policy design, target setting, implementation and evaluation. The overall aim of this phase was to develop a Reference Manual on Strategic Waste Prevention (published in 2000).

153. Following the publication of the OECD Reference Manual on Strategic Waste Prevention, it was clearly recognised that there is a lack of internationally accepted waste prevention indicators. To address this fundamental problem, member countries endorsed in 2000 a multi-year project devoted to examining and developing waste prevention performance indicators. To launch this project, the OECD held a first international workshop on waste prevention performance indicators in Paris on 8-10 October 2001. The workshop documentation and outcome were published in 2002. Based on the workshop recommendations, work was initiated on drivers for waste generation with the aim to develop pressure indicators for waste prevention. Also work has been undertaken on response indicators and on material flow accounts aiming towards the development of indirect pressure and response indicators for waste prevention. The outcomes of these three projects were published in 2004,

154. Although the concept of waste prevention was broadly accepted, it became evident during this project to all involved parties that ever-growing waste amounts, waste diversity, and associated risks, are heightening the need for governments to vigorously pursue waste prevention as an essential component of strategy for a sustainable future. Also the associated financial and environmental benefits were broadly recognised, such as reduced investments to waste management, reduced air and water pollution and most notably the reduced emission of greenhouse gases. Also it was demonstrated that measurement of waste prevention is possible and feasible.

D. Secretariat of the Basel Convention (SBC)

1. Mobile Phone Partnership Initiative (MPPI)

155. The Basel Convention Mobile Phone Partnership Initiative (MPPI) was launched at the sixth meeting of the Conference of the Parties in December 2002 with the world's foremost manufacturers of mobile phones, governments and non-governmental organizations. The MPPI has completed four main projects:

(a) Project 1 - Reuse of Used Mobile Phones.

(b) Project 2 - Collection and Transboundary Movement of Used Mobile Phones.

(c) Project 3 - Recovery and Recycling of End-Of-Life Mobile Phones.

(d) Project 4 - Awareness Raising and Training - Design Considerations.

156. In the coming years, the MPPI will be embarking on pilot projects in selected countries in order to test the technical guidelines developed under this Initiative.

2. Programmes and Projects on Electronic and Electrical Waste (E-waste)

157. The Basel Convention Partnership on the Environmentally Sound Management of Electrical and Electronic Wastes for the Asia-Pacific Region was officially launched in Tokyo on 25 November 2005. The following Asian countries have supported and are participating in the project activities: Cambodia, China, India, Indonesia, Malaysia, the Philippines, Singapore, Sri Lanka, Thailand and Viet Nam. In addition, the Basel Convention Regional Centres located in Beijing, Jakarta and the South Pacific Regional Environment Programme are also participating in regional projects for countries in their region. Activities involving detailed inventories of e-waste in Cambodia, Malaysia, Thailand and Viet Nam were also carried out. Two sets of technical guidelines were completed under the leadership of the Basel Convention Regional Centre for South East Asia on the methodology of e-waste inventory and the environmentally sound management and "3R" (reduce, reuses, recycle) of end-of-life e-products.

3. Pilot Project on Transboundary Movement of End-of-Life Mobile Phones

158. In November 2006 a Pilot Project on Transboundary Movement of End-of-Life Mobile Phones in South East Asian Countries was started jointly by the Secretariat of the Basel Convention, the Basel Convention Regional Centre for South East Asia, Jakarta and the Dowa Eco-System Co. Ltd., Japan. The project, involving Malaysia, Thailand and Singapore, was recently completed and a report is now available.

4. Basel Convention Regional Centres

159. Transfer of know-how, environmentally friendly technologies or processes is essential for a global recycling society. Under the Convention, Regional Centres for training and transfer of technologies as a vehicle for the implementation of the Convention were established. Today, 14 such

Centres are carrying out training and capacity building activities in Africa, Asia and the Pacific, Eastern and Central Europe and Latin America and the Caribbean (see http://www.basel.int/centers/centers.html). In this connection, greater support is required to enable these centres to be an effective delivery mechanism at the regional level in the implementation of the Basel Convention.

E. United Nations Development Programme (UNDP)

1. Structuring and Institutionalising Solid Waste Management in Penang (Jul 2005 – Apr 2007)

160. This 2 year project which began in August 2005, focuses on activities to support and accelerate sustainable modernisation of the urban waste system in Penang, Malaysia, and via policy dialogue, disseminate the results to the rest of Malaysia. The project aims to help Penang implement a more structured approach to waste management, integrating recycling, organics recovery, land filling, with collection and waste prevention, all of which are alternatives to mass technologies.

161. The project was officially launched on 23 January 2006 by Dato' Dr. Teng Hock Nan. Following the launch in January, the appointed consultants for the project, Socio-economic & Environmental Research Institute (SERI) and PE Research Sdn. Bhd. have carried out a number of activities towards the achievement of the objectives of the project.

162. These activities include continuous discussions and research into alternative approach towards Solid Waste Management (SWM) in Penang, investigations of solid waste data for the baseline studies, review of PPPUE experience as well as an estimation of preliminary SWM costs. Key stakeholders such as UPEN Penang, MPPP and MPSP have been actively engaged in the project since its inception.

163. A seminar entitled "Solid Waste Management in Penang: Are we heading in the right direction?" was held in Penang on 7 November 2006.

164. Following this seminar, another seminar on "Integrated Solid Waste Management System" was held on 8 February 2007, organised jointly by the Penang State UPEN, MPSP and UNDP under the purview of the project.

2. Supporting the extension of solid waste management services in the rural communities (2005-2006) in the former Yugoslav Republic of Macedonia

165. The main goal of the project is to support local initiatives for solving the solid waste problem in the rural communities of the Prespa Park region through a) establishment of a sustainable solid waste management system b) increase of awareness and knowledge of the local communities on waste minimization and treatment practices. The project activities will be complementary to the UNDP-GEF Prespa Park project, and will also support enforcement with the newly enacted Law on Waste

166. Project activities included:

(a) Establishment of a sustainable solid waste management system in 34 rural communities within the Prespa Lake watershed

(b) Cleaning, Reorganization and Landscaping of Existing illegal solid waste sites in the watershed

(c) Introduction of Composting in households

(d) Public Awareness Activities

3. Raising Environmental Awareness through Ecological Solid Waste Management in the Philippines

167. UNDP has been implementing a very successful programme to further environmental education and awareness through community-based ecological solid waste management. With initiatives such as a Recyclables Collection Event Day and the publication of a comic-book for children on the importance of recycling, the programme, funded by the Government of Japan, has successfully raised awareness of ecological solid waste management (ESWM). Activities such as including displaying and distributing posters on ESWM at the programme’s waste collection and sorting sites have reduced the amount of waste hauled to dump sites, and a website and guidebooks have been developed and computers distributed to spread ESWM know-how and ensure broad and sustainable take-up.

168. The programme, implemented through the National Solid Waste Management Commission, chaired by the Department of Environment and Natural Resources has been successful in catalysing the implementation of the Philippines' Republic Act 9003, The Ecological Solid Waste Management Act. For example, the programme's posters provide a constant reminder of the importance of separating recyclables from household waste, and have been handed out to local businesses and other sectors to promote ESWM know-how.

169. Another success has been the reduction of waste hauled to dump sites – from one garbage truck per day/per street, to two garbage trucks per day for all 21 streets at Barangay COMEMBO in Makati City, and from 5 trucks per day to one truck at the project site in Barangay Sto Nino, Paranaque City. In terms of awareness-raising, one of the highest ranking Philippine government officials, the Honourable Secretary Angelo Reyes of the Department of Environment and Natural Resources, showed his support for the project at the Recyclables Collection Event Day in Quezon City, where he took the initiative to cycle the UNDP programme's 'Eco-Trike' to demonstrate the importance of the Eco-Aide in ESWM through the collection of recyclables in the communities.

170. The Ecological Solid Waste Management Act of 2000 recognized the importance of Environmental Education by mandating that the teaching of the new Act and Ecological Solid Waste Management should be included in the school curriculum. To support this effort, the programme developed and printed the 'Basura Kid at Iba Pa' Comics to educate school children on the importance of learning and practicing ESWM, not only in school, but also by taking home their new-found skills and know-how to ensure that their family and neighbours also practice ESWM as a way of life. The programme also developed a website to provide information on ESWM not only for the project sites, but to all Filipinos with Internet access. The website provides internet users the capability to download a copy of the 2000 Ecological Solid Waste Management Act, as well as the handbook developed by the programme, 'ESWM: Solid Waste Management Made Easy' and its companion 'field book'.

171. Finally, UNDP has also provided project sites with personal computers to support them in monitoring and evaluating the implementation of ESWM in their Barangay. The computers were loaded with information and education campaign (IEC) materials on ESWM including templates for monitoring the amount and type of recyclables collected, house-to-house waste separation practices (Recyclables, Residuals and Biodegradables) and junkshops and/or recyclables buyers' reports. The provision of PCs is also designed to 'bridge the digital divide' by providing access to higher technology for the Barangays and in the process upgrading their technical skills.

F. United Nations Environment Programme (UNEP)

1. Key initiatives

172. The Marrakech Process is a global effort to promote progress on the implementation of Sustainable Consumption and Production (SCP) and the elaboration of a 10-Year Framework of Programmes on SCP (10YFP). The process responds to the call of the WSSD Johannesburg Plan of Implementation to develop a 10YFP to support regional and national initiatives to promote the shift towards sustainable consumption and production patterns. The Marrakech process was initiated by national governments together with UNEP and UN DESA and has engaged business and civil society. The last global Marrakech meeting called for the establishment of a Marrakech Task Force (MTF) on integrated resource and waste management in addition to existing MTFs on topics such as sustainable procurement and sustainable products. The Commission on Sustainable Development (CSD) will review the theme of SCP during its 2010/11 two-year cycle.

2. Pilot/Demonstration Projects

173. With Support from Government of Norway, UNEP has implemented demonstration projects on Integrated Waste Management with focus on 3R in Pune, India; and Maseru Lesotho.

(a) Pune, India –The Pune Municipal Corporation is the local partner for the project. Several stakeholder consultation workshops were conducted with stakeholders concerned with specific waste streams (municipal waste, industrial waste, healthcare and other hazardous waste, e-waste) to identify issues of concern and constraints. Based on these the ISWM Plan was developed. 31 specific sub-projects/schemes have been developed to assist management of Pune Municipal Corporation in implementing the ISWM Plan. Throughout this process intensive local capacity building was carried out. Specific training and awareness raising packages have been prepared for ongoing capacity building and awareness raising. The project has been completed.

(b) Maseru, Lesotho – The compilation of data on waste quantification and characterisation has already been carried out as a separate project (Phase 1) by SCP branch. The Ministry of Local Government is the local partner for the Phase 2 of the project. The draft ISWM Plan has been developed is now under review by the local partner. Final awareness raising and training workshops are planned in November 2007

(c) Wuxi New District, PR China – The New District Administration Committee of Wuxi Municipal People's Government is the local partner for the project. An intensive waste quantification and characterization study was carried out to develop a baseline inventory of waste. Stakeholder consultation workshops were conducted to identify the gaps in the existing waste management system and also the issues of concern. An ISWM Plan has been developed along with 13 specific subprojects/schemes to assist Wuxi Municipal People's Government in implementing the Plan. Throughout the process intensive local capacity building was carried out.

(d) Nairobi, Kenya – The City Council of Nairobi is the local partner for the project. The project will result in the preparation of an ISWM Plan that incorporates a scientific assessment of waste characterization and quantification with future projections, assessment of current waste management system and gaps therein, and set targets through stakeholder consultations. Appropriate environmentally sound technologies and policy framework for each component of ISWM (source segregation, collection and transportation, transfer stations with material recovery for recycling, treatment and resource recovery (e.g. composting/biogas and waste to energy) and final disposal) will be identified. Detailed actions and specific schemes will be designed and an implementation strategy including various types of public-private partnerships proposed. The outcomes of the project will be disseminated at regional and national level to support its replication.

174. The implementation of the Resource Augmentation Project in Viet Nam, in co-operation with Vietnam Cleaner Production Centre and Song Con Sugar Company, showed that there is high interest and potential in resource augmentation through converting wastes into useful products and harnessing renewable resources. Under the project, detailed designs and drawings for wastewater reuse system and rainwater harvesting system were prepared and were implemented by the Company. The entire work was done in close association with the Vietnam Cleaner Production Centre to build local institutional capacity. The results will be disseminated at the national level to create more awareness.

175. In partnership with a number of local partners, UNEP has implemented a plastic waste management programme for the city of Nairobi based on the '3R' principles. The project has established a comprehensive plastic bag reuse/recycle programme through civil society-industry partnership supported by key policy and economic instruments.

176. UNEP has carried out an e-waste and environment demonstration project in Mumbai, India that focuses on building capacity in the informal sector to avoid recycling techniques that harm human health and the environment.

177. UNEP has done a demonstration project on the sustainable management of industrial areas in Tunisia.

3. Capacity Building and Information Dissemination

178. UNEP has implemented a number of activities to develop capacities in cleaner and safer production at national and regional levels. For example, training packages on environmental management for industrial estates, hazardous waste management, CP-MEA Integration, CP-Energy Efficiency integration etc. have been developed and delivered to National Cleaner Production Centres (NCPCs).

179. A CD-ROM prepared by UNEP -- Cleaner Production Companion – provides information to facilitate understanding of what different stakeholders can do to continuously apply integrated and preventive environmental strategies in their respective spheres of influence.

180. A training package on Design for Sustainability (D4S): A Practical Approach for Developing Economies has been prepared based on various 'test' training sessions. It introduces the D4S concept and how to apply it in a company setting in developing economies. It can be used by companies to pursue internal D4S efforts and by intermediaries (such as NCPCs) who work with companies.

181. A business guide on Life Cycle Management and related training material in various languages have been published recently and distributed to the regional networks of the Life Cycle Initiative.

182. A 3R South Asia Workshop was organized in 2006 with the main objective to discuss strategic actions toward the application of 3R in different levels of the region and sub-region. The workshop highlighted the importance of establishing a network of new and existing regional 3R centers of information, best practice and knowledge exchange.

G. United Nations Industrial Development Organization (UNIDO)

1. Key initiatives

183. The UNIDO-UNEP National Cleaner Production Centre (NCPC) programme has been very successful in raising awareness, building capacity and demonstrating the scope and potential of waste prevention in developing countries. The focus of NCPCs has been on assisting enterprises to reduce their generation of wastes (and other releases of pollutants, along with greater efficiency in resource consumption). Since 1994, when the NCPC programme started, 37 NCPCs and CP programmes have been initiated worldwide. In recent years, UNIDO has put a particular accent on promoting through the NCPCs the concept of closing the loops, where the focus is on ensuring that whatever wastes and pollutants are generated by enterprises even after cleaner production activities are reused / recycled to the maximum extent possible. To a great extent, this effort has been directed at wastes.

2. Pilot/Demonstration Projects

2.1. Cleaner Production

184. One UN Programme for Rwanda – Capacity Building through technical assistance for waste management to communities at decentralized level:

185. Technical assistance to the establishment and operation of an international institute for monitoring and management of environment, resources and resources recovery technologies in China: The present project aims at the establishment of an International Institute for Monitoring and Management of Resources' Recovery Technologies in Beijing, China, with a complete organizational setting, which will focus its activities on priority resource recovery sectors of the country, namely the lubrication oils, plastic waste, aluminium, copper and other noble metals scrap. The proposed Institute will aim at the provision of information on the available eco-efficient technologies for recovery of resources including international environmental standards to local resources recovery firms and thus enhancing their competitiveness and promoting sustained social advance in a way compatible with environmental protection. The Institute will respond to the main environmental concerns faced by the local resource recovery companies in China, with a specific focus on the selected priority sectors: - Thorough overall performance evaluation of all contemporary resource recovery technologies; - Identification of new safe and environmentally sound technologies for resources recovery from used lubrication oils, plastic waste, wood waste, aluminium, copper and other noble metals scrap; - Optimization of established technologies for above-mentioned applications in terms of safety and environmental protection and the use of energy, water and auxiliary materials in close cooperation with the corresponding technology users and suppliers; - Analysis of potential international markets for resource recovery technologies designed, developed and manufactured in China; - Provision of advisory services on environmental protection, technologies, policies and marketing potentials; - Establishment of an extensive database with information on resource recovery technologies, the costs, international environmental standards, etc.

186. Promotion and implementation of Closing the loops cooperation and business models in the chemical industry: the main objective of the project is to foster the implementation of Chemical Leasing activities in Egypt, Mexico and Russia. The main elements of the present project are national capacity building, involving both the staff of the NCPC and the main national stakeholders, and Chemical Leasing demonstration projects in selected chemical industries. The results of the demonstration projects are expected to show the applicability and impact of the concept in the participating countries.

187. Cleaner and integral utilization of sisal waste for Biogas and bio-fertilizers in Tanzania: The proposed project is designed to establish the technical and economic viability of the production of biogas, electricity and bio-fertilizer from sisal waste through the practical demonstration at pilot level. It is the first 'zero' waste cleaner production demonstration project implemented by UNIDO that would contribute to improve the competitiveness of the sisal industry and facilitate the access-to-mar of the elaborated sisal-based end products. Adding value to the waste material without impacting on the main production modality of sisal extraction will contribute to the overall profitability of sisal production. A major positive side effect (which at this stage, can neither be quantified nor priced) is that the environmental degradation caused by the disposal of the thus far unutilized and untreated sisal waste

material (around 95% of the sisal leaf will be reduced and possibly, completely eliminated. This is the first demonstration project for the total utilization of this commodity in an economically feasible and environmentally friendly way. Another positive effect is the possibility to generate electricity in rural areas from a locally available renewable source.

188. Municipal Solid Waste management systems, technical standards, treatment and disposal, and capacity building in China: The strategic objective of the project is to support Government of China efforts to improve practices in the handling and treatment of municipal solid wastes (MSWs), and thereby to reduce the health risks and environmental damage associated with current practices.

The total budget of on-going UNIDO projects on Cleaner production amounts to USD 12,750,083.

2.2. Water Management

189. International Waters and the Ecosystem Approach: UNIDO executes major programmes addressing regional transboundary problems of river basin, wetland and coastal zones and Large Marine Ecosystems (LME) all within the International Waters focal area of the Global Environment Facility. These programmes bring together governments of the region and scientists from different disciplines to assess the complex interactions of industrial development and performance on the international waters and to establish baseline conditions against which future actions can be judged. This cooperation enables the setting of appropriate environmental and developmental goals and recommends priority actions to maintain or restore environmental productive capacity. Such programmes include, in Latin America and the Caribbean, the Gulf of Mexico LME (Mexico, Cuba, and the USA) and the Humboldt Current LME (Chile and Peru). In Sub-Sahara Africa, the Guinea Current LME (Angola, Benin, Cameroon, Congo, Democratic Republic of the Congo, Côte d'Ivoire, Gabon, Ghana, Equatorial Guinea, Guinea, Guinea-Bissau, Liberia, Nigeria, Sao Tome and Principe, Sierra Leone and Togo). In Europe and NIS, the Strategic Action Programme (SAP) for the Dnieper River Basin and Development of SAP Implementation Mechanisms.

190. Removal of Barriers to the Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies: The Global Mercury Project (GMP) is an innovative initiative seeking to reduce mercury emissions from artisanal gold mining (ASM). With major projects in mining areas of six participating countries - Zimbabwe, Tanzania, Sudan, Brazil, Indonesia and Lao PDR - the GMP is in the process of introducing cleaner technologies, training miners, developing regulatory mechanisms, strengthening governance, and building the capacity of local laboratories and health authorities to monitor mercury pollution. GMP project sites were selected based on the importance of artisanal and small-scale mining in these regions and the proximity of communities to international waters that may be impacted by mercury from ASM. The GMP is jointly supported by the Global Environment Facility (GEF), United Nations Development Programme (UNDP) and is executed by United Nations Industrial Development Organization (UNIDO). The Global Mercury Project (GMP) began in August 2002 with a vision to demonstrate ways of overcoming barriers to the adoption of best practices and pollution prevention measures that limit the mercury contamination of international waters from artisanal and small-scale gold mining (ASM). The ultimate goals of the present GEF/UNDP/UNIDO project are:

- to reduce mercury pollution of international waters by emissions emanating from small-scale gold mining,
- to introduce cleaner technologies for gold extraction and to train people in their application,
- to develop capacity and regulatory mechanisms that will enable the sector to minimize mercury pollution,
- to introduce environmental and health monitoring programmes,
- to build capacity of local laboratories to assess the extent and impact of mercury pollution.

191. Transfer of Environmentally Sound Technologies (TEST) – Danube River Basin: This project was initiated in mid-2001 to build capacity in existing polluting industrial sites in five Danube countries (Bulgaria, Croatia, Hungary, Romania, and the Slovak Republic). This is achieved through the application of the UNIDO-developed methodology for the Transfer of Environmentally Sound Technology (TEST) at 20 pilot enterprises. The aim of the assistance is to bring these pilot enterprises into compliance with environmental norms of the Danube River Protection Convention while at the same time taking into account their needs to remain competitive and to deal with the social consequences of major technology upgrading. The enhanced institutional capacity would then be available to assist other enterprises of concern in these countries as well as other Danube countries.

192. Transfer of Environmentally Sound Technologies (TEST) – Mediterranean Basin: Starting in 2008, a similar programme, with financing from the Government of Italy and expected co-financing

from the GEF and other sources, will be implemented in the Mediterranean southern basin. Initially, three countries will be involved, namely Egypt, Lebanon, Morocco and Tunisia.

The total budget of on-going UNIDO projects on Water management amounts to USD 23,185,467.

2.3. Persistent Organic Pollutants (POP's)

193. UNIDO is implementing several projects on the environmentally sustainable management of POPs in different countries and regions under the Stockholm convention mechanisms and funding from the GEF:

1. Environmentally Sound disposal of obsolete POPs pesticides, dioxin rich filters and CFCs contaminated equipment through cost-effective non-combustion technologies in China;
2. Environmentally sustainable management of PCBs and other POPs waste in the Republic of Armenia;
3. Environmentally sustainable management of medical waste in China;
4. Global programme to demonstrate the viability and removal of barriers that impede adoption and successful implementation of available non-combustion technologies for destroying POPs in Philippines, Slovakia;
5. Disposal of PCB wastes in Romania;
6. Introduction of BAT and BET Methodology to demonstrate reduction or elimination of PCDD/PCDFS releases from the industry in Vietnam;
7. Phasing out and elimination of PCB containing equipment in the former Yugoslav Republic of Macedonia;
8. Promotion of strategies to reduce unintentional production of POPs in the PERSGA Region;
9. Enabling activities to facilitate early action in the implementation of the Stockholm convention on POP's in Sierra Leone, Botswana, Venezuela, Seychelles, Sao Tome and Principe, Malawi, Gabon, Nepal and Guatemala;
10. Regional network on Pesticides for Asia and the Pacific;

The total budget for on-going UNIDO projects on POP's amounts to USD 33,955,773.