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International Environmental Technology Centre

Mapping of Waste Management Initiatives at Global and Regional Level and Major National Initiatives

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Global Partnership on Waste Management (GPWM)

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ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
AfDB	African Development Bank
EBRD	European Bank for Reconstruction and Development
E-Waste	Electronic Waste
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GIZ	German Society for International Cooperation, Ltd.
GPWM	Global Partnership on Waste Management
HW	Hazardous Waste
HCW	Healthcare Waste
IADB	Inter-American Development Bank
IFC	International Finance Corporation
JICA	Japan International Cooperation Agency
KOICA	Korea International Cooperation Agency
ML	Marine Litter
MSW	Municipal Solid Waste
OECD	Organization for Economic Cooperation and Development
PCB	Polychlorinated Biphenyl
SIDA	Swedish International Development Cooperation Agency
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UN Habitat	United Nations Human Settlements Programme
UNDP	United Nations Development Programme
UNEP-IETC	United Nations Environment Program-International Environment Technology
USAID	United States Agency for International Development
WAB	Waste Agriculture Biomass
WPT	Waste Oil Palm Trees
WW	Waste Water

I. Introduction

1. In November 2010 the Global Partnership on Waste Management (GPWM) was launched to enhance cooperation among stakeholders and coordinate waste management activities to identify areas for improvement that promote resource conservation and efficiency thru information exchange, awareness raising, political will and capacity building. The GPWM is an open-ended partnership for international organizations, governments, business, academic institutions, local authorities and non-governmental organizations. The International Environmental Technology Center (IETC) serves as the secretariat of the GPWM.

2. The first report on the Mapping of Current Activities on Waste Management was focused on waste management projects and initiatives of the international organizations during the period 2011-2012. This report, which follows the first report maps completed projects on Waste Management. It is a follow-up report that focuses on the assessment of select completed waste management projects with detailed narratives from 2012-2016. A separate report was prepared for the waste management projects which during the said period are still on-going and still in the pipeline (see the report on "Analysis of the Major International Waste Management Programmes and Projects with Suggestions").

3. This report utilized the concept of waste streams. Waste is generally regarded as something that does not have use or value which paved the way in the concept of resource. Things which do not have use or value are wastes and those that still have utility are considered resource. Based on the Guidelines for National Waste Management Strategies Moving from Challenges to Opportunities of UNEP 2013, looking into the aspect of waste streams is important as it provides significant information as to the identification of waste sources (generation), its collection, treatment, and disposal as well as provides inputs in policy formulation and program development. For instance, building and demolition operations are the main sources of construction and demolition waste, while packaging waste comes from multiple sources like households, public facilities, offices retail operations, etc.

4. Using the GPWM framework, waste streams are composed of nine (9) different materials such as municipal solid waste, healthcare, hazardous, electronic, industrial, waste agricultural biomass, organic, waste plastics and waste water. All these wastes when not properly handled will have different health and environmental impacts. Consequently, the methods by which various waste streams are collected, recovered, processed, treated or disposed of may vary broadly. Hence, the policy applied to each waste stream will need to recognize and take into account these differences in order to achieve the relevant policy objective.

5. The information in this report was based on the information on the implementation of the 188 waste management projects of 17major international organizations. The purpose of this

report is to present an inventory of completed waste management projects to compliment the supply side with the demand in waste management services around the world, to provide stakeholders opportunities for projects partnerships and to harmonize efforts and avoid duplication. The report highlights projects of international organizations and UN Bodies with a focus on, but not necessarily limited to, waste management. The GPWM secretariat will continue its commitment inupdating the report on a biennial basis.

II. Methodology

6. This report was based on the review of both the maiden report and the project reports of waste management initiatives that have been completed, on-going and in the pipeline. A matrix of waste management initiatives by the major international organizations was prepared. The information in the matrices were validated from the websites of the respective international organizations. The matrix was updated and revised eventually.

7. The report also includes updating of the online mapping of activities report, which contains a more comprehensive list of completed and on-going waste management activities and programmes that have been represented graphically through an online mapping exercise. The maps are accessible on the GPWM website.

III. Implementation of Completed Waste Management Projects by International Organizations during the Period 2012-2016

8. For this report, a total of 188 waste management projects were mapped out as implemented by international organizations. Of this total, sixty-nine (69) or 36.7% have been completed, sixty (60) or 31.91% are on-going and fifty-nine (59) or 31.38% are still in the pipeline (see Figure 1). However, only the completed projects are discussed in this report.

9. Among the completed waste management initiatives, municipal solid waste projects have the most number of projects (52%), followed by hazardous waste management projects (19%) and heathcare waste projects (12%). Very minimal are initiatives on industrial waste projects (1%) and no projects implemented by the international organizations which are focused on organic and waste plastics (see Figure 2).

10. As mentioned earlier, many of the waste management projects completed by the international organizations were focused on municipal, hazardous and healthcare wastes. This could be attributed to the fact that many pressing issues are attached to these waste streams. For instance, uncollected municipal wastes dumped in an open space or along the streets are nuisance and would force many local governments to prioritize as waste management issue. The collective numbers of municipal waste management concerns, attract most attention by

the international organizations that perhaps explain the figure. This is also true for the hazardous and healthcare wastes. But this could be attributed more in terms of the lack of capability of the institutions and the different stakeholders to handle and manage both hazardous and healthcare wastes appropriately. In case of hazardous and healthcare wastes not properly treated or disposed of will have serious health and environmental implications. This explains why a significant number of countries would engage in implementing hazardous and healthcare wastes especially when funding and technical support were available from the different international organizations.

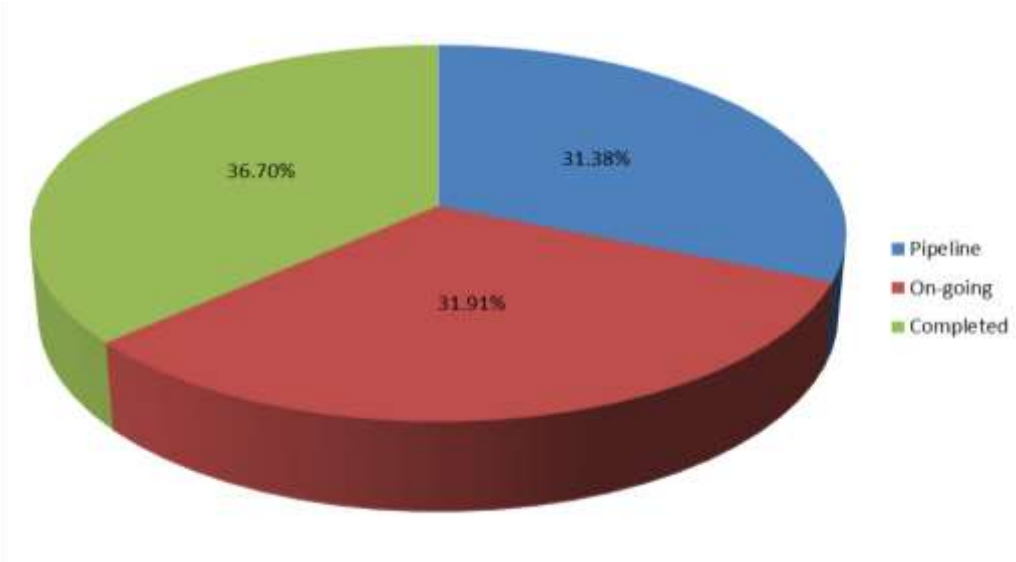

Figure 1. Percentage of Projects

11. During the period 2012-2016, the 69 completed waste management projects were implemented and supported by the 16 international organization namely Asian Development Bank (ADB), African Development Bank (AfDB) Global Environment Facility (GEF), European Bank for Reconstruction and Development (EBRD), German Society for International Cooperation, Ltd. (GIZ), Japan International Cooperation Agency (JICA), United Nations Development Program (UNDP), UN Habitat, UN ESCAP, S Swedish International Development Cooperation Agency (SIDA), Inter-American Development Bank (IADB), United States Agency for International Development (USAID), Korea International Cooperation Agency (KOICA), Organization for Economic Cooperation and Development (OECD), International Finance Corporation (IFC) , United Nations Environment Program-International Environment Technology (UNEP-IETC) and the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).The Projects implemented by these organizations are shown in Table 1.

12. Among the international organizations, most number of completed waste management projects (17 or 25%) is under GEF. Also, GIZ has completed 10 waste management projects.

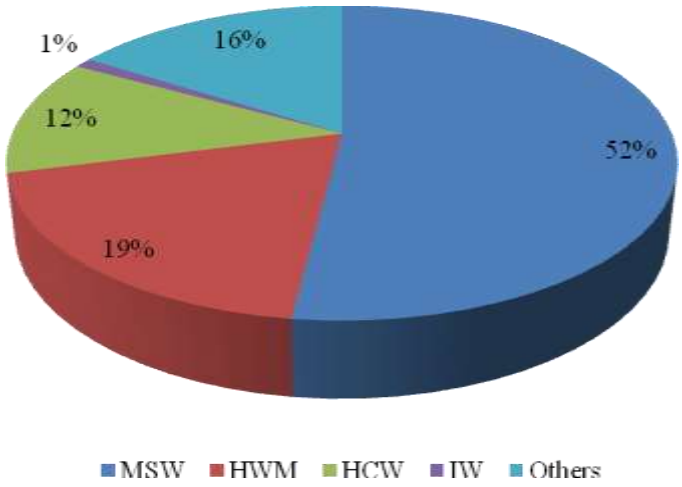

Figure 2. Percentage of Projects by Waste Streams

13. Of the 69 waste management projects, 36 projects are focused on MSW, while 13 projects on HW Management. GIZ and JICA implemented and completed five (5) MSW related project each.

14. The implementation of SWM in the different countries, especially those related to MSW have varied focus. A significant number of them had engaged in activities that would contribute to the development of the capacity of relevant institutions or associations. The capacity building intervention includes both conduct of training and action research. These kinds of activities have contributed to the formulation of relevant SWM policies and programs at the municipal and city levels.

Table 1. Solid Waste Management Projects Completed by International Organizations 2012-2016 by Waste Stream (GPWM)

Waste Stream	Funding Agency	Number of Completed Projects	Percentage (%)
E-waste		**3**	**4**
	GEF	1	
	UNDP	1	
	UNEP	1	
Hazardous waste		**13**	**19**
	GEF	8	
	GIZ	2	
	UNDP	1	
	UNEP	2	
Healthcare waste		**8**	**12**
	AfDB	1	
	IADB	4	
	UNEP	1	
	USAID	2	
Industrial waste		**X`x1**	**1**
	UNEP	1	
Municipal solid waste		**36**	**52**
	ADB	3	
	EBRD	1	
	GEF	3	
	GIZ	5	
	IADB	3	
	IFC	1	
	JICA	5	
	KOICA	4	
	OECD	3	
	SIDA	1	
	UN Habitat	1	
	UNDP	1	
	UNEP	3	
	UNESCAP	2	
Waste agricultural biomass		**1**	**1**
	GEF	1	
Waste water		**7**	**10**
	GEF	4	
	GIZ	3	
TOTAL		**69**	**100**

IV. Analysis of Completed Waste Management Using GPWM Thematic Areas

15. The succeeding part of the report is an analysis of the completed waste management projects implemented by the different International Organizations (IOs) using the eight (8) thematic areas of the GPWM which includes Waste and Climate Change, Waste Agricultural Biomass (WAB), Integrated Solid Waste Management (ISWM), Electronic Waste Management (E-waste), Marine Litter (ML), Waste Minimization, Hazardous Waste Management (HW), and Metal Recycling.

Waste and Climate Change

16. Climate change is the general change in temperature, rainfall, wind, and other climate patterns over a period of time. We consider the actions of people as a cause of this change. Thus we say that climate change is a direct or indirect result of human activity. The United Nations Intergovernmental Panel on Climate Change (2014) defines climate change as a change in the state of the climate that can be identified (e.g., using statistical tests) by changes in the mean or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use (CCC, 2014).

17. Climate Change is considered as an urgent issue, however, among the waste management completed projects only the study conducted by the Organization for Economic Cooperation and Development (OECD) tackles waste management in relation to climate change. Specifically, OECD Environmental Outlook 2050 (Chapter 3- Climate Change) 2011 focuses on how to avoid economic, social and environmental costs from the impact of climate change including wastes that will influence policies to promote low-carbon and climate resilient economic growth paths. The limited inclusion of climate change issue in waste management among the completed waste management could be attributed to the fact that incorporating climate change in waste management is a bit challenging task to capture in the waste management context based on the perceptions of concerned authority and personnel from different countries (Survey with focal persons from selected countries, July 2016).

Waste Agricultural Biomass

18. Waste Agricultural Biomass refers to organic products from agriculture that are not sold as food nor used in the manufacturing of other goods. Mostly, this biomass is in the form of residual stalks from crops, leaves, roots, seeds and seed shells etc. Common examples are wheat and paddy straw, bagasse (residue from sugarcane milling in sugar production), seed hulls (rice husks, groundnut husks), waste wood from timber processing, etc. (UNEP IETC, 2013).

19. Of the 69 completed waste management projects, a number of waste agricultural biomass were implemented under GEF in two countries namely Abidjan and Egypt which include both building institutional capacity by coming up with integrated waste management plan, awareness raising on handling farm waste, providing additional income and jobs and construction of turnkey project for municipal waste management treatment and industrial composting unit. Other related projects were implemented by the GIZ in selected Asian cities on treating sludge for organic fertilizer and compost in agriculture. UN ESCAP established Integrated Resource Recovery Centers in Pakistan. The IRRC is a decentralized community-based recycling and composting facility.

20. Interesting to note that biogas might be the future of innovative alternative resources that can be used as fuel and electricity generation. Projects pushing for strengthening institutional capacities, knowledge building and awareness, and maximizing the use of resources in specific agricultural areas are important in waste management. Further projects may include 100% utilization rate of agricultural products to convert the leftovers to materials, fuel, or even fertilizers in order to reduce waste as a whole.

Integrated Solid Waste Management

21. ISWM is a comprehensive waste prevention, recycling, composting, and disposal program. An effective ISWM system considers how to prevent, recycle, and manage solid waste in ways that most effectively protect human health and the environment (USEPA, 2002). The following are the narrative assessment of the integrate solid waste management implementation in the different countries in the three regions.

22. ISWM aims to improve capacities of cities to implement waste management system. Most of the global efforts are leaning towards incorporation of capacity development and technical assistance to both the local government units and those in the informal waste sector.

23. Many of the countries waste management initiatives by the international organizations are related to ISWM. In fact, 36 (52%) of the 69 completed waste management projects implemented by 14 international organizations namely ADB, EBRD, GEF, GIZ, IADB, IFC, JICA, KOIKA, OECD, SIDA, UN-Habitat, UNDP, UN ESCAP and UNEP. Most of the waste management projects were focused on providing technical assistance and capacity building.

24. Mapping the kind of waste management interventions on ISWM during 2012-2016 are more focused on establishing regional networks and initiatives by GIZ, JICA, support in the preparation and initial implementation of municipal/city waste management system, social and economic inclusion of informal waste pickers by IADB, capacity development and improvement of municipal/city waste management systems by JICA, SIDA, UN-Habitat, waste management study and publication by KOICA, OECD, UNEP-IETC.

25. The above broad waste management strategies paved the way in the conduct of regional conferences, training, bilateral south-south exchanges in selected Middle East countries; improvement of waste management systems and strategies, waste management plan, purchase of waste management equipment, vehicles, rehabilitation and reconstruction of old and dysfunctional disposal facilities, construction of sanitary landfill; Information, Education and Communication which promotes on waste management practices; Publications of Environmental Outlook, Resource Productivity, Solid Waste Management in the World Cities (UN-Habitat book), Guidelines on National Waste Management Strategies and the Global Waste Management Outlook (GWMO). Social and economic inclusion of informal waste sector and waste pickers; Practice of 3Rs; and decentralized community-based recycling and composting.

26. Capacity development program was conducted by KOICA to capacitate 25 participants from Myanmar as part of Korean government's grant aid and technical cooperation program; Capacity building of Nepal Solid Waste Management Council by the ADB; Abidjan (Africa) capacity building by the GEF; Ministry of Energy, Development and Environmental Protection of Serbia provided with technical assistance by SIDA; Municipal Solid Waste Management in Georgia by EBRD; Ten Year Solid Waste Management Plan among Local Government Units in the Philippines with assistance from the ADB; Training of 590 community advisors in Mexico with assistance from GIZ;

27. Technical assistance in waste management legislation, preparation of waste management plans in South America by GIZ also in Pacific Island countries by JICA, Fiji as implemented by UNDP.

28. Promotion of 3Rs was also noted during the period. JICA has provided technical assistance in Fiji. This project introduced a new interpretation of the 3Rs concept for Small Island Countries such as Reduce, Reuse, Recycle/Return adding the word Return particularly in the Lautoka City and Nadi Town.

29. A study on waste management focusing on integrated solid waste management were conducted in Nepal by ADB; waste management assessment of 20 cities by the UN Habitat and the Guidelines for National Waste Management Strategies that provides conceptual and methodological framework for national waste management conducted by the UNEP-IETC; in Sri Lanka and Viet Nam focusing on pro-poor solid waste management for secondary cities and small towns in Asia-Pacific conducted by UN ESCAP and significant publications by the GIZ namely Network for Integrated Solid Waste Management in the MENA Region, Regional Profile on the SWM Situation in Middle East and North Africa, SWM Situation in Mashreq and Maghreb countries and Waste Management Situation in Middle East and North America.

30. With regards to social and economic inclusion of informal waste sector, the following projects and initiatives were noted. A study on roles and services of the informal waste sectors in the context of the local and national solid waste management plans in South

America with assistance from the GIZ. The results of the study were applied through pilot projects integrating informal waste collectors in Brazil, Mozambique, Chile, Costa Rica, India and the Philippines to test and to refine the waste management strategies.

E-Waste Management

31. Efforts in E-waste Management revolve on promoting investments on environmentally sound management of electrical and electronic waste and upscale activities and initiatives. Leading initiatives involves forming frameworks that will lead to better urban-industrial management. Innovations such as finding alternative uses for disposed electrical devices are encouraged by projects in order to be a source of livelihood and additional income for government units and other people.

32. For the period 2012-2016 E-waste management projects implemented were mapped out. The UNEP-IETC had prepared and published the E-Waste III-WEEE Take back system manual. This manual describes the different components of regulatory systems, collection, and transport as well as the financial framework of electronic waste. In Ethiopia, a project entitled investment promotion on environmentally sound management of electrical and electronic waste was implemented by the GEF. This resulted in the establishment of national e-waste strategy including legislative and policy measures on the sound management of e-waste.

Marine Litter

33. Marine litter is any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; or accidentally lost, including material lost at sea in bad weather (UNEP, 2009).

34. Marine conservation and water sanitation are, in a way, the heart of this focus area. Global efforts in this area involve providing communities accessible water supply, preventing water-borne diseases by restoring and reviving water systems, reducing wastewater, maximizing water utility and functionality, and making water resources as a source of income revenue. Water is an essential necessity for each individual. Due to this concept, international organizations are also applying efforts to provide countries with sustainable integrated management of non-conventional water resources as the future of interconnected water and sanitation between countries.

35. Mapping marine litter project implemented during the period 2012-2016, there is no single project implemented by the different international organizations. It is assumed however that the integrated solid waste management projects and initiatives will directly or indirectly contribute to addressing marine litter. If city/municipal waste collection and disposal systems

(especially of plastics) are in place then this will contribute in not polluting the bodies of water. It would be interesting to note though that initiatives to address marine litter are already necessary hence, international organizations are encouraged to start looking into this concern while country focal persons on waste management worldwide are motivated to consciously look into this evolving issue on waste management.

Waste Minimization

36. Waste minimization aims to eliminate waste before it is produced and reduce its quantity and toxicity. Prevention is the primary goal, followed by reuse, recycling, treatment and appropriate disposal (Queensland Government DEHP, 2013).

37. Global efforts in waste minimization are still related to the time-tested and successful breakthrough of the Reduce, Reuse, Recycle (3Rs) concept. International Organization projects on Waste Minimization are still based on efforts to reduce the waste that countries produce, reuse them by finding alternative and innovative uses of waste, and recycling the waste for future use.

38. Mapping the waste minimization efforts globally has shown some of the initiatives such as the German-Tunisian waste management program; JICA has implemented waste minimization through recycling, practice of 3Rs and public awareness in Fiji, Kosovo, and Pacific Island countries; ADB has implemented similar initiatives in the Philippines as well as KOICA in Pakistan; UN ESCAP likewise implemented pro-poor initiatives in Sri Lanka and Viet Nam and recycling in Pakistan.

Hazardous Waste Management

39. Global outlook in Hazardous Waste Management mostly revolves around protecting and reducing environmental and human health risks. Particular hazardous compounds that have global attention is to Polychlorinated Biphenyl (PCB), Persistent Organic Pollutants (POPs), Mercury, Medical Wastes, and other obsolete forms of chemical compounds. Such compounds have been the focus of projects that seeks to reduce usage and properly dispose of these hazardous waste, assess health hazards and risks, and introduce the concept of environmentally sound management to such wastes.

40. Mapping of hazardous waste management initiatives from 2012-2016 are concentrated more on feasibility studies, a compilation of technologies methodology and treatment for waste oils and healthcare wastes. The compendium for the industry waste, healthcare wastes and waste oils all contain basic information and outline the process of technology to be utilized. The industry waste technology was conducted in Japan and waste oil in Malaysia. The healthcare waste compendium could be utilized as guidelines for all countries considering that the technology selection was based on UNEP's Sustainability Assessment of Technologies (SAT).

41. Most of the GEF completed projects in America (17 or 71%) are focused on hazardous wastes. This includes disposal of POPS wastes and obsolete pesticides in Mozambique, Polynesia and Melanesia, China, Kazakhstan and in Europe; PCB wastes and transformer and capacitors containing PCBs in Africa, Jordan Mercury-containing products and their wastes in Uruguay; management of solid and hazardous wastes, promoting sound healthcare management in Kazakhstan, South Africa.

Metal Recycling

42. Metals are very useful raw materials. This can be used to manufacture cars, airplanes, ships and railways. Metals could be recycled without altering its properties. The most common recyclable metals include aluminium and steel.

43. Mapping of the 2012-2016 waste management projects implemented by international organizations, there was no global effort in looking into metal recycling. This is another challenge for the different waste management focal persons in the different countries as well as to international organizations to look into metal recycling as an equally important waste management concern.

V. Conclusions and Recommendations

44. During the period 2012-2016, a total of 188 waste management projects were initiated by 17 international organizations globally. Of this total, 69 are completed. Using the GPWM thematic areas, significant number of completed waste management projects are focused on ISWM which generally aims to develop the capacity of the different countries both at the local and the national levels to formulate national solid waste management strategies and plans, rehabilitate existing waste disposal facilities and incorporate environmental awareness among citizens and social inclusion of informal waste sector. Capacity development initiatives such as trainings, exchange program, conferences, and workshops were also conducted to improve waste management. Significant initiatives were also noted in terms of study and publications. Likewise, there are also a number of hazardous waste management initiatives mainly by GEF.

45. Based on the mapping, there is a very little initiative in terms of waste management relating to the issue on climate change. It could also be noticed from the different completed projects the limited initiatives on e-wastes. Almost no initiative could be witnessed in the areas of marine litter and metal recycling.

46. It is therefore recommended in this report that the waste management initiatives in the future should focus more on the waste management in relation to climate change issue. The focal persons on waste management among the different countries should also look into the issue of marine litter and metal recycling as there were no projects implemented during the period covered by this paper.

47. It is the hope of this report that international organizations will consider to increase their engagement by supporting different nations in responding to the challenges brought about by least prioritized waste management themes in the global arena.

ANNEXES

Narratives of Waste Management Project Completed (2012-2016) by the different International Organizations

This section discusses details of SWM Projects implemented and completed by the different international organizations during the period 2012-2016.

A. Asian Development Bank

1. The Asian Development Bank had implemented and completed three (3) municipal solid waste management in two countries.

ASIA

a. Capacity Building for Waste Management - Nepal

The MSW project was implemented from October 2010 to September 2013 with total funding of USD 100,000. It is a technical assistance to support policy and capacity development of organizations relevant to solid waste management at the central level that is necessary to improve waste management at the local level. Outcomes include strengthened the capacity of the Solid Waste Management Council (SWMC) and Solid Waste Management Technical Support Center (SWMTSC) under the well-defined policy, regulatory, and institutional framework. Three outputs were supported namely policy and institutional framework; capacity development support to SWMC and SWMTSC; and drafted regulations, standards, and guidelines for improving SWM.

b. Solid Waste Management, Current Status, and Policy Recommendations - Nepal

The project was implemented from 2012 to 2013 with total funding of USD 600,000. The project included a publication about the state of solid waste management in the 58 municipalities in Nepal. Baseline surveys were undertaken during 2011–2012 produced data on household waste generation and composition. The study also accounts the collection and disposal methods, financial and organizational aspects of solid waste management in the 58 municipalities.

c. Solid Waste Management Sector Project- Philippines (Asia)

The waste management project was implemented fromAugust 2012 toDecember 2015. The projects aimto improve solid waste management in the Philippines by assisting the local governments with investments in related infrastructure complemented by capacity building and technicalassistance. The project resulted in Ten Year SWM plans prepared at the Local Government Unit levels, investment programs for solid waste management facilities werecompleted, and project management and institutional capacity was improved.

Table2. List of ADB Waste Management Completed Projects

Country Region	**Country**	**Waste Stream**	**Project**	**Date (Start/End)**	**Total Budget (USD)**
Asia	Nepal	MSW	1. Capacity Building for Waste Management	Oct 2010-Sep 2013	1,000,000
Asia	Nepal	MSW	2. Solid Waste Management in Nepal	2012-2013	600,000
Asia	Philippines	MSW	3. Solid Waste Management Sector Project	August 2012-Dec 2015	(Not available)

B. African Development Bank

2. Four (4) waste management projects were funded by AfDB during the period 2010 to 2016 in five countries. (Table 6) The projects focused are as follows two (2) healthcare wastes (1 completed and 1 pipeline), two (2) waste water (on-going)

3. Completed (1) AfDB Projects:

AFRICA

a. Central Province Eight Centres Water Supply and Sanitation Project in Zambia (Africa)

The project was implemented from the years 2003 to 2013with total funding of USD 24.62 Million. The project aims at increasing access to water supply and customer service, eliminating water rationing, having anincidence of water-borne diseases, improving revenue, and reducing unaccounted-for-water. Target project outcomes include 25 production boreholes rehabilitated and/or installed; 2 existing water treatment plants rehabilitated and 1 new installed, 5 new water storage reservoirs constructed and 24 existing rehabilitated, 74 km of distribution pipes replaced and water distribution networks extended by 113 km, 148 public water kiosks installed, 80 km of house connection pipes replaced and 14,600 water meters installed. For sanitation, 32km of sewer reticulation rehabilitated and expanded, 65km of sewer lines cleaned/flushed, 10 sewage treatment plants and associated pumping stations rehabilitation and 5 new constructed; 180 on – site Sanitation facilities (improved latrines). For institutional support, commercial utility established and operational; improved customer database, and increased acceptance of new tariffs

Table 3. List of AfDB Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Africa	Zambia	HCW	1. Central Province Eight Centres Water Supply and Sanitation Project	2003-2013	24.62 M

C. European Bank for Reconstruction and Development

4. Three (3) MSW projects funded by EBRD were implemented in a single country Georgia for the period 2014 to 2016. One is completed, another one is ongoing and still, another one is in the pipeline.

5. Completed (1) EBRD Project:

a. Adjara Solid Waste Project in Georgia (Asia).

This project was implemented for two years (2014 to 2015). The project has a total funding of USD 8.3. Million. The project intended to improve the solid waste management (SWM) in the City of Batumi and the municipalities Kobuleti and Khelvachauri of the Adjara Province. This minimizes the inflow of the surface water probably polluted by the leachate collected and treated through a bottom construction meeting the requirements of the EC directive for a landfill. This minimized the leachate discharge to the ground and ground water. The project funded the "Higiena 2009" Ltd, a company established by the Autonomous Republic of Ajara ("Ajara") to own and operate the landfill facility. A new sanitary landfill was constructed as areplacement to the (eventual) closure of existing landfills in Batumi and Kobuleti.

Table 4. List of EBRD Projects

Country Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Asia	Georgia	MSW	1. Adjara Solid Waste Project	2014-2015	8.3 M

D. Global Environment Facility

6. For this assessment period (2012-2016), GEF has funded most number of waste management projects tota ling to one hundred (100). It is interesting to note however that the projects being hereto are covering the period 2008 to 2021. During the conduct of the assessment, 17% are completed, 27% are on-going and 56% are in the pipeline.

7. The GEF funded projects covering six (6) regions, namely Africa, America, Asia, Europe, Middle East and Oceania. Below are the detailed summary of the various projects:

a. In Africa, GEF has Forty-one (41 or 41%) projects, broken down below:
   - 7 (17%) completed projects: E-waste, hazardous waste, municipal waste, waste agricultural biomass and waste water.
   - The majority (26 or 41%) of the projects in Africa has focus on hazardous waste stream.

b. In America, GEF has twenty-four (24 or 24%) projects:
   - 4 (17%) completed projects: hazardous waste, municipal waste, and waste water
   - The majority (17 or 71%) of the projects in America has focus on hazardous waste stream.

c. In Asia, GEF has twenty-two (22 or 22%) projects:
   - 5 (23%) completed projects: hazardous waste, municipal waste, and waste water
   - The majority (17 or 77%) of the projects in Asia has focus on hazardous waste stream.

d. In Europe, GEF has eight (8 or 8%) projects:
   - 1 (12%) completed projects: hazardous waste, municipal waste, and waste water
   - 100% of the projects in Europe have focus on hazardous waste stream.

8. Completed GEF Projects:

a. Demonstration of a Regional Approach to Environmentally Sound Management of PCB Liquid Wastes and Transformers and Capacitors Containing PCBs - in Africa

The project was implemented from 2009-2013 with total funding of USD 15.03 Million. The project is implemented in order to reduce environmental and human health risks from PCB oils releases by introducing cost-effective environmentally sound management (ESM) to PCB oils, equipment and wastes held by electrical utilities. Project outcomes include enhanced regional harmonization of national regulatory infrastructure and sustainable mechanisms; enhanced regional capacity for ESM of PCB-containing equipment in service; established a regional mechanism for ESM of decommissioned PCB liquids and equipment; and raised awareness of Stakeholder and replication.

b. TT-Pilot (GEF-4): Construction of 1000 Ton per day Municipal Solid Wastes Composting Unit - AKOUEDO Abidjan(Africa)

The project was implemented from 2011 to 2013 with total funding of USD 39.62 Million. The project's main goal is to reduce anthropogenic greenhouse gas emissions which cause climate

change, by dealing with the municipal solid waste through an environmentally friendly technology for a sustainable integrated management system. The specific solution was to construct and operate a pilot 1,000 tons/day industrial composting unit. Project outcomes were elaborated and implemented sustainable integrated management plan for the municipal solid wastes in the agglomeration of Abidjan; improved door to door collection and installation of a sustainable information system and management; construction of a turnkey project for municipal solid wastes treatment and industrial composting unit including leachate treatment unit; and transferred technology and built capacity in selected sites.

c. Recycling Agricultural Waste into Compost to Protect the Climate and Improve the Lives of Bedouin (Egypt)

This project was implemented from 2010-2013 with total funding of USD 108,687.26.The project, focused on the rural and suburban areas, helped communities take care of their environment while having better health conditions, by teaching them the proper way to deal with farm waste. In doing so, communities had additional income while acquiring some skills and keeping the land fertility for the cultivated land. Major outcomes of the project are raised the awareness of the local community on the proper way to deal with agriculture waste; improved environmental and health conditions through stopping the continuous burning of any extra agricultural wastes; nearly 1000 cubic meters of compost produced, quality tested and sold to farmers; 15 job opportunities for local communities created; 24 training workshops for farmers on collecting agricultural wastes reached about 300 farmers.

d. Investment Promotion on Environmentally sound Management of Electrical and Electronic Waste: Up-Scale and Promotion of Activities and Initiatives on Environmentally Sound Management of Electrical and Electronic Waste - Ethiopia(Africa)

This project was implemented from 2012-2014 with total funding of USD 2.95 Million. The project sought to promote investment on environmentally sound management of electrical and electronic waste and upscale activities and initiatives. Project outcomes include established national e-waste strategies including necessary legislative and policy measures on the sound management of e-waste; reviewed and scaled up infrastructure to treat e-waste in order to operate higher volumes, according to environmental and health standards and to be sustainable; evaluated and monitored e-waste management strategy.

e. Disposal of POPs Wastes and Obsolete Pesticides - Mozambique(Africa)

This project was implemented from 2010 to 2013 with total funding of USD 6.07 Million. The project aims at detailed characterisation, excavation and environmentally sound disposal of buried pesticide stocks and associated wastes; and development of local disposal options for treatment of low level contaminated soils and pesticide containers. Target outcomes are strengthened environmental and waste management legislation related to permitting and operating of national waste disposal; inventory report on level and type of contamination; assessed and identified options for disposal of contaminated soil; removed risks for further

contamination; treated contaminated materials treated and risk eliminated; and evaluated impacts of treatment option on public health and environment

f. Implementing Integrated Water Resource and Wastewater Management in Atlantic and Indian Ocean – SIDS (Africa)

This project was implemented from 2010 to 2014 with total funding of USD 26.04 Million. Project targets countries to accelerate progress on WSSD targets on IWRM/WUE plans and water supply and sanitation MDGs through adoption and implementation of an integrated approach to water resource management and water use efficiency that include policy, institutional and legislative reforms, and demonstration of more effective technologies and methodologies. Project outcomes include demonstrations in IWRM and WU; monitoring and indicators framework; policy, legislative and institutional reforms and capacity building for IWRM and WUE; and knowledge exchange, best-practices, replication, and stakeholder involvement.

g. Tunisia Greater Tunis Treated Wastewater Reuse Project (Africa)

The project was implemented from 2010 to 2015 with total funding of USD 555 Million. The Project objective was to reduce treated wastewater discharge from Greater Tunis into the Gulf of Tunis; scale-up the reuse of treated wastewater in agriculture and promote recharge of over-exploited aquifers. This project aimed at helping conserve biodiversity, supporting key investments, strengthening capacity, framework monitoring, and regional partnerships. Project outcomes include treatment of waste water transferred from the Mediterranean Sea to Inland Areas for Reuse; feasibility studies conducted and capacity building and monitoring for improved quality treated wastewater discharge into the Mediterranean Sea.

h. Sustainable Use of Biogas from Agro-Industrial and Solid Waste Applications - Argentina (America)

The project was implemented from 2011 to 2015 with total funding of USD 24.10.Targeted outcomes include strengthened Institutional capacity, knowledge and use of biogas; uplifted market environment for biogas from residues; design and construction of AD prototypes; financial instrument for sustainability; all these avoiding a total of 2900 tonsCO2eq /year for 1700 MWh/year for electricity generation and 1800 MWh/year of heat production for combined heat power applications.

i. Testing a Prototype Caribbean Regional Fund for Wastewater Management (CReW) – America

The project was implemented from 2010 to 2014 with total funding of USD 271.88 Million. In the context of the Cartagena Convention and its LBS Protocol, the project aims to pilot and test the feasibility of establishing a revolving financial mechanism for waste water management. This is an instrument that provides sustainable financing for the implementation of environmentally sound and cost-effective wastewater management measures. Components of the project include investment and innovative financing for waste water management, including financing

mechanism, project development facility (PDF), and monitoring and evaluation; policy reforms for wastewater management with capacity building and technical assistance consistent with the UNEP GPA's Strategic Action Plan on Municipal Wastewater; and Regional Dialogue.

j. Minamata Initial Assessment for Guyana (America)

The project was implemented from 2014-2015 with total funding of USD 200,000.Undertake an Initial Mercury Assessment to identify the national mercury challenges and the extent to which legal, policy and regulatory framework will enable Guyana to implement future obligati1. Enabling environment for decision-making on the ratification of Minamata established. Outcomes include (a) Enabling environment for decision-making on the ratification of Minamata established and (b) National Mercury Profile and Mercury Initial Assessment Report development.

k. Environmental Sound Life-Cycle Management of Mercury-Containing Products and their Wastes - Uruguay (America)

This project was implemented from 2011 to 2015 with total funding of US 3.33 Million. The project aimed at protecting human health and the environment from mercury releases originating from the intentional use of mercury in products and the unsound management and disposal of such products. Expected outcomes were strengthened regulatory and policy framework for the sound LCM of mercury-containing products and their wastes; phased-out and phased-down mercury containing devices and products by introducing mercury-free alternatives or products with lower Mercury content; improved national capacity to make LCM of Mercury containing products technically and economically feasible

l. Implementing Sustainable Integrated Water Resource and Wastewater Management - Pacific and Island Countries (Asian).

This project was implemented from 2008 to 2013 with total funding of USD 68.12 Million. This project aims to improve water resources management and water use efficiency in Pacific Island Countries, through balancing overuse and conflicting uses of scarce freshwater resources through policy and legislative reform and implementation of applicable and effective Integrated Water Resources Management (IWRM) and Water Use Efficiency (WUE) plans. Project outcomes include demonstration, capture and transfer of best practices in IWRM and WUE; indicators Framework; policy, legislative and institutional reform; and regional and national capacity building and sustainability programme, with knowledge exchange, learning and replication.

m. PAS: Pacific POPs Release Reduction through Improved Management of Solid and Hazardous Wastes (Asia)

This project was implemented from 2010 to 2015 with total funding of USD 7.03 Million. The project's main goal is to reduce POPs releases in the Pacific Island states through the introduction of integrated whole-system approaches to the environmentally sound management of solid and hazardous wastes. Main components of the project were development of national and regional uPOPs prevention and management strategy; training and awareness raising in solid and

hazardous waste management best practices; enhanced, post-NIP Inventory, stockpile management and safe disposal strategy for unwanted pesticides; waste oil export and reuse in Polynesia and Melanesia; legislation enforcement and promotion of low risk alternatives in agriculture and wood treatment, in PICs with significant reliance on pesticides; impact monitoring and evaluation, lessons learned, knowledge management, project planning and administration, and future project identification.

n. Environmentally sound management and disposal of obsolete POPs pesticides and other POPs wastes - China (Asia)

This project was implemented from 2008 to 2013 with total funding of USD 41.31 Million. The project targeted at environmentally sound management (ESM) and disposal of obsolete stockpile pesticides and other POPs related wastes in fulfillment of China's commitment to the national implementation of the Stockholm Convention (SC) and the National Strategy for Hazardous Waste.Project outcomes include strengthened legal and regulatory framework for ESM and disposal of POPs wastes; improved institutional capacity at all levels of POPs waste disposal management; removal for disposal of 10,000 tons of POPs stockpiled pesticides as source contaminants for the vulnerable local ecosystem receptors; destruction of 10,000 tons stockpiled POPs pesticides and disposal of a continuous waste stream of 11,000 tons dioxins rich incineration fly ash; implemented national or local programs or projects for clean-up of POPs.

o. Environmentally Sound Management of Medical Wastes - India (Asia)

This project was implemented from 2010 to 2015 with total funding of USD 40.69 Million. The project aims to reduce and ultimately eliminate the releases of unintentionally produced POPs and assist India in implementing its relevant obligations under the Stockholm Convention. The project promotes country-wide adoption of BAT/BEP in the healthcare institutions in ways that ensure human health is protected and adverse environmental impacts are reduced.Project outcomes included development of enabling and harmonized environmental and health-care policy and regulatory instruments; strengthened institutional capacity for environmentally sound management of medical waste; facilitated promotion of PPP to improve support and supply capacities in medical waste management, improve local technological and manufacturing capacities in transport and disposal; and demonstrated project on integrated systems for medical waste management and disposal in selected states.

p. NIP Update, Integration of POPs into National Planning and Promoting Sound Healthcare Waste Management - Kazakhstan (Asia)

This project was implemented from 2011 to 2015 with total funding of US 19.53 Million. The project objective was to reduce the releases of unintentionally produced POPs and other globally harmful pollutants into the environment by promoting sound healthcare waste management and to assist the country in implementing its relevant obligations under the Stockholm convention.Outputs included Stockholm Convention NIP update and improved institutional coordination on chemical MEAs; assessment of overall mercury situation and formulation of the outline of mercury reduction and containment plan; minimization of uPOPs emissions (and

mercury from medical devices) through demonstration of sound HCWM; and monitoring, learning, adaptive feedback, outreach, and evaluation.

Integrated Solid Waste Management (formerly called Persistent Organic Pollutant Stockpile Management and Technical/Institutional Capacity Upgrading) – Europe

This project was implemented from 2010 to 2013 with total funding of USD 27.26 Million. The project targets to reduce environmental and health risks associated with the presence and release of persistent organic pollutants (POPs) in the global and local environment through securing POPs stockpiles, environmentally sound destruction of priority POPs stockpiles and improving capacity for elimination and management of future POPs stockpiles and releases. The project outcomes include Reduction of POPs Stockpiles and Wastes related risks; provision of technical Support for Capacity Development; and strengthened institutional and regulatory needs.

Table 5. List of GEF Funded Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Africa	Africa	HW	Demonstration of a Regional Approach to Environmentally Sound Management of PCB Liquid Wastes and Transformers and Capacitors Containing PCBs	2009-2013	15.03 M
Africa	Cote d'Ivoire	MSW	Demonstration of a Regional Approach to Environmentally Sound Management of PCB Liquid Wastes and Transformers and Capacitors Containing PCBs	2011-2013	39.62 M
Africa	Egypt	WAB	Recycling Agricultural Waste into Compost to Protect the Climate and Improve the Lives of Bedouin (Egypt)	2010-2013	108,687.26
Africa	Ethiopia	EE-waste	The project sought to promote investment on environmentally sound management of electrical and electronic waste and upscale activities and initiatives	2012-2014	2.95 M
Africa	Mozambique	HW	Disposal of POPs Wastes and Obsolete Pesticides	2010-2013	6.06 M
Africa	SIDS	Waste water (WW)	Implementing Integrated Water Resource and Wastewater Management in Atlantic and	2010-2014	26.04 M

			Indian Ocean SIDS		
Africa	Tunisia	WW	Tunisia Greater Tunis Treated Wastewater Reuse Project	2010-2015	555 M
America	Argentina	MSW	Sustainable Use of Biogas from Agro-Industrial and Solid Waste Applications	2011-2015	24.10 M
America	Caribbean	WW	Testing a Prototype Caribbean Regional Fund for Wastewater Management (CReW)	2010-2014	271.88 M
America	Guyana	HW	Minamata Initial Assessment forGuyana	2014-2015	200,000
America	Uruguay	HW	Environmental Sound Life-Cycle Management of Mercury-Containing Products and their Wastes	2011-2015	3.3 M
Asia	Asia and Pacific	WW	Implementing Sustainable Integrated Water Resource and Wastewater Management in the Pacific and Island Countries	2008-2013	65.11 M
Asia	Asia and Pacific	HW	PAS: Pacific POPs Release Reduction through Improved Management of Solid and Hazardous Wastes	2010-2015	7.03 M
Asia	China	HW	Environmentally sound management and disposal of obsolete POPs pesticides and other POPs wastes in China	2008-2013	41.3 M
Asia	India	MSW	Environmentally Sound Management of Medical Wastes in India	2010-2015	40.69 M
Asia	Kazakhstan	HW	16. NIP Update, Integration of POPs into National Planning and Promoting Sound Healthcare Waste Management in Kazakhstan	2011-2015	19.54 M
Europe	Belarus	HW	Integrated Solid Waste Management (formerly called Persistent Organic Pollutant Stockpile Management and Technical/Institutional Capacity Upgrading)	2010-2013	27.26 M

E. German Society for International Cooperation, Ltd.

9. Fifteen (15) SWM projects were funded by GIZ covering the period 2010 to 2019. The status of which are as follows:
    - Completed – 10 or 67%

10. The funded projects came from four (4) regions, namely Africa, America, Asia and the Middle East. The waste streams responded to by the projects was summarized below.

a. In Africa, GIZ has five (5 or 33%) projects, broken down below:
    - 3 (60%) completed projects: Hazardous waste, municipal waste, and waste water.
    - The majority (3 or 60%) of the project focused on Municipal Solid Waste stream.

b. In America, GIZ has four (4 or 27%) projects, broken down below:
    - 3 (75%) completed projects: Hazardous waste and municipal solid waste and waste water.
    - The majority (3 or 75%) of the project focused on Municipal Solid Waste stream.

c. In Asia, GIZ has four (4 or 27%) projects, broken down below:
    - 3 (75%) completed projects: Municipal solid waste and waste water.
    - The majority (3 or 75%) of the project focused on Waste Water stream.

d. In the Middle East, GIZ has two (2 or 13%) projects, broken down below:
    - 1 (50%) completed projects: Municipal solid waste.
    - 1 (50%) on-going projects: Waste water.

11. Completed (10) GIZ Projects:

e. Network of demonstration activities for sustainable integrated wastewater treatment and reuse in the Mediterranean - Egypt, Jordan, Morocco and Tunisia (Africa)

The project timeline is 2012-2015. The project aimed for a sustainable integrated management of non-conventional water resources in Jordan, Egypt, Morocco, and Tunisia has become more sustainable. Pilot activities were done to identify appropriate forms of wastewater treatment and reuse for irrigation.

- Morocco: to address wastewater by separating it at its source, to introduce decentralised treatment methods that promote reuse, and to reuse the water effectively for energy and agricultural production. The project is also working to improve rainwater harvesting.

- Jordan: to treat wastewater centrally by conventional means, and to use alternative technologies in decentralised facilities to promote the reuse of treated water in agriculture and for the restoration of the environment.

- Tunisia: to control the quality of treated wastewater in storage and during transfer to the end users. This includes the introduction of contracts between farmers and (waste) water providers that stipulate water quality.

- Egypt: to provide secondary treatment and to use treated water for irrigation of agricultural land.

At the national level, in the four target countries of Egypt, Jordan, Morocco, and Tunisia the project is conducting pilot activities to identify appropriate forms of wastewater treatment and reuse. These activities will demonstrate innovative approaches that can be applied at different stages of wastewater processing, especially the reuse of treated municipal wastewater for irrigation.

f. Environmental Programme Morocco (PGPE), Morocco (Africa)

The project timeline is 2014-2015. In one of its action areas, the project provides advice on setting up an environmental monitoring system that will also be useful in establishing a national hazardous waste treatment centre. Outcome includes:

- The framework law for the National Charter for Environment and Sustainable Development has been adopted;
- The Environmental Evaluation System (EES) tool has been introduced;
- An Eco tax on plastic products has been introduced;
- An environmental police force has been established and a decree setting out its status and tasks has been issued;
- A new master's degree in Engineering and Industrial Waste Management (IGEL) has led to the creation of 62 jobs;
- 180 people have received environmental training, primarily in the household and hazardous waste recovery.

g. Environmental Protection Programme, Tunisia (Africa)

The project timeline is 2003 to 2013. The project combines advisory fields, such as caring for the environmental and reducing environmental pollution, decentralisation of environmental roles, integrated waste management, environmental technology cooperation, environmental communication and awareness raising; and provides technical, methodological and material support for the responsible ministry and its subordinate departments. Main outcomes of the project are developed sustainability indicators; adapted environmental legislation; opened to private sector waste disposal; schoolchildren taught of what they can do for the environment.

In its five components, the German-Tunisian environmental programme combines advisory fields, such as caring for the environmental and reducing environmental pollution, decentralisation of environmental roles, integrated waste management, environmental technology cooperation, environmental communication and awareness raising. It provides technical, methodological and material support for the responsible ministry and its subordinate departments as they perform their advisory and coordinating duties (strategy planning, environmental

communication). OUTCOME: (1). Sustainability indicators are being developed for the most important economic sectors. (2.) Environmental legislation is being adapted to current requirements. (3.) The waste disposal sector is being opened up to private sector involvement. (4.) Using the teaching method of action learning, schoolchildren are now being taught what they can do for the environment.

h. Modernisation and decentralisation (PROMODE), Ecuador (America)

The project timeline is 2004-2013. The project focused on state reform and decentralization of fiscal policies. OUTCOME: Among the wide range of results covering Governance, economic benefits, and development potentials, this program has also resulted in very much improved public services where an environmentally sound solid waste management system has been put into place.

i. Urban-industrial Environmental Management in Mexico (America)

The project timeline is 2010 to 2013. Mexico's strong economic growth in recent years has brought with it a multitude of environmental problems. Almost 30 per cent of all municipal waste and 80 per cent of all hazardous waste are still being disposed of improperly. The project aimed to strengthen urban-industrial environmental management to be more efficient especially in the aspects of waste management and reclamation of contaminated sites. Project outcomes include:

- Some 590 community advisors have received training under the programme. These waste experts have encouraged 660 communities in nearly all of Mexico's federal states to improve their waste management.
- Recycling strategies for PET bottles and old electric appliances have been elaborated in cooperation with the Environment Ministry and the National Institute for Ecology and Climate Change. With the assistance of German experts, the first-ever set of Eco balances (environmental impact analyses) has been generated for these types of waste.

j. Promotion of pro-poor and environmentally sound recycling strategies (South America)

The project timeline is 2003-2011. The project aims at bringing together the public sector and both the formal and informal private sectors. It supported the development of national and local waste management plans which take into account the role played by informal workers. The respective authorities or municipalities responsible are thus able to involve the informal sector in the collection and sorting of waste. -- The advisory project conducted studies and devised guides and methodological approaches for the analysis of the services actually performed by informal workers, and to incorporate them into the official waste management system. It implemented pilot measures in Brazil, Mozambique, Chile, Costa Rica, India and the Philippines in order to test and refine strategies for integrating informal waste collectors.

k. Integrated resource management in Asian cities: the urban nexus (Asia)

The project timeline is 2013-2015. The project focuses on the topics of secure water supply and sanitation systems, energy security and efficiency, land use, food security and their interrelationship. OUTCOMES: Among other results, (1) Innovative waste water management concepts have been applied that are linked to renewable energy generation, the use of treated waste water for irrigation and treated sludge for organic fertiliser and compost in agriculture. This form of integrated resource management closes the loop between water, energy, and food (including food security). Each city has a cross-sectoral Nexus Task Force to ensure its success; (2) Peer-to-peer learning has strengthened the South-South dialogue, resulting in innovative, adapted, environmentally friendly and financially feasible solid waste management concepts, which convert waste into energy.

l. Promotion of green economic development (ProGED), Philippines (Asia)

The project timeline is 2013-2015. Under an overarching drive of green economic development, Philippines' Department of Trade and Industry (DTI) together with GIZ engaged pilot activities that focused on 6 "greening strategies" which involved among others, (1) smart and integrated solid waste management program for micro, small, and medium enterprises; (2) material efficiency is also a greening strategy that synergizes with waste management in the 3R concept. OUTCOME: The impact of promoting green economic development is felt at national level. DTI father intends to incorporate aspects of the green economy into its guidelines for industry and manufacturing sectors. Among many other results from this broad project, the policy intentions are in line with a holistic approach to managing waste streams among MSMEs.

m. Wastewater and solid waste management for provincial centres, Vietnam (Asia)

The project timeline is 2005-2014. With Viet Nam's rapidly growing urban population, existing infrastructures are insufficient to guarantee environmentally compatible wastewater and solid waste disposal. This project aimed to address and improve the conditions for wastewater disposal and solid waste management by delivering advisory services accounting for lessons learned on the ground and channeled upwards to the national level for legislative actions. OUTCOME:

- Overhauled legislation- New laws such as those concerning urban household access to wastewater networks for proper disposal;
- All participating provinces are receiving advisory services

n. 6 wastewater service providers are supported and have implemented Regional network for integrated waste management in the MENA region (SWEEP-Net) – Middle East

The project timeline is 2009-2015. The project is working to turn informal contacts in the waste management sector into a functional, formal network structure. The SWEEP-Net regional network connects experts from national public institutions, local authorities, business, the scientific community and civil society. OUTCOME:

- An efficient network structure has been created. The network has determined its strategic orientation, developed new methods of communicating and set up a knowledge management system;

- Nine partner ministries (national coordinators) are represented on the steering committee;
- The statutes of the network have been recognised by ministerial signature in five countries (Tunisia, Mauritania, Morocco, Egypt and Yemen) and ratified by a cabinet resolution of the Yemeni Government;
- The SWEEP-Net database includes more than 300 documents from the region and provides access to over 300 waste experts. Publications inform the network's members about best practices in the region and other countries and encourage participants to share their knowledge and experience;
- The network has drawn up comprehensive, standardised country profiles and reports for member countries, as well as a regional benchmarking report. These documents are regularly updated;
- SWEEP-Net has held four regional conferences attended by around 600 experts to date. The network offers regular training sessions on specialist topics. Approximately 1.400 experts have taken part in over 40 regional and national workshops. Five bilateral South-South exchanges have been organised so far.

Table 6. List of GIZ Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Africa	Jordan, Egypt, Morocco, Tunisia	WW	Network of demonstration activities for sustainable integrated wastewater treatment and reuse in the Mediterranean (publication)	2012-2015	
Africa	Morocco	HW	Environmental Programme Morocco (PGPE) –Publication	2014-2015	-
Africa	Tunisia	MSW	Environmental Protection Programme (Publication)	2003=2013	-
America	Ecuador	MSW	Modernisaion and decentralisation (PROMODE) – Publication	2004-2013	
America	Mexico	HW	Urban-industrial Environmental Management in Mexico (Publication)	2010-2013	
America	South America	MSW	Promotion of pro-poor and environmentally sound recycling strategies (Publication)	2003-2011	
Asia	China, Indonesia, Mongolia, Philippines, Thailand, Viet Nam	WW	Integrated resource management in Asian cities: the urban (Publication)	2013-2015	

Asia	Philippines	MSW	Promotion of green economic development (ProGED) – Publication	2013-2015	
Asia	Vietnam	WW	Wastewater and solid waste management for provincial centres (Publication)	2005-2014	
Middle East	The Middle East, North Africa (MENA)	MSW	Regional network for integrated waste management in the MENA region (SWEEP-Net) -- Publication	2009-2015	

F. Inter-American Development Bank

12. Eight (8) SWM projects were funded by IADB covering the period 2009 to 2016. The status of which are as follows:
    - Completed – 7 or 88%

a. The majority (7 or 88%) of IADB projects was implemented in America while only 1 (12%) project is of global/regional coverage.

b. The majority (5 or 63%) of the project was focused on Healthcare waste stream while only 3 (or 37%) on Municipal Solid Waste stream.

13. Completed (7) IADB Projects:

c. Free Stall Bio Gas Project & Feedlot Bio Gas Project, Argentina (America)

The projecttimeline is 2009-2013 with funding USD 180,000.00. The project aims to reduce pollution from animal waste and manure by capturing the methane gas and hence resulting to accessible clean water. Employees and the local community where methane gas will be captured will benefit because there will be a reduction in the pollution of animal waste and manure and they will have clean water accessible

d. Reconquista River Basin Environmental Sanitation Program, Argentina (America)

The project timeline is year 2014 with total funding of USD 345,000.00. The program aimed to restore the environmental quality of the Reconquista River Basin (CRR) by implementing a comprehensive management plan that prioritizes leveraging actions in that regard. Priority was given to investments aimed at those living in health risk areas. The objective of the program is to restore the environmental quality of the Reconquista River Basin (CRR) by implementing a comprehensive management plan that prioritizes leveraging actions in that regard. To motivate the population and include it in the program, priority will be given to investments aimed at those living in health risk areas. These investments will help to: (i) increase water, sewerage, and wastewater treatment coverage; (ii) enhance integrated solid waste management, primarily by

closing open-air dumps; (iii) improve connectivity and access to outlying neighborhoods located in hard-to-reach areas; and (iv) strengthen the operational management capacity of the Reconquista River Basin Committee (COMIREC) by developing management tools, which primarily include the Reconquista River Basin Comprehensive Management Plan (PGICRR).

e. Support preparation and initial implementation Solid Waste Project in Bolivia (America)

The project timeline is from 2011-2014 with total funding of USD 478,678.00. This Technical Cooperation aims to strengthen the DGGIRS of MMAyA for the preparation and execution of the Integrated Solid Waste Management Program. The project contributed to the economic insertion of informal recyclers operating in two districts/metropolitan zones of Brazil. The specific objective was to improve the capacity of generation of income of these tasters and their families through the action of social integration, professionalization, and provision of infrastructure/equipment and the fortification of its productive organizations. This Technical Cooperation will serve as a preparatory activity for the IDB's investment operation in the field of solid waste management in Bolivia in 2012 (BO-L1073). It aims to strengthen the DGGIRS of MMAyA for the preparation and execution of the Integrated Solid Waste Management Program.

f. Social and economic integration of informal solid waste pickers, Brazil (America)

Project timeline is from 2009-2012 with total funding of USD 200.000.00. The project contributed to the economic insertion of informal recyclers operating in two districts/metropolitan zones of Brazil. The specific objective is to improve the capacity of generation of income of these tasters and their families through the action of social integration, professionalization, provision of infrastructure/equipment and the fortification of its productive organizations, promoting its integration in the chain of value and the formal system of harvesting of municipal solid residues.

g. Truitier Informal Recycler Inclusion Program in Haiti (America)

The project timeline is from 2012-2014 with total funding of USD 460,000.00. The project was aimed at developed and implemented Community Action Plan and Capacity Building, Institutional Strengthening and Business Development for solid waste management

h. Development of Strategic Plans for the Water and Sanitation Sector (Regional)

The project timeline is from 2015-2016 with total funding of USD 250,000.00. The project include water and sanitation works such as rehabilitation, upgrading, and expansion of water and sewer coverage; and institutional strengthening aimed at improving operating, business, and financial management by service providers

The main component is the preparation of strategic sector plans in countries where such document is needed. For most countries, updates to existing strategies need to be considered, particularly when significant sector institutional changes have taken place, or when there are new unforeseen circumstances (for example natural disasters), or changes of the political authorities. In many other cases, particularly dealing with the solid waste subsector and the water resources subsectors, basic strategies need to be developed.

Table 7. List of IADB Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
America	Argentina	HCW	Free Stall Bio Gas Project & Feedlot Bio Gas Project	2009-2013	180,000.00
America	Argentina	HCW	Reconquista River Basin Environmental Sanitation Program	2014	345,000.00
America	Bolivia	HCW	Support preparation and initial implementation Solid Waste Project in Bolivia	2011-2014	478,678.00
America	Brazil	MSW	Social and economic integration of informal solid waste pickers	2009-2012	200,000.00
America	Guatemala	MSW	National Plan for Solid Waste Management in Guatemala	2011-2015	25,909.00
America	Haiti	MSW	Truitier Informal Recycler Inclusion Program	2012-2014	460,000.00
Global/ Regional	Regional	HCW	Development of Strategic Plans for the Water and Sanitation Sector	2011-2016	-

G. International Finance Corporation

14. Three (3) MSW and agricultural projects were funded by ADB being implemented during the period 2011 to 2037 in selected countries fromAfrica and Asia. The status of which are as follows:
    - One (1) completed project was focused on municipal solid waste.

15. Completed (1) IFC Project

a.Bel Impex, Nigeria (Africa)

The project timeline is 2012. The project involves upgrading and expanding an existing paper manufacturing operation located within an industrial area. Key potential impacts and risks relate to occupational health and safety ("OHS") during operations, solid and liquid waste management and supply chain related issues in the collection of waste paper. However, as defined in the project's Environmental and Social Action Plan ("ESAP"), Bel Papyrus and Bel Impex will implement systems to ensure these issues are adequately addressed. The Project is expected to:

(i) Increase waste paper converting capacity in Nigeria; (ii) Contribute to filling the gap between supply and demand for tissue products in Nigeria; (iii) Promote knowledge transfer from the equipment suppliers; (iv) Generate tax revenue for the Government; (v) Maintain existence of over 300 jobs and create over 10 new direct jobs; (vi) Have a demonstration effect on other local companies to pursue similar projects; and (vii) Create opportunity for linkages and benefit to other sectors of the economy along the waste paper collection chain.

Table 8. List of IFC Waste Management Projects

Country Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Africa	Nigeria	MSW	Bel Impex	2012	-

H. Japan International Cooperation Agency

16. Five Waste Management projectswere funded by JICA which were completed covering the period 2009 to 2015 from selected countries in Asia, Europe, Oceania and some have wider coverage. All the five (5) projects focused on municipal solid waste (MSW).

17. Completed (5) JICA Projects

a. Strengthening the Capacity for Solid Waste Management in Ulaanbaatar City, Mongolia (Asia)

The project timeline is from2009-2012 with total funding of 250 Million Yen. The Project's aim is to strengthen capacities for SWM in UB City through human resource development of the EPWMD, CMPUA, District Waste Service Fund (DWSF), and district offices. The overarching goal is improved deteriorated urban environment and sanitary conditions caused by uncontrolled solid waste in Ulaanbaatar City. Outcomes include developed human resource in EPWMD for policy making and planning, operation and maintenance of solid waste collection vehicles and heavy machineries, proper management of Narangiin Enger Landfill, administrative/financial management, and promoting public awareness and participation in SWM; and recommended appropriate system of waste separation and recycling in Ulaanbaatar City

Japanese Government implemented the Grant Aid in 2008 for the construction of new Narangiin Enger Disposal Site and provision of equipment such as waste collection vehicles and heavy machineries.

b. The Project for Improvement of Solid Waste Management – Kosovo (Europe)

The project aims to improve the public waste disposal systems in Pristina, Prizren and some municipalities surrounding Prizren by equipping the relevant utility companies with about 40 new compacter trucks altogether. Outcomes of the project are attained 70% of collection by Prizren Municipality, and replaced collection vehicles that have been in operation for more than 15 years.

c. The Project for Enhancement of Capacity for Waste Management toward Sound Material-Cycle Society- Kosovo (Europe)

The project timeline is from 2011-2014. The project's objective is to strengthenthe capacity of solid waste management in Prizren municipality. Its implementation started in 2011. Project outcomes include analyzed situation and problems on solid waste management in Prizren municipality; developed draft solid waste management plan and pilot activities; confirmed feasibility of solid waste management plan; improved public awareness; implemented solid waste management

d. The Project for Promotion of Regional Initiative Solid Waste Management (J-PRISM)-Pacific Island Countries

The project timeline is from 2010-2015 with total funding of USD 10 Million. The project aimed to strengthen human and institutional capacity base for sustainable solid waste management in the Pacific Region through implementation of the Pacific Regional Solid Waste Management Strategy

Outcomes were developed Solid Waste Management Plan focusing respectively in Lautoka City and Nadi Town; implemented pilot Projects; implemented 3Rs; residents' awareness raised through environmental education activities on 3R promotion; and developed recommendations on 3R model for Fiji. Specifically, sustainable SWM in the Pacific Region is enhanced: Each member country has implemented identified priority strategies harmonized with the Pacific Regional Solid waste Management strategy to realized solid waste management in areas including sustainable financing, integrated solid waste management, legislation, awareness, communication and education, environment monitoring, policy, planning and performance and Advance cross-border and region-wide improvement of solid waste management and enhanced regional and national policy capacity for sustainable solid waste management.

e. Waste Minimization and Recycling Promotion Project" (3R) – Fiji (Oceania)

The project timeline is from 2008 – 2012.In order to develop a model for Fiji, the Project introduced a new interpretation of the 3R concept for small island countries as "Reduce, Reuse and Recycle/Return," adding the word "Return (for recycle)" to the conventional definition of 3R. The capacity of 3Rs of the Department of Environment (DOE), Lautoka City and Nadi Town is increased through developing a 3R model for Fiji.Outcomes were developed Solid Waste Management Plan focusing respectively in Lautoka City and Nadi Town; implemented pilot Projects; implemented 3Rs; residents' awareness raised through environmental education activities on 3R promotion; and developed recommendations on 3R model for Fiji.

Table 9. List of JICA Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)

Asia	Ulaanbaatar City, Mongolia	MSW	Strengthening the Capacity forSolid Waste Management in Ulaanbaatar	2009-2012	Yen250 M
Europe	Municipality of Pristina and Municipality of Prizren	MSW	The Project for Improvement of Solid Waste Management	2011-2012	Yen4.83M
Europe	Prizren Municipality	MSW	The Project for Enhancement of Capacity for Waste Management toward Sound Material-Cycle Society	2011-2014	-
Global Coverage	Pacific Island Countries	MSW	The Project for Promotion of Regional Initiative Solid Waste Management (J-PRISM)	2010-2015	10 M
Oceania	Lautoka City and Nadi Town	MSW	Waste Minimization and Recycling Promotion Project" (3R)	2008-2012	-

I. Korea International Cooperation Agency

18. Four (4) waste management projects were funded by JICA. These projects focusing on MSW were implemented and completed was completed during the period of 2011 to 2014; of which 1 project was implemented in Africa while 3 projects were implemented in Asia. All the four (4) projects focused on municipal solid waste (MSW).

19. Completed (4) KOICA Projects

a. Improving Municipal Solid Waste Management In Dar Es Salaam – Tanzania (Africa)

The project timeline was year2012. Site visits intended to provide an "on the ground" understanding of existing facilities, system operations and key issues was conducted. A workshop was also held to bring together the DLAs, the private sector, BOs,and NGOs to review Dares Salaam's proposed directions, to identify issues and to discuss ideas and approaches for moving forward

b. Multi-year Capacity Development Program on Solid Waste Management for Myanmar Administrator – Myanmar (Asia)

The project timeline was 2014. KOICA conducted a Fellowship Program "Multi-year Capacity Development Program on Solid Waste Management for Myanmar" for 15 participants from Myanmar as part of the Korean government's grant aid and technical cooperation program

c. Solid waste management training, - Myanmar (Asia)

The project timeline was 2011. KOICA conducted a training program "Solid Waste Management (Myanmar)" for 10 participants from Myanmar as part of the Korean government's grant aid and technical cooperation program

d. "KOICA-World Bank Joint Study on Solid Waste Management – Pakistan (Asia)

The project funding is USD 39,264.00. The project was initiated to tackle the problems with comprehensive and interdisciplinary approaches in improving waste management system and strategy encompassing functions of governance, institutions, finance and technology Waste management problems due to the lack of a comprehensive waste management system and strategy that encompasses functions of governance, institutions, finance, and technology. Outcomes include analysed current situation on solid waste management; solid waste management plan drafted and implemented later; confirmed solid waste management feasibility study; and increased public awareness

Table 10. List of KOIKA Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Africa	Tanzania	MSW	Improving municipal solid waste management in Dar Es Salaam	2012	-
Asia	Myanmar	MSW	Multi-year Capacity Development Program on Solid Waste Management for Myanmar Administrator	2014	-
Asia	Myanmar	MSW	Solid waste management training	2011	-
Asia	Pakistan	MSW	Joint Study on Solid Waste Management	-	39,264.00

J. Organization for Economic Cooperation and Development

20. Three (3) Waste Management projects were funded by the OECD. These projects were already completed covering the period 2011 to 2012- global coverage. All the three (3) projects focused on municipal solid waste (MSW).

21. Completed (3) OECD Projects:

a. OECD Environmental Outlook to 2050 (Chapter three: Climate Change), 2011.

This report chapter demonstrates how avoiding economic, social and environmental costs from climate change impacts, including wastes, require effective policies to shift economies onto low-carbon and climate-resilient growth paths. Outcome: Environment outlook.

b. Resource Productivity in the G8 and the OECD, 2012.

The report focuses on indicators that track country progress and aims to enrich the knowledge-base by drawing extensively on good practice examples drawn from OECD Member country experience. It presents information and examples on management of solid waste, waste water treatment, industrial wastes and hazardous wastes among others. Outcome: Resource Productivity report.

c. Review of Implementation of OECD environmental strategy, 2012.

The report focuses on indicators that track country progress and aims to enrich the knowledge-base by drawing extensively on good practice examples drawn from OECD Member country experience. It presents information and examples on management of solid was. Outcome: Publication containing countries' implementation strategy and good examples and case studies on waste management.

Table 11. List of OECD Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Global Coverage	OECD Members	MSW	OECD Environmental Outlook to 2050 (Chapter three: Climate Change)	2011	-
Global Coverage	OECD Members	MSW	Resource Productivity in the G8 and the OECD	2011	-
Global Coverage	OECD Members	MSW	Review of Implementation of OECD environmental strategy	2012	-

K. Swedish International Development Cooperation Agency

22. SIDA has funded 1 waste management project focused on municipal solid waste (MSW) which was completed during the period 2011 to 2014 in Europe.

23. Completed (1) SIDA Projects:

a. An integrated approach to handling the garbage, Serbia (Europe)

Project timeline is from 2011-2014 with total funding of 35 Million SEK. This project, in line with the overall goal of the Serbian Environmental Strategies to improve the standard of environmental protection, targeted to help build a national database that congregates all different household waste and wastewater demands, which help prioritize implementation and project

support. It also provided technical assistance on preparing feasibility studies. The project has contributed to the development of a "project pipeline", a priority list that is a good basis for the selection of investment projects. The ministry's capacity and expertise in the planning and implementation of environmental investments and donor coordination has improved significantly, while a number of key documents for EU integration in the waste sector have been developed. The purpose of SIDA's support is to assist Serbia's Ministry of Energy, Development and Environmental protection to develop a systematic approach to assessing, preparing and prioritizing environmental infrastructure projects. The project has two main components; development of a national environmental project database and enables the Serbian ministry to get direct experience of project implementation. The lack of waste water treatment and modern waste management is a major problem in Serbia. SIDA's development cooperation has so far focused on waste management since Serbia gives this issue the highest priority. Moreover, the responsibility for water and wastewater management is shared between Ministry of Energy, Development and Environmental protection and the Ministry of Agriculture, which makes it more complicated to plan and implement projects.

Table 12. List of SIDA Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Europe	Serbia	MSW	An integrated approach to handling the garbage	2011-2014	SEK 35 M

L. UN-Habitat

24. Two (2) waste management projects were funded by UN-Habitat; of which one (1) was completed focused on municipal solid waste (MSW) and the other one is on-going project focused on Healthcare waste, covering the period 2009 to 2010.

25. Completed (1) UN-Habitat Project

a. Solid waste management in the world cities waste business in Lusaka (Global coverage)

Project implementation was 2009. This is a research conducted by more than 25 researchers assessing 20 cities waste management system. The results of this research have been published in the UN-Habitat's book "Solid Waste Management in the World Cities".

Table 13. List of UN-Habitat Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Global coverage	20 Selected World	MSW	Solid waste management in the world cities waste	2009	-

	cities		business in Lusaka		

M. United Nations Development Programme

26. Six (6) waste management projects were funded by the UNDP being implemented since 2008 until 2017 from five (5) Regions, namely, Asia, Middle East, Oceania, America and Europe. Waste The status of which are as follows:
    - Three (3) completed projects focused on hazardous waste, E-waste, and municipal solid waste.
    - Three (3) on-going projects focused on municipal solid waste, E-waste and waste agricultural biomass.
    - One (1) pipeline

27. Completed (3) UNDP Projects:

a. Disposal of POPs Pesticides and Initial Steps for Containment of Dumped POPs Pesticides – Georgia (Asia)

The project timeline is from 2011 to 2015.The project sought to minimize releases of POPs from obsolete pesticide stockpiles in Georgia and create capacity in the management of the POPs pesticide stockpiles. The project will directly contribute to the broader goal to support to sustainable development through the elimination of POPs from the environment. Outcome: Sustainable practices and instruments for the management of chemicals, land, water and biological resources demonstrated at pilot areas and up-scaled at national and/or trans-boundary levels 3.2.2. System; enhanced institutional and staff level capacities for implementation of national environmental commitments and major international agreements on climate change, biodiversity, land degradation and chemicals.

b. Implementation of phase 1 of a comprehensive PCB management system in the Hashemite Kingdom of Jordan (Middle East)

The project timeline is from 2010-2013 with total funding of USD 3.41 Million. The PCB project aims to provide the necessary tools and to increase technical capacity of the country of Jordan to meet the requirements with respect to the Stockholm Convention with the overall objective of safeguarding the environment and health from PCB impacts at the national and global levels. Outcomes include upgraded National capacity to manage PCB through the transfer of technical advice and specialized training. PCB materials are better identified, labeled, stored and disposed of using environmentally sound ways; and equipment is recorded in a centralized manner for the use by authorities and for public information. Analytical capacity was also enhanced through the supply of portable equipment and GC protocols and specialized trainings for existing labs. Awareness of risks associated with PCB holders was also raised

c. Preparatory Assistance Phase for the introduction of Container Deposit Legislation and Sustainable Solid Waste Management in Suva, Fiji (Oceania)

The project timeline is from 2008-2012 with total funding of USD 54,000.00.The project sought to reduce the amount of waste that each community produces, make the best use of the waste, develop and implement incentives to change wasteful behavior, improve and upgrade existing waste management and disposal systems, choose waste management practices which minimise the environmental risks and harm to human health. Project outcome includes: Mainstreamed environmentally sustainable energy into regional and national policies, planning frameworks, and programmes; and effective management and sustainable use of environment and resources by Fiji communities to reduce the amount of waste that each community produces; to make best use of the waste; to develop and implement incentives to change wasteful behaviour; to improve and upgrade existing waste management and disposal systems, and to choose waste management practices which minimise the environmental risks and harm to human health.

Table 14. List of UNDP Waste Management Projects

Country Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Asia	Georgia	HW	Disposal of POPs Pesticides and Initial Steps for Containment of Dumped POPs Pesticides in Georgia	2011-2015	-
Middle East	Jordan	E-Waste	Implementation of phase 1 of a comprehensive PCB management system in the Hashemite Kingdom of Jordan	2010-2013	3.41 M
Oceania	Fiji	MSW	Preparatory Assistance Phase for the introduction of Container Deposit Legislation and Sustainable Solid Waste Management in Suva, Fiji	2008-2012	54,000.00

Environmentally sustainability and sustainable energy are mainstreamed into regional andnational policies, planning frameworks, and programmes; and Fiji communities effectively manage and sustainably use their environment, as well as natural and cultural resources.

O. United Nations Environment Program-International Environment Technology

28. Sixteen (16) Waste management projects were funded by UNEPin various countries and being implemented for the period 2012 to 2017. The status of which are as follows:
    - Eight (8) completed projects focused on hazardous waste, industrial waste, E-waste, healthcare waste, municipal solid waste.

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29. Completed (8) UNEP Projects

a. The Japanese industrial waste experience: Lessons for rapidly industrializing countries, Japan (Asia)

The project timeline is from year 2014. This project analyses the Japanese case and highlights the potential relevance of Japan's experience in industrial waste management for sustainable development in rapidly industrializing countries.

b. Converting Waste Oil Palm trees into a Resource, Malaysia (Asia)

This feasibility study determines the feasibility of converting waste oil palm trees (WPT) into a resource, either as raw material for various industrial applications or for utilization in energy generation. This report contains: Characterization and quantification of WPT in Malaysia, Assessment of current WPT management systems, practices and utilization, and Identification, assessment and selection of ESTs for converting WPT into material or energy

c. Compendium of Recycling and Destruction Technologies for Waste Oils, 2012.

A compendium of recycling and destruction technologies for waste oils has been developed.

d. Application of the Sustainability Assessment of Technologies Methodology: Guidance Manual, 2012.

This manual incorporates SAT methodology for both strategic and operational level assessments while enabling application on any or all scenarios in the context of sustainable socio-economic development.

e. Compendium of Technologies for Treatment/Destruction of Healthcare Waste

This compendium reviews basic data on healthcare waste, outlines a process of technology selection based on UNEP's Sustainability Assessment of Technologies (SAT) methodology, provides detailed process descriptions and information on types of waste treated, ranges of capacities, pathogen destruction, emissions, operational details, installation requirements, and maintenance needs for ten generic treatment technologies, and also deals with specific technologies.

f. E-waste Volume III - WEEE/e-waste "Take back system",

The manual describes various components of Policy Framework, including regulatory systems and collection and transport systems, along with financial aspects and case studies of schemes currently underway.

g. Global Waste Management Outlook (GWMO)

GWMO provides the first comprehensive global overview of the state of waste management around the world in the 21st century; Outlook report + GWMO summary for Decision Makers + GWMO at a glance.

Publication

h. Guidelines for the development, review, and updating of National Waste Management Strategies (NWMS)

The Guidelines for National Waste Management Strategies: Moving from Challenges to Opportunities provides a conceptual and methodological framework. The Guidelines for National Waste Management Strategies: Moving from Challenges to Opportunities + Supplementary tools, guidance, and training materials planning that countries may adapt to their particular circumstances. It also establishes a clear rationale for making waste management a national priority.

Table 15. List of UNEP Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Asia	Japan	I-waste	The Japanese industrial waste experience: Lessons for rapidly industrializing countries	2014-	-
Asia	Malaysia	HW	Converting Waste Oil Palm trees into a Resource	2012-	-
Global/ Regional	Global	HW	Compendium of Recycling and Destruction Technologies for Waste Oils	2012=	-
Global/ Regional	Global	MSW	Application of the Sustainability Assessment of Technologies Methodology: Guidance Manual	2012-	-
Global/ Regional	Global	HCW	Compendium of Recycling and Destruction Technologies for Waste Oils	2012-	-
Global/ Regional	Global	E-waste	E-waste Volume III - WEEE/e-waste “Take back system”	2013-	
Global / Regional	Global	MSW	GWMO	2015-	-
Global / Regional	Global	MSW	Guidelines for the development, review, and updating of NWMS	2013-	-

P. United Nations Economic and Social Commission for Asia and the Pacific

30. Two (2) Waste management projects were funded by the UNESCAP with focus on municipal solid waste (MSW) and implemented during the period 2009 to 2012.

31. Completed (2) UN-Habitat Project

a. Pilot project for Solid Waste Management through the establishment of Integrated Resource Recovery Centers, Pakistan (Asia)

The pilot project was initiated through the establishment of IRRC, a decentralized community-based recycling and composting facility. The IRRCs can be built and operated at low costs by using limited mechanical technology, ensuring low operational costs with minimal equipment breakdowns, while creating job opportunities. Project outcome: efficient waste collection and transfer system were developed.

b. Pro-Poor solid waste management, Sri Lanka and Vietnam (Asia)

The project objective was to enable participating local governments, civil society organizations and organizations of the poor to develop and implement town-wide solid waste management strategies that are decentralized, pro-poor, low carbon and financeable through the sale of carbon credits. The project aims to further refine the approach by transforming the decentralized compost plants into Integrated Resource Recovery Centres (IRRC's). The components of the IRRC's include: the compost plant; processing sheds for recyclable materials; bio-diesel conversion plant to treat waste cookingoil, and sludge digester to process meat and fish waste and sludge from septic tanks. Project outcome: Provided source of income to community waste collectors in secondary cities and small towns.In Asia and the Pacific; Publication: Pro-poor solid waste management for secondary cities and small towns in Asia and the pacific.

Table 16. List of UN ESCAP Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Asia	Pakistan	MSW	Pilot project for Solid Waste Management through the establishment of Integrated Resource Recovery Centers	2012	-
	Sri Lanka	MSW	Pro-Poor solid waste management	2009-2012	-

Q. United States Agency for International Development

32. Two (2) Waste management projects were funded by USAID with focus on healthcare waste and municipal solid waste, covering the period from 2010 to 2012 (Table).

33. Completed (2) USAID Project:

a. Improving Pharmaceutical Service in the Primary Healthcare Sector through the training of Pharmacist Assistants, South Africa

The project timeline is from 2010-2012. KI, in order to improve the quality of Pharmaceutical services, developed a model of care where Post Basic Pharmacist Assistants (PBPA) are employed and up-skilled. Once up-skilled, this Indirectly Supervised Pharmacist Assistants (ISPA) provides and strengthen pharmaceutical service at PHC level under the indirect supervision of a Designated Supervisory Pharmacist (DSP). The success rate of the initial learnership project was 100% as all 5 learners now have a national qualification as qualified basic pharmacist assistants. All five are enrolled as learner post basic pharmacist assistants in order to complete their second.

b. Guide to health care waste management for community health worker.

This guide provides practical guidance for community health workers on how to safely handle and dispose of hazardous waste. It describes the basic principles of waste management and offers solutions for managing the waste generated from everyday activities carried out in the community.

Table 17. List of USAID Waste Management Projects

Region	Country	Waste Stream	Project	Date (Start/End)	Total Budget (USD)
Africa	South Africa	HCW	Improving Pharmaceutical Service in the Primary Healthcare Sector through the training of Pharmacist Assistants	2010-2012	-
Global / Regional	Global coverage	HCW	Guide to health care waste management for community health worker	-	40,848.00