



UNEP-DTIE-IETC Initiatives on Waste Management

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AIST_UNEP Training Workshop "Converting Waste Plastics into Fuel"
1-4 March 2011, Tsukuba



UNEP/DTIE/IETC



UNEP

UNITED NATIONS ENVIRONMENTAL
PROGRAMME

provides leadership and encourage
partnership in caring for the environment.

DTIE

DIVISION OF TECHNOLOGY,
INDUSTRY AND ECONOMICS

encourages decision makers to develop
and implement policies, strategies and
practices that are cleaner, safer and
efficient.

IETC

INTERNATIONAL ENVIRONMENTAL
TECHNOLOGY CENTER

promotes and implements Environmentally
Sound Technologies (ESTs)

- Disaster Prevention
- Waste Management
- Water and Sanitation



IETC Activities on Waste

- UNEP GC decision 25/8 on Waste
- UNEP Programme of Work
- Basel 9th COP on Waste Management: Bali Strategic Plan for Technology Support and Capacity-building
- Millennium Development Goals
- CSD 18 and 19 on Waste
- Support to MEAs

Field Projects:

- Integrated Solid Waste Management
- E-waste
- Waste Plastics
- Waste Agricultural Biomass

Normative function:

- Guidelines and training
- Waste and climate change
- Compendium of technologies

Global Partnership on Waste Management

Information Platform on Waste Management





Integrated Solid Waste Management (ISWM)

ISWM

Process

- Capacity building of local project team on data collection, target setting for ISWM, identification of stakeholders concerns and how to develop ISWM Plan
- Fieldwork and compilation of baseline studies
- Stakeholders consultation workshops
- Development of ISWM Plan
- Implementation of pilot activities

Field Projects

- ISWM Plan for Wuxi New District, China – 2008
- ISWM Plan for Pune City, India – 2008
- ISWM Plan for Maseru City, Lesotho – 2009
- ISWM Plan for Matale City, Sri Lanka – 2009
- ISWM Plan for Novo Hamburgo, Brazil – 2009
- ISWM Plan for Nairobi, Kenya – 2010
- ISWM Plan for Bahir Dar, Ethiopia – 2010
- ISWM Plan for Pathum Thani, Thailand – 2011



ISWM

Normative Work – Training Package (online):

“Developing Integrated Solid Waste Management Plans”

- Waste Characterisation and Quantification with Projections for the future
- Assessment Management Systems
- Targets and Issues of Concern
- ISWM Plan



Normative Work – Capacity Building

- South-South Cooperation on ISWM – 2008
- Regional Training for Africa in Mauritius – Mar 09
- Regional Training for Asia-Pacific in Osaka – Oct 09
- Regional Training for Asia-Pacific in Seoul – July 10
- Regional Training on SAT for ISWM – Dec 10





Management of Specific Waste Streams

IETC Activities on Waste Streams

- Converting agricultural waste biomass into a resource:**
 Compendium of Technologies - **online**
 Piloting in Nepal and Sri Lanka – **completed**
 Piloting in Pakistan and Philippines – **In progress**
 Recycling of waste palm trees in Malaysia – **Signed**
 Regional Workshop for Asia-Pacific **March 10**



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**Using Agricultural Biomass Waste for Energy and Materials:
Resource Conservation and GHG Emission Reduction**
A Biomass Assessment and Compendium of Technologies Project
Read more...

Global Assessment on Waste Biomass	Cellulosic Waste Biomass	Compendium of Waste Biomass Conversion Technologies	Other Documents
Global Assessment on Total Biomass from Crop Residues Annex A - Regional Data on Total Crop Production, Total Biomass from Crop Residues, and Total Biomass Energy of Agricultural Crops Biomass Characteristics Report Annex B - Characteristics of Biomass Regional Assessment on Specific Waste Biomass Annex C - Details on Region Country Specific Waste Biomass		Compendium Report on Technologies Utilizing Agricultural Waste Biomass Waste Biomass Conversion to Energy Waste Biomass Conversion to Materials	Ninoy Aquino Biomass Situation Region III Biomass Baseline Report Policy Framework for Biomass Use Local Workshop

- Converting waste plastic into a resource:**
 Assessment Guidelines **online**
 Compendium of technologies - **online**
 Piloting in Philippines and Thailand - **In progress**
 Regional Workshop for Asia-Pacific **Oct 11**

IETC Activities on Waste Streams

- E-waste management:**
 - Manuals on E-waste Inventory - online
 - Manual on E-waste Management - online
 - E-waste management Plan for Phnom Penh, Cambodia completed
 - Manual on Take Back System In progress
 - Regional workshop for Asia-Pacific July 10

E-WASTE VOLUME I

http://www.unep.or.jp/Ietc/Publications/spc/EWasteManual_Vol1.pdf
http://www.unep.or.jp/Ietc/Publications/spc/EWasteManual_Vol2.pdf

Inventory Assessment Manual E-waste Management Manual

E-WASTE VOLUME II

- Destruction Technologies for Hazardous Waste – 2010-11**
 In progress





Global Partnership on Waste Management (GPWM)



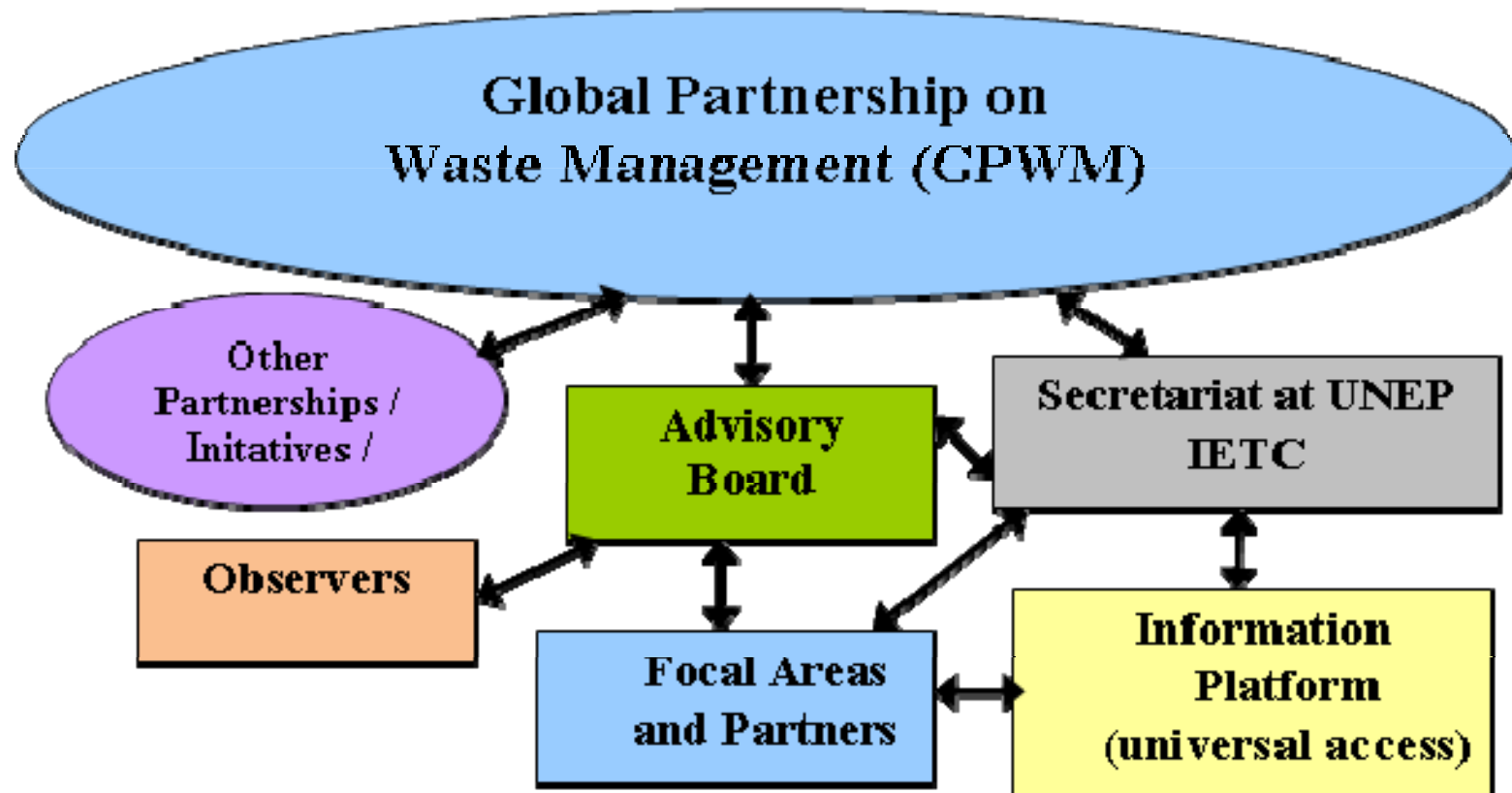


Global Partnership for Waste Management



- GPWM is an **open-ended partnership** for international agencies, governments, businesses, academia, local authorities and NGOs.
- GPWM supports the **development of work plans** to facilitate the implementation of integrated solid waste management at national and local level to overcome environmental, public health, social and economic issues inflicted by waste and its impact.
- GPWM will also support to **undertake policy dialogues** and other activities to exchange experiences and practices. It will facilitate enhanced awareness raising and capacity building.

Structure of GPWM





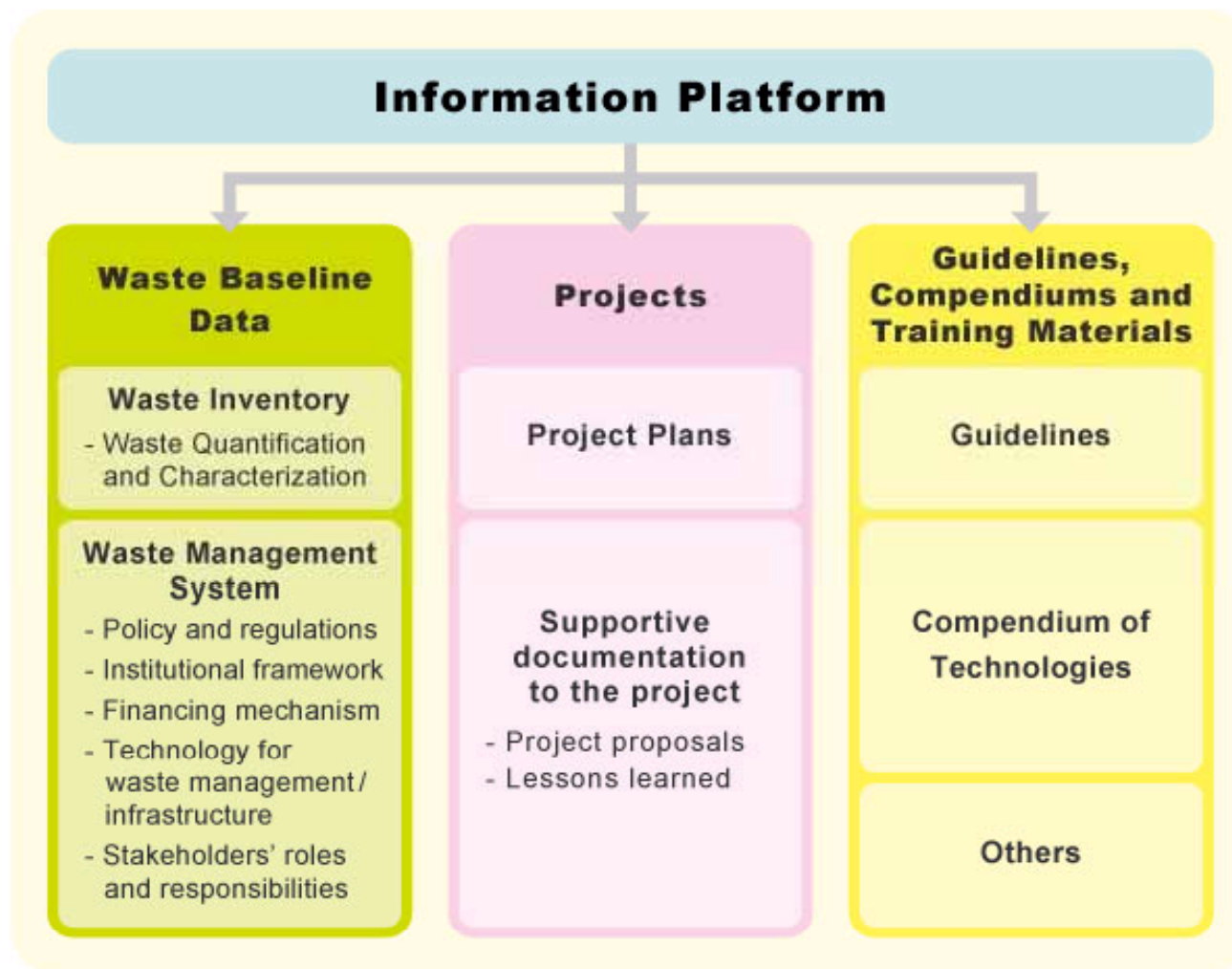
Information Platform for Waste Management



- to promote, share and exchange information on solid waste related issues in different countries, regions or cities.
- currently developed as a prototype with in-house capacity and resources available to UNEP-IETC
- full scale platform to host the information and links to the information of other entities.

http://www.unep.or.jp/ietc/GPWM/info_platform.html

Information Platform for Waste Management





Other Waste related Activities



Additional Activities

- Waste management in the context of climate change - Report was launched in Cancun 2010
- Guidelines for “Sustainable Assessment of Technologies” (SAT Methodology) - In Progress
Methodology that integrates environmental, social, technical and economic considerations and that can be adapted to country specific parameters and constrains



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Thank You...





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Converting Waste Plastics into Fuel

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Converting Waste Plastics into a Resource



UNEP has started a 3-year project on converting waste plastics to fuel to:

- **Strengthen local capacity** in data collection and analysis to develop baseline scenarios for cities/countries
- Build local capacity for identification of appropriate **technologies**.
- Assess their **feasibility** with regards to local socio-economic and environmental characteristics
- **Assess** their potential for **resource conservation** and GHG reduction

The Government of Japan, Ministry of Foreigner Affairs is financially supporting the project.

Phase 1 – Scoping Phase

- a) Developing **Guidelines for Assessment** (quantification and characterization) of waste plastics in industrial/municipal waste streams
- b) Developing a **Compendium of Technologies** on Converting Waste Plastics into a Resource, supported by an International Experts Meeting
- c) **Building capacity** in selected countries using the guidelines
- d) **Assessment of waste plastics in six cities** in selected countries to identify two potential cities for developing pilot technology projects (Agra and Faridabad in India, Cebu and Mandaue in Philippines and Bangkok and Chiang Mai in Thailand)



Results

- a) **Cebu (Philippines)** is the most promising city for the implementation of the pilot project. Bangkok and Chiang Mai (Thailand) were not found to be suitable places for further work as it was also the case for Agra and Faridabad (India).
- b) Further assessment of cities in India was not considered since, as per the findings, the plastic recycling market/industry is already strongly established in India.
- c) Assessment of additional cities in Thailand showed
 - **Phitsanulok** was already in the process of establishing an agreement to set up a plastic to fuel facility in their municipality, and they were seeking for additional support,
 - **Nakhon Ratchasima** was already trying to address the plastic component of their waste.



Phase 2 – Design Phase

- a) Detailed baseline plastic waste data in the cities where the demonstration project is to be implemented
- b) Identification of local partners
- c) Technology Assessment
- d) Design of the pilot projects and feasibility study
- e) Stakeholder consultation Workshop
- f) Policy framework
- g) National Workshop



Results

- a) **Cebu:** Converting waste plastics along with paper and wood, into solid fuel in the form of **Refuse Plastic Fuel (RPF)** using a locally manufactured plastic extrusion briquetting machine.
- b) **Nakhon Ratchasima:** The **gasification of Refuse Derived Fuel (RDF)** is the desire technology; however the pilot project will focus on the production of RDF itself. For scaling up the technology to gasification , detailed techno-economic feasibility assessment is to be carried out
- c) **Phitsanulok** The technology to be used is the conversion of plastics into **liquid fuel** based on the pyrolysis of the plastics and the condensation of the resulting hydrocarbons.



Phase 3 – Implementation Phase

- a) **Implementation** phase to demonstrate environmentally sound technologies for converting waste plastics into fuel.
- b) **Assess** their potential for **resource conservation** and GHG reduction
- c) **Lessons learned** will be disseminated, along with generic training.
- d) **Scale up and replicate** similar efforts in other cities/countries.





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