

Division of Technology, Industry and Economics



# UNEP-IETC Activities on on Waste Management

The 7th Asia-Pacific Eco-Business Forum  
14-15 February 2011  
Kawasaki, Japan

Surya Prakash CHANDAK  
Deputy Director  
UNEP DTIE IETC



# IETC Activities on Waste



UNEP GC decision 25/8 on Waste  
UNEP Programme of Work  
Basel 9<sup>th</sup> COP on Waste Management  
Millennium Development Goals  
CSD 18 and 19 on Waste  
Support to MEAs

**Field Projects:**

- Integrated Solid Waste Management
- Waste Plastics
- E-waste
- 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**





# Focal Areas of Intervention



- Integrated Solid Waste Management (ISWM) at local level
- Management of specific waste streams
  - Converting waste plastics into fuel (supported by MOFA Japan)
  - Converting waste agricultural biomass into material/energy resource
  - E-waste management



# IETC Activities on ISWM



## Demonstration 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



# IETC Activities on ISWM



## Normative work and capacity building:

- ISWM Training Package on ISWM - **online**
- Regional Training for Africa in Mauritius – **Mar 09**
- Regional Training for Asia-Pacific in Osaka – **Oct 09**
- Regional Training for Asia-Pacific in Seoul – **July10**
- Regional Training on SAT for ISWM – **Dec10**
- South-South Cooperation on ISWM – **2008**

# Important Outcomes and follow-up impact of ISWM work

- Wuxi ISWM is a showcase project in China
- Pune started implementing the Plan and offered reduced property tax for source segregation
- UNDP started negotiations with Maseru City to implement ISWM under public-private partnerships
- UN-ESCAP is developing Integrated Resource Centre for waste recycling in Matala City under support from Gates Foundation
- ISWM Plan for Nairobi is being followed up by JICA
- Bahir Dar project has created a lot interest in Addis Ababa



# Important Outcomes and follow-up impact of ISWM work

- Capacity of various institutions is built – Cape Town University (South Africa), University of Mauritius, University of Nairobi, University of Jambo Kenyata, National Cleaner Production Centre (Sri Lanka), Thammasat University (Thailand), Souther Jiangsau University (China), and Forum for Environment (Ethiopia) – human resources available at local, national and regional level
- Four volumes of ISWM Guidelines are becoming popular and requests have been received for local translations (e.g. China)





# 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 City, Cambodia
  - Regional workshop for Asia-Pacific
- **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
- **Converting waste plastic into a resource:**
  - Compendium of technologies - [online](#)
  - Piloting in Philippines and Thailand - [In progress](#)
  - Regional Workshop for Asia-Pacific
- **Waste management in the context of climate change**
  - [Report was launched in Cancun – 2<sup>nd</sup> volume to be prepared](#)
- **Destruction Technologies for Hazardous Waste – 2010-11**
  - [In progress](#)



# Important Outcomes and follow-up of Activities on E-waste

- IETC manuals and field project has attracted a lot of interest as seen from the continuous requests
- GEC and IETC organized a regional workshop in Osaka – participants requested to develop 3<sup>rd</sup> Manual on E-waste focusing Take-back system
- In addition to governments (China, Malaysia, Indonesia, Thailand, Philippines, Vietnam, Pakistan, Bangladesh) many private companies (Panasonic, Sharp, Hitachi, Mitsui, Canon, etc.) and academia presented their work and requested IETC for training workshops on regular basis
- China is translating IETC manuals and other countries are re-printing for local use
- JICA's interest to undertake E-waste projects in cooperation with IETC – First project for Malaysia was discussed and JICA informed that they have to find out the modalities to work together (still waiting for their response)
- MOE Japan's interest to involve IETC for ground activities and training on E-waste management (they mentioned that they would discuss with SBC to get IETC's involvement based on the successful work done by IETC)





# Important Outcomes and follow-up of Activities on Waste Plastics



- First time, a detailed study carried out to ascertain the possibilities for converting waste plastics into fuel
- AIST (Japan) assisted compendium of technologies was compiled
- GEC and IETC organized experts workshop where many technology providers made presentations and discussed the possibilities for B2B partnerships with partners and governments in developing countries
- Pilot activities are being carried out in Thailand and Philippines (to be completed by end of 2011)
- Lessons learned will be very useful to address the myths and hypothesis about waste plastic recycling in developing countries
- Final dissemination workshop is planned for November 2011 (either in Osaka or in Bangkok)
- AIST is holding a workshop in Tsukuba on 1-3 March 2011 to introduce technologies for waste plastics conversion into fuel

# Important Outcomes and follow-up of Activities on Waste Agricultural Biomass

- UNEP brought this issue at national and international level – as now project outcomes are part of UNEP stories (30 days 30 ways) launched in Cancun as well as part of UNEP annual report
- Most of the international focus on waste management is for cities and industrial areas and attention on waste agricultural biomass was limited despite of fact that this contributes heavily to environment including climate change, public health and economics
- An active south-south cooperation and B2B partnerships were developed – vital experiences for international community expand the focus on waste agricultural biomass conversion – A project proposal with MOFA Japan is under consideration
- A new project with Forest Research Institute Malaysia (FRIM) has been signed for recycling of waste palm trees. FRIM is also working with JIRCAS (Japan) to develop technology for producing ethanol from waste palm trees
- GEC and IETC organized a regional workshop in Osaka where the governments discussed about the implementation of technologies for waste agricultural biomass conversion





# Waste and Climate Change



- UNEP publication on Waste and Climate Change – Global Trends and Strategy Framework was launched in Cancun and it has been widely discussed and appreciated – media in many countries has picked up this report
- IETC and ISWA pushed the agenda of waste and climate change during a pre-COP event in Copenhagen and received a lot of support from scientists, policy makers and private sector
- IETC was invited by Mayor of London as key-note speaker for C40 Cities for Climate Change Workshop on Waste management in London
- Discussing with GEC to develop Volume 2 of the publication on Waste and Climate Change – to cover the case studies and technologies

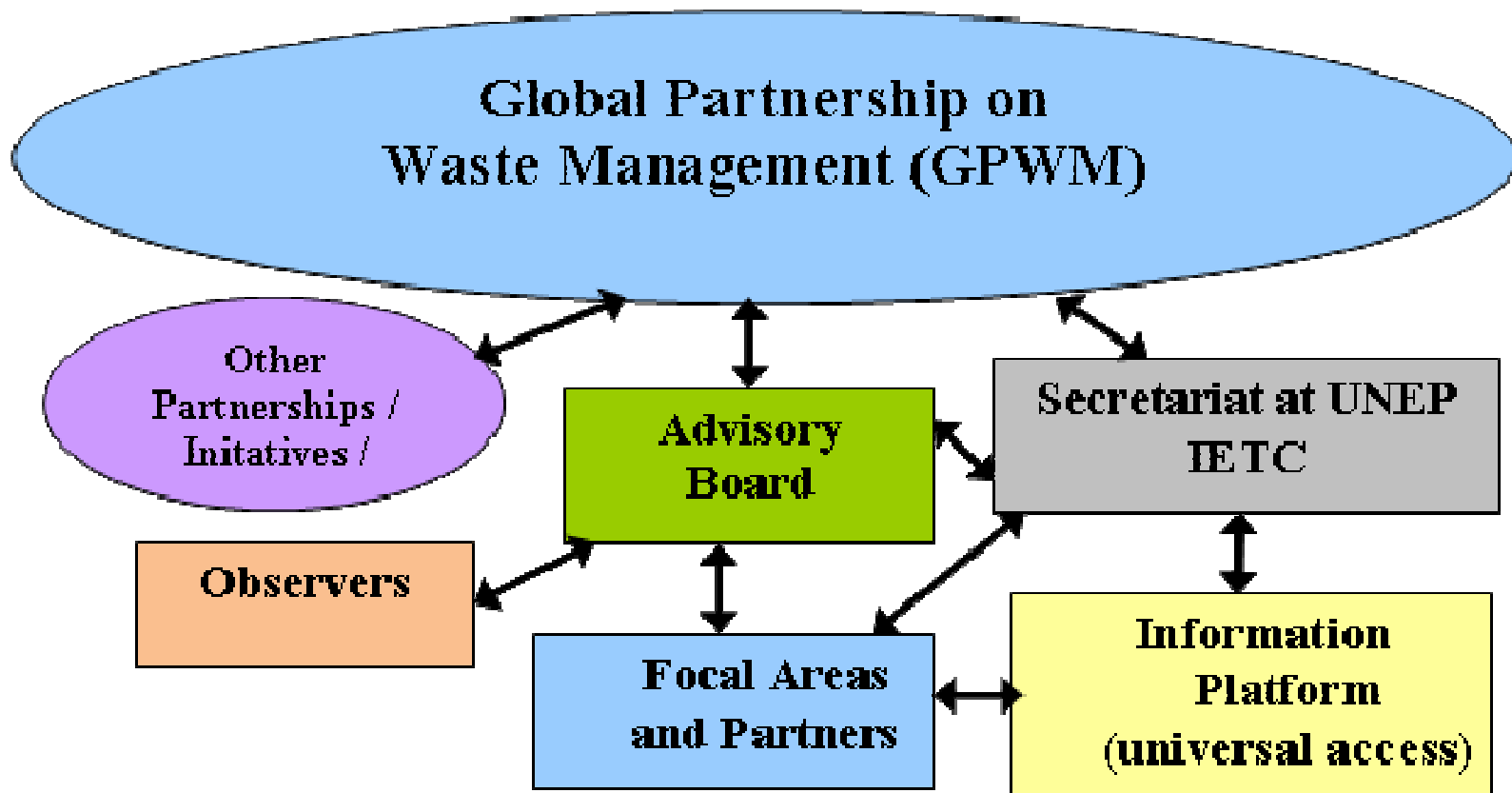


# Publications on Waste



- Resource Augmentation in Viet Nam
- E-waste Inventory - Manual 1
- E-waste Management - Manual 2
- E-waste “Take-back System” - Manual 3 - **In progress**
- Waste Characterization & Quantification - Manual 1
- Assessment of Waste Management System - Manual 2
- Target Setting and Issues of Concern for ISWM - Manual 3
- How to develop ISWM Plan – Manual 4
- Compendium of Technologies for Converting Waste Agricultural Biomass into Resource
- Compendium of Technologies for Converting Waste Plastics into Resource
- Sustainability Assessment of Technologies (SAT) Manual - **In progress**
- Assessment Methodology for Waste Plastics
- Compendium of Technologies for Converting Waste Plastics into Resource
- Waste and Climate Change: Global Trends and Strategy Framework

# Global Partnership on Waste Management





# Objectives of GPWM



To protect human health and environment, and to tackle adverse impacts of unsound management of waste

To promote resource efficiency through waste prevention and by recovering valuable material and/or energy from waste

To enhance international cooperation, knowledge management and sharing



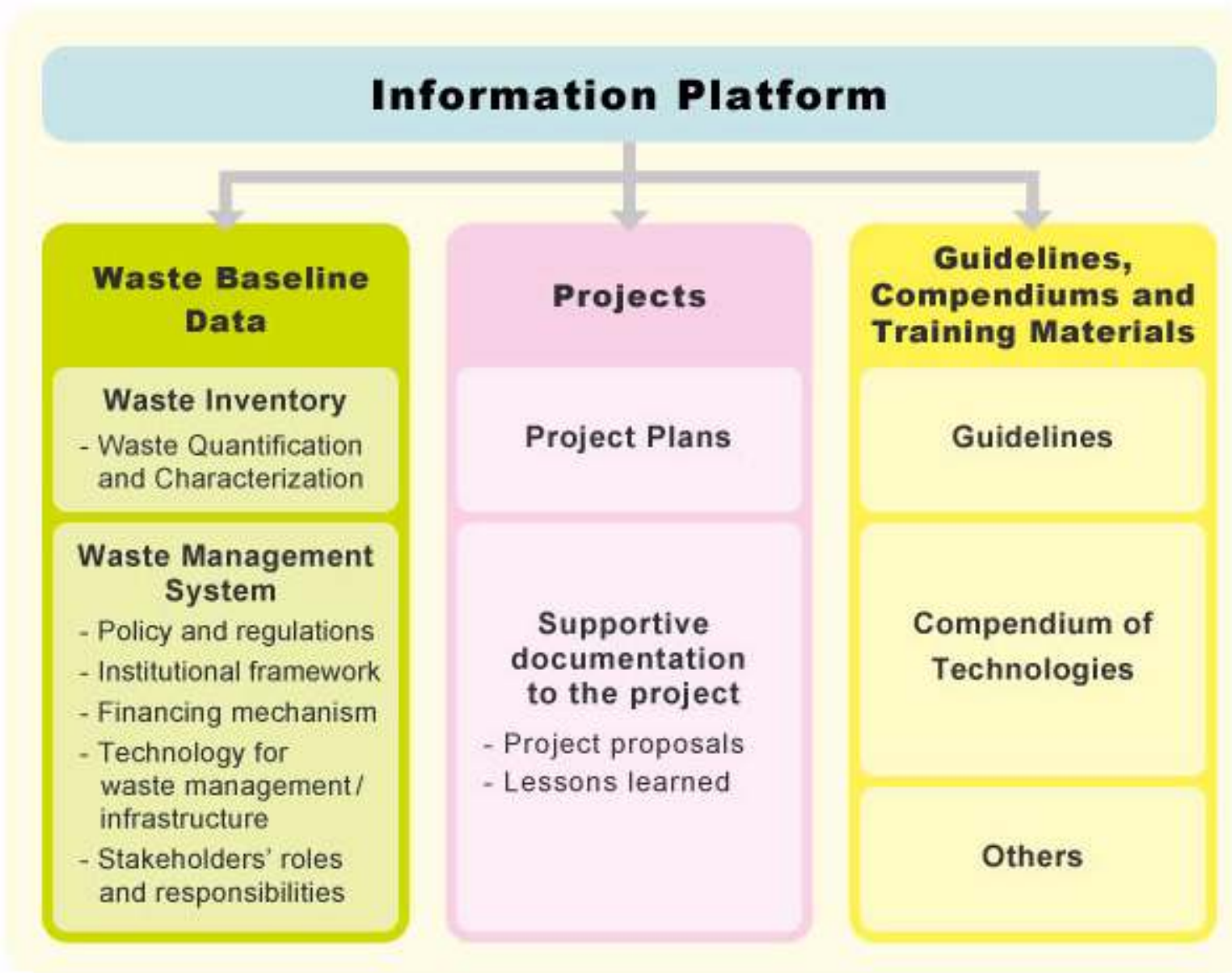
# Information Platform



- 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.



# Information Platform Structure



# Waste Baseline Data



Project		WASTE INVENTORY
		Waste Quantification and Characterization
<b>Integrated Solid Waste Management (ISWM)</b>	China - Wuxi	0
	India - Pune	0
	Lesotho - Maseru	0
	Sri Lanka - Matale	0
	Brazil - Novo Hamburgo	0
	Kenya - Nairobi	On-going
	Ethiopia - Bahir Dar	0
<b>Waste Agricultural Biomass (WAB)</b>	Philippines - Cabaio	On-going
	Nepal - Madhyapur Thimi	0
	Sri Lanka - Uva Province	0
	Pakistan - Sanghar	0
<b>Waste Plastic</b>	India - Agra	0
	India - Faridabad	0
	Thailand - Bangkok	0
	Thailand - Chiang Mai	0
	Philippines - Cebu	0
	Philippines - Mandaue	0
<b>E-waste</b>	Cambodia - Phnom Penh	0



# Guidelines, Compendiums, Training Materials



## GUIDELINES

Project	GUIDELINES
<b>Integrated Solid Waste Management (ISWM)</b>	<ul style="list-style-type: none"> <li>• Training Manual               <ul style="list-style-type: none"> <li>○ Vol. 1: Waste Characterization and Quantification with Projections for Future, Jun 2009 (PDF 884KB)</li> <li>○ Vol. 2: Assessment of Current Waste Management System and Gaps therein, Jun 2009 (PDF 294KB)</li> <li>○ Vol. 3: Targets and Issues of Concern for ISWM, Jun 2009 (PDF 301KB)</li> <li>○ Vol. 4: ISWM Plan, Jun 2009 (PDF 3.6MB)</li> </ul> </li> </ul>
<b>Waste Plastic</b>	<ul style="list-style-type: none"> <li>• <a href="#">Converting Waste Plastics into a Resource – Assessment Guidelines</a>, Dec 2009 (PDF 678KB)</li> </ul>
<b>E-waste</b>	<ul style="list-style-type: none"> <li>• E-Waste               <ul style="list-style-type: none"> <li>○ Vol. 1: Inventory Assessment Manual, Dec 2007 (PDF 1.7MB)</li> <li>○ Vol. 2: E-waste Management Manual, Dec 2007 (PDF 2.2MB)</li> </ul> </li> </ul>

## COMPENDIUMS

Project	COMPENDIUMS
<b>Waste Agricultural Biomass (WAB)</b>	<ul style="list-style-type: none"> <li>• <a href="#">Converting Waste Agricultural Biomass into a Resource – Compendium of Technologies</a>, Oct 2009 (PDF 5.2MB)</li> </ul>
<b>Waste Plastic</b>	<ul style="list-style-type: none"> <li>• <a href="#">Converting Waste Plastics into a Resource – Compendium of Technologies</a>, Dec 2009 (PDF 1.4MB)</li> </ul>



# Proposed GC decision 26/8 “Waste”



- *Requests* the Executive Director to provide further assistance to developing countries in their efforts to strengthen national implementation of an **integrated waste management** approach through the programme of work and budget;
- *Also requests* the Executive Director to support Governments in enhancing access to energy in rural areas through the **conversion of waste agricultural biomass** into energy, as reflected in the programme of work and budget;
- *Urges* the Executive Director to provide more intensive **capacity-building and technology-demonstration** projects, in particular in urban areas, **to promote the “3R”** (reduce, reuse and recycle) approach in developing countries;
- *Requests* the Executive Director to scale up the work in the field of **greenhouse gas mitigation by converting waste to energy** through the development of guidance materials and capacity-building;
- *Calls upon* Governments and other relevant stakeholders to support the initiative by the United Nations Environment Programme to set up a **Global Partnership on Waste Management**, by providing additional resources and taking the lead in partnerships in their respective core areas related to waste management;

# Emerging Cooperation

- KOICA through UNEP-ROAP is seeking increasing cooperation on waste management, especially for integrated solid waste management, technologies, partnerships, and training
- ISWA on waste and climate change as well as for Global Partnership on Waste Management
- UNCRD on 3R and integrated solid waste management
- Secretariat of Basel Convention on E-waste
- Academia and other civil society organizations on research and capacity building



## International Environmental Technology Centre

### Osaka

2-110 Ryokuchi Koen,  
Tsurumi-ku,  
Osaka 538-0036, Japan  
Tel : +81 (0) 6 6915 4581  
Fax : +81 (0) 6 6915 0304  
E-mail : [ietc@unep.org](mailto:ietc@unep.org)  
Web: <http://www.unep.or.jp>

### Shiga

1091 Oroshimo-cho,  
Kusatsu City,  
Shiga 525-0001, Japan  
Tel : +81 (0) 77 568 4581  
Fax : +81 (0) 77 568 4587  
E-mail : [ietc@unep.org](mailto:ietc@unep.org)  
Web: <http://www.unep.or.jp>

***Thank You...***

