




Division of Technology, Industry and Economics

UNEP

UNEP-DTIE-IETC

E-Waste Management and

Waste Agricultural Biomass Management

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E-Waste

E-waste management activities:

• Manual 1: E-waste Inventory -	Online
• Manual 2: E-waste Management -	Online
• E-waste project for Phnom Penh, Cambodia	Completed
• Training workshop on Manuals 1 & 2	July 2010
• Manual 3: Take Back System	Online - Draft
• Training workshop on Manual 3	13-15 July 2011
• E-waste project for Malaysia	discussions

WEEE/E-waste Inventory

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E-WASTE VOLUME I

1. E-waste/ WEEE Definition
2. Guidelines for Assessment of WEEE/ E-waste Market
3. Guidelines for Selection of Methodology for WEEE/ E-waste Inventory
4. Guidelines for WEEE/E-waste Inventory Assessment
5. Case Study 1: WEEE/ E-waste Inventory Assessment in Cambodia
6. Case Study 2: E-waste assessment methodology and validation in India

Guidance Notes

Inventory Assessment Manual

WEEE/E-waste Management

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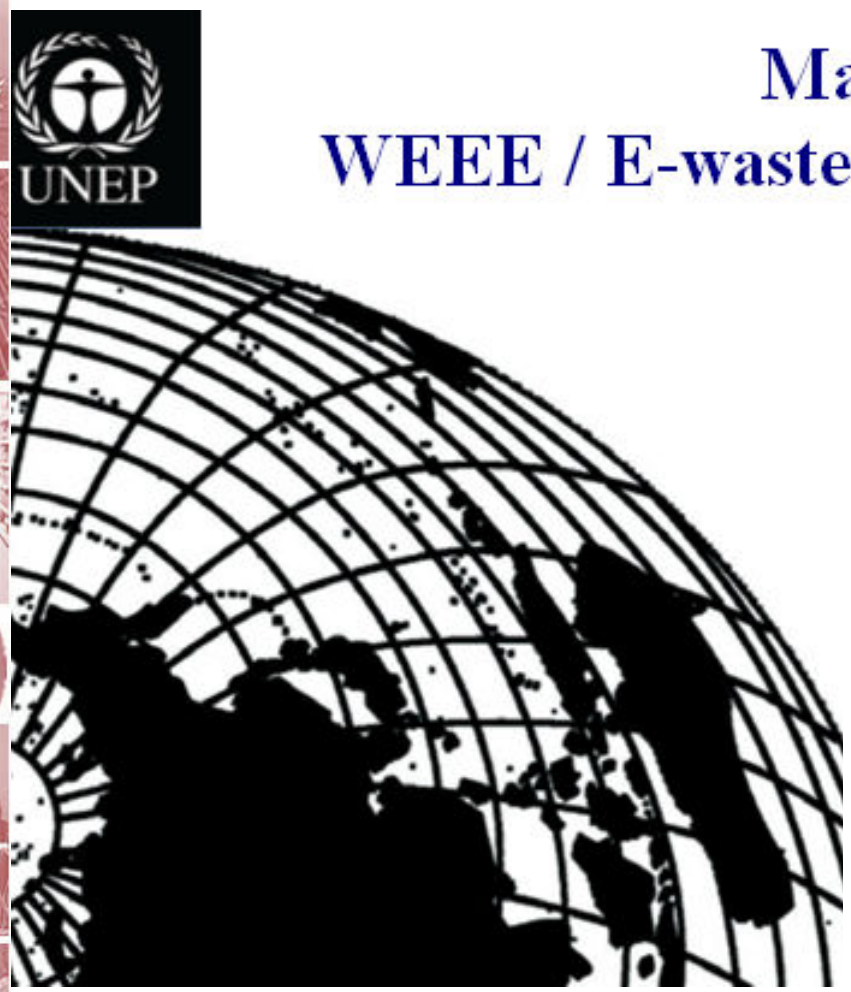
E-WASTE VOLUME II

1. Perspectives of WEEE/E-waste Management
2. Current Practices of WEEE/E-waste Management
3. Stages and Technologies for WEEE/E-waste Management
4. Financing Mechanism of WEEE/E-waste Management
5. Case Study

Guidance Notes

E-waste Management Manual

WEEE/E-waste Take-back System



Manual 3:
WEEE / E-waste "Take Back System"

1. Introduction
2. WEEE / E-waste Management System
3. Policy Perspective for WEEE / E-waste
4. Collection and Transportation under Take-back
5. Financial Schemes under Take-back
6. Case Studies on Take-back

Capacity Building Projects

Objectives

1. Awareness raising on E-waste
2. Capacity building and institutionalization of E-waste inventory
3. Capacity building and institutionalization of E-waste management
4. Demonstration project on E-waste management interventions

Demonstration Project

WEEE/E-waste Management in Phnom Penh

Pilot project on E-waste inventorization and E-waste management, including recovery of valuable materials, to build the local capacity at national and local government level and at small businesses and private sector.

WEEE/E-waste Management in Phnom Penh

Methodology

1.Training program using the E-waste manuals

2.Inventory of E-waste including not only the assessment and quantification and characterization of E-waste in Phnom Penh but the technical assistance required to institutionalize E-waste inventory and its updating with Phnom Penh City Government.

3.Study of E-waste recycling structure and its capacity, together with the E-waste toxic footprint and feasibility of the level of treatment of E-waste in the formal sector in Phnom Penh City.

WEEE/E-waste Management in Phnom Penh

Methodology (cont.)

4. Design of pilot project for E-waste storage, collection and transportation system including the study of consumer behavior for these activities, assessing the existing infrastructure and pilot testing of E-waste storage, collection and transportation system using existing infrastructure.
5. Identification of best practices and enabling policy/ regulatory requirement to ensure that E-waste management including collection, transportation, and treatment and disposal system includes possibilities of public private partnership.
6. Identification of stakeholders (manufacturing industry) and initiating a dialogue with them to involve them in future work related to EPR/e-design of key electronic components (e.g. computers – keyboard manufacturers).
7. Dissemination of the project experiences, including guidelines and E-waste Plan for Phnom Penh City, at national level to help other cities to develop their own plans based on local data.

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 3rd 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)

Glimpses of Waste Activities

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Waste Agricultural Biomass

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 2010

Compendium of Technologies

-Waste Agricultural Biomass-

Global, Regional & Local Data

development academy of the philippines
The National Productivity Organization

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

Web-based Compendium

Compendium of Waste Biomass Conversion Technologies

Compendium Report on Technologies Utilizing Agricultural Waste Biomass

Waste Biomass Conversion to Energy

Waste Biomass Conversion to Materials

Compendium of Waste Biomass Conversion Technologies and Assessment

Waste Biomass Conversion to Energy

Crop / Type	Waste
Agricultural Crops - This refers to a variety of agricultural crops, specific samples of which were not indicated in the source materials.	Crop Residue
Barley	Waste
Coconut	Fronds Husks Shell
Coffee	Bean Husks Grounds Husks Shells
Corn	Biomass-Derived Carbohydrates Cobs Shelled Corn

Crop/Type > Coconut > Husks

Process

Combustion	Gasification

Crop/Type > Coconut > Husks > Gasification

Equipment	Technology Details	Assessment Details	Product
Prototype modular downdraft biomass gasifier coupled with an internal combustion engine	ModularDowndraft_USA	To be updated	Electricity

COMPENDIUM OF WASTE BIOMASS CONVERSION TECHNOLOGIES
PART I: CONVERSION TO ENERGY

UNEP DAP

Modular downdraft gasifier[1]
USA, Pilot Demonstration

Crop	Coconut, sugarcane, rice, wood, palm
Residue	coconut shells and husks, bagasse, rice hulls, wood residues, rubber wood, and palm nutshells
Process	Gasification
Equipment	Prototype modular downdraft biomass gasifier coupled with an internal combustion engine
Main Product	Electricity

Technical Description of Technology
The prototype modular down-draft biomass gasifier coupled with an internal combustion engine was developed by Community Power Corporation (CPC) through a cost-fund sharing with the US

Demonstration Projects

-Waste Agricultural Biomass-

Objectives

- Building the local capacity to identify and implement Environmental Sound Technologies (ESTs) for waste agricultural biomass
- Assess their feasibility with respect to local socio-economic and environmental characteristics.
- Assess their potential for resource conservation and greenhouse gas emission reduction

Areas/regions of implementation

- Cabiao (Philippines)
- Sanghar district (Pakistan)
- Monaragala district (Sri Lanka)
- Madhyapur Thimi Municipality (Nepal)

Demonstration Projects

-Waste Agricultural Biomass-

Methodology

1.Characterization and quantification (baseline of waste agricultural biomass in the area/region

2.Assessment of current patterns of use/disposal of waste agricultural biomass.

3.Stakeholder's consultation workshops have also been carried out.

4.Identification and assessment of suitable technologies for the of waste agricultural into useful energy/material.

Important Outcomes and follow-up of Activities

- 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

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Thank You…