



Role of UNEP in Integrated Solid Waste Management (ISWM)

Why, What and How?



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Outline of Presentation



- 1. Why**
Waste Generation
Waste Management: Gaps, Impacts and Concerns
- 2. What**
Defining Integrated Solid Waste Management (ISWM)
- 3. How**
Developing ISWM Plan
- 4. UNEP-DTIE-IETC Activities on ISWM**
Role of IETC
IETC Projects on ISWM



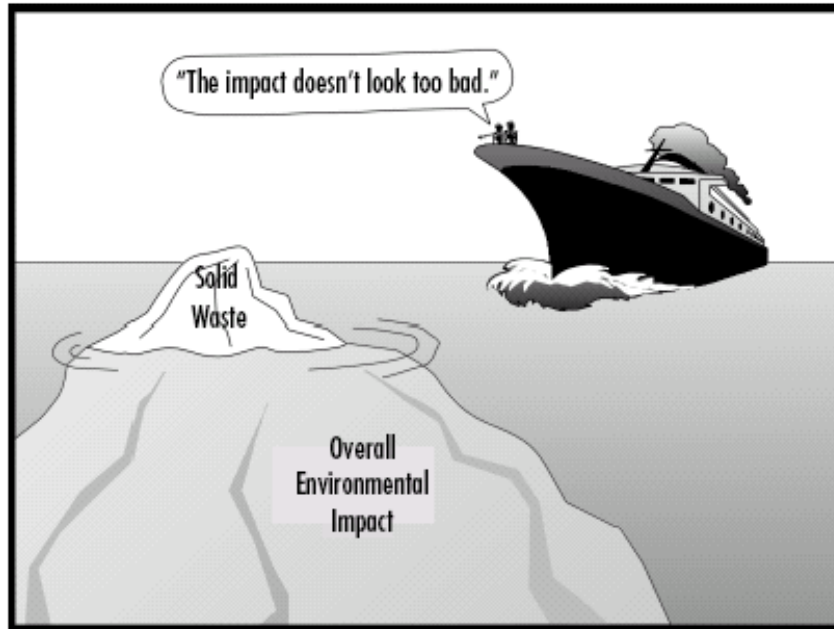
Waste – what does it mean!



Water **We** Wise
Air **Are** Approach to
Soil **Spoiling** Sustainability
Triggers **The** through
Economy **Environment** Technological
Excellence



Major Impacts



Public health, environment, economy and living conditions:

- respiratory infections resulting from infected dust, chronic respiratory diseases, including cancers resulting from exposure to dust and hazardous compounds mainly generated through open burning and unsafe incineration
- more than 200 people died and hundreds were injured when Payatas dumpsite in Philippines collapsed in 2000
- usable surface aquifers are contaminated due to percolation of leachate
- waste dumps also emit methane, which is a GHG of concern for global environment
- nuisance as a result of littered and smelly neighbourhoods with insects, rats and mice. The choked sewerage systems, due to plastic bags and other garbage, cause flooding of sewage damaging the infrastructure and buildings



Survey of Gaps 1



Activity	Low income	Middle income	High income
Source reduction	No organized programs, but reuse and low per capita waste generation rates are common.	Some discussion of source reduction, but rarely incorporated in to any organized program.	Organized education programs are beginning to emphasize source reduction and reuse of materials.
Collection	Sporadic and inefficient. Service is limited to high visibility areas, the wealthy, and businesses willing to pay.	Improved service and increased collection from residential areas. Larger vehicle fleet and more mechanization.	Collection rate greater than 90 percent. Compactor trucks and highly mechanized vehicles are common.
Recycling	Most recycling is through the informal sector and waste picking. Mainly localized markets and imports of materials for recycling.	Informal sector still involved, some high technology sorting and processing facilities. Materials are often imported for recycling.	Recyclable material collection services and high technology sorting and processing facilities. Increasing attention towards long-term markets.
Composting	Rarely undertaken formally even though the waste stream has a high percentage of organic material.	Large composting plants are generally unsuccessful, some small-scale composting projects are more sustainable.	Becoming more popular at both backyard and large-scale facilities. Waste stream has a smaller portion of compostables than low and middle income countries.



Survey of Gaps 2



Activity	Low income	Middle income	High income
Incineration	Not common or successful because of high capital and operation costs, high moisture content in the waste, and high percentage of inerts.	Some incinerators are used, but experiencing financial and operational difficulties; not as common as high income countries.	Prevalent in areas with high land costs. Most incinerators have some form of environmental controls and some type of energy recovery system.
Landfilling	Low-technology sites, usually open dumping of wastes.	Some controlled and sanitary landfills with some environmental controls. Open dumping is still common.	Sanitary landfills with a combination of liners, leak detection, leachate collection systems, and gas collection and treatment systems.
Costs	Collection costs represent 80 to 90 percent of the municipal solid waste management budget. Waste fees are regulated by some local governments, but the fee collection system is very inefficient.	Collection costs represent 50 to 80 percent of the municipal solid waste management budget. Waste fees are regulated by some local and national governments, more innovation in fee collection.	Collection costs can represent less than 10 percent of the budget. Large budget allocations to intermediate waste treatment facilities. Upfront community participation reduces costs and increases options available to waste planners (e.g., recycling and composting).



Need for ISWM



- **Cities are facing an increasing growth in population, and shares in GDP growth, resulting in – among other things – increasing quantities of waste being generated**
- **Due to changing lifestyles and consumption patterns, the quantity of waste generated has increased with quality and composition of waste becoming more varied and changing.**
- **Industrialization and economic growth has produced more amounts of waste, including hazardous and toxic wastes.**
- **There is a growing realization of the negative impacts that wastes have had on the local environment (air, water, land, human health etc.)**
- **Complexity, costs and coordination of waste management has necessitated multi-stakeholder involvement in every stage of the waste stream. This calls for an integrated approach to waste management.**
- **Local Governments are now looking at waste as a *business opportunity*, (a) to extract valuable resources contained within it that can still be used and (b) to safely process and dispose wastes with a minimum impact on the environment**



Defining ISWM

Integrated solid waste management refers to the strategic approach to sustainable management of solid wastes covering all sources and all aspects, covering generation, segregation, transfer, sorting, treatment, recovery and disposal in an integrated manner, with an emphasis on maximizing resource use efficiency



Benefits of ISWM



Resource augmentation and higher resource efficiency

Reduced investments and savings in waste management costs

Better business opportunities and economic growth

Cleaner and safe neighborhoods

Local ownership & responsibilities / participation

Turning vicious circle into virtuous circle



ISWM Coverage



Geographical and Administrative boundaries
Geographical and jurisdiction (municipal, industrial) limits
Institutions involved and administrative mandate

Sectors and sub-sectors
Residential (single family and multifamily)
Commercial and industrial
Healthcare and laboratory
Construction and Demolition debris
Sludge

Types of solid waste
Non-hazardous (recyclable and non-recyclable)
Hazardous



ISWM Plan



An ISWM Plan per se is a package consisting of a Management System including:

Policies (regulatory, fiscal, etc.),

Technologies (basic equipment and operational aspects) &

Voluntary measures (awareness raising, self regulations)

A management System covers all aspects of waste management; from waste generation through collection, transfer, transportation, sorting, treatment and disposal.

Data and information on waste characterization and quantification (including future trends), and assessment of current solid waste management system for operational stages provide the basis for developing a concrete and locality-specific management system.



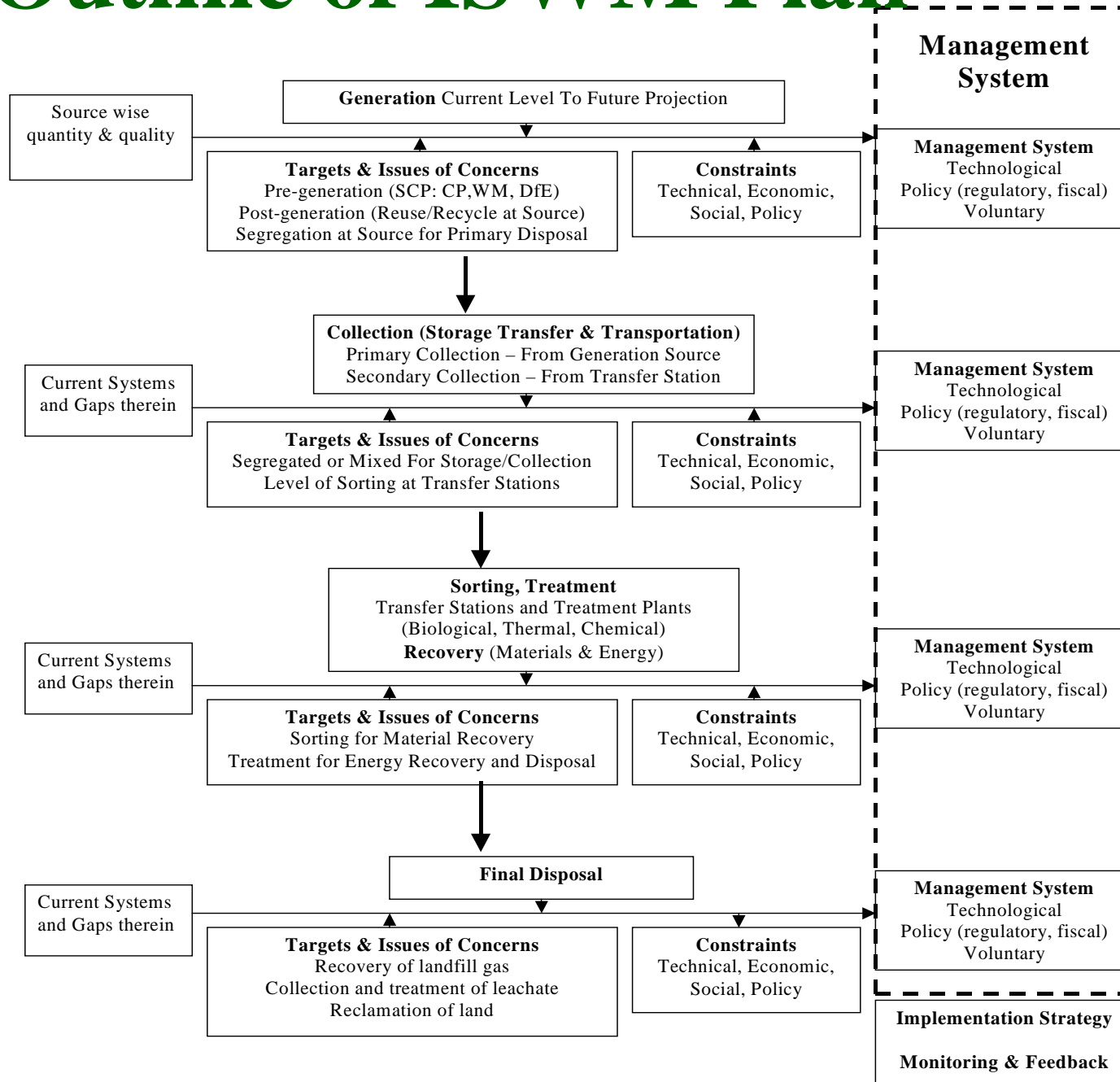
Elements of Developing ISWM Plan



1. Baseline data on waste characterization and quantification with future trends and baseline data on prevailing waste management systems and gaps there-in
2. A list of targets to be achieved through the ISWM System
3. A Plan with details of the Management System covering policies, technologies (and voluntary measures
4. Specific schemes for implementation
5. Implementation Aspects such as time schedules, costs, institutional requirements etc.
6. Monitoring and feedback mechanism



Outline of ISWM Plan



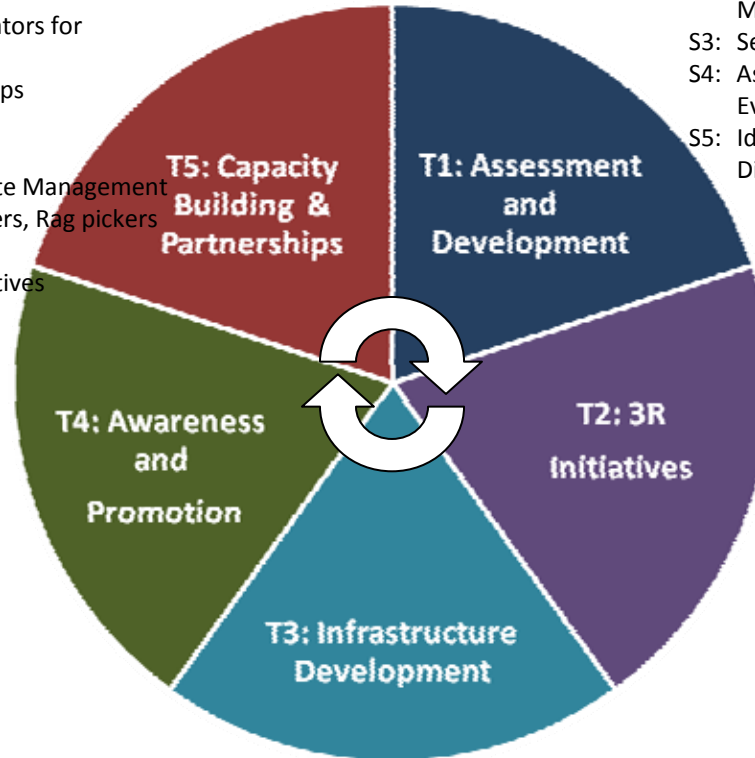


Specific Schemes - ISWM



- S1: Establishment of Standardized Guidelines for Operating Decentralised Treatment Plants
- S2: Establishment of a Cadre of Certified Operators for Decentralized Treatment
- S3: Introducing Industry - University Partnerships
- S4: Establishment of a Waste Exchange Centre
- S5: Establishment of an ISWM Cell
- S6: Develop and Introduce Policy for C&D Waste Management
- S7: Improving Health and Safety of PMC Workers, Rag pickers and citizens in proximity of the landfill
- S8: Strengthening of PMC Rag picker Co-operatives

- S1: Inventorisation of Solid Wastes
- S2: Development of a Model for Municipal Solid Waste Management
- S3: Securing Carbon Credits through CDM
- S4: Assessment of Existing Waste Disposal Sites and Evaluating Management Options
- S5: Identification and Preliminary Design of New Waste Disposal Sites



- S1: Design and Launch of a Comprehensive Awareness Campaign on ISWM
- S2: Taming Consumption of Non-biodegradable Plastic
- S3: Imparting Awareness and Training for BMW Management
- S4: Initiating Schools involvement in Waste Management
- S5: Introducing Awards Schemes
- S6: Improving Waste Management during Festivals

- S1: Optimatisation and Strengthening of MSW Collection Systems
- S2: Establishment of Community Sorting Centres (CSC)
- S3: Pilot Projects for Recycle and Reuse of C&D Waste
- S4: Recycling of Plastic Waste
- S5: Establish E-Waste recycling facility
- S6: Establish a CFL recycling Programme and Common facility

- S1: Establishment of Environmental Awareness Centre
- S2: Private Partnerships in the Current Waste Collection System
- S3: Private Partnerships in Decentralised Treatment System
- S4: Establishment of a Compost collection and managing centre
- S5: Demonstration Projects for Hotel Waste Management
- S6: C&D Waste Management



UNEP-DTIE-IETC Activities on ISWM



Role of IETC

- Implementation of ISWM projects with local partners
- Local capacity building - training & field activities
- Normative Function



UNEP-DTIE-IETC Activities on Waste Management



1. ISWM Projects
 - ISWM Plan for Wuxi New District, PRC
 - ISWM Plan for Pune City, India
 - ISWM Plan for Maseru City, Lesotho
 - ISWM Plan for Matale City, Sri Lanka

2. Other Waste related projects
 - E-waste management at Pnom Penh, Cambodia
 - Waste exchange in Penang, Malaysia
 - Agricultural waste biomass management, The Philippines
 - Forest waste management in Indonesia
 - Recycling of tsunami debris in Indonesia
 - Converting waste plastic into fuel



Local Capacity Building



1. Guidelines, Formats and Training with field activities

Waste Characterization and Quantification

Analysis of Prevailing System

Target Setting & Gaps Analysis

Concerns & Constrains

2. Develop & Design ISWM Plan

Identification of Policies

Identification & selection of ESTs

Financing Strategy and Role of Stakeholders



ISWM Training Package

- Guidelines to undertake all the activities to formulate ISWM Plan based on local data & information
- Excel based model to simulate local data for developing ISWM Plan with specific actions/schemes
- Learning from experiences in Pune, Wuxi New District and Maseru





Support for South-South Cooperation on ISWM



Opportunities for South-South Cooperation

- Similar type of opportunities across most of the countries
- Organic waste is more than 50% - converting into a resource
- Most of expenditures are on waste collection
- Limited resource availability to properly manage increasing volumes of waste
- 3R based ISWM to reduce final volumes of waste and to support local businesses by converting waste into a resource
- Higher cost of imported technologies and availability of home-grown technologies
- Increasing prices of fuels and market for alternative energy



Novo Hamburgo

Launching of
Integrated Solid Waste Management
Project
at
Novo Hamburgo, Brazil

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Thank You...

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