



Panel discussion: Directions for improving solid waste management in Thailand

Workshop: "Sustainability of Solid Waste Management in Thailand"
King Mongkut's University of Technology Thonburi, Bangkok
11 October 2010



The Joint Graduate School of Energy & Environment

Introduction to JGSEE

Founded in 1998, it is a center of excellence of higher learning and research in science, technology and policy in the field of energy technology and environment



KMUTT

King Mongkut's University of Technology Thonburi



KMUTNB

King Mongkut's University of Technology North Bangkok



CMU

Chiang Mai University



SIIT-TU

Sirindhorn International Institute of Technology



PSU

Prince of Songkla University

Some Background Information About ISSOWAMA

- ISSOWAMA = **I**ntegrated **S**ustainable **S**olid **W**aste **M**anagement in **A**sia
- The project is funded under EU-FP7
- It is a coordination and support actions project
- Duration 30 months from January 2009 to June 2011
- There are 19 partners involved in this project
 - *13 from Asian countries*
 - *6 from EU countries*

Bangladesh (SA)

1. Khulna University of Engineering & Technology
2. Dhaka City Corporation

Cambodia (GMSR)

1. Department of Environment Phnom Penh Municipality
2. Royal University of Phnom Penh

China (GMSBR)

1. Tsinghua University- Department of Environmental Science and Engineering

India (SA)

1. Winrock International India
2. The energy and resource institute

Indonesia (SEA)

1. Demographic Institute at Faculty of Economics University of Indonesia

Philippines (SEA)

1. Solid Waste Management Association of the Philippines
2. School of Urban and Regional Planning
3. University of the Philippines
4. ZKK Foundation, Inc

Thailand (GMSBR)

1. JGSEE
2. AIT

Denmark

International Solid Waste Association

Germany

Verein zur Förderung des Technologietransfers an der Hochschule Bremerhaven e.V.

Netherlands

Wageningen University Sub-department of Environmental Technology
Stichting WASTE

Spain

BIOAZUL S.L.

Switzerland

Eidgenössische Anstalt für Wasserversorgung, Abwasserreinigung und Gewässerschutz

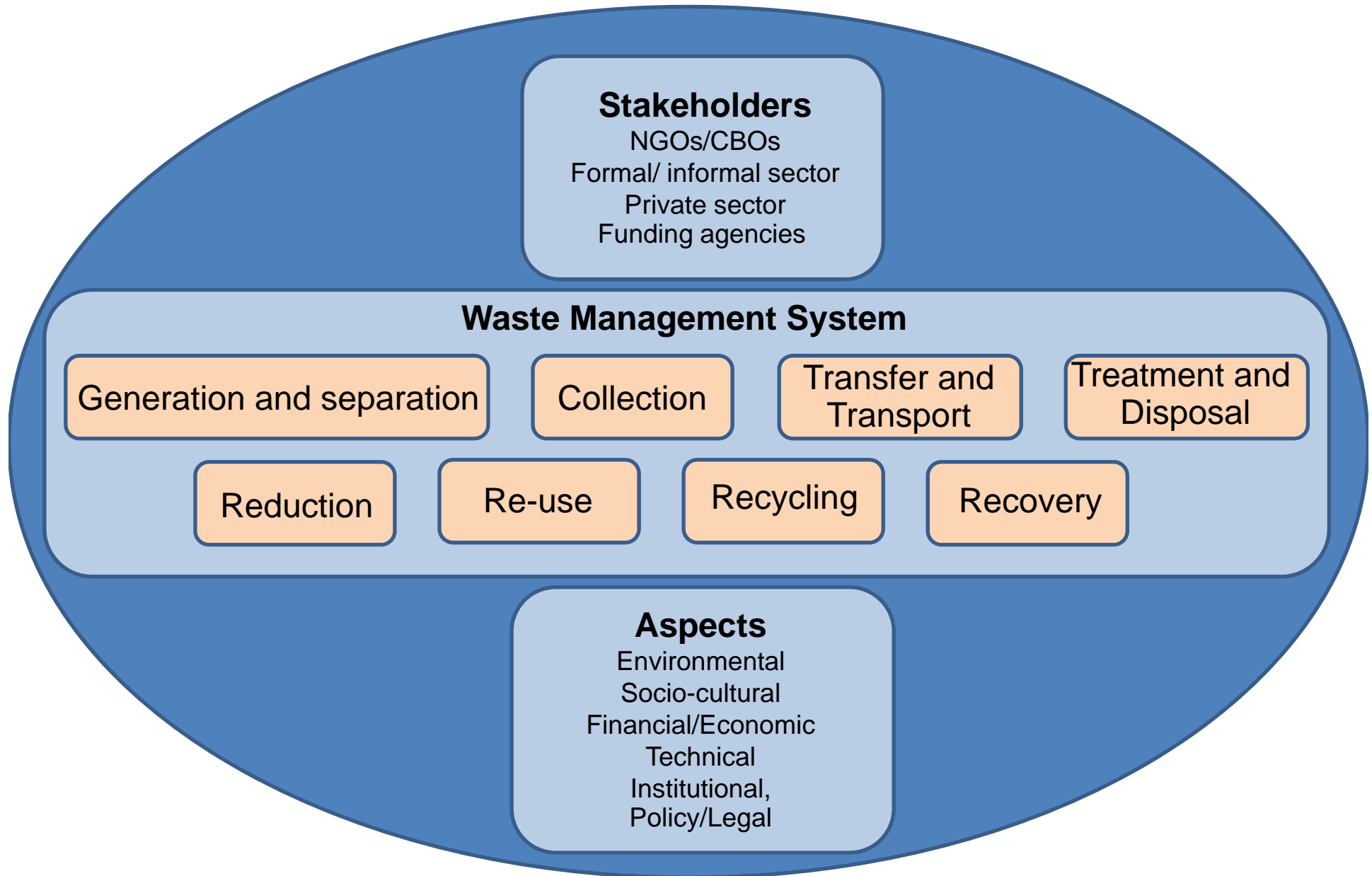
Waste situation in Asia

- Globally 12 billion tonnes of waste are produced per year, comprising 2 billion tonnes of municipal solid waste (MSW)
- In Asia, on an annual basis, approx. 4 billion tonnes of solid waste are generated and MSW amounts to 790 million tonnes.
- About USD25 billions are spent for solid waste management in urban areas
- On average 50% of residents lack collection services in urban areas of low and middle income countries

MSW management in Asia

- Municipal solid waste composition varies broadly due climatic and cultural variations (about 50% is biodegradable)
- Systems for collection, transportation and disposal are similar but unique to Asia
- Involvement of formal (public and private organisations) and informal sector, NGOs and community based organisations , etc.
- Industrial waste (hazardous and non hazardous waste) enters the MSW stream
- Disposal of waste electric and electronic equipment (WEEE) to landfill

Integrated Sustainable Solid Waste Management



Main Objective of ISSOWAMA

To develop a performance assessment system for integrated waste management scenarios

- *Development of qualitative sustainability criteria*
- *Development of quantitative impact indicators*

Focus will be on sustainability assessment addressing (in a life cycle perspective):

- *Environmental impacts (health and esthetic impacts and pollution to air, water and soil)*
- *Economic considerations (“polluter pays” principle, financial instruments for private and public participation)*
- *Social situation (acceptance and participation, improved living conditions and health situation)*

Work Packages of ISSOWAMA

WP1: Mapping of solid waste management networks

- *A database of current research activities and networks operating in solid waste management in Asia is established*

WP2: Mapping and evaluation of solid waste management case studies

- *Case studies of MSW management are identified, screened and assessed based on technical and socio-economic parameters*

WP3: Review and analysis of environmental impact assessment methods and impact categories

- *A comprehensive analysis of impact categories for assessing selected case studies in Asia is performed in this WP*

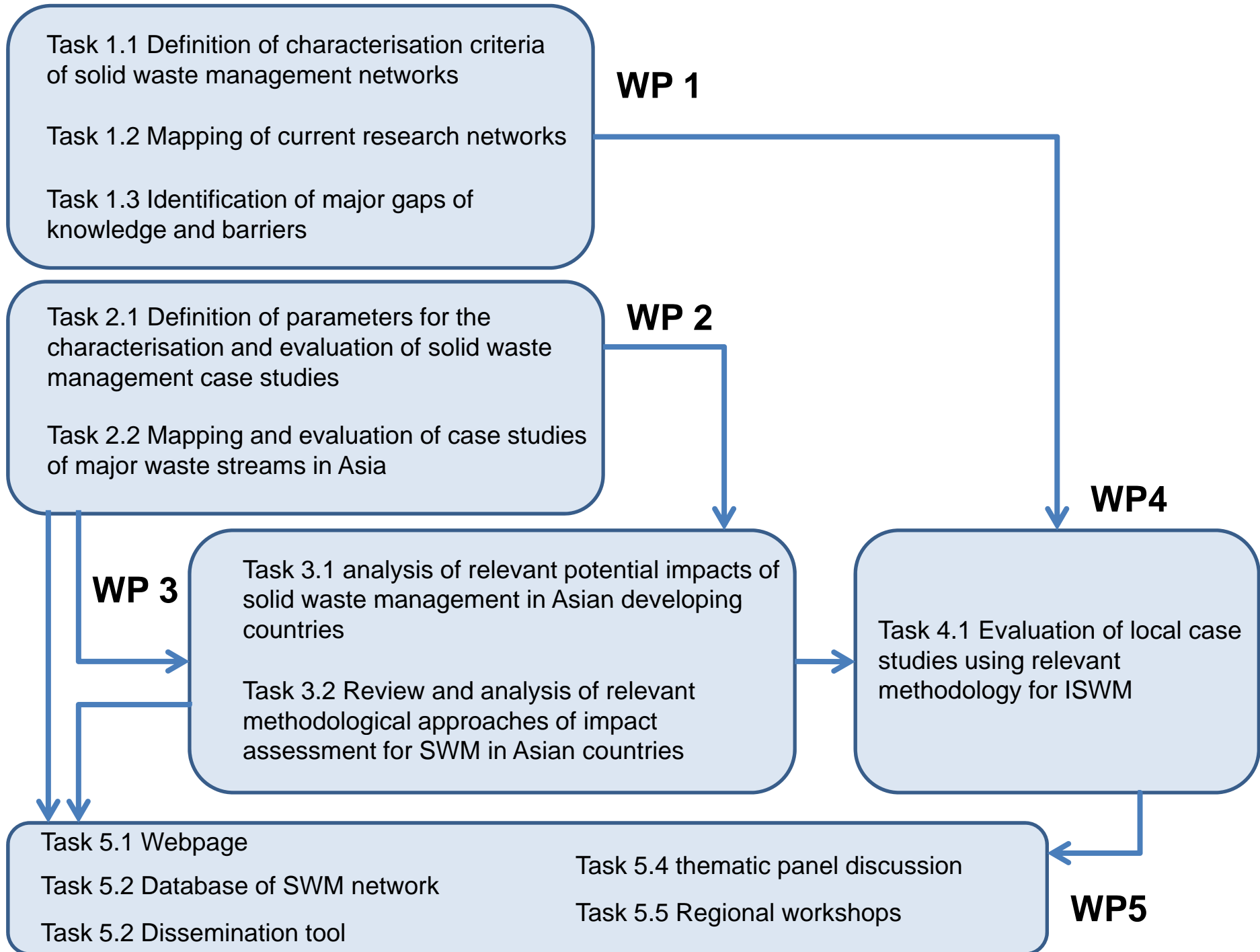
Work Packages of ISSOWAMA

WP4: Analysis of representative local case studies

– A selection of representative local case studies (from WP2) are assessed based on the methodologies and impact categories proposed in WP3

WP5: Dissemination and promotion of stakeholders participation

– Knowledge gained through the project is disseminated in the form of workshops, thematic panels and paper/report publications



Key Deliverables From the Project

- Characterisation and evaluation criteria for solid waste management networks – *Report* (WP 1; Task 1.1)
- Current research in solid waste management in Asian developing countries – *Report* (WP1; Task 1.2)
- Evaluation of major gaps in knowledge and barriers – *Report* (WP1; Task 1.4)
- Review of characterization and evaluation criteria for assessing solid waste management systems (to assess local case studies identified in Asia) – *Report* (WP 2; Task 2.1)
- Characterisation and evaluation of identified case studies, review of technologies and waste streams and selection of local case studies – *Report* (WP 2; Task 2.2)

Key Deliverables From the Project

- Investigation of relevant potential impacts and methodologies for environmental impacts assessment of SWM in Asian developing countries. Selection of local case studies – *Report* (WP 3; Task 3.1)
- **Asian guidelines of ISWM assessment methods – *Report*** (WP4, Task 4.1)
- Dissemination materials/events under WP5
 - *Website of the project (www.issowama.net)*
 - *Databases of networks and literature on SWM*
 - *Leaflet and poster of the event*
 - *Simplified guide on ISWM in Asian developing countries*
 - *Workshops, panels, e-conferences*
 - *Paper publications*

Case Studies of Thailand

1. MSW management in Nonthaburi Municipality
2. Environmental and social assessment of MSW management of Medium-Scale Municipality (Hua Hin) in Thailand
3. Environmentally friendly conversion of municipality wastes into useful energy in Rayong
4. Waste Recycling Facility in Phitsanulok Province
5. Integrated Solid Waste Management System in Chonburi
6. Environmental Evaluation of Integrated Solid Waste Management in Phuket
7. Rehabilitation of dumpsite to integrated waste management (Nonthaburi)
8. Recycling of plastic wastes from dumpsite for RDF production (Nonthaburi)
9. Municipal solid waste incinerator at phuket municipality
10. Management of demolition wastes arise from natural disaster (Phuket)
11. Development of compost bin for recycling organic wastes at source
12. Waste separation and baling plant of small communities (Pakprak municipality in Nakornsithammarat province)
13. Application of aerated static pile composting system for market wastes (Suphunburi and Chainat municipalities)
14. Utilization of landfill gas for electricity generation (Nakhon Pathom)
15. Hospital waste management in Bangkok Metropolitan

Characterization and Evaluation Criteria of SWM Case Studies

- Geographic, socio-economic and demographic information
 - *Location, topography, climate*
 - *GDP, average income per household, number of households*
 - *Population of area, density, population growth rate, average household size*
- Scope and overview of case study
 - *Objective, characteristics of MSW management system, stakeholders, key institutional aspects, key aspects of the SWM system*
- Stakeholders
- Elements of SWM system,
 - *Waste type, quantity, composition, collection, transportation, reduction, reuse, treatment, disposal etc.*
- SWM sustainability aspects
 - *Technical, environment and health, financial/economic, socio-cultural, institutional, legal and policy*
- Impacts of the case study and achievements

Next Step...

- Selection of case studies for Thailand:
 - *MSW management in Nonthaburi Municipality*
 - *Environmentally friendly conversion of municipal wastes into useful energy in Rayong*
 - *Waste Recycling Facility in Phitsanulok Province*
- Extended methodologies (based on existing environmental impact assessment methods) for assessing environmental impact of SWM in Asia
- Assessment of local case studies based on impact assessment method set for Asia
- Asian guidelines of ISWM assessment methods

Thank You for Your Kind Attention

For further information:

Dr Sebastien Bonnet

E-mail: sebastien@jgsee.kmutt.ac.th



Assoc Prof Dr Shabbir H. Gheewala

E-mail: shabbir_g@jgsee.kmutt.ac.th

