IMPLEMENTATION OF SMM IN INDONESIA PERSPECTIVE

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The outline

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The Background

General Facts

- Area: 1.9 million km² (world’s 15th largest, 9 times larger than the size of Korea)
- Climate: Tropical
- Population: 230 million (4th in the world); over 300 tribes including Jawa (35%), Sundanese (13.6%), Aceh, Balinese, etc.
- Language: Bahasa Indonesia
- Industry structure: Mostly Oil and Gas, Agriculture and Manufacturing
- Maintained over 6% growth rate by stabilizing inflation through controlling local oil price and taxes on telephone and electricity, and lowering Central Bank’s interest rate.
Waste Management Status

**Waste Management Implementation**

- Waste Management in Indonesia is regulated by two Laws i.e. Law No. 32/2009 for Industrial Waste and Law No. 18/2008 for Municipal Solid Waste (MSW)
- To implement Law No. 18/2008, MOE Indonesia is currently formulating 3 drafts of government regulations including Waste Minimisation, Waste Handling, and Waste Specific Management
- Conducting 3R implementation by building pilot projects, giving subsidies, providing 3R facilities esp. composting facilities
- Developing eco-industries project in industrial zone
- Conducted e-waste inventory
Waste Management Status

**Source and Characteristic of MSW**

- MSW generation in nationwide is about 176,000 ton daily
- Composition by source: household waste (48%), market waste (24%), commercial waste (9%), street and from public facilities waste (5%)
- Compostable organic waste is dominated the MSW composition in Indonesia (60-70%)
- The 4 major materials that are discussed in the forum is totally different with common situation in Indonesia

**MSW Composition by Source**

- Household: 48%
- Market: 24%
- Commercial: 9%
- Street & public facilities: 5%
- Others: 14%

**MSW Handling**

- Collected: 69%
- Burried: 10%
- Composted & Recycled: 7%
- Burned: 5%
- Unmanaged: 10%
Waste Management Status

**Performance Status**

- MSW handling in some big cities: collected (69%), buried traditionally (10%), composted & recycled (7%), open burned (5%), unmanaged (10%)
- Coverage of MSW collecting services in nationwide is about 40-60%
- Our final disposal is 95% open dump. A half of them is unmanaged.
- There are composting activities at any scale including household, community, mid to big composting
- Portion of composted waste in 2010 is about 0.5% of total MSW. It is actually very low compare to previous data
- Recycling activities is mainly conducted by informal stakeholders
- By law, we have started to change our MSW management paradigm i.e. from collect-transfer-dump into reduce at source and resource recycle

Source: Indonesian domestic solid waste statistics in year of 2008
Waste Management Status

■ Industrial Waste (Limited PROPER Industries)
  ● Industrial waste is mostly considered as hazardous
  ● Major industries in Indonesia as follows: basic and chemical, energy, miscellaneous, agriculture, mining, and oil & natural
  ● The largest 3R implementation of industrial waste is in agriculture industry. The utilisation of waste is mainly used for fuel at own factory
  ● Another major industrial waste that utilised as 3R is ash as building material
  ● Some cement industries is already utilised waste as co-generation or co-processing activities

 Holcim Indonesia Own Two Cement Plants:
  ● Located at Cilacap Central Java
  ● Located at Narogong West Java

 Each Plants has been co-processing wastes at temperature > 1800°C

 For 2010, waste energy recovery within Narogong Plant is estimated:
  ● 100.000 ton for Industrial Hazardous Waste
  ● 120.000 ton for Biomass Recovery
  ● 20.000 ton for Sorted Municipality Solid Waste (in bales)

 Calculated Energy coloric value – Thermal Substitution Rate with saving due to utilization of waste is about 10 %

Source: Utun Sutrisna, AMC/CMA
Source and Characteristic of Industrial Waste (Limited PROPER Industries)

- Industrial waste is considered as hazardous
- Waste generation: 7,029 kiloton
- Managed and reused (90%), unmanaged (10%)

Waste generation by sectors:

- Basic and chemical: 3,187,152 ton/day
- Energy: 1,376,665 ton/day
- Miscellaneous: 1,233,142 ton/day
- Agriculture: 785,768 ton/day
- Mining: 191,946 ton/day
- Oil and natural: 158,010 ton/day

Composition:

- Copper slag: (1,809,039 ton/day)
- Steel slag: (550,490 ton/day)
- Coal ash: (223,257 ton/day)
- EAF Ash: (13,545 ton/day)
- Oil sludge: (54,297 ton/day)

※ Basic Industries include: Aluminum profiles, smelting, metal smelting, and cement
※ Miscellaneous Industries include: Dry batteries, electronics, vehicle spare parts, ceramics, miscellaneous, automotive, metal plating, painting, consumer goods, rayon, and textiles

Source: MOE, 2006
The Current Capacity

**Institutional Aspects**
- Need comprehensive strategy on waste management and 3R both national and local level
- Need institutional capacity and human resource development particularly in local level
- Need a clear and fair role and responsibility among stakeholders including informal sector

**Policy and Regulation Aspects**
- Need comprehensive legal framework of waste management and 3R
- Need a complete technical regulations that regulate standards, mechanism, criteria, etc.
- Need a complete technical guidelines

**Financial Aspects**
- Need to set up a reasonable budget allocation for waste management and 3R especially at local level
- Need involvement of private sector for building waste management and 3R infrastructure
- Need support from international through bilateral and multi-lateral cooperation

**Building Awareness Aspects**
- Need to implement a extensive campaign programmes and activities
- Need to educate people in early ages through educational system and institution
- Need a strong collaboration among stakeholders
The Policy Direction of MSW Management

Benchmarking
- Comprehensive Regulations
- Integrated Planning and Coordination
- Measurable Goal and Target
- Community Awareness

Implication

1. Define Legal Framework
   - Integrate and synergise central and local regulations
   - Define clear role and responsibility among line ministries and local agency

2. Integrated Waste Management
   - Integrate up stream and down stream activities
   - Integrate to related policies such as ecosystem, spatial planning, water & air pollution, green development, etc.

3. Manage Quantitative Goals
   - Set management target according to prevention principle
   - Minimize waste generation, maximize reuse and recycle

4. Manage Extensive Campaign
   - Promote 3R to community at all level
   - Set campaign programme with well-defined target and method
The Policy Direction of MSW Management

**Vision**

**Establish 3R Society**

**Minimisation**
- Establish basis for environmentally waste management

**Waste Transform**
- Consider resource circulation, establish efficient recycling system

**Proper Management**
- Expand waste management infrastructure, such as technology, finance, facility, etc.

**Management Advancement**
- Advance waste management policy through information and science orientation

**Direction**

**Target**
- Prevent generation and promote reduction at the source of generation
- Promote reuse, recycling and energy recovery
- Create basis for value management for resource circulation
- Promote energy transform of waste
- Expand waste treatment and disposal facility
- Establish and advance hazardous waste management system

**Comprehensive Regulations**

**Integrated Planning & Coordination**

**Measurable Goal & Target**

**Measurable Goal & Target**
EPR : extended producer responsibility ; TC/ITF: temporary collection/intermediate transfer facility; LF: landfill; IWTF: integrated waste treatment facility; MRF: material recycling facility
# The Strategy Implementation

## Waste Minimisation

### Settlement of EPR
- Consolidation of recycling obligation ratio, development of recycling technology
- Preparing balance between manufacturers with recycling responsibility
- Establish take-back systems, deposit refund systems

### Creation of recovery system for electrical and electronic product
- Creating recovery system for manufacturers of electrical and electronic waste, local governments and retailers
- Preparing pre-recyclability assessment scheme to raise recyclability of components and materials
- Integrating and reorganizing of cost bearing scheme to prepare financial incentive

### Ensure separate collection
- Clarifying role and responsibility for separate collection and recovery assortment process in connection with EPR
- Establishment of separate collection system by EPR for hazardous waste (e.g. fluorescent lamp, battery)

### Promote eco-product and Eco-packaging
- Setting standard for reusable and recyclable material as well as recycled content
- Preparing guidelines to restrain excessive packaging, promote recycling by restricting the use of non-disposable material
The Strategy Implementation

- **Waste Resource & Energy Transform**

  - **Organic waste to resources**
    - Establishing a guideline about optimum disposal method of organic waste
    - Derivation of demand of the organic waste, promotion of the use of agricultural compost

  - **Waste to energy**
    - Increasing construction of landfill gas to resources facilities
    - Increase of efficiency and promotion of energy recovery in existing and new incineration facilities
    - Technical development for expansion of 'waste to energy'

  - **Introduction of Advance Technology**
    - Introduction of new disposal technology such as MBT (Mechanical Biological Treatment) and RDF (Refuse Derived Fuel)
    - Construction of MBT facilities and generation of electric power of RDF
The Strategy Implementation

- **Proper Waste Management**

  - **Increase of the waste disposal facility**
    - Installation of landfill and incineration facility considering the total circumstances of each district
    - Suggestion of supporting plans, for example, to give the incentive to the district where the waste disposal facility is installed

  - **Dioxin management of the incineration facility**
    - Suggestion of technical and political plans for the proper management of small and medium-sized incinerators
    - Review of regulations for the dioxin from the incineration facility and the air pollution materials
    - Reinforcement of management of the organization to measure and analyze dioxin

  - **Reinforcement of the standard for the harmfulness and management system of hazardous waste**
    - Building up the management system offering the harmfulness and management standard
    - Regulation for the use of hazardous materials in electronics and cars
    - Reinforcement of management of package for agrichemical waste, waste of medical supplies, imported and exported hazardous waste, etc
    - Plans for the prevention and treatment of the waste left alone for comfortable life environment
    - Introduction of WMS (Waste Manifest System) and RFID (Radio Frequency Identification)
# The Strategy Implementation

## Advance Management Development

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<th>Category</th>
<th>Description</th>
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| Suggestion of law regarding the waste       | • Establish implementing regulations and related guidelines  
                                           | • Support establishment of local regulations                                |
| Improvement in waste category and management| • Improvement in waste category considering source and management characteristic   |
|                                             | • Review of the waste information system using D/B and GIS regarding waste recycling |
| Operation of waste statistical research     | • Assumption of waste generation and composition through sample survey       |
|                                             | • Advanced management of waste statistics through computerization            |
| Operation of program to stop NIMBY          | • Environment education, formation of residents agreement for conversion of recognition about waste disposal facility  
                                           | • Prior consultation about establishment of waste disposal facility         |
|                                             | • Improvement in efficiency through competitive cooperation between private and public sector |
Policy and Strategy Link to SMM

**Policies**
- Vision to establish 3Rs Society
- Waste Minimisation/Reduction Implementation
- Cleaner Production Optimisation
- Green Purchasing and Green Procurement Development
- Sustainable Consumption and Production

**Strategies**
- EPR settlement (take-back system)
- Eco-product and eco-packaging development
- Labelling of product and packaging settlement
- Separate collection implementation
- Massive public campaign and education
Conclusion and Recommendation

**Conclusion**

- Real problem for Indonesia is waste management. SMM is likely a very advance issue.
- Indonesia has just started to implement a proper waste management therefore in SMM policy we are still in end of life perspective. It’s far away to implement SMM.
- Since we shifted the policy paradigm of waste management, some future policies and strategies are link to SMM.
- We believed that our policy on waste management that being developed is on the right direction to support SMM in the future.

**Recommendation**

- Indonesia needs international support to initiate SMM policy and implementation into action not an theoretical issue.
- Since Indonesia adopted 3Rs policy it need to develop clear linkage between 3Rs and SMM.
THANK YOU