

IMPLEMENTATION OF 3R IN INDONESIA

The 2nd Meeting of the 3R Regional Forum in Asia
Kuala Lumpur, 4-6 October 2010

The Background

■ General Facts

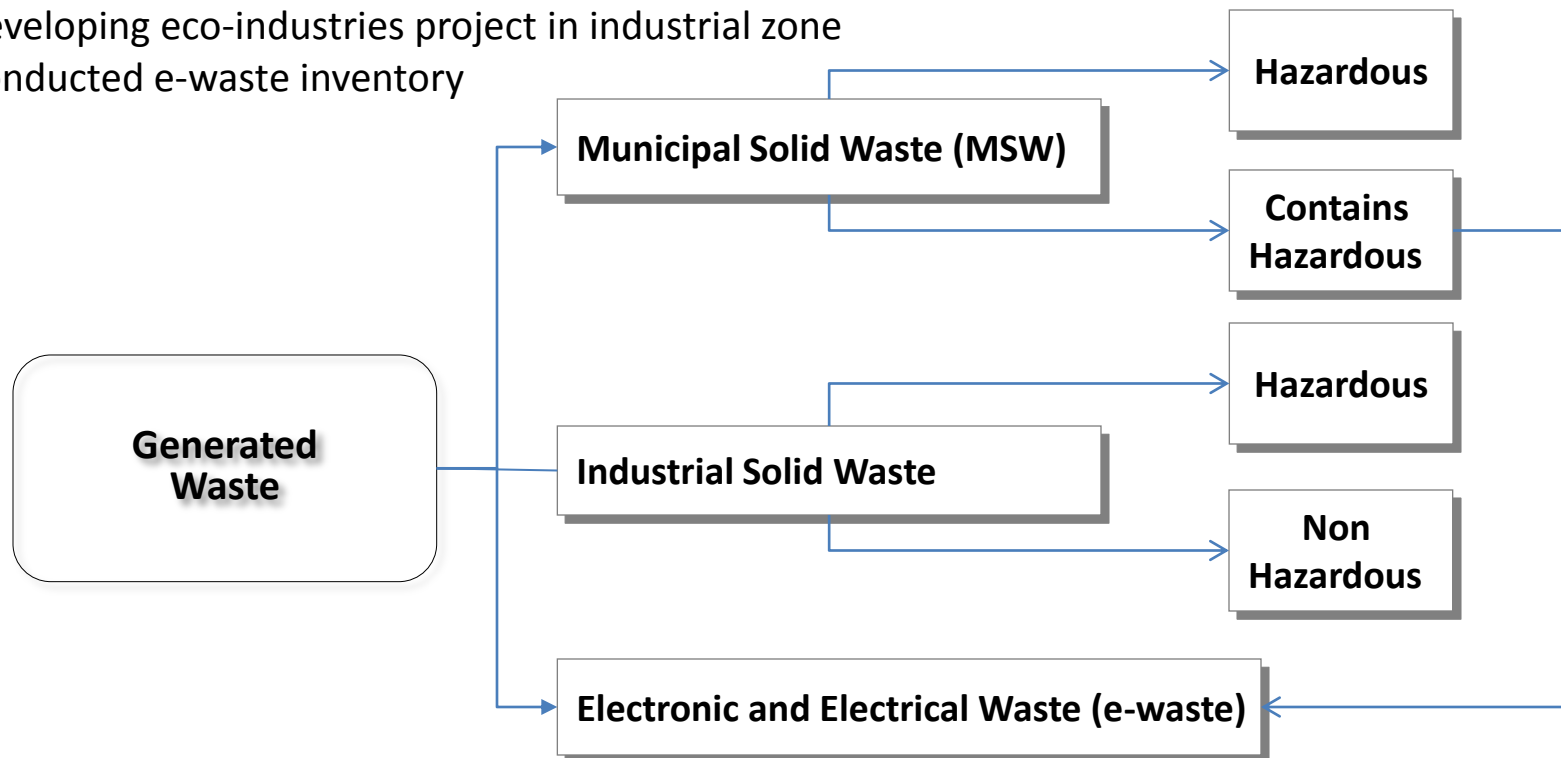
- Area: 1.9 million km² (world's 15th largest, 9 times larger than the size of Korea)
- Climate: Tropical
- Population: 230 million (4th in the world); over 300 tribes including Jawa (35%), Sundanese (13.6%), Aceh, Balinese, etc.
- Language: Bahasa Indonesia
- Industry structure: Mostly Oil and Gas, 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



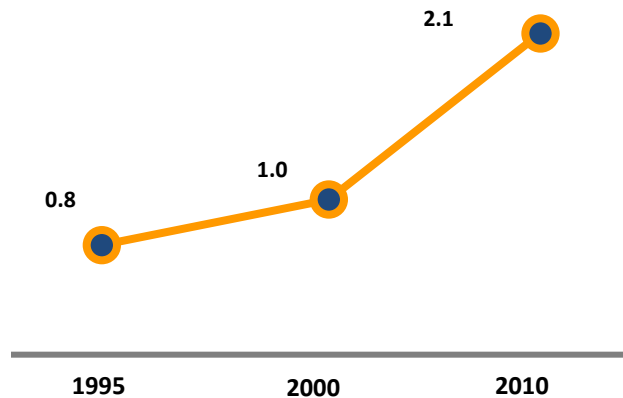
MSW Management

■ Source and Characteristic of MSW

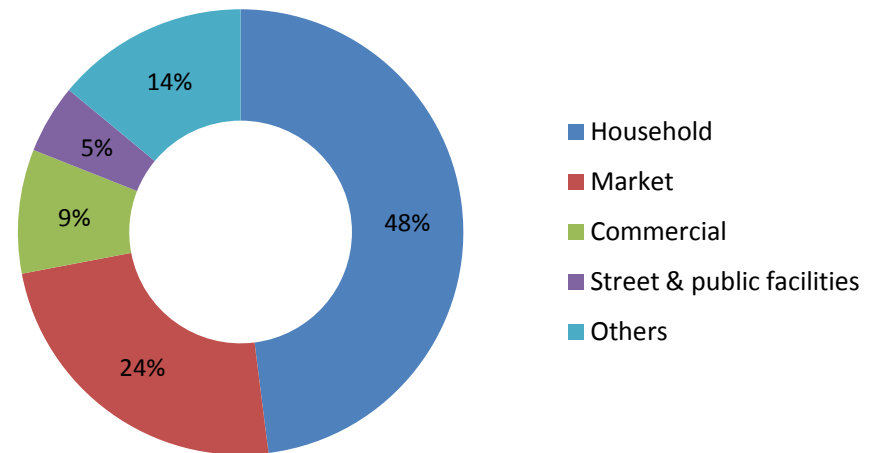
- MSW generation in nation wide is about 176,000 ton daily
- Composition by source: household waste(48%), market waste(24%), commercial waste(9%), street and public facilities waste (5%), and others (14%)
- Compostable organic waste is dominated the MSW composition in Indonesia however the number of this type of waste tends to decrease. Meanwhile plastic and paper waste increase significantly

MSW generation

(unit: kg/capita/day)

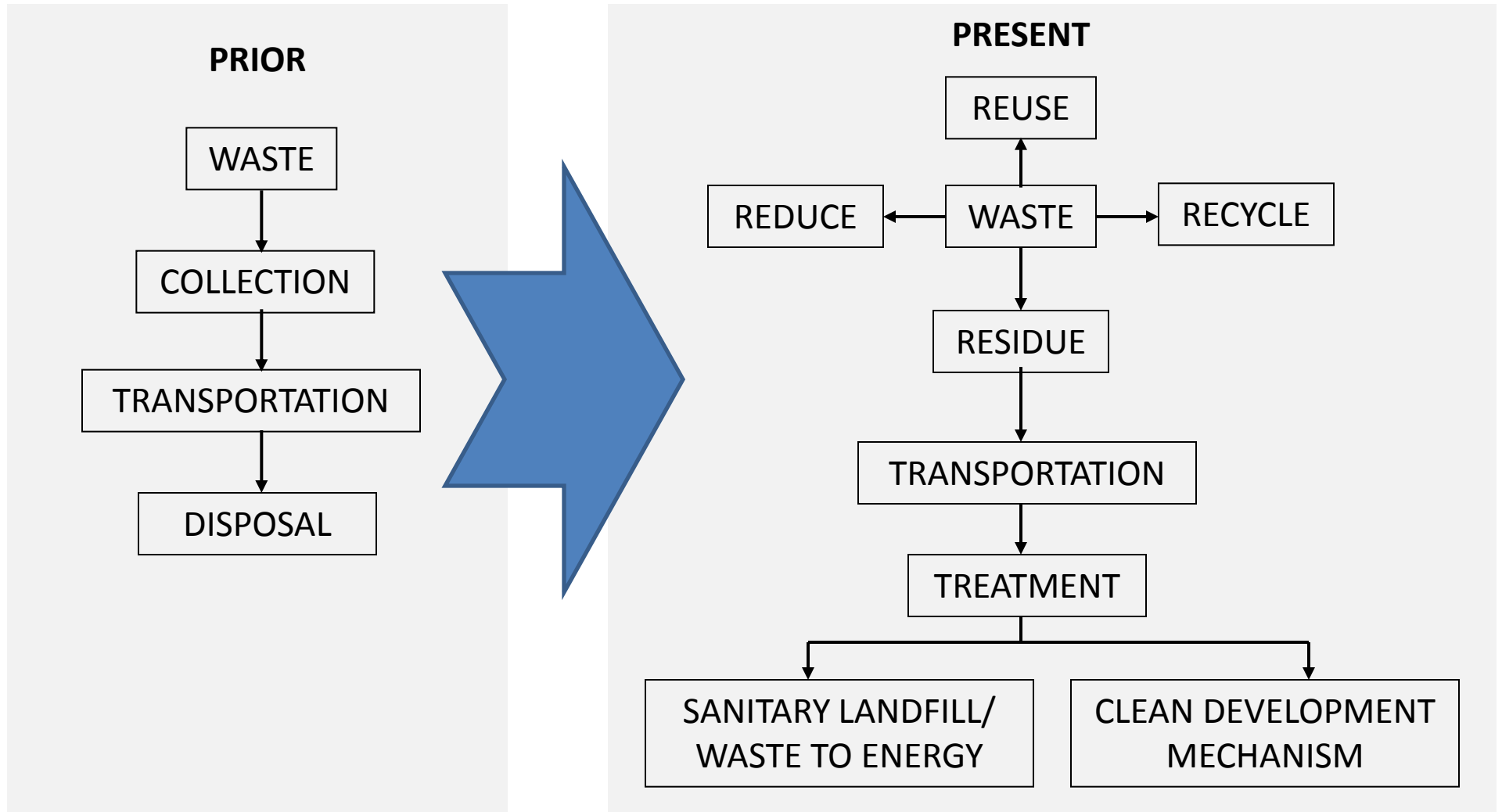


MSW Composition by Source



3R in MSW Management

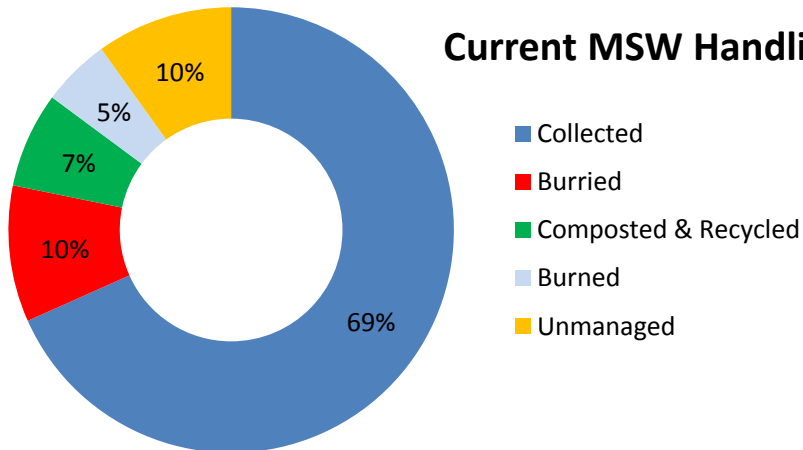
Shifted Paradigm of Solid Waste Management in Indonesia



MSW Management

■ 3R Status

- MSW handling: collected (69%), buried(10%), composted & recycled (7%), open burned (5%), unmanaged (10%)
- Coverage of MSW collecting services in nation wide is about 40-50%
- 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
- 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



Industrial Waste Management

■ Source and 3R Implementation of Industrial Waste (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)

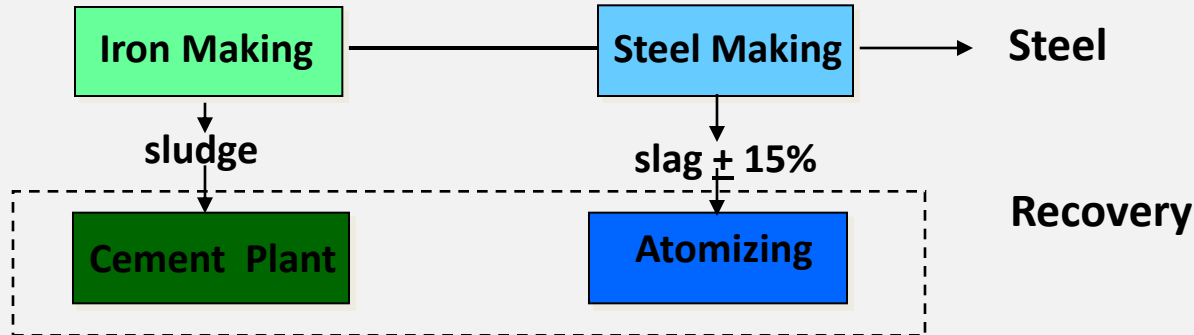
Calculated Energy coloric value – Thermal Substitution Rate with saving due to utilization of waste is about 10 %

Source: Utun Sutrisna, AMC/CMA

3R Implementation of Industrial Waste

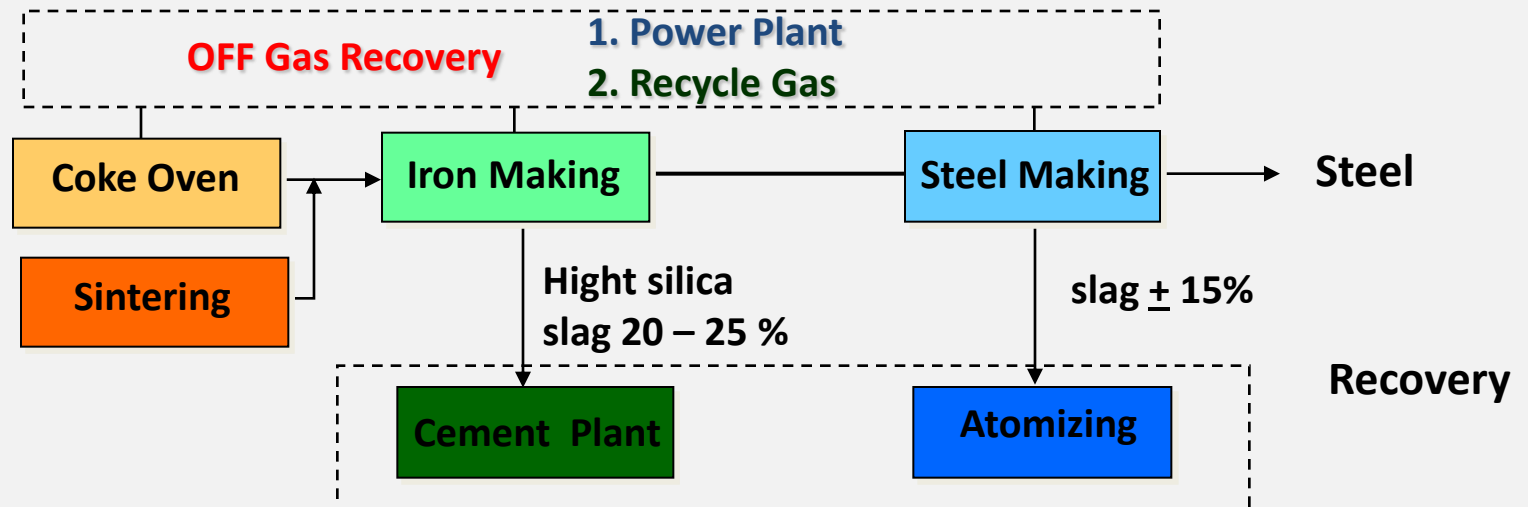
I. Existing Krakatau Steel Plant (Gas Bases)

Capacity 2 mio Ton per year



II. New Krakatau Steel Project Posco (Blast Furnace)

Capacity 3 mio Ton per year



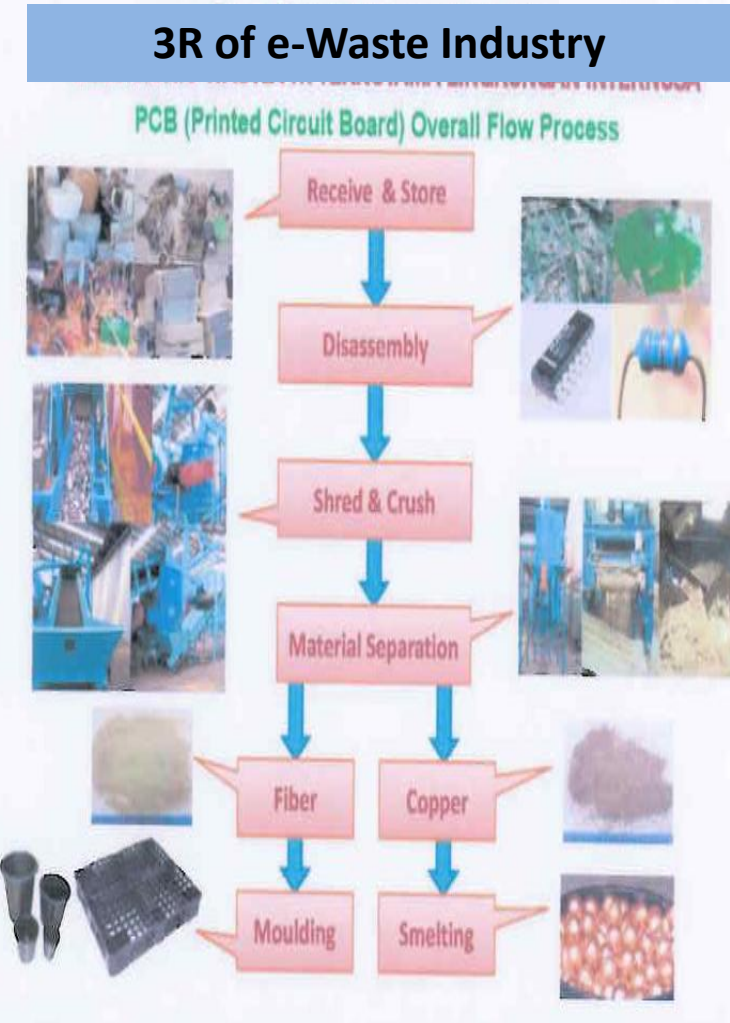
E-Waste Management

■ Source and 3R Implementation of e-Waste

- The absence of such regulation would give difficulties in collecting data on e-waste from households which considered as the largest consumers of electronic products.
- There is no obligation for producers to manage, “take back” their obsolete products indicates that there is no liable part responsible for generation of e-waste including its management.
- The Ministry of Environment has formulating regulation or policy on electronic waste treatment and disposal.
- Further study on e-waste inventory should be focused on :
 1. Data collecting from Specific Sources
 2. Data collecting from Recycle Facilities
 3. Data collecting of Post Consumer Electronic Products



3R Implementation of Industrial Waste and e-Waste



Source: PT Teknotama Lingkungan Internusa

The Current Capacity & Constraints of 3R

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 3R

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 3R

Vision

Establish 3R Society

Minimisation

Waste Transform

Proper Management

**Management
Advancement**

Direction

Establish basis for environmentally waste management

Consider resource circulation, establish efficient recycling system

Expand waste management infrastructure, such as technology, finance, facility, etc.

Advance waste management policy through information and science orientation

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

- Improve accuracy and reliability of waste-related statistical data
- Improve efficiency through public-private cooperation

Comprehensive Regulations

Integrated Planning & Coordination

Measurable Goal & Target

Measurable Goal & Target

The Plan

~2010

**Adjust role assignment
for waste management**

- Rational role assignment for economic subject
- Expansion of voluntary waste recycling system led by manufacturer
- Creation of basis for national waste statistics survey
- Technology development for accelerating waste recycling

~2015

**Establish waste management
Infrastructure and adjust system**

- Adjust waste-related legal system and improve assortment system
- Establish integrated waste management system
- Promote waste management using information system
- Start compensation and penalty system

~2020

**Genuine operation of
New waste management system**

- Establish information system
- Establish integrated waste management system
- Establish waste management governance
- Introduce new waste disposal technology
- Develop and apply waste management model meeting globalization and internationalization

Phase 1

Phase 2

Phase 3

Establish 3R Society in Waste Management

The Achievements

Law and regulations

- Established the basis law of MSW Management
- Working on draft of 2 implementing regulations i.e. waste minimisation and waste handling
- Studying on preparing the content of the 3rd implementing regulation i.e. specific waste management

Pilot Projects

- Developed several pilot projects of 3R implementation both city-scaled and community-based in some cities
- Disbursed subsidies for 3R facilities development to local governments

Capacity Development

- Established co-generation/co-processing
- Conducted seminars, workshops, and trainings
- Monitored and evaluated 3R implementation performance of local governments

Raising Awareness

- Community-based 3R and composting
- Conducted 3R campaigns both national and local level
- Published campaign medias including video, books, magazines, poster, leaflet, etc.
- Improvement in efficiency through competitive cooperation between private and public sector

Informal Sectors

- Recycling industries have been established for 20 years
- Estimated 90% of recyclables (PET, paper, metal) are recycled by informal sectors
- This sectors also recycle e-waste at small scaled activities

City-scaled Composting



Community-based 3R



Community-based 3R

Community able to turn waste into value added items, like compost and recycle product. The waste volume from household level also decrease → less waste to dumping sites



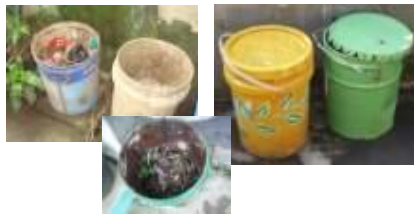
Composter Unit



Compost : green fertiliser at no cost



Biopores : for water conservation



Waste segregation



Trashion Product



Recycle Product



Independent community

Greener and Cleaner Community



Greening



Preserving traditional herbal plants

Community taking ownership



Creating leader and reviving social value

Adding Value to Packaging Waste



Government commitment to build the program further

3R Infrastructures Development

Policy, Strategy and Action Plan of SWM for short term (2010 – 2014):

- Waste reduction of 20% through 3R Implementation through 250 projects stimulant
- Increase waste collection coverage area of 60%
- Improvement of landfill sites in 210 cities
- Improvement of vehicle of 3R is about 250 units
- Emission reduction project in 240 cities (to reduce 0.0048 Gton by 2020)
- Establish CDM project in 15 cities (supported by KFW and World Bank)

PRIORITY ACTIVITIES	TARGET	INDICATOR	OUTCOME INDICATOR	TARGET					
				2010	2011	2012	2013	2014	2010-2014
Improvement of Solid Municipal Waste Infrastructures	210 cities/district	Landfill Revitalitation/ Development	Number of Inhabitants served by solid waste infrastructure	55	60	70	70	60	210
	250 units	Solid Waste Collection Facilities	Number of Inhabitants served by solid waste infrastructure	0	75	60	63	52	250
	250 locations	3R Facilities	Number of Inhabitants served by solid waste infrastructure	50	75	39	43	43	250

3R Infrastructures Development



Conclusion and Recommendation

Conclusion

- 3R has been put as mainstream policy and strategy in waste management in Indonesia
- Implementing regulations of waste management law are currently being formulating
- Most local governments are still having less concern to promote and implement 3R in waste management
- In fact, informal sector is 'the power of recycling' industry in Indonesia
- The standards, criteria, procedures, and guidelines are to be set up
- The future policy direction is being developing

Recommendation

- Indonesia needs international support from both UN Bodies and Donor Agencies
- 3R Regional Forum should transform into actions
- Public private partnership mechanism could be an option for implementing 3R especially in infrastructures and facilities development