Third Meeting of the Regional 3R Forum in Asia

“Technology Transfer for promoting the 3Rs – Adapting, implementing, and scaling up appropriate technologies”

5-7 October 2011, Singapore

Achievements since the First Regional 3R Forum/Tokyo 3R Statement – Moving towards Rio+20 and beyond

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Regional 3R Forum in Asia

Goal:
To achieve low carbon and sound material cycle societies in Asia through facilitating bilateral and multilateral cooperation for increasing resource and energy efficiency through the 3Rs, and for promoting environmentally sound management of wastes in the region; to set in motion a regional mechanism to address 3R issues, needs and priorities in Asian countries, including emerging issues of concern in waste management.

Objectives:
(a) facilitate high-level policy dialogues on 3R issues, challenges, and opportunities;
(b) facilitate improved dialogue and cooperation with international organizations and donor communities for materializing and implementation of 3R projects at local and national level identified through national 3R strategies;
(c) provide a strategic and knowledge platform for sharing experiences and disseminating among Asian countries best practices, tools, technologies, policy instruments on various aspects of the 3Rs;
(d) provide a platform to develop multilayered networks of stakeholders such as governments, academia, scientific and research community, private sector, and NGOs;
(e) generate international consensus and understanding on the beneficial aspects of the 3Rs in the context of achieving MDGs, resource and energy efficiency, resource efficient economy, and climate change mitigation; and to
(f) provide a platform for proliferation of national 3R strategies in developing countries.

• Inaugural Regional 3R Forum in Asia (Nov 2009, Tokyo) & Tokyo 3R Statement served as an input to 18th Session to CSD (CSD-18) in May’2010;
• Second Regional 3R Forum in Asia (Oct 2010, Kuala Lumpur) served as an input to 19th Session of CSD (CSD-19) in May’2011.

United Nations Centre for Regional Development
TOKYO 3R STATEMENT (2009)

• Agreed on 12 November 2009, at the Inaugural Meeting of the Regional 3R Forum in Asia, held in Tokyo.

• Endorsed and welcomed the launching of the Regional 3R Forum in Asia with an objective to provide a strategic and guiding framework for proliferation of 3Rs and for a socially sound, ecologically sustained and economically feasible alternative to help decision makers and public waste utilities/municipalities that already suffering from the burden of understaffing and budget constraints, to reconsider their overall policy towards waste management.
Achievements made since the Inaugural Meeting in Tokyo

Contribution to the global dialogue on waste management

- The Tokyo 3R Statement was officially submitted to CSD18 by Japan.
- The Chair’s Summary of the Second Meeting of the Regional 3R Forum held in October 20 officially submitted to CSD19 by Malaysia, the host government.

Global recognition of the 3Rs and the Regional 3R Forum

CSD18 noted that Regional initiatives promoting 3Rs, such as the 3R Forum in Asia, should be enhanced. This would expand the capacities of countries within a region through information and knowledge exchange to promote waste minimization, address local waste management challenges and minimize transboundary movement of waste.”

- Significance of the 3Rs is gaining recognition in other regions of the world. For example, in the CSD Intersessional Consultative Meeting on Solid waste Management in Africa, held in Rabat, Morocco in November 2011, acknowledged the 3Rs as a sound strategy and a valuable tool that should be adopted towards decoupling economic growth from excessive use of resources and minimizes generation and disposal of wastes.
Major developments in 3Rs promotion in Asia

- **Malaysia - Japan Collaboration on the 3Rs** - MHLG-Malaysia and MOE-Japan, in collaboration with IGES, working together to establish an action plan for food waste management and related pilot projects.

- **Viet Nam- Japan collaboration on the 3Rs** - After National Strategy for Integrated Sold Waste Management has been launched in 2009, Viet Nam and Japan are collaborating for implementation of some of the 3Rs plans in support of the Strategy;

- **Collaboration between Sheng Yang city (China) and Kawasaki city (Japan)** – for implementing eco-town ideas involving research institutes and industrial sector. Also, several Chinese cities and Kita-kyushu city of Japan have been collaborating in developing eco-town;

- **Asia Resource Circulation Policy Research (ARCPR)** - 7 research institutes and universities, who are the members of expert group of the forum, are conducting an international collaborative research to provide technical input to high level policy consultations. Among others, developed technical paper/policy brief on EPR implementation for e-waste.

- **3R Knowledge Hub** – hosted by AIT, supported by ADB, 3RkH aims to support and strengthen Asia-Pacific’s regional capacity in 3Rs by collecting, creating, and disseminating knowledge and technologies relevant to 3Rs, specifically in MSW, medical waste, e-waste.
Philippines

- **Energy Efficiency Forum**
  - The European Chamber of Commerce in the Philippines (ECCP) is organizing the first Philippine Energy Efficiency Forum together with the DOE in July 2010.

- **SMART Cebu Program**
  - Aims to assist SMEs in the production of eco-friendly home and lifestyle products by promoting clean production and entering the green markets in Europe and Asia to support a sustainable business development path.

- **Credit Line for Energy Efficiency and Climate Protection (CLEECP)**
  - New approaches for developing CDM projects for groups of small scale enterprises are currently being explored to better enable SMEs to access the CDM.
  - Land Bank product providing loans to private sector and entities including SMEs aimed to significantly reduce consumption of primary energy (diesel, coal, and gas) and direct GHG emissions, thereby contributing to mitigation while at the same time increasing the competitiveness of companies/SMEs through resource efficiency. Eligible projects include the replacement or retrofitting or energy efficient modernization of chillers and general energy efficient investments.
  - Project examples include the replacement and modernization of manufacturing systems powered by coal, diesel or gas.
Republic of Korea

- MOU with the Korea Vessel Recirculation Association (KVRA)
  - one of efforts for efficient collection and recycling of empty bottles
  - includes mutual agreements on the unification of a bottle size and shape.

- National Resource Recirculation Master Plan
  
  < The 1st National Resource Recirculation Master Plan(2011~2015) >

<table>
<thead>
<tr>
<th>Scope</th>
<th>Limited to MOF affairs (passive, exclusive)</th>
<th>Extended to ministries concerned (active, integrated)</th>
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<tr>
<td>Period</td>
<td>2008 ~ 2012 (5 years)</td>
<td>2011 ~ 2015 (5 years)</td>
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| Goal            | - Analysis limited to perspective of resource productivity and resource recirculation rate
                 | - Management of recycling rate by parts and items
                 | - Quantitative management (Recycling)            |
                 | - Set up the national goals on resource recirculation rate and end landfill
                 | - Management of resource recirculation indexes by parts and items
                 | - Qualitative management (Upcycling)             |
| Tasks           | - Major tasks: purchasing eco products, nurturing industry
                 | - Recycling plan by parts (EPR, packaging, specified wastes, food, etc)
                 | - Reinforcement of supporting system (R&D, statistics, survey, etc)
                 | - Converting into resource recirculation society
                 | - Actualization of value raising 4R
                 | - Establishment of integrated waste treatment infra
                 | - Higher value-added R&D and industry nurturing
                 | - Preparation of basement to estimate and fulfill the resource recirculation
                 | - Assessment of fulfillment:
                   Annual action plan, biannual execution of national resource recirculation assessment |
| Measure         | Annual action plan                          |                                                      |
Mainstreaming 3Rs at National Policy Level

• The national 3R strategy of Viet Nam became an integral part of the “National Strategy of Integrated Solid Waste Management to 2025, vision to 2050,” approved by the Prime Minister of Viet Nam via Official Decision No. 2149/QD-TTg dated 17 December 2009. Viet Nam experience was shared with the GMS countries by holding a regional workshop in July 2010.

• The national 3R strategy of Bangladesh was endorsed by the Government in November 2010, and was officially launched by the Ministry of Environment and Forests in December 2010.

• National 3R Strategy – Indonesia (2011-12)
However there are major policy gaps in most countries…

• Prevailing economic system does not provide adequate incentives for **resource conservation and efficient resource allocation**

• Prevailing production and consumption patterns are not adequately oriented towards **resource efficiency**, contributing to growing quantities of wastes that must be managed for final disposal

• As industrial economies continue to grow, the region will generate more toxic chemicals & hazardous wastes, mostly coming from industrial, agriculture, and manufacturing processes, but current waste management policies are not linked with resource conservation/ ecosystem protection

![Projected Solid Waste Generation in Asia (2000-2050)](chart.png)

*Source: ADB & IGES, 2009*
Population growth & urbanization will continue to compound the waste management issues.

- By 2050, world population is projected to reach 9.1 billion with 99 percent of global population growth is projected to occur in developing nations.
- By 2050, around 70% of the world population is projected to live in urban areas.
- Cities now account for 75% of energy consumption and 75% of carbon emissions (Clinton Foundation, 2009)
- For Asia, the urban population will grow to 2.21 billion by 2020

**Population growth projection : 1950-2050**

**Projected urbanization : 1950-2050**


New emerging waste / diversification of wastes will further compound the problem – Examples of E-waste

- Every year 20 to 50 million tonnes of e-waste are generated worldwide
- About 53 millions tons were produced worldwide in 2009 and only 13% of it was recycled
- By 2020 e-waste from old computers in South Africa and China will have jumped by 200-400% and by 500% in India from 2007 levels
- One billion PCs will be in use by the end of 2008 - two billion by 2015 with most growth in emerging Brazil, Russia, India, and China

Source: adapted from Sunil Herat (2010), Presented at the International Consultative Meeting on Expanding Waste Management Services in Developing Countries, 18-19 March 2010, Tokyo, Japan.

- Dangerous chemicals and metals, such as mercury, cadmium, lead, are included in e-wastes and may leach into the environment and local ecosystem.
Key messages and recommendations:

- A **zero waste economy**, recognizing waste as a resource and waste prevention and minimization should be considered as valuable concepts to guide action on waste;

- Waste management needs to be addressed through **integrated approaches**;

- **Reducing waste production, recycling waste and reusing materials** should form the basis for sustainable waste management, and further, implementation of extended producer responsibility (EPR) should be considered;

- Emerging new waste streams such as **electronic waste, plastics in the marine environment, oil and lubricants** require special international and national action aiming at a high rate of recovery worldwide, and these streams need to be addressed through appropriate programmes and environmentally sound technologies to promote material and energy recovery;

- There is a need to build local capacity in the developing countries to address the flow of e-wastes, in particular, the **shipment of e-waste to developing countries** as second-hand and near-end-of-life goods needs to be urgently addressed - in this regard, electronic companies take full responsibility for the safe recycling of their products.

Need to transition to more resource efficient economy

1. One-way Economy
   - a little effort is made to reduce the amount of materials consumed in production and hence the wastes are produced. Also little effort is made to reuse or recycle those wastes which mainly go for landfill.

2. More resource efficient economy
   - by reducing consumption and waste of materials, and by reusing and recycling by products. By implementing measures on both the production and consumption sides, countries may be able to reduce (per unit of product) both the quantity of the resource extraction stream and the quantity and environmental impact of the residual materials flow that ultimately reaches disposal sites.
   - nearly all outputs either become inputs to other manufacturing processes or are returned to natural systems as benign emissions rather than as pollutants, e.g., a closed-cycle processing plant takes in freshwater and does not discharge any liquid effluents. Rather, the water is constantly recycled and possibly utilized in the final product itself.

3. Closed Loop Economy
   - a closed-loop economy -> nearly all outputs either become inputs to other manufacturing processes or are returned to natural systems as benign emissions rather than as pollutants, e.g., a closed-cycle processing plant takes in freshwater and does not discharge any liquid effluents. Rather, the water is constantly recycled and possibly utilized in the final product itself.
The route to sustainable development is through minimizing net natural capital throughout the entire life cycle of the product and services. 

- Extraction of natural resources
- Processing of resources
- Design of products and selection of inputs
- Production of goods and services
- Distribution
- Consumption
- Reuse of wastes from production or consumption
- Recycling of wastes from consumption or production
- Disposal of residual wastes

Every one of these stages can create waste and pollution. Resource efficiency will aim to minimize amount of resource (materials, energy, and water) consumed in producing a unit of product or services. It involves using smaller amount of physical resources and generating less waste to produce the same product or service, and encourages patterns of consumption that use few resources through the design of products and services and their delivery to consumers (ADB, 2008)
Pursuing resource efficiency will help Asian countries -

• Tackling local environmental problems → in efficient use of resources lead to environmental burdens;

• Addressing climate change → resource efficiency is key strategy for low carbon path by reducing GHG emissions from energy generation and use, material extraction, processing, transportation, and waste disposal;

• Ensuring energy security → through energy efficiency measures, WtE;

• Preserving natural capital and avoiding resource conflicts

• Improving economic competitiveness of firms and nations → better respond to volatility of oil prices, metal prices, etc; improvement of production process brings financial benefits to the producer as well as improvement of product quality;

• Minimizing disposal costs by minimizing wastes → land fills and incinerators are very expensive methods; end-of-pipe disposal is a sunk cost with no financial return;

• Developing new business opportunities → resource recovery, recycling, WtE schemes can create green jobs; biotechnology, nanotechnology, renewable energy;

• Pursuing social benefits → environment industry as potential source of employment and long term natural asset protection; reducing environmental impacts from harmful wastes;
3Rs offer an environmentally friendly alternatives to deal with growing generation of wastes and its related impact on human health, economy and natural ecosystem and achieve resource efficiency.

First: **Reduction**
Reduce waste, by-products, etc.

Second: **Reuse**
Use items repeatedly.

Third: **Material Recycling**
Recycle items which cannot be reused as raw materials.

Fourth: **Thermal Recycling**
Recover heat from items which have no alternatives but incineration and which cannot be recycled materially.

Fifth: **Proper Disposal**
Dispose of items which cannot be used by any means.

(Source: Adapted from MoE-Japan)
3Rs and Climate mitigation potential (waste sector)

- **Restraints on waste generation (Reduce)**
  - Reduction of waste
  - Reduction of necessary production volume
  - Change to production process
  - Alternative energy
  - Reduction of waste for landfill
  - Return to the environment

- **Reuse**
  - Reduction of fuel oil used for incineration
  - Reduction of energy consumption
  - Reduction of fossil fuel consumption
  - Reduction of methane generated at landfill sites
  - Increase the amount of carbon stored in soil

- **Recycling**

Source: MOEJ, 2009
Building on the achievements, ...and focusing on the future

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Overall Theme: Technology Transfer for promoting the 3Rs – Adapting, implementing, and scaling up appropriate technologies

“Developing and transferring environmentally sound technologies, including cost effective and feasible technologies that meet the needs of the developing countries, for the waste management and the 3Rs”

- Identified as one of the key priorities in the Tokyo 3R Statement

Objectives:

• Address 3R technologies (including technologies that reduce virgin material input as well as technologies that encourage use of recycled resources);

• Address and identify policies and institutional frameworks for the promotion of the 3Rs technologies, including those that contribute to attracting investment and promoting business to business technology transfer;

• Address and identify opportunities for collaborative actions and partnerships including bilateral, multilateral and regional supporting mechanisms to promote 3R technology transfer;

• Contribute towards enhanced regional input to the Rio+20 by addressing 3Rs and resource efficiency in the context of Green Economy.
3Rs and Resource Efficiency in a Green Economy

Green Economy

Low carbon
Green economy substitutes renewable energy and low carbon technologies for fossil fuels

Resource Efficient
Green economy promotes enhanced energy efficiency, material efficiency, closed loop manufacturing and better waste management, etc.

Socially inclusive
Green economy is central to poverty alleviation and seeks to provide diverse opportunities for economic development and poverty alleviation without eroding a country’s natural assets; contribute to create green jobs to offset job losses; address health and labor standards for informal waste sector, among others.

While there is no unique, internationally agreed definition of the concept of “green economy,” some recent statements and definitions by the UN include the following: the concept of green economy focuses primarily on the intersection between environment and economy (2nd Prep Com of UNCSD/Rio+20, 2010); green economy is “an economy that not only improves human well-being and social equity but also significantly reduces environmental risks and ecological scarcities,” i.e., an economy that is “low carbon, resource efficient and socially inclusive” (UNEP 2011).
3R needs to be addressed in a broader context

- to encompass integrated approach and resource efficiency

- Green design, resource efficiency, minimizing disposal costs, new business opportunities

- Resource efficiency, use of renewables, resource recovery

- Fresh water, Urban air, etc. compounding the water quantity problem is quality

- E.g. floods induced by solid waste clogging drainage channels

- Green jobs, poverty alleviation MDGs,

- Dependence on fossil fuels is not sustainable; waste-to-energy

- E.g. Basel Convention

- Reduce GHG emissions from energy generation, related extraction, processing, transportation, and waste disposal

- E.g. composting, organic farming, chemical farming weakens soil structure and nutrient level over time

- Sustainable Agriculture

- Economic Competitiveness

- Preservation of Natural Capital & Biodiversity

- Protection of Environment & Human Health

- Addressing Climate Change

- International Obligation

- Energy Security

- Social Benefits

- Disaster Mitigation

- Sustainable Agriculture

- Economic Competitiveness

- Preservation of Natural Capital & Biodiversity

- Protection of Environment & Human Health

- Addressing Climate Change

- International Obligation

- Energy Security

- Social Benefits

- Disaster Mitigation

- 3R
The proposed “Recommendations of the Singapore 3R Forum” is...

• A comprehensive set of recommendations, covering wide range of sectors and issues relevant to the 3Rs and resource efficiency.

• It is based on the fundamental understanding that the **3Rs is not just about waste management, but is intrinsically linked with resource efficiency** in a wide range of sectors such as agriculture, industry, and energy, etc., towards transitioning to resource efficient, and ultimately **green economy**.

• Encourages Asian countries for transitioning to a resource efficient society, and also provide a meaningful basis to work towards realizing a regional agreement, possibly in the form of a Ministerial Declaration on mainstreaming 3Rs and resource efficiency.

• Aims to strengthen the **regional input to Rio+20 process**, which would address two overarching themes (1): a green economy in the context of sustainable development and poverty eradication; and (2) the institutional framework for sustainable development.

• The draft Singapore Recommendations, circulated to the countries prior to this Forum, will be discussed in detail in Plenary Session 6 (on Day 2), is expected to be annexed to the Chair’s Summary, as a **key message and input from the region towards Rio+20** from 3Rs and resource efficiency perspective.
The United Nations Conference on Sustainable Development, Rio+20, will focus on two themes:

1. Green economy in the context of sustainable development and poverty eradication; and

2. Institutional framework for sustainable development.