1st State of the 3Rs in Asia and the Pacific Report

Yasuhiko HOTTA & Chen LIU

Sustainable Consumption & Production Area

(UNCRD, IGES, IDE-JETRO, Kyoto University, Tottori University, University of Tokyo, NIES of Japan, ISPONRE of Viet Nam, The Promotion of Low Carbon City across Thai Municipalities, Chulalongkorn University, Tsinghua University, University of Philippines Los Banos, North South University, SPREP, Japan Waste Management and 3R Research Foundation, Anna University, University of Phnom Penh, CSIR Indian Institute of Petroleum, National Environment Agency of Singapore, University of Malaya (UM), Asia Institute of Technology (AIT), Institut Teknologi Bandung (ITB))
About “State of the 3Rs in Asia and the Pacific”

- Launched at the 8th Regional 3R Forum in AP in April, 2018, based on the collaboration among UNCRD, IGES, MOEj, and drafting committee members.
- Provides region-specific approach to review the status of 3R policy implementation based on the ground data.
- 11 countries (Bangladesh, Cambodia, China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, Thailand, Viet Nam) and a region (Pacific Island countries)
- 9 indicators (MSW generation, recycling rate, hazardous waste, E-waste, agricultural biomass waste, marine and coastal plastic waste, EPR, GHGs emissions, and macro-level material flows) is developed to clarify the current status and the future directions.
- This report may contribute to upgrading SWM, improving resource efficiency, promoting green and circular economy, mitigating climate change, and supporting the SDGs.
3R Forum ⇔ “State of the 3Rs in AP” Project

4th Regional 3R Forum in AP (2013; Hanoi, Viet Nam) (Hanoi 3R Goals)

5th Regional 3R Forum in AP (2014; Surabaya, Indonesia) (Nine core indicators)

6th Regional 3R Forum in AP (2015; Maldives)

7th Regional 3R Forum in AP (2016; Adelaide, Australia)

8th Regional 3R Forum in AP (April 2018; India)

Drafting Committee Meeting
1st: Jan. 2015; Cebu
2nd: Feb. 2015; Tokyo
3rd: Nov. 2015; Tokyo

Country Report (Malaysia, Viet Nam, China, Thailand, Indonesia, Japan, Singapore)
Zero Draft of Synthesis Report

4th: Mar. 2016; Hanoi

Country Report (Bangladesh, Cambodia, India, Indonesia, Philippines, Pacific Region)
First Draft of Synthesis Report

5th: Oct. 2016; Adelaide

6th: Apr. 2018; India

Launch of the “Synthesis Report”
Part 1: *Synthesis Report*

State of the 3Rs in Asia and the Pacific

- Expert’s Assessment of Progress in Hanoi 3R Goals-

Part 2: *Country Reports*

Case of progress of 3Rs in AP region

* The 1st series of the work is based on case studies from 11 countries (Bangladesh, Cambodia, China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, Thailand, Viet Nam) and a region (Pacific Island countries).

* The 1st series of publication will be provided as inputs to Regional 3R Forum in AP to be held in 2017.
State of the 3Rs in Asia and the Pacific
-Experts' Assessment of Progress in Ha Noi 3R Goals-

Prepared by:
The Drafting Committee of the State of the 3Rs in Asia and the Pacific

Co-ordinated by:
The Secretariat of the Regional 3R Forum in Asia and the Pacific,
United Nations Centre for Regional Development (UNCRD), and
Institute for Global Environmental Strategies (IGES)

Financially Supported by:
Ministry of the Environment, Government of Japan

Country Report
(11 countries+Pacific Island countries)
Contents of Country Reports

A. Waste Definition and Categorization
B. Country’s Basic Policy Direction Past and Future
C. 3R indicators based on 9 core indicators proposed at the regional 3R Forum in Surabaya
   ① Total MSW Generated and MSW Generation Per Capita
   ② Overall Recycling Rate and Target (%) and Recycling Rate of Individual Components of MSW
   ③ Amount of Hazardous Waste Generated and Disposed in Environmentally Sound Manner
   ④ Indicators based on macro-level material flows
   ⑤ Amount of agricultural biomass to be used
   ⑥ Marine & coastal plastic waste quantity
   ⑦ Amount of E-waste Generation, Disposal and Recycling. Existence of policies and guidelines for E-waste management
   ⑧ Existence of policies, guidelines, and regulations based on the principle of extended producer responsibility (EPR)
   ⑨ GHG Emission from waste sector
D. Experts Assessment on 3R Policy implementation
Contents of Synthesis Report

Executive Summary

1. Background and Scope of Work

2. Urgent Needs and Multiple Benefits of Improving 3R Approach in AP

3. Major Trends of 3R policy Implementation in AP
   3.1. Trends in 3R and Waste Management Policies and Responses
   3.2. Trends of Waste Streams of Key Concern (MSW, HW, Agricultural Biomass Use, E-waste, Marine & Coastal Plastic)

4. Experts’ Assessment of Policy Readiness for Related Ha Noi 3R Goals and Progress at Regional Level

5. Main Recommendations
Images of some data for Synthesis Report
<table>
<thead>
<tr>
<th>Country</th>
<th>Trend</th>
<th>Notes</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td><img src="image" alt="Graph" /></td>
<td>Includes all waste except industrial waste. Total population. Survey data at source. Source: MOEj statistics.</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td><img src="image" alt="Graph" /></td>
<td>Collected and transported waste by municipality. Not include recyclable waste such as paper, bottles, cans and etc. Urban population. Weighted data at waste transfer center. Source: Statistical yearbook.</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td><img src="image" alt="Graph" /></td>
<td>It includes all waste except for scheduled waste. Total population. The data is a combination of real time data collected at source and also data estimated.</td>
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</tr>
<tr>
<td>Country</td>
<td>Trend</td>
<td>Notes</td>
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<tr>
<td>Thailand</td>
<td><img src="image1.png" alt="Graph" /></td>
<td>Solid wastes. Total population. Survey data at source. Source: PCD, MoNRE; Thailand State of Pollution Report 2013.</td>
<td></td>
</tr>
<tr>
<td>Viet Nam</td>
<td><img src="image2.png" alt="Graph" /></td>
<td>Urban solid wastes. Urban population. Source: MONRE, SOE 2011.</td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td><img src="image3.png" alt="Graph" /></td>
<td>It is the wastes disposed of at disposal sites. Total population. Source: NEA website.</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>In 2007, 38.5 million tonnes/year; 0.45 kg/person/day.</td>
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</tbody>
</table>
## Current situation of recycling rates (example)

<table>
<thead>
<tr>
<th>Country</th>
<th>Recycling rate in common</th>
<th>Definition</th>
<th>Past</th>
<th>Future target for 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td>2000</td>
<td>2015</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Recycling rate</td>
<td>(MSW reuse and recycling) / (Total amount of MSW generation)</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Recycling rate</td>
<td>(MSW reuse and recycling) / (Total amount of MSW generation)</td>
<td>-</td>
<td>10%</td>
</tr>
<tr>
<td>Japan</td>
<td>Recycling rate</td>
<td>(Direct recycling amount + Recycling amount after intermediate processing + Group collection amount) / (Total amount of processing waste + Group collection amount)</td>
<td>14.3%</td>
<td>20.6% (2013)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Recycling rate</td>
<td>Collecting and separating solid waste for the purpose of producing products</td>
<td>5%</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td>Cyclical use rate</td>
<td>Amount of cyclical use (i.e. reuse and recycling) / (Amount of cyclical use + natural resources input)</td>
<td>10%</td>
<td>14-15%</td>
</tr>
<tr>
<td>Country</td>
<td>Reference of waste management in its basic environmental policy</td>
<td>Existence of waste management law</td>
<td>Existence of framework strategy and law on resource circulation and the 3Rs</td>
<td>Existence of specific law for recycling and take-back scheme for specific end of life products</td>
</tr>
<tr>
<td>-----------</td>
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<tr>
<td>Cambodia</td>
<td>Law on Environmental Protection and Natural Resources Management 1996</td>
<td>Sub-decree on SWM (1999)</td>
<td></td>
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<tr>
<td>Indonesia</td>
<td>Law no.18/2008 on MSW Management: 3R as the principle approach for waste management Law no. 32/2009 on Haz. Wastes</td>
<td></td>
<td>The GR no. 81/2012 on 3Rs and EPR</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>Basic Environmental Law and Plan</td>
<td>Waste Management and Public Cleansing Law</td>
<td>Basic act and fundamental plan for establishing sound material cycle society</td>
<td>Various recycling laws</td>
</tr>
</tbody>
</table>
Status of implementation of EPR-based legislations/policies in the selected countries in AP (example)

<table>
<thead>
<tr>
<th></th>
<th>Fully implemented</th>
<th>Postponement period before full implementation</th>
<th>Specific legislations are under preparation</th>
<th>Existence of provisions supporting EPR principle</th>
<th>Based on voluntary approach/agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
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<tr>
<td>Cambodia</td>
<td>N.A.</td>
<td>N.A.</td>
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<tr>
<td>India</td>
<td></td>
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<td>E-waste rules (IT products and home appliances, E. 2011)</td>
<td></td>
<td>voluntary take-back under Law for promotion of effective utilization of resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Battery rules (lead acid batteries, E. 2010)</td>
<td></td>
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<tr>
<td>Japan</td>
<td></td>
<td></td>
<td>N.A.</td>
<td>N.A.</td>
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<tr>
<td></td>
<td>Law for promotion of effective utilization of resources (Revised 2000, Fl. 2001)</td>
<td></td>
<td>N.A.</td>
<td>Basic Act for Establishing Sound Material Cycle Society</td>
<td>voluntary take-back under Law for promotion of effective utilization of resources</td>
</tr>
<tr>
<td></td>
<td>Container and packaging recycling act (E.1995, Fl. 2000)</td>
<td></td>
<td>N.A.</td>
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<td></td>
<td>Home appliance recycling act (E. 1998, Fl. 2001)</td>
<td></td>
<td>N.A.</td>
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<td></td>
<td>Small appliances recycling act (E. 2012, Fl. 2013)</td>
<td></td>
<td>N.A.</td>
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</tbody>
</table>
# Major Treatment Options and 3R Technologies/Practices (image not final)

Based on the current situation of national policy/strategy, please mark "x" as "Active" (BLANK means "Non-active") in the related cell. Any kind of "notes" and "comments" is welcome.

<table>
<thead>
<tr>
<th>Country</th>
<th>Collection*</th>
<th>Separation</th>
<th>Recycling</th>
<th>Intermediate Treatment Processes</th>
<th>Anaerobic Digestion (Biogas)</th>
<th>Open Burning</th>
<th>Incineration (Until pollution control system)</th>
<th>Final Treatment / Disposal Methodologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Islands</td>
<td>x x</td>
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<td>Vietnam</td>
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<td>Malaysia</td>
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<td>India</td>
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<td>Nepal</td>
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<td>Singapore</td>
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<td>Japan</td>
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</tbody>
</table>

*(BLANK means "Non-active")

(Based on the information by each countries’ experts)
DMC, Material intensity and Resource productivity

[Based on UNEP-Live]
## Current situation of progress on the related 3R goals

### Table 4-1. Progress in policy readiness for related Ha Noi 3R goals

<table>
<thead>
<tr>
<th>Ha Noi Goals</th>
<th>Bangladesh</th>
<th>Cambodia</th>
<th>China</th>
<th>India</th>
<th>Indonesia</th>
<th>Japan</th>
<th>Malaysia</th>
<th>The Philippines</th>
<th>Singapore</th>
<th>Thailand</th>
<th>Viet Nam</th>
<th>Palau</th>
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</thead>
<tbody>
<tr>
<td>Goal 1 (MSW)</td>
<td>√√√</td>
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<td>Goal 3 (RR)</td>
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<td>Goal 9 (HW)</td>
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<td>Goal 11 (Agri)</td>
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<td>Goal 12 (Marine)</td>
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<tr>
<td>Goal 13 (E-waste)</td>
<td>√√√</td>
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<tr>
<td>Goal 15 (EPR)</td>
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<td>Goal 17 (MFA)</td>
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<td>Goal 18 (GHGs)</td>
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</table>

Notes:
- √√√ National law/regulation incorporating 3R principles has been enforced;
- √√ National law/regulation has been enacted but not yet (fully) implemented;
- √ Department-level regulation and/or project-based implementation and/or informal sector activity exists/National level policy yet to be prepared;
- — Actions yet to be initiated or insufficient data and information

Source: prepared by IGES based on the data and information of Country Chapters, State of the 3Rs in Asia and the Pacific
Main Observations

- 3R policy progress varied widely among countries;
- Total direct material consumption and waste generation volumes show an increasing trend across the region;
- Recycling rates improved between the years 2000 and 2015;
- E-waste shows an increasing trend in the region, and a number of countries have started to apply EPR-based policies;
- Though being signatories of Basel Convention, actual implementation of policies on hazardous waste varies widely across countries;
- Most countries have installed laws/policies to utilize agricultural biomass as a feedstock for renewable energy;
- Marine litter and coastal plastic waste has been given increasing attention;
- Several countries are advancing GHG mitigation efforts through landfill diversion and intermediate waste treatment.
1) Role of Regional Platform is crucial to link global initiatives and local activities as well as various ongoing initiatives. But, how to make it more attractive for resource mobilization?

2) Move one step forward from just conceptual discussion, sharing of good practices, and policy dialogue. Establish practical regional policy/expert working group (formally recognized by regional processes such as ASEAN+X) for scoping issues, analyzing current status, conducting policy analysis, and forming policy guidance (with proper funding and human resources). Start from circular economy-related issues.
Challenges and Possible Future Priorities for 3R Policy Assessment at Regional Level

Chen LIU & Yasuhiko HOTTA
Sustainable Consumption & Production Area

Special session 【S3】 3R Policy Indicators and Its Future Challenges – Based on the experience of 1st State of the 3Rs in AP at 3Rincs2019. Feb. 27, 2019, Bangkok, Thailand.
Outline of Today

1. Current status the MSWM and 3Rs in Asian and the Pacific
   ① Definition of Waste & MSW
   ② Classification of Waste & MSW
   ③ Amount of MSW
   ④ Recycling rate
   ⑤ Legislative framework

2. Challenges and Possible Future Priorities
1. Current status the MSWN and 3Rs in AP

- While reviewing the member countries to assess the situation by 9 indicators, we found that the **comparability was generally poor**. The legal definition, classification, framework and data monitoring/collecting system **varies from country to country**.

- Under the paradigm shift from the conventional waste management to the **resource management**, as well as from the local waste issue to the **global waste issue**, there is an urgent need to clarify the common terminology of wastes to promote common consensus.

**Aim to** develop the common understanding and further promote 3R policies in AP, we

- put related data and information of 11 countries and 1 region **in a table** to provide an overview of the definitions and classifications of waste and MSW, as well as the national legislative waste management frameworks.
Fact findings 1-① Definition of “waste”

- **Pre-Salvage Definition (personal)**: waste is defined as any substance or object that the generator/holder discards, intends to discard, or is required to discard; e.g. China, Thailand, Philippines, Cambodia, Indonesia

- **Post-Salvage Definition (impersonal)**, waste refers to material that is discarded without being resold to other persons or companies, and it generates collection, transportation, and disposal costs. e.g. Singapore, Japan
The definition of MSW is more variable among countries, while it is conventionally understood as solid waste that is collected and disposed of by or for municipalities.

Most of countries do not use the terms MSW in their native language. Waste managed by or for municipalities is often translated as MSW regardless of the official wording in the native language.

- In Japan’s case, waste other than industrial waste is considered as MSW. However, in the case of Singapore, Bangladesh, industrial waste is considered as MSW since it is managed by municipalities.

- In the case of Japan and Singapore, the scope of MSW covers whole countries, while China, Viet Nam and others only covers urban/sub-urban area.
Fact findings 1-② Classification of “wastes” & MSW

- **Japan’s case**

  - Solid Waste
    - Wastes Management Law
      - Industrial waste (IW)
        - 20 types of waste defined in the laws and regulations
          - HW (Specially controlled IW)
        - Human waste
        - Garbage
          - HW (Specially controlled MSW)
          - Household garbage
          - Business-related garbage

- **Singapore’s case**

  - Solid Waste
    - MSW (General waste)
    - HW (Toxic industrial waste)
Fact findings 1-② Classification of “wastes” & MSW

- Viet Nam’s case
  - Solid Waste
    - Non-hazardous waste
    - Hazardous waste
    - Domestic/Household Waste (DW)
    - Industrial Waste (IW)
    - Medical Waste (MW)
    - Waste discharged from daily life of households
    - Waste discharged from production, business, and service activities
    - Waste from medical establishments

- Indonesia’s case
  - Solid Waste
    - Law 18/2008
      - MSW
    - Law 32/2009
      - Non MSW
      - Non HW
    - Law 32/2009
      - HW
Fact findings 1-② Classification of “wastes” & MSW

- Malaysia’s case & Bangladesh’s case
- China's case

Solid Waste
- Municipal waste (MSW)
- Industrial waste (IW)
- Hazardous waste (HW)
- Agricultural waste (AW)
- E-waste

Act 672

Law on Prevention of Environment Pollution Caused by Solid Waste
- Urban Waste
- Industrial Waste (IW)
- Hazardous Waste (HW)
Estimates of final waste disposal volumes reported by landfill sites.

Cambodia

MSW & MSW per capita

Collected waste at transfer center; Urban population

China

By survey data at source

India

Estimated data based on 2001, 2011 and 2015

Malaysia

All waste except for scheduled waste which collected at source.

Singapore

Total waste including industrial waste

Thailand

Scattered data from different data source

Viet Nam

All waste except for industrial waste; survey data at source

Japan

Estimated data based on 2001, 2011 and 2015
The definition of recycling rate differ quite extensively, for example based on the life cycle of materials and products,

- When emphasizing the input side: cyclical use rate \( \frac{(Idr+Imr)}{(Ix+Imr+Idr)} \)
- When emphasizing resource recovery: recovery rate \( \frac{Idr}{(Rpd+Rcd)} \)
- When emphasizing the landfill side: waste diversion rate \( \frac{(Rce+Rcd)}{(Rce+Rcd+Rc)} \)

……
Recycling Rate = Total MSW Recycled/Total MSW Generated

- Singapore: Recycling rate = (Total Waste Recycled / (Total Waste Disposed + Total Waste Recycled)
- Viet Nam: Recycling rate = (Collected recyclable waste for recycling from MSW) / (Total amount of collected MSW)
- Bangladesh, Cambodia, India, Indonesia: Recycling rate = MSW reuse and recycling) / (Total amount of MSW generation)
- Malaysia: Recycling rate = Collecting and separating solid waste for the purpose of producing products
- China: do not have published recycling rate for MSW.
- Japan: Recycling rate = (Direct recycling amount + Recycling amount after intermediate processing + Group collection amount) / (Total amount of processing waste + Group collection amount)
Also, the recycling rates differ among countries due to the policy goals that have been set.

- The Philippines: diversion rate. Based on the Ecological Solid Waste Management Act of 2000 (RA 9003), the LGU shall divert at least 25% of all solid waste from waste disposal facilities through re-use, recycling, and composting activities and other resource recovery activities.

- Japan: cyclical use rate.

  The ratio of the recycled amount to the total material input (or named as Resource Recycle Rate)
### Fact findings 1-④ Recycling rates-4

<table>
<thead>
<tr>
<th>Country</th>
<th>Recycling rate in common</th>
<th>Past</th>
<th>Future target for 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Recycling rate</td>
<td>4% (2005)</td>
<td>12%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Recycling rate</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>China</td>
<td>Industrial Solid Waste</td>
<td>45.9%</td>
<td>62.8% (2013)</td>
</tr>
<tr>
<td>India</td>
<td>MSW Recycling rate</td>
<td>12% in 2010</td>
<td>27%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Recycling rate</td>
<td>N.A.</td>
<td>10%</td>
</tr>
<tr>
<td>Japan</td>
<td>Recycling rate</td>
<td>14.3%</td>
<td>20.6% (2013)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Recycling rate</td>
<td>5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Philippines</td>
<td>Diversion rate</td>
<td>25%</td>
<td>32%</td>
</tr>
<tr>
<td>Singapore</td>
<td>Recycling rate</td>
<td>40%</td>
<td>61%</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>Recycling rate</td>
<td>N.A.</td>
<td>8–15%</td>
</tr>
<tr>
<td>Pacific Island</td>
<td>Recycling rate</td>
<td>N.A.</td>
<td>47% (2014)</td>
</tr>
<tr>
<td>Countries</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Some countries have set overly ambitious targets for recycling, a result of a lack of waste management data that is crucial for evidence-based policymaking.
Fact findings 1-5 Legislative framework - Japan’s case

Basic Environment Law
- Completely enforced in August 1994

Basic Environment Plan
- Completely amended and announced in April 2012

Basic Act for Establishing a Sound Material-Cycle Society (Basic Framework Act)
- Completely enforced in January 2001

Fundamental Plan for Establishing a SMC Society
- The fundamentals for other plans designed by the State
- Officially announced in March 2003
- Amended in March 2008

Waste Management and Public Cleansing Law
- Partially amended in May 2010
- Regulations according to characteristics of individual articles

Law for the Promotion of Effective Utilization of Resources
- Completely amended and enforced in April 2001
- (1 R) Recycling of recycled resources
- (2 R) Ingenuity and innovation to create structures and use materials to facilitate recycling
- (3 R) Labeling for sorted collection
- (4 R) Promotion of effective utilization of by-products

Regulations according to characteristics of individual articles:
- Law for the Promotion of Sorted Collection and Recycling of Containers and Packaging
- Law for the Recycling of Specified Kinds of Home Appliances
- Law for the Promotion of the Utilization of Recyclable Food Resources
- Construction Material Recycling Law
- Law for the Recycling of End-of-Life Vehicles
- Small Home Appliance Recycling Law
- Green Purchasing Law (The State takes the initiative to promote the procurement of recycled items)
Fact findings 1-⑤ Legislative framework - China’s case

Constitution

Environmental Protection Law (issued in 1989, amended in 2015)


Cleaner Production Promotion Law (issued in 2002)

Circular Economy Promotion Law (issued in 2008)

Measures on Management to Hazardous Waste Operation Permits

Regulations on Management to Medical Waste

Management Ordinance on RoHS & Regulations on Management to WEEE

Department Rules

National Technology & Economy Policy

Local Regulations

Standards & Specifications

The Regulations (Ordinances) of Urban Appearance and Environmental Sanitation Management.

National 13th Five-Year Plan
Fact findings 1-⑤ Legislative framework - Viet Nam’s case

- The National Strategy on Integrated SWM to 2025 and Vision to 2050 (QD2149/2009)
- Law on Environmental Protection (QH13/amended 2014)
- The Decree on Solid Waste Management (ND59/2007; ND-CP 2015)
- The Decision on Category of Hazardous Waste (QD23/2006)
- The Decree on Environmental Protection Charges for Solid Waste (ND174/2007)
- The Decision on Management of Medical Wastes (QD43/2007)
Japan and China have the independent basic acts on waste management as well as on the 3Rs/resource management.

Emerging economies such as Malaysia, Philippines and Viet Nam have started to develop related policies. Overall framework policies on waste management including recycling and the 3Rs exists together in their basic environmental policies.

Less developed economies have just a minor reference of 3Rs in waste management and basic environmental policy, and often does not have specific/special legislation.
“State of the 3Rs in AP” evaluated the 3R progresses at national level by 9 indicators. How to contribute this work and key indicators with international/regional/global target setting to achieve global needs? Meanwhile how to link this work with local government to innovate the conventional waste management by introducing 3R policies to achieve local needs is a big challenge for sustainable development in AP region.
Further develop the indicators to cover the entire supply chain.

Also develop the combination of 3R indicators to bridge 3Rs with other global issues such as circular economy, SDGs and so on.

Material flow assessment
2 Challenges and Possible Future Priorities -3

- There is a gap in data availability, monitoring, collection and accuracy. A guideline to standardize 3R indicators such as waste generation rate at source, waste collection rate, waste separation rate at source and so on) could be considered.

- Indicators on “reduction” and “reusability” at source are left out.

- To further improve emphasis on 3R legislative framework. Also, specific legislations with regard to food waste, e-waste, plastic waste, C&D waste need to be enhanced.

- Capacities for evidence-based policymaking and implementation plan need to be enhanced.

- Platform building among academic, policy-maker, and implementer, capacity building, financing, awareness raising, ...
Acknowledgements

We deeply appreciate the experts’ contribution of knowledge and experience to this report as well as individual Country Chapters as the fundamental pillars of State of the 3Rs in Asia and the Pacific, which is an integral component of the Regional 3R Forum in Asia and the Pacific. Furthermore, we express gratitude for the great work and professionalism of the guest editor as well as peer reviewers.

Reference

“State of the 3Rs in Asia and the Pacific - Experts’ Assessment of Progress in Ha Noi 3R Goals-”
Hanoi Declaration
3R Policy Indicators:  
Pacific Context

3RINCs Special Session
February 27, 2019

Ma. Bella Guinto
SWM Adviser, SPREP
The Pacific Region

Waste-related definitions in the Pacific context

Challenges in defining the 3R indicators

Lessons and opportunities learned in drafting the State of the 3R Report

Way forward for the 3R sector in the Pacific

Overview
MELANESIA
Volcanic, fertile, resource rich
98% of total Pacific land area
90% of the population

MICRONESIA
“Small Islands”
Over 2,000 atolls, islands & reefs
Harsh climates

POLYNESIA
“Many islands”
Array of islands

21 Island nations
Over 10 million people
Over 7,500 islands
EEZ of 30 million km²
2% land area
Waste-related Definitions in the Pacific Context

• No generic consistent definition of wastes in most Pacific Island regulations, policies and strategy documents
• Formal waste management only started 20 years ago
• Waste audits conducted a few years later

• Solid waste as any solid or semi-solid garbage, refuse or rubbish, sludge and other discarded material including any contained liquid or gaseous material remaining from industrial, commercial, institutional activities and residential or community activities (SPREP, 2005)
• Hazardous waste is a waste with properties that make it dangerous, or capable of having a harmful effect on human health and the environment …require special measures in handling and disposal … and are generally not suitable for direct disposal in a landfill (SPREP, 2005)
Definition and context of Waste and Pollution on Sustainable Development

- **Waste** is a product of many human activities and has risen with increasing **populations** with the demand for more products.

- Waste therefore needs to be managed responsibly.

- The concept of sustainable development promotes waste minimisation and supports the use of **renewable** material and **recycling** where possible.

- The use of waste in general and the handling of hazardous waste has been regulated through MEAs.
Challenges in Defining the 3R Indicators in the Pacific Context

- **MSW Generation Per Capita**
  - Most of the data not comparable across PICTs (various years and different methodologies).
  - Most households feed food wastes to pigs (are these considered generated wastes?)
  - Discrepancy of generated wastes from audit to actual discharged wastes at collection points

- **Total MSW Generated and Disposed**
  - Disposal facilities are not equipped with weighbridges or capacity to record incoming wastes
  - Collection coverage is not significant in some areas
  - A lot of informal collection service
Challenges in Defining the 3R Indicators in the Pacific Context

- Recycling Rate and Target
  - Measurement is not aligned with global context
  - No country reports on recycling rate except those implementing CDL systems

- Recycling Rate of Individual Components
  - Nil recycling in some countries (no domestic and limited export market) – economy of scale
  - Recycling undertaken by private companies (no records)
  - No stockpile inventory
  - Outdated data and does not reflect current trends in recycling in the region.
Challenges in Defining the 3R Indicators in the Pacific Context

- **Amount of Hazardous Wastes Generated and Disposed (Asbestos and Healthcare wastes)**
  - Baseline survey available through the EU-funded PacWaste Project
  - No data available yet on disposal (project on-going)

- **Macro-level material flows**
  - Communities have unique issues to confront when managing wastes at different levels of the stream – economic volatility and geographical isolation
  - Not all countries are monitoring material flows except those with CDL systems such as Palau
Challenges in Defining the 3R Indicators in the Pacific Context

- **Amount of Agricultural Biomass**
  - No active involvement of the Agriculture sector in waste management in most countries
  - No measurement of agricultural biomass undertaken
  - Composting programmes mostly involve yard wastes

- **Marine and coastal plastic waste quantity**
  - Most countries do not have adequate pollution prevention and response plans
  - Extent of the marine litter problem has not been comprehensively documented (suggests that marine litter is not appropriately managed in most PICs)
  - Very little research on land- and sea-based sources of pollution
Challenges in Defining the 3R Indicators in the Pacific Context

- Amount of E-waste Generation, Disposal and Recycling & Existence of policies and guidelines for E-waste management

- Precise scale of the E-waste problem in PICTs is difficult to quantify due primarily to the limited availability of importation, recycling, and disposal data in individual PICTs.

- E-waste management has not been fully explored in the PICTs although a detailed country assessment has been undertaken.
Challenges in Defining the 3R Indicators in the Pacific Context

- Existence of policies, guidelines, and regulations based on the principle of extended producer responsibility (EPR)
  - Volatility of the economies of Pacific Island countries limit opportunities to produce own goods – no producers, mostly importers
  - PICs have not adopted any specific policy on EPR yet, let alone a regional guidance to support the PICs on making informed decisions in this respect.
  - Only New Caledonia is implementing EPR for hazardous wastes; Samoa has a small-scale EPR system on beer and soda bottles
Challenges in Defining the 3R Indicators in the Pacific Context

- GHG emissions from the waste sector
  - Linkage between climate change and waste is very weak.
  - Very limited regional programmes which can investigate resilience to climate change and disasters through proper disaster waste management or assessment of emissions resulting from waste services such as collection, transport and disposal.
  - No measurement and tracking of greenhouse gas (GHG) emission from the waste sector in the Pacific
Lessons and Opportunities Learned in Drafting the Pacific Country Report

- Difficulty in consolidating the country data into a regional context – insufficient data, inconsistent methodology: A regional waste monitoring system is currently being developed.

- Coverage of the Pacific Region is very big – 21 PICTs: To consider sub-regional coverage (Melanesia, Polynesia, Micronesia)

- Uniqueness of the conditions in the Pacific in terms of economic volatility, geographical isolation, land ownership tenure: Sustainable financing mechanisms are promoted in a number of PICs, where possible; Most PICs have updated integrated national waste and pollution strategies which considers prevention, recovery, management of residual wastes and improved monitoring of receiving environment.
Lessons and Opportunities Learned in Drafting the Pacific Country Report

- Limited capacity of PICs to manage wastes: **SPREP continues to invite donor investments for the waste and pollution sector such as the EU EDF11, AFD, UN Environment GEF, collaboration with JICA J-PRISM and universities such as University of New Castle, Griffith University, USP for more academic researches and capacity building on wastes, among others.**

- Very limited business opportunities in the 3R sector: **National recycling associations are being created to open up more markets with the view of establishing Regional Recycling Network; Technical Working Groups established under the Clean Pacific Roundtable; Moana Taka Partnership with SWIRE Company to enable non-commercial recyclables to move out of the islands, PRIF feasibility study to determine regional recycling hubs, etc.**
Way Forward

Regional and National Waste Monitoring System

- Data collection
- Dissemination (Country Waste Profile)
- Data template (annual submission)
- Data processing
- Data storage
Way Forward

1. Identify indicators
   - Link to national, regional and global priorities

2. Assign monitoring responsibilities
   - Institutional arrangements

3. Determine current baseline
   - 2015 values referenced (properly)

4. Establish targets
   - Based on goals (national, CP2025 and SDGs)

5. Collect indicator data
   - Consistent method across all countries

6. Assess progress
   - Compare to other sources?
   - Meeting goals?

7. Report progress
   - Clean Pacific Roundtable
   - Waste Profiles
State of the 3Rs Report and Its Future Challenges – State of the 3Rs in Asia and the Pacific

Recapping 1\textsuperscript{st} Round and Priorities for 2\textsuperscript{nd} Round

Prof. Agamuthu Pariatamby
BACKGROUND

• Proposal from Ministry of the Environment of Japan to launch the project to develop a synthesis and status report of 3R implementation in Asia and the Pacific with data and its periodical publications.

• Since the launch of the 3R Initiative in 2004, a lot of experience and information was shared among countries.

• Regional 3R Forum in Asia and the Pacific started to accumulate lots of information through the form of background papers and country reports.
Achievements

International collaboration focusing on

1. establishment of a national focal point to strengthen the institutional setup and improve coordination on data collection and 3R indicator development in each country

2. development of model cases illustrating how target-setting and following-up of indicators can provide an improved informational basis for policy design and evaluation, and

3. Training and capacity development in forming collaborations between policy makers, academia and research institutes to develop methodology and guidelines.
WAY FORWARD

• Phase 2 should consider:
  o Integrating experience into practice
  o Enhanced training in 3R
  o Incorporate Circular Economy / Zero waste into 3R Concept
  o Broaden the scope of the Country Chapter
  o Reaffirm the 3R indicators and application
  o Consider a review of the whole project for improvement.
State of the 3Rs in Asia and the Pacific
Special Session 3: 3R Policy Indicator and Its Future

Recapping 1\textsuperscript{st} Round and Priorities for 2\textsuperscript{nd} Round – Novelty of 3R Status Report and Way Forward

Prof. Shinichi Sakai
Novelty of 3R Status Report

• To set waste management as an important social basic infrastructure as well as to focus on material cycles and resource productivity

• To write 3R Status Report based on Regional 3R Forum in Asia and the Pacific and each country report

• There are many issues for waste management and 3R developments. This 3R Status Report specifies target items for PDCA cycle
  • Development of 3R policies
  • Agricultural biomass
  • E-Waste
  • Marin plastic waste
  • Importance of GHG Mitigation
# Feature Comparison of 3R Status Report and Global Waste Management Outlook (GWMO)

<table>
<thead>
<tr>
<th></th>
<th><strong>3R Status Report</strong></th>
<th><strong>Global Waste Management Outlook (GWMO)</strong></th>
</tr>
</thead>
</table>
| **Background and status of target items** | Indicators for 3R and waste management efficiency  
Resource efficiency  
Waste management system  
Basic information reported from each country  | Waste generation quantity and quality  
Reality of waste management  
Status of resource recovery  
Secondary resource industry  |
| **Difference in Approaches** | Asia & Pacific Basis  
3R Forum & Country Report  | Global Approach by UN & ISWA  
Expert Outlook & Peer Reviews  |
| **Key points for countermeasures** | 3R Measures & Waste Management  
Resource Efficient Management  
Priority setting for measures  | Waste management as priority policy issue  
Governance  
Finance  |
WAY FORWARD (2)

• Follow-up of 1\textsuperscript{st} Status Report
  • Specific Emerging Flow First
  • Follow-up on the status of the countries engaged in the 1\textsuperscript{st} report and increase in the membership countries

• Approaches for Emerging Waste Flows
  • Micro-Plastics
  • Food Loss
  • Construction and Demolition Materials
  • GHG Mitigation by Material Cycles

• Policy Developments cooperated with Scientific Communities
  • Use of platform for policy discussion: Round table for decision-makers and experts
  • Use of academic journals for information dissemination to the world
    • Waste Management & Research (WM&R)
    • Journal of Material Cycles & Waste Management (JMCWM)