Developing State of the 3Rs in Asia and the Pacific Report

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About “State of the 3Rs in Asia and the Pacific”

- The overall **objective** is to provide knowledge base to assist the member countries of the Regional 3R Forum in AP at **for improved decision making towards effective implementation of 3R** and **environmentally sound waste management** at local/national level.
- Provide technical inputs to policy consultation at the forum (both processes are complementary)
- **A collaborative initiative** among member countries, 3R forum secretariat and experts
- It also aims to contribute to **Sustainable Development Goals (SDGs) process** by providing progress of 3R policy indicators in the region.

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)

Progress reporting

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

Progress reporting

Publication
(Country Report & Synthesis Report)

8th Regional 3R Forum in AP
(December 2017; India)

Drafting Committee Meeting

1th : 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 : ?

Final Draft of Synthesis Report

Structure of "State of the 3Rs in Asia and the Pacific"

Part 1: *Synthesis Report*

State of the 3Rs in Asia and the Pacific

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

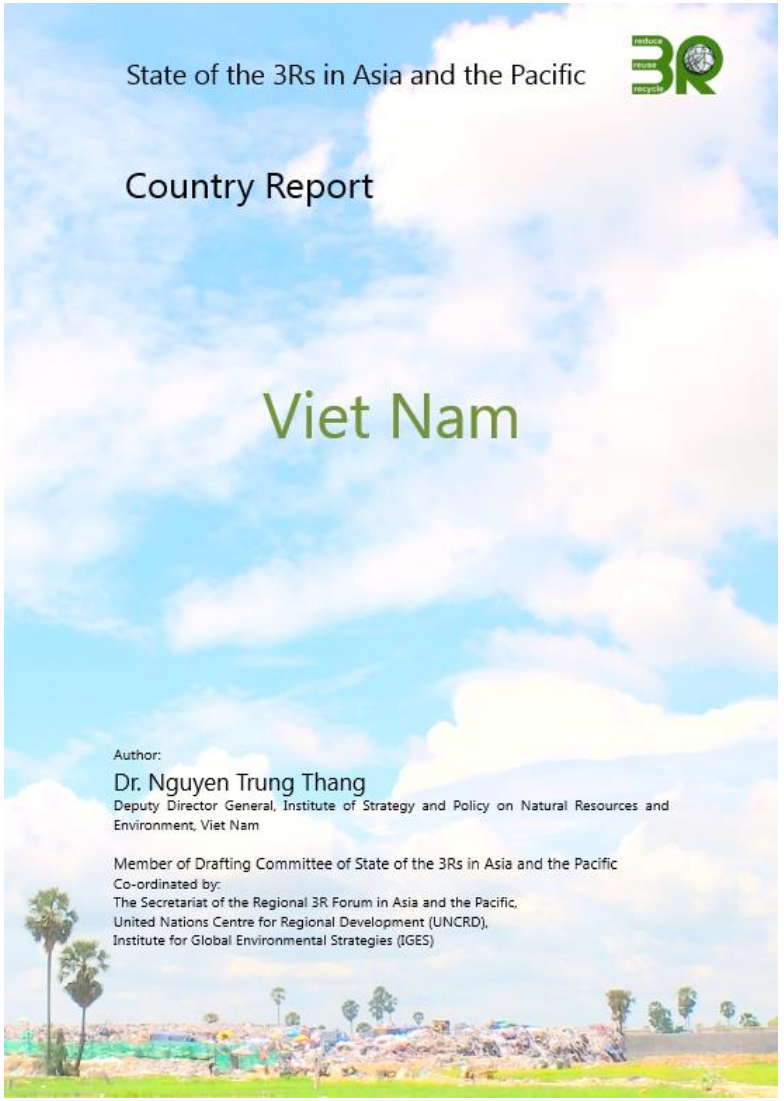
Part 2: *Country Reports*

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.

Current Status & Follow-up of *Country Reports*

- Country Report of Japan, Malaysia, Thailand, China, Viet Nam, Indonesia has been prepared.



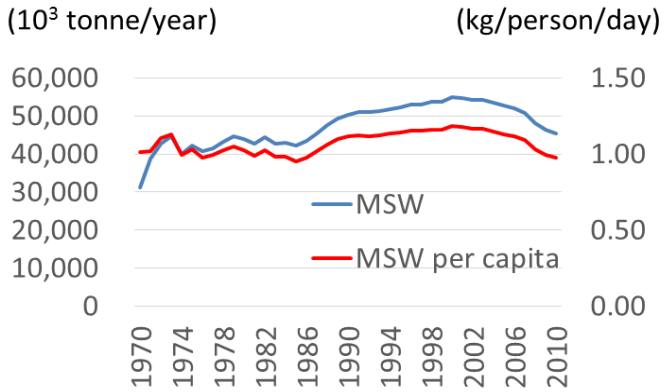
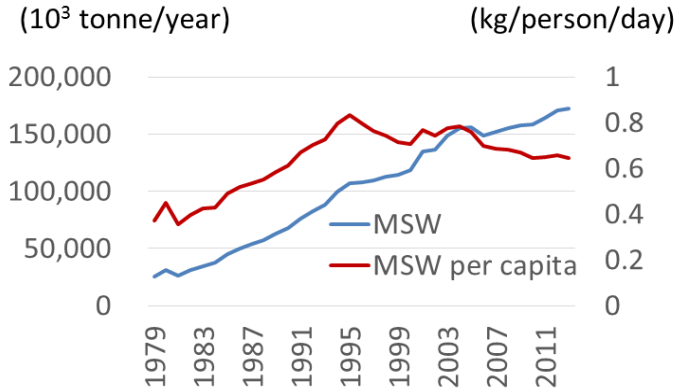
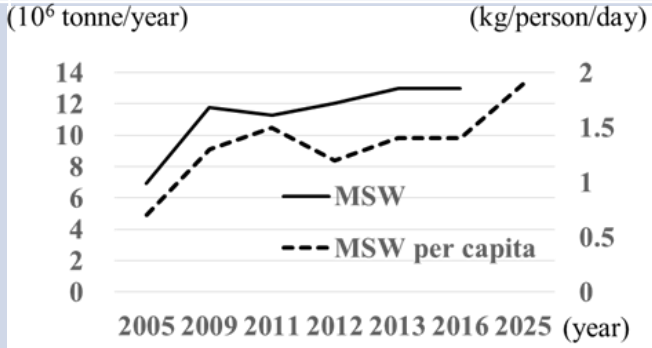
Contents of Country Reports

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

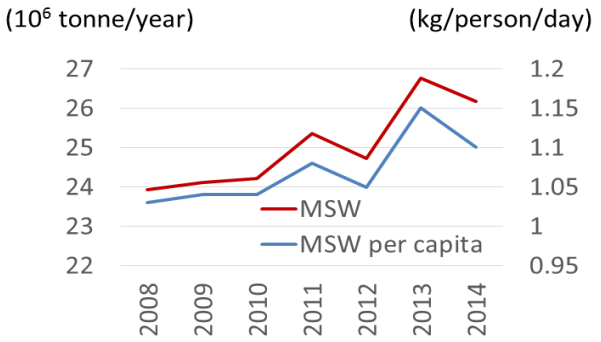
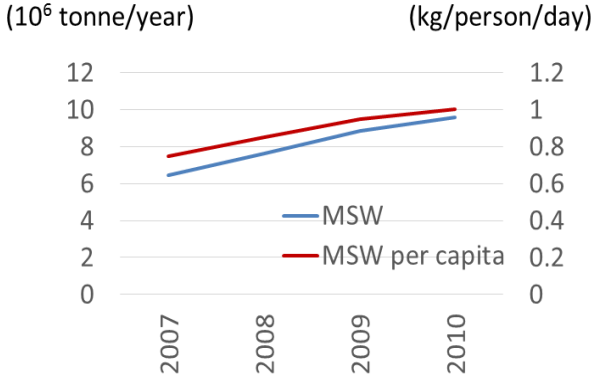
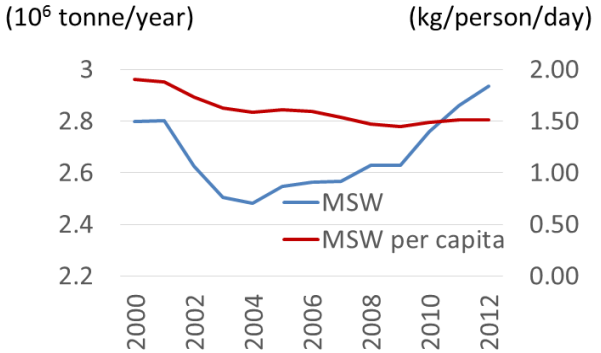
Contents of Synthesis Report (tentative)

Images of some data for Synthesis Report

MSW Generation & MSW Generation per capita - 1

Country	Trend	Notes
Japan		Includes all waste except industrial waste. Total population. Survey data at source. Source: MOEj statistics.
China		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.
Malaysia		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.

MSW Generation & MSW Generation per capita - 2

Country	Trend	Notes
Thailand		Solid wastes. Total population. Survey data at source. Source: PCD, MoNRE; Thailand State of Pollution Report 2013.
Viet Nam		Urban solid wastes. Urban population. Source: MONRE, SOE 2011.
Singapore		It is the wastes disposed of at disposal sites. Total population. Source: NEA website.
Indonesia	In 2007, 38.5 million tonnes/year; 0.45 kg/person/day.	

Current situation of recycling rates (example)

Country	Recycling rate in common	Definition	Past		Future target for 2020
			2000	2015	
Cambodia	Recycling rate	(MSW reuse and recycling) / (Total amount of MSW generation)	10% (estimated)	15% (estimated)	60 %
Indonesia	Recycling rate	(MSW reuse and recycling) / (Total amount of MSW generation)	-	10% (estimated)	22%
Japan	Recycling rate	(Direct recycling amount + Recycling amount after intermediate processing + Group collection amount) / (Total amount of processing waste + Group collection amount)	14.3%	20.6% (2013)	27%
	Cyclical use rate	Amount of cyclical use (i.e. reuse and recycling) / (Amount of cyclical use + natural resources input)	10%	14-15%	17%
Malaysia	Recycling rate	Collecting and separating solid waste for the purpose of producing products	5%	12.5%	22%

Waste management and 3R-related policies/strategies in AP (example)

	Reference of waste management in its basic environmental policy	Existence of waste management law	Existence of framework strategy and law on resource circulation and the 3Rs	Existence of specific law for recycling and take-back scheme for specific end of life products
Cambodia	Law on Environmental Protection and Natural Resources Management 1996	Sub-decree on SWM (1999)		
Indonesia	Law no.18/2008 on MSW Management: 3R as the principle approach for waste management Law no, 32/2009 on Haz. Wastes		The GR no. 81/2012 on 3Rs and EPR	
Japan	Basic Environmental Law and Plan	Waste Management and Public Cleansing Law	Basic act and fundamental plan for establishing sound material cycle society	Various recycling laws

Status of implementation of EPR-based legislations/ policies in the selected countries in AP (example)

	Fully implemented	Postponement period before full implementation	Specific legislations are under preparation	Existence of provisions supporting EPR principle	Based on voluntary approach/ agreement
Bangladesh	N.A.	N.A.	N.A.	N.A.	N.A.
Cambodia	N.A.		N.A.	N.A.	N.A.
India	E-waste rules (IT products and home appliances, E. 2011) Battery rules (lead acid batteries, E. 2010)	N.A.	N.A.	N.A.	N.A.
Japan	Law for promotion of effective utilization of resources (Revised 2000, FI. 2001) Container and packaging recycling act (E.1995. FI. 2000) Home appliance recycling act (E. 1998, FI. 2001) End of life vehicles recycling act (E. 2000, FI. 2005) Small appliances recycling act (E. 2012, FI. 2013)	N.A.	N.A.	Basic Act for Establishing Sound Material Cycle Society	voluntary take-back under Law for promotion of effective utilization of resources

Major Treatment Options and 3R Technologies/Practices (image not final)

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

	Separation at source	Collection*				Intermediate Treatment Processes											Final Treatment / Disposal Methodologies					
						Separation	Recycling				Biological Treatment			Incineration				Landfill					
			Regular Truck	Compactor Truck	Waste Banks	Mechanical Sorting (MBT/MRF)		Informal Recycling** (paper, metal, bottles, glasses and etc.)	RDF	Gasification		Composting	Anaerobic Digestion (bio-gas)	Open Burning	Small Scale Incineration (without pollusion controle syst.)	Incineration (with pollusion controle syst.)	WtE (thermal energy recovery)		Open Dumping	Controlled Dumping	Sanitary /Engineered Landfill	Landfill Gas Recovery	Landfill Mining (LFMR)
Pacific Islands			X	X			X (mainly return)	X	X	X		X	X	X		X			X	X	X		
							Not very extensive	Public redemption in Palau and Samoa	Paper briquettes in RMI	Plastic to oil in Palau		Pilot scale	Pilot scale (Tuvalu and Samoa)	In some schools - paper		Healthcare wastes only					Fukuoka method		
Cambodia	X		X	X			X	X			X	X	X	X	X				X		X		
		Only in major cities	Widely accepted	Only in capital and tourist cities				39.7 t/day = 4.3% (G) private recyclers and NGOs							6 units for IW 3,525 t/year (5 units WtE in garment industry)				72 units		1 unit (Phnom Penh)		
Bangladesh		X	X				X	X			X	X	X	X	X				X				
		55%(G)						15%(G) Dakha City															
Philippines	X		X	X			X	X		X	X	X		X			X	X	X	X	X		
		Collection by IWS			Few	Few			Few				Few				Few	9794 (Ildefonso, 2016)	341 (Ildefonso, 2016)	215 (Ildefonso, 2016)	114 (Ildefonso, 2016)	Few	
Vietnam						X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	
						Normally part of composting plants		8-15% (c)				28 /41 units Operational Not prevalent	500,000 units mostly household scale units in rural area			44 units plus 25 units in intermediate treatment centres		458 units 76-82% (c)	337 units 50%of landfilled waste		121 /458 units		
Malaysia			X		X		X	X	X		X	X			X	X		X			X		
					1 unit		green chemical, bio-polymers, bio-composites	15%≦x (G)	1 unit (integrated power plant)			1.0% (G)				5 units		93.5% (G) 165 /296 units (operational/total)			8 /165 units		
Indonesia	X		X	X	X	X	X	X			X	X	X	X	X				X	X	X	6 units	
						200 MRF in 150 cities manual sorting				for agricultural waste only		7.19% (C)		4.79% (C)	6.59 (C)			71.85% (C)					
Thailand	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	
						3 units			Experimental	Experimental			Experimental 1 unit		8 units	2 units	1 unit			367 units	73 units	1 unit	
India						X		X	X	X	X	X	X		X				X		X	X	X
						1 unit																	
China	X		X	X		X	X	X			X	X	X		X	X	X		X	X	X	X	X
	Pilot city		Rural area	Urban area		Pilot city						2% (C)				16%(c) incl. all types of incinerators		83%(C) incl. all types of landfill	Rural area	Small-city		Mega-city	Pilot
Singapore				X			X				X		X				X	X			X		
							60% (C)										38%(C) MSW, agricultural bio-mass	2% (C)					
Japan	X			X			X		X	X		X	X		X	X	X				X	X	
															915 units 79%(G)		306 units						

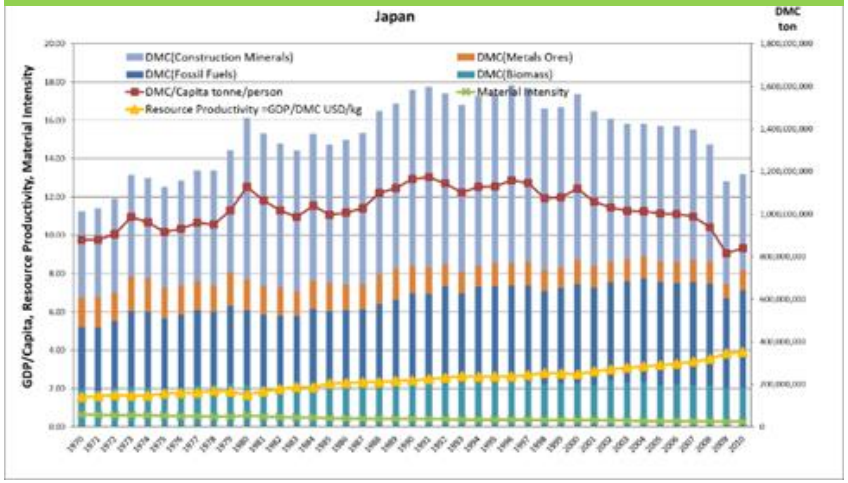
(G) = of generated ; (C) = of collected IW = industrial waste

* Collection service provided under municipal responsibility. ** Includes range of market-based processes from collection to processing/treatment by informal sector

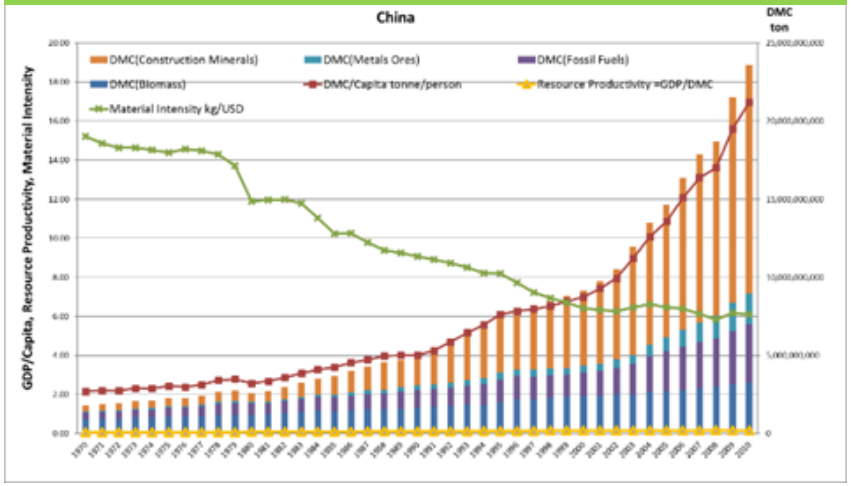
(Based on the information by each countries' experts)

DMC, Material intensity and Resource productivity

Japan



China



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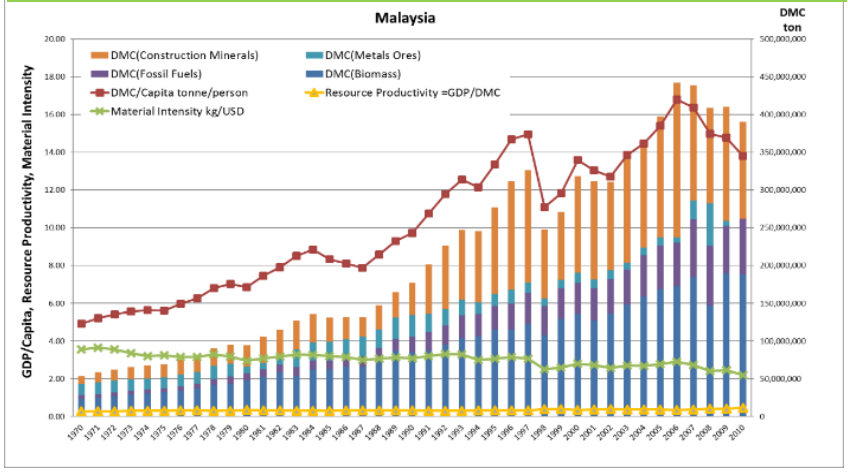
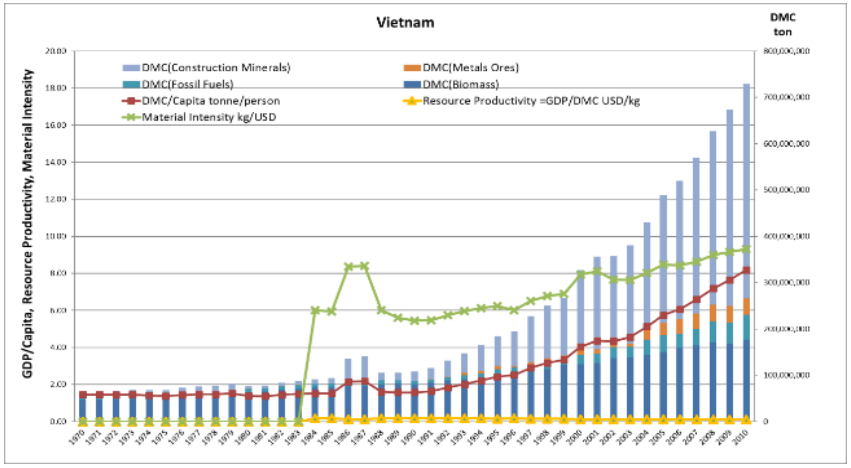


Viet Nam



(Based on UNEP-Live)

Current situation of progress on the related 3R goals (image not final)

Hanoi Goals	Assessment (◎ achieve progress; ○ started to implement; △ the regulation has been issued but not yet implemented; ― No data/information						
	Viet Nam	Indonesia	Thailand	Philippines	Pacific region	Cambodia	Bangladesh
Goal 1: MSW	―	○	○	―	○	○	△
Goal 3: Recycling rate	◎	―	○	○	―	―	―
Goal 9: HW	○	○	―	○	○	○	○
Goal 17: Resource efficiency	―	―	○	△	○	―	―
Goal 11: Agricultural biomass	◎	◎	○	―	○	○	―
Goal 12: Marine waste	―	―	○	―	○	―	―
Goal 13: E-waste	―	―	○	―	○	○	△
Goal 15: EPR	△	△	△	―	○	―	△
Goal 18: Climate Change	○	―	○	―	○	―	○

(Based on the information by each countries' experts)

Recommendation/Conclusion (Draft)

(1) Regional 3R Forum helped to mainstream 3R policy in the member countries.

(2) The Sign of improvement in resource productivity and waste reduction

(3) Importance of ‘reduce’ strategy among the 3Rs

(4) Gap between institutions and investment needs and opportunities (limited strategies and initiatives on new business model on circular economy, sharing economy, long-term realization of 3Rs as a part of SDGs)

Recommendation/Conclusion (Draft)

(5) Need to emphasize stakeholder engagement and consensus-building-based policy making

(6) Special attention is necessary to specific challenges (logistics, available facilities etc.) faced by small island countries and remote rural areas in the region

(7) The 3Rs as a part of global sustainability agenda back to back with low carbon strategies and resource efficiency

(8) Regional 3R Forum in Asia and the Pacific should take a lead in global policy debate on resource efficiency, circular economy, waste management and the 3Rs.

Expected Outputs

- **Synthesis report** on current status of 3R policy implementation in the region;
- **Regular update of data** regarding selected 3R policy indicators;
- **Establishment of a knowledge platform** on progress of 3R policy implementation at local and national level;
- **Assist to establish thematic expert working groups** on various common themes on 3R policy in the region, which aims to develop common understanding/guideline/policy discussion papers to facilitate multi-stakeholders dialogues;
- **Science-based advice to Regional 3R Forum in AP** on existing and future challenges.

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