



**“The Second State of 3Rs in Asia and the Pacific – Advancing Circular Economy in Asia and the Pacific Towards Achieving the Sustainable Development Goals (SDGs)”
(PRE-FINAL Draft Report)**



UNCRD

Coordinated by

The Secretariat of the Regional 3R and Circular Economy Forum in Asia and the Pacific,

Presented by

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環境省

Ministry of the Environment

Supported by

Office for Promotion of Sound Material-Cycle Society, Environmental Regeneration and Material Cycles

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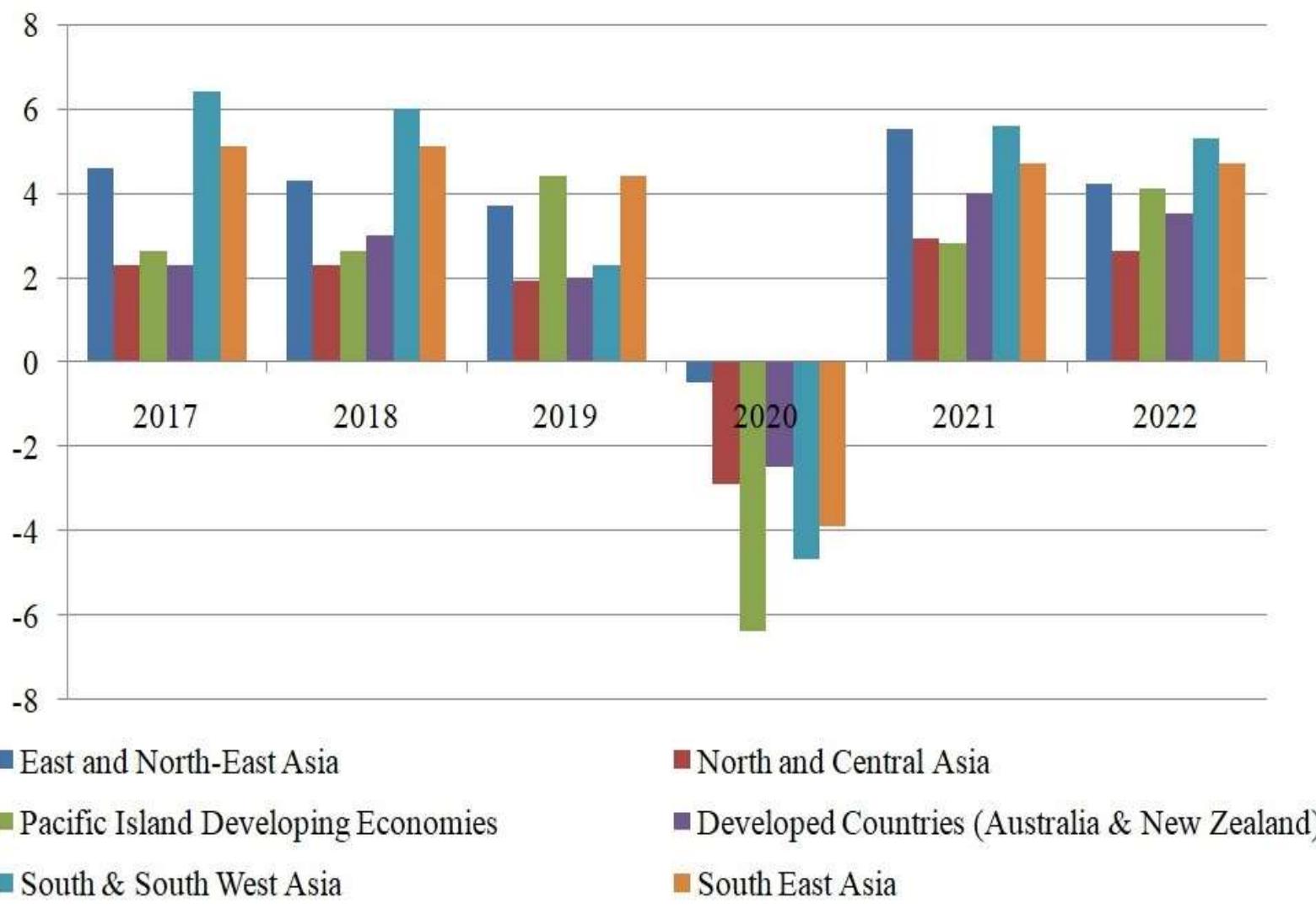
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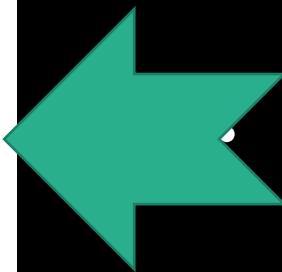
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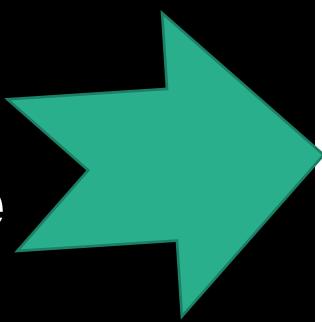


Sub-Regional GDP Growth Rates



- GDP above US\$ 40 trillion (nominal)
- Two thirds of the regional economies, account for 80% of the region's GDP

Shocks / Crises in Asia Pacific (Resilience of the region)



Environmental Profile

- Increasing material intensity since 1970s & material consumption growing at 5.2% (50% of world consumption)
- Fossil fuels-based energy generation (renewable energy remains small)
- Air pollution, water pollution, grossly polluted water resources, marine litter, waste management, deforestation, land degradation, and biodiversity loss.
- Municipal solid waste (MSW) is expected to reach 1.6 kilograms per person per day
- Region has to rethink the pathways towards development and prosperity

Relevance of (Reduce, Reuse and Recycle) 3R, Practices and connectivity to SDGs and its Targets

As a regional response to these environmental issue, UNCRD has been convening annual Regional 3R Forum in Asia and the Pacific since 2009 under the project of Promotion of 3R in Asia and the Pacific, supported by the Ministry of the Environment, Japan.

So far 10th Regional 3R Forums have been organized with major declaration as:

- 4th Regional 3R Forum in Asia (Ha Noi, Vietnam / March 18-20-, 2013) – Ha Noi 3R Declaration
- 6th Regional 3R Forum in Asia and the Pacific (Male Maldives / August 16-19, 2015) – Male Declaration
- 7th Regional 3R Forum in Asia and the Pacific (Adelaide, South Australia, Australia / Nov 2-4, 2016) – Adelaide Declaration
- 8th Regional 3R Forum in Asia and the Pacific (Brilliant Convention, Centre, Indore, Madhya Pradesh, India / April 10-12, 2018) – Indore Declaration
- 9th Regional 3R Forum in Asia and the Pacific (Bangkok, Thailand / March 4-6, 2019) – Bangkok, Declaration

connectivity to SDGs and its Targets Contd...

- Hanoi Declaration (2013-2023) voluntarily develop, introduce and implement policy options, programmes and projects towards realizing the thirty three sustainable 3R goals in the region.
- Further evolution into circularity, self sufficiency & integration into 2030 Agenda for Sustainable Development with 17 Sustainable Goals at its core.
- The first report “State of the 3Rs in Asia and the Pacific” is an experts assessment on the regional 3R progress since 2013.
- “The Second State of the 3Rs and Resource Circulation and Circular Economy in Asia and the Pacific

(Advancing Circular Economy in Asia and the Pacific towards achieving the Sustainable Development Goals (SDGs)” to assess the progress made on the Ha Noi 3R Declaration (2013-2023)

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Chapter 2	3	11	1 Case Study (Japan)	25
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Chapter 4	4	6	0	9
Chapter 5	2	0	0	1

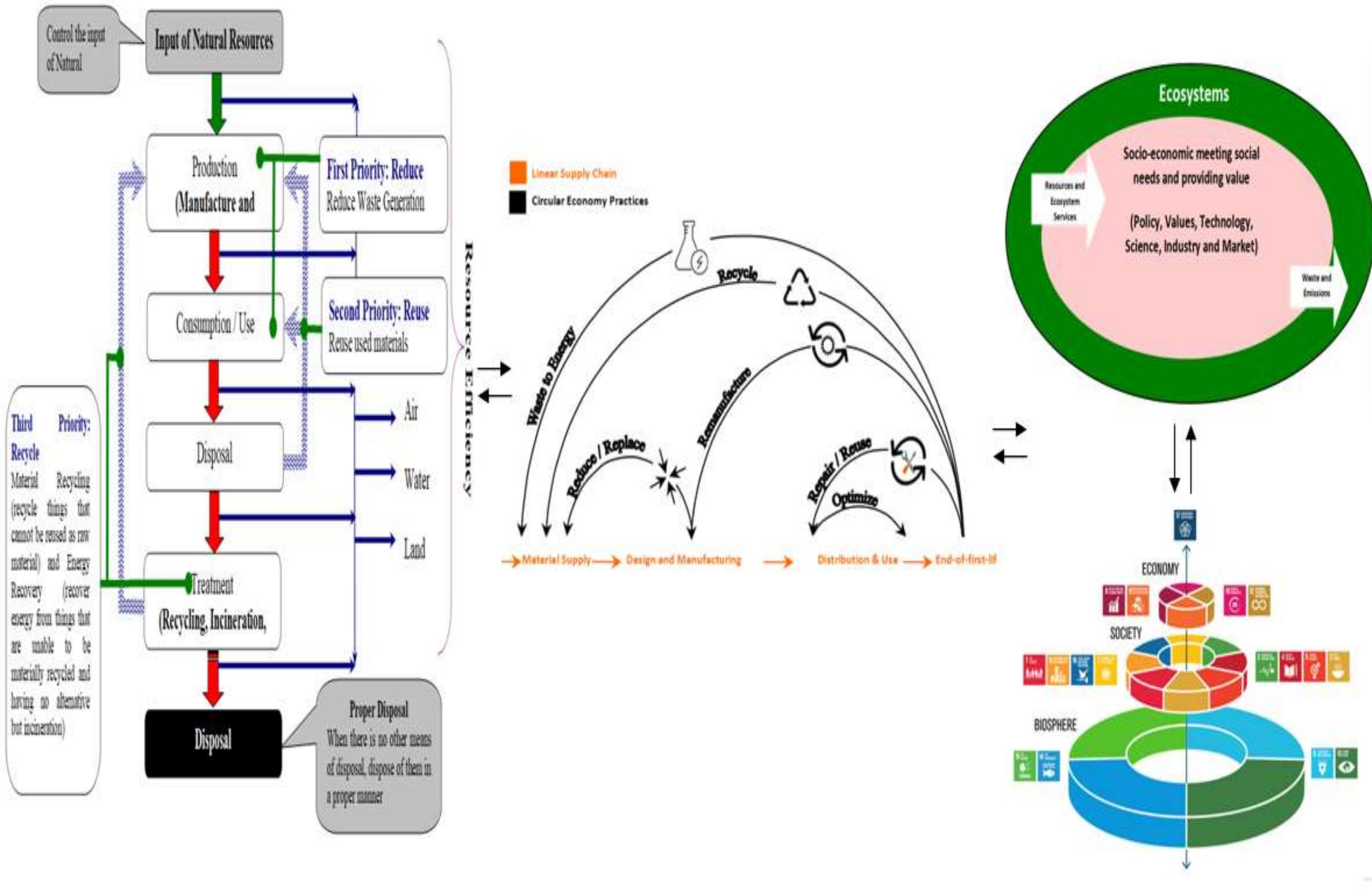
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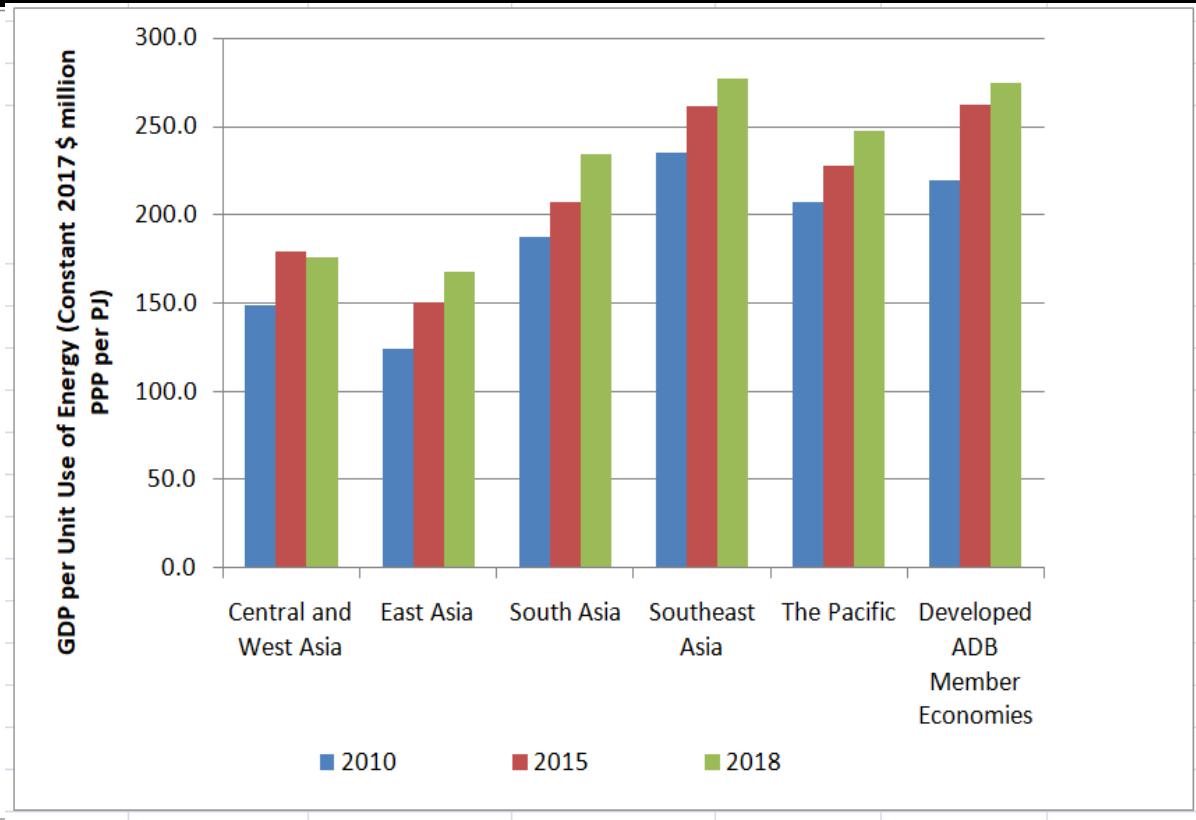
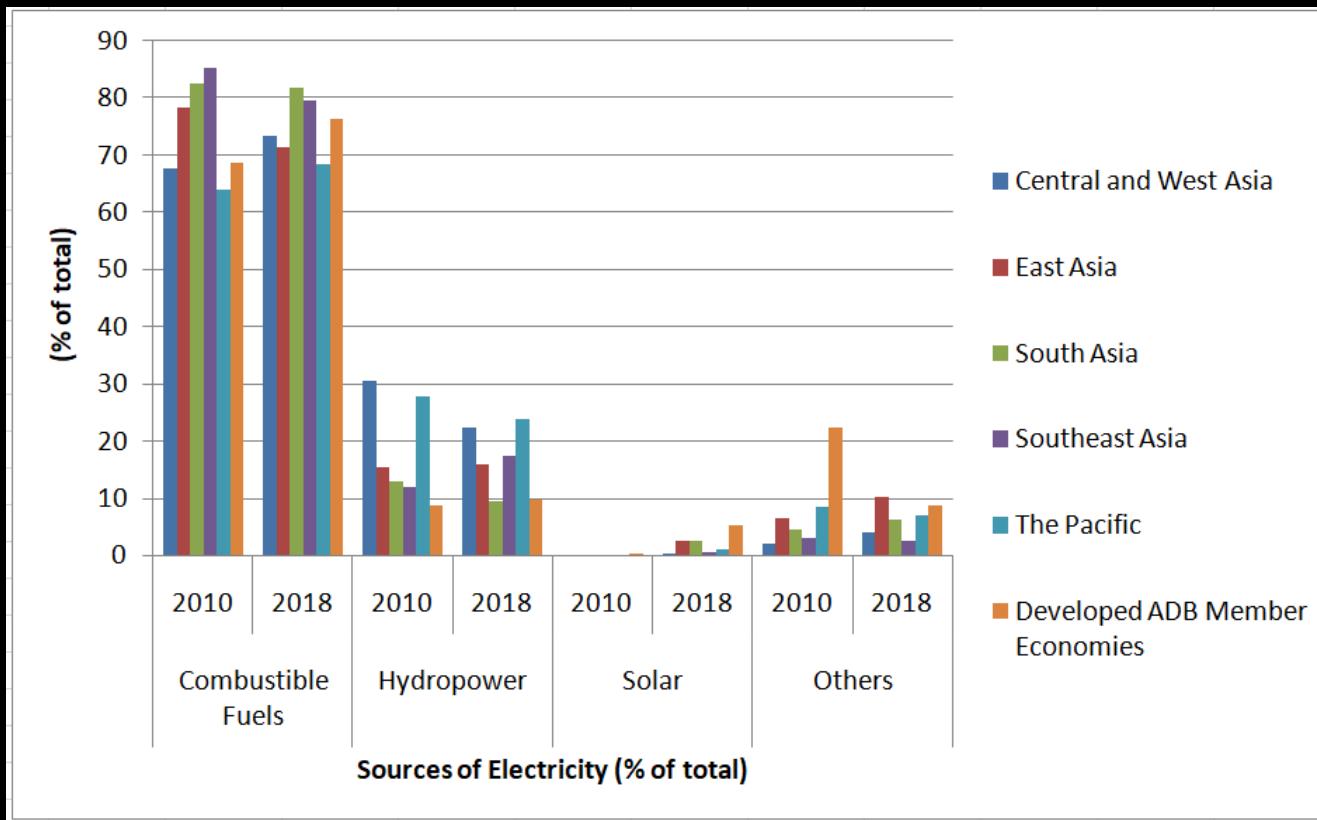
2.2 Key factors for promoting circular economy in Asia and the Pacific

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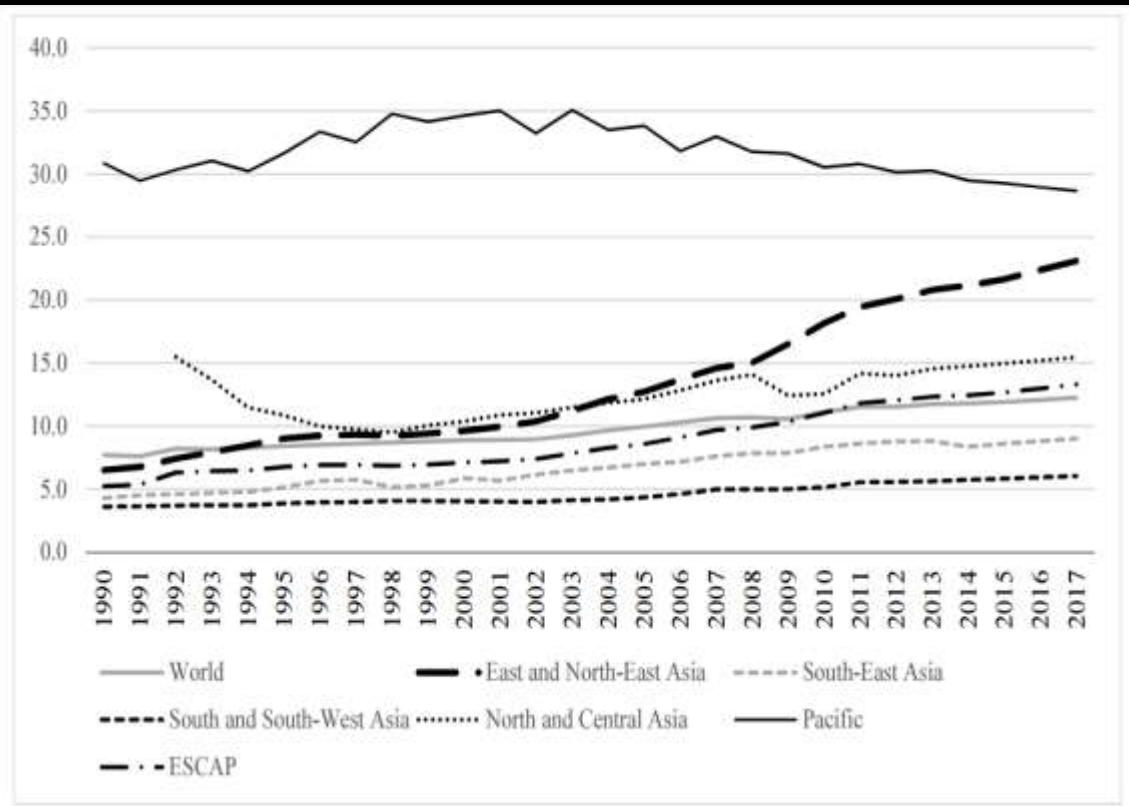
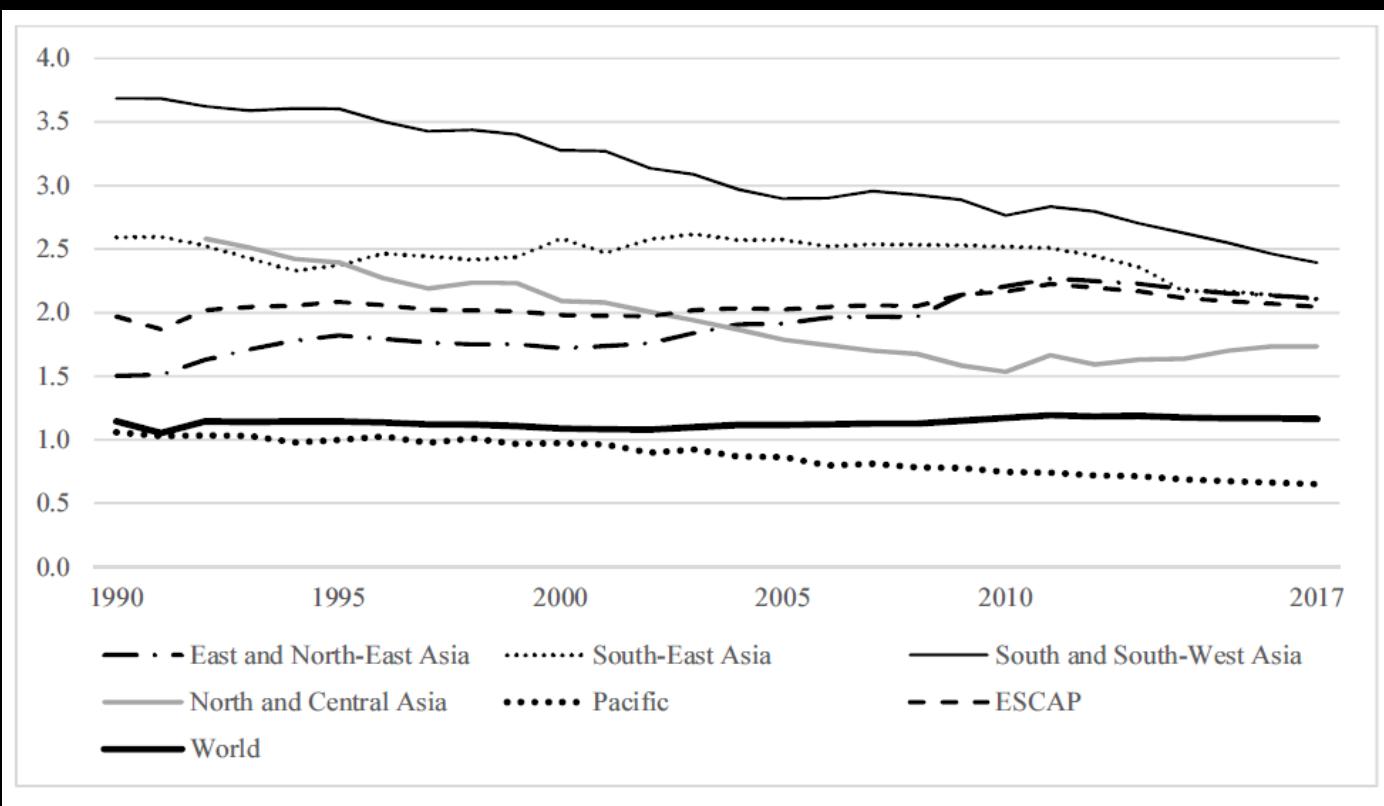
3R and Resource Efficiency as the Heart of Circular Economy that enables society to maximize the economic return on scarce resources.

Key factors for promoting circular economy in Asia and the Pacific Contd...



Electricity Production and Sources

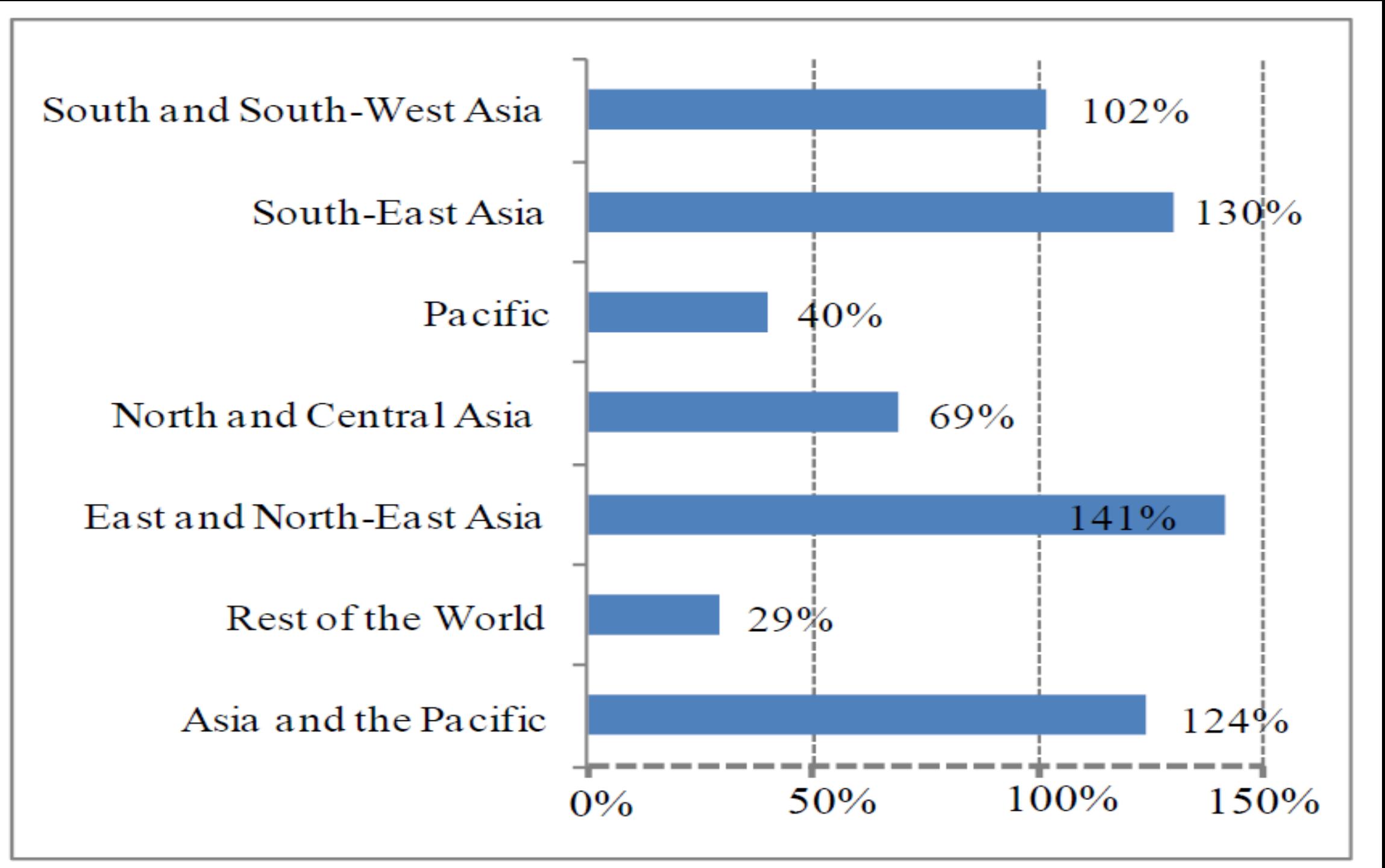
GDP Per Unit Use of Energy



Trends in resource intensity: domestic material consumption, 1990–2017 (Kilograms per United States dollar)

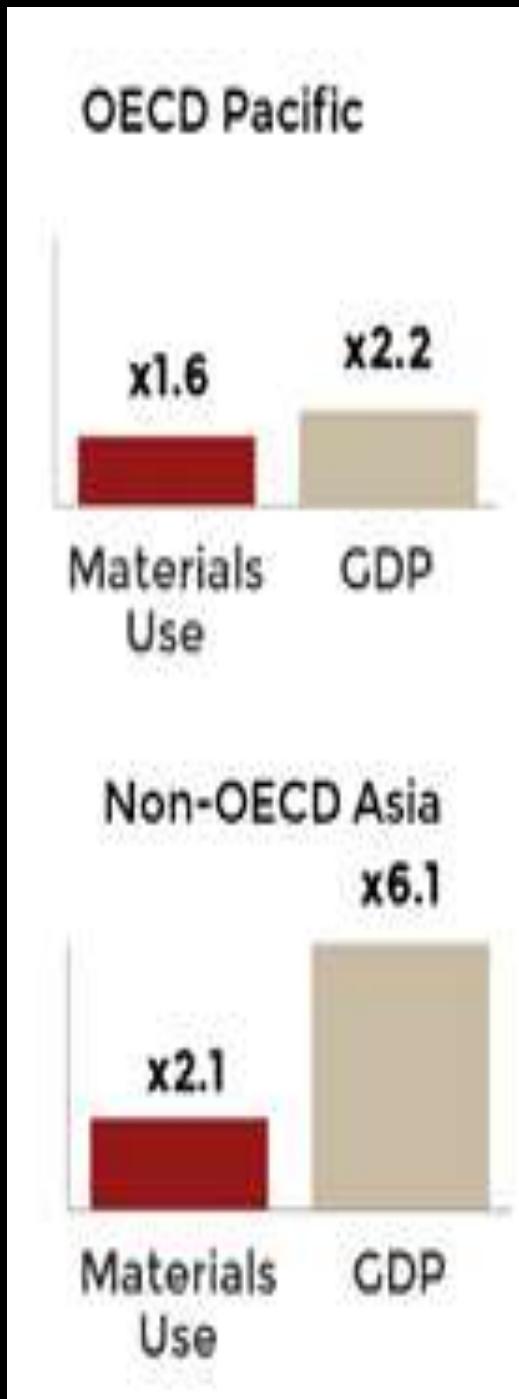
Trends in domestic material consumption, 1990–2017 (Tons per capita)

Key factors for promoting circular economy in Asia and the Pacific Contd...

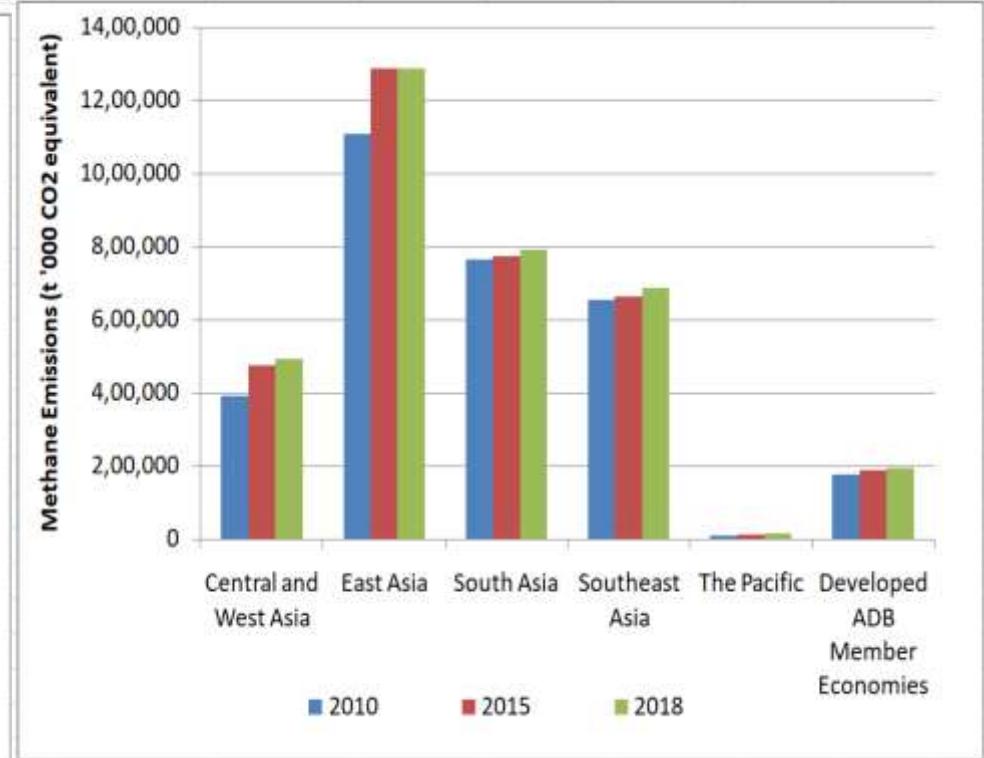
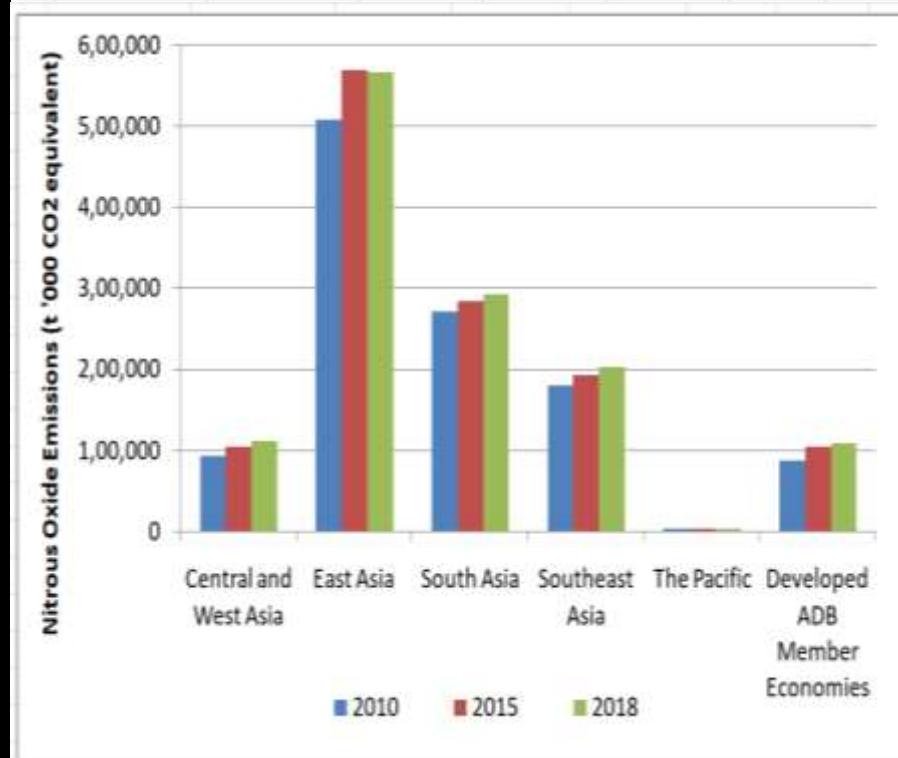
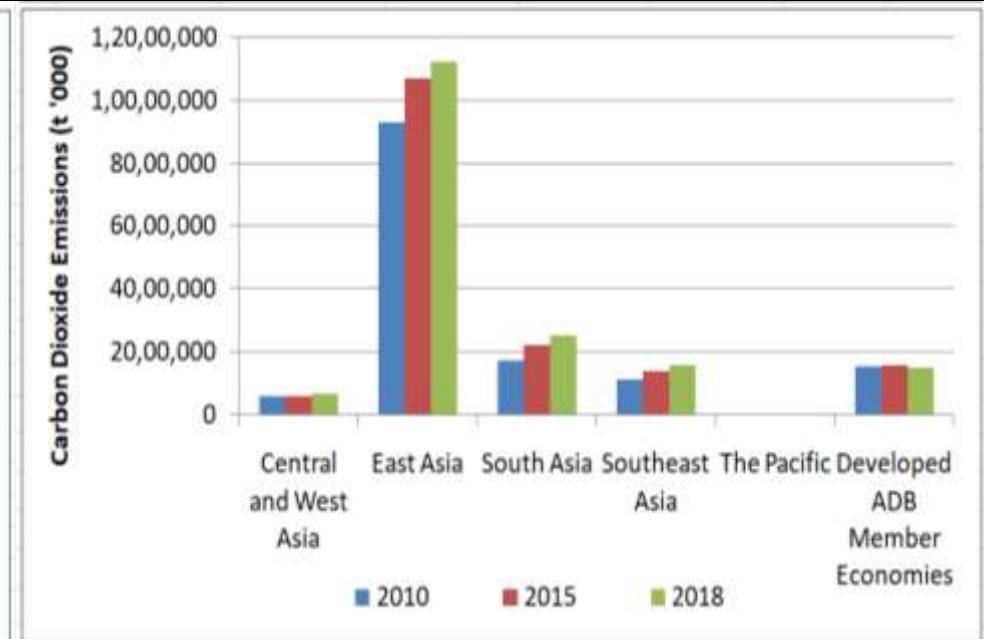
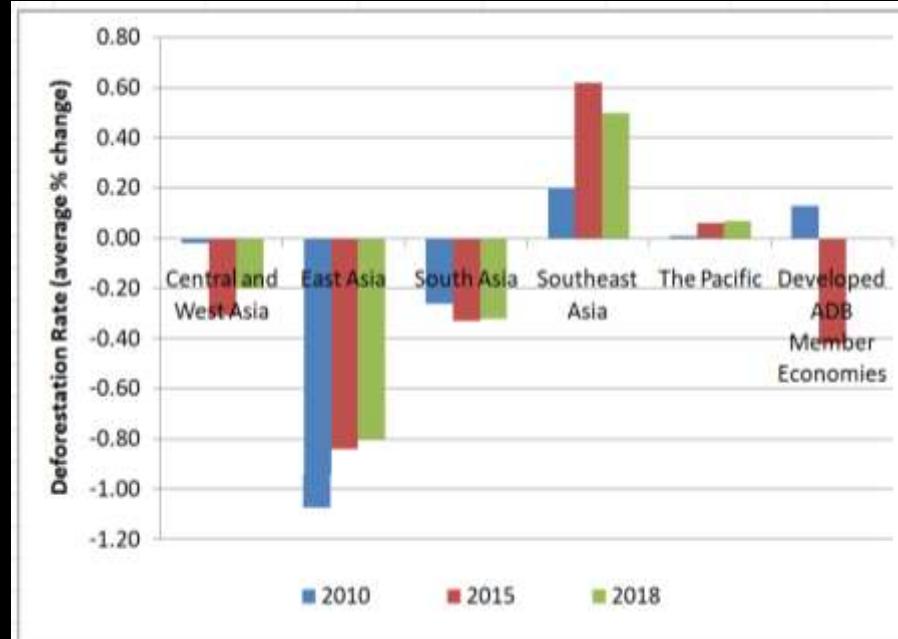


Net Change in Material Footprint, 2000-2017

Key factors for promoting circular economy in Asia and the Pacific Contd...

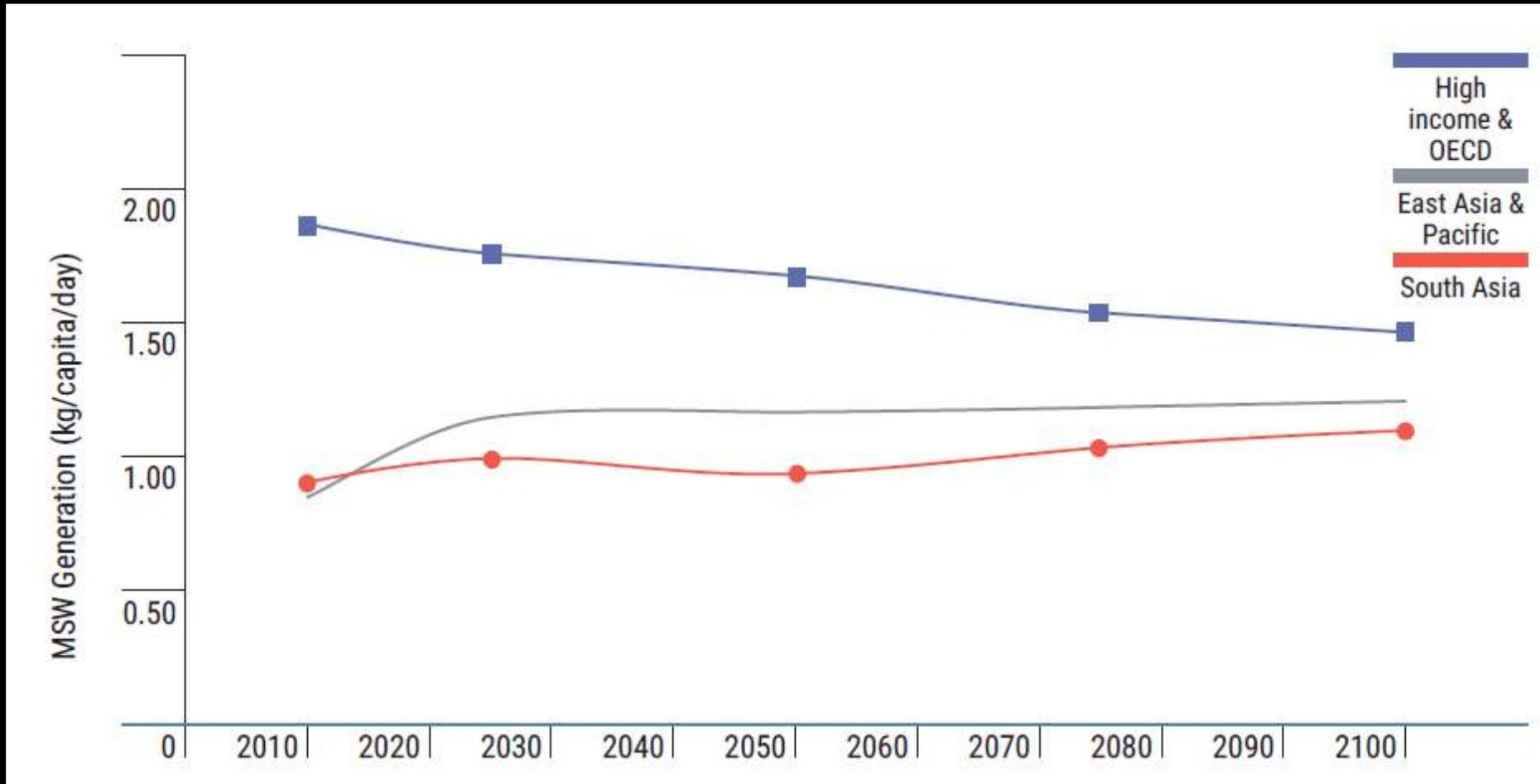


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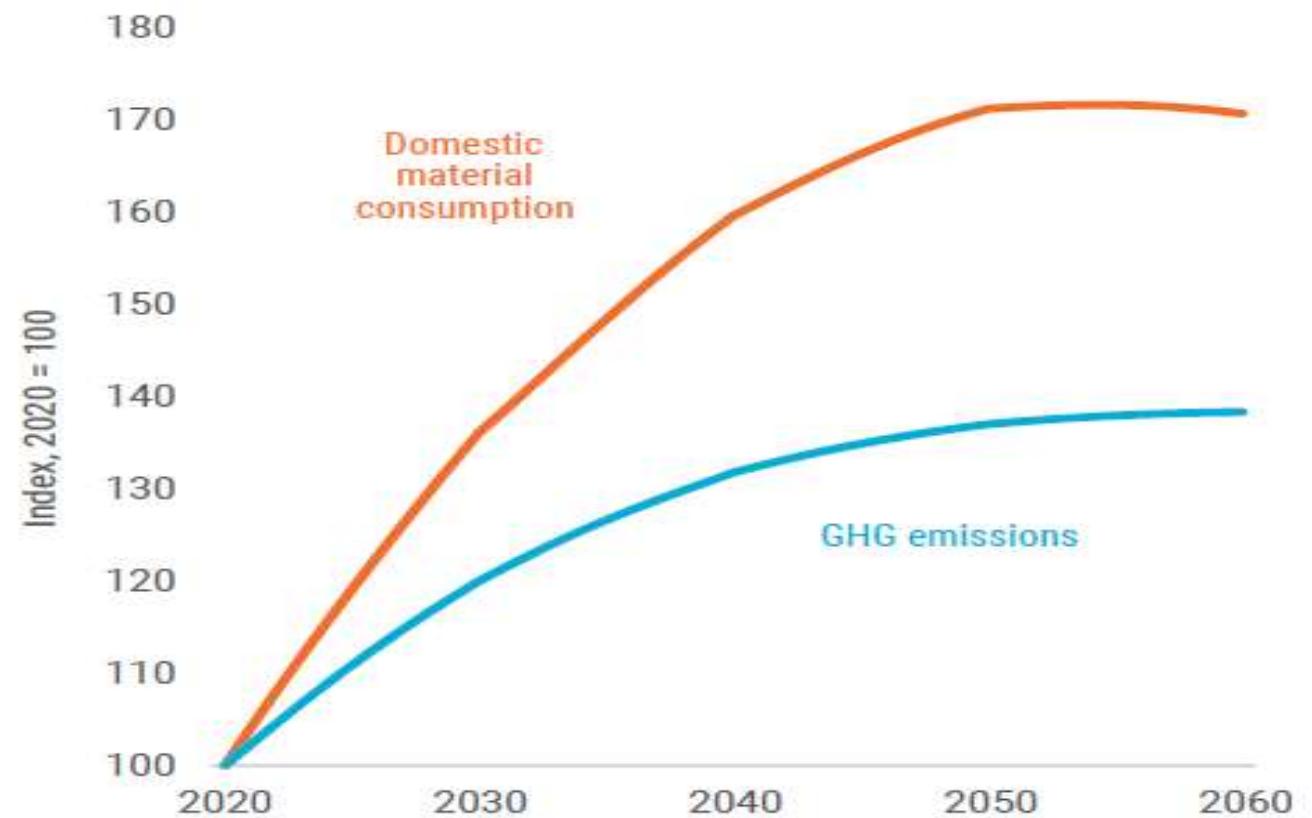
Deforestation and Pollution

Key factors for promoting circular economy in Asia and the Pacific Contd...



Forecasted MSW Generation Per Capita across Different Regions, 2010–2100

Domestic Material Consumption and GHG Emissions in 2020-2060 with 2020 Levels



Role of 3R and Circular Economy towards Achieving the SDGs

- Processes and products are becoming more resource efficient than their earlier versions due to various economic, environmental and societal compulsions.
- Technology is a driver for clean energy and green industry towards sufficiency economy.
- Alternate materials and Alternate fuels (Green Hydrogen) are becoming more available & affordable.
- New recycling technologies e.g. Recycling of solar panels, Digitisation & Artificial Intelligence (AI)
- Sound material accounting of material flows are very crucial to determine the circularity & self sufficiency ecosystem.
- During pandemic, the two major economies China and India has taken up urgent steps to increase circularity.

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Trends of 3R and Circular Economy in Asia and the Pacific

- This sub-section is based on updation of the First State of 3Rs in Asia and the Pacific in terms of nine indicators selected from the Ha Noi 3R Declaration (2013-2023).
- Majority of countries have specific 3R policies, programs & projects in place addressing different waste streams
- Implementation is challenging
- The countries which have reported specific Extended Producer Responsibility (EPR) policies that were enacted or introduced
- The majority of reporting countries have introduced specific policies and guidelines for product standard (towards quality / durability, environment / eco-friendliness, labour standards)
- Countries in the Asia and the Pacific region have addressed climate mitigation in waste management policies, plans, programmes as part of national communication to UNFCCC
- The countries in Asia and the Pacific region have introduced market based instruments like EPR, deposit refund schemes and recycling mandates.

Contd...

- Addressal of different waste streams leading to linkage to SDGs
- Other issues include inventorization, export import statistics etc e.g. hazardous waste
- Food security is being addressed
- Healthcare and biomedical waste is getting increasing attention
- Water security is one of the major challenges in Asia Pacific region, which needs urgent attention.

Some of the barriers are

- lack knowledge on recycled products;
- limited of technologies for waste recovery; low quality and reduced performance;
- lack of market availability of the products;
- limitations caused by specifications, standards and permits;
- and limited acceptability and negative perceptions.

Data Issues on New Emerging Waste Streams

1. Quantification is difficult, as a number of studies globally as well as Hanoi 3R indicators reporting indicates that due to informal sector operation in material flow chain the comprehensive data on waste generation, segregation, reuse, repurpose, treated and disposed are not available.
2. It is widely scattered at local and national level. Further, data related to littering or illegal movement at local, national & global level is also very scattered.
3. Therefore, the real magnitude of problem remains unclear, though the impacts of informal treatment in some countries are unquestionably significant.
4. The driving factor is compliance with existing national and global waste legislation. Other drivers are:
 - (i) Increasing volumes of new emerging waste;
 - (ii) Absence of waste-specific legislation;
 - (iii) Limitations of waste management infrastructure;
 - (iv) Competition between formal and informal sectors for valuable items;
 - (v) Mixing of waste with other waste streams;
 - (vi) Complex nature of waste
 - (vii) Hazardous extent and nature of waste and;
 - (viii) Emergence of concepts like resource efficiency, sustainability & circular economy.

Case studies and description of conventional and frontier technologies have been covered in the report

1. Waste-to-Energy
2. Biobased Plastics and Biodegradable Plastics
3. Used Tire for Roads Construction
4. Plastics as Alternative Timber (for example-Case of Australia)
5. Application of Smart Technology
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3R Policy Implementation in Asia and the Pacific

Overall Assessment indicate positive movement towards policy and regulatory regime formulation, implementation and monitoring of the waste value chain in the region

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Summary of 3R Goals at National Level

- Majority of countries have reported subscription to policy , programmes, projects, regulations, related to twenty two out of thirty three Ha Noi 3R goals.
- Goal 1, 2 and 3 related to solid (municipal & other) waste, its sub streams ex. paper, metal, organic etc. and their recycling aspects are widely reported in the region.
- The recycling activities are happening both in formal and informal sector. Majority of countries have specific 3R policies, programs & projects in place.
- The policies have been translated into specific regulations of municipal solid waste, which have been institutionalized at national level to be implemented at provincial and local level.
- The facilities for recycling of construction waste is poor in majority of countries. Institutional and financial challenges are reported to be significantly followed by policy and technical.
- The majority of the countries in the region, which have vibrant industrial sector have reported initiatives as per goal 6, 7, and 8.
- Majority of the countries have not defined the amount of agricultural biomass waste and livestock waste that was grossly generated per annum.
- Majority of the countries make composts / fertilizers from the agricultural biomass waste.

Summary of Progress of 3R Goals at Regional Level

- With regard to emerging waste issues, e-waste management has been prioritized and a number of countries have started to apply EPR-based policies for e-waste management (Goal 13 and 15).
- Whilst marine/coastal plastic waste has been given increasing regional attention, concrete actions taken by national governments are limited in most countries (Goal 12 and 15). Goal 15 is evolving across the region.
- The majority of countries have introduced specific energy efficiency schemes for production, manufacturing and service sector.
- Majority of the countries support Goal 23, Goal 24, Goal 25, Goal 27, Goal 28 and Goal 29. Goal 30 and Goal 31 i.e. attention on developing countries including SIDS and the concept of “Return” have received **limited response** from countries.
- Social governance issues like child labour (Goal 32) and gender bias (Goal 33) have received significant addressal from the majority of countries.
- The low response by countries has been observed for Ha Noi Goals 6, 8, 20, 22, 24, 26, 29, 30, 31, 32 and 33. It indicates the priority areas for future attention at regional level.

Summary of Progress of 3R Goals at Regional Level

Summary of 3R Goals at National Level (2013-2023) is summarized below.

Overall Hanoi 3R Goal Wise Implementation in Asia and the Pacific Region

Goals No.	Description	Ranges	Name of Country (Example)	Specific Interventions (Examples)
Goal 1	Reduction in the Quantity of Municipal Solid Waste Generated	M – H	Japan Republic of Korea	Policy, Technical & Financial
Goal 2	Full-scale utilization of the organic component of municipal waste, including food waste, as a valuable resource, thereby achieving multiple benefits such as the reduction of waste flows to final disposal sites, reduction of GHG emission, improvement in resource efficiency, energy recovery, and employment creation.	M – H	Japan	Technical & Collection on Mechanism
Goal 3	Increasing Recycling Rate of Recyclables (e.g., plastic, paper, metal, etc.)	M – H	Japan	Recycling Industry
Goal 4	Build sustainable cities /green cities by encouraging “zero waste” through sound policies, strategies, institutional mechanisms, and multi - stakeholder partnerships (giving specific importance to private sector involvement) with a primary goal of waste minimization	M – H	Japan, Singapore & Republic of Korea	Private sector participation & PPP Model
Goal 5	Encourage the private sector, including small-and medium-sized enterprises (SMEs) to implement measures to increase resource efficiency and productivity, creation of decent work and to improve environmentally-friendly practices through applying environmental standards, clean technologies, and cleaner production.	M – H	India	Energy Efficiency program in SME. Make in India Program
Goal 6	Promote the greening of the value chain by encouraging industries and associated suppliers and vendors in socially responsible and inclusive ways.	L	Japan, Singapore, China Republic of Korea	Examples of Major retailers in the region

Summary of Progress of 3R Goals at Regional Level

Goals No.	Description	Ranges	Name of Country (Example)	Specific Interventions (Examples)
Goal 7	Promote industrial symbiosis (i.e., recycling of waste from one industry as a resource for another), by providing relevant incentives and support.	M – H	Indonesia	Waste Bank Programs
Goal 8	Build local capacity of both current and future practitioners, to enable the private sector (including SMEs) to obtain the necessary knowledge and technical skills to foster green industry and create decent, productive work.	L	Thailand, Vietnam, Cambodia	Cleaner Production Program
Goal 9	Inventory of Hazardous Waste	M – H	India	Implementation of Rules on Hazardous waste
Goal 10	Reduce losses in the overall food supply chain (production, post harvesting and storage, processing and packaging, distribution), leading to reduction of waste while increasing the quantity and improving the quality of products reaching consumers.	M – H		
Goal 11	Agricultural Biomass Waste Management	M – H	Vietnam	Regulation, Strategy / Plans
Goal 12	Eliminating Marine Plastics	M – H	Japan	Programs & infrastructure to prevent marine litter
Goal 13	E-Waste Management	M – H	Japan	Policy, laws & recycling ecosystem

Summary of Progress of 3R Goals at Regional Level

Goals No.	Description	Ranges	Name of Country (Example)	Specific Interventions (Examples)
Goal 14	Effective enforcement of established mechanisms for preventing illegal and inappropriate export and import of waste, including transit trade, especially of hazardous waste and e-waste.	M – H	Japan	Policy, laws & recycling ecosystem
Goal 15	Implementation of Extended Producer Responsibility	M – H	Japan, Republic of Korea, India	Regulations
Goal 16	Promote the 3R concept in health-care waste management.	M – H	India	Regulations & Waste Management System
Goal 17	Improving Resource Efficiency and Resource Productivity	L-M	Japan, Republic of Korea	
Goal 18	Co-benefits for Local Air, Water, Oceans, and Soil Pollution and Global Climate Change	M – H	Japan, Republic of Korea	Policy, Regulation & Ecosystem
Goal 19	Enhance national and local knowledge base and research network on the 3Rs and resource efficiency, through facilitating effective and dynamic linkages among all stakeholders, including governments, municipalities, the private sector, and scientific communities.	M – H	Japan, Republic of Korea, Singapore	Policy, Regulation & Ecosystem
Goal 20	Strengthen multi-stakeholder partnerships among governments, civil society, and the private sector in raising public awareness and advancing the 3Rs, sustainable consumption and production, and resource efficiency, leading to the behavioural change of the citizens and change in production patterns.	L	Singapore	Policy, Regulation Implementation & Ecosystem Development

Summary of Progress of 3R Goals at Regional Level

Goals No.	Description	Ranges	Name of Country (Example)	Specific Interventions (Examples)
Goal 21	Integrate the 3Rs in formal education at primary, secondary, and tertiary levels as well as non-formal education such as community learning and development, in accordance with Education for Sustainable Development.	M – H	Japan	Sapporo city elementary & Junior High School effort of conversion food waste into compost
Goal 22	Integrate the 3R concept in relevant policies and programmes, of key ministries and agencies such as Ministry of Environment, Ministry of Agriculture, Forestry and Fisheries, Ministry of Industry, Ministry of Trade and Commerce, Ministry of Energy, Ministry of Water Resources, Ministry of Transport, Ministry of Health, Ministry of Construction, Ministry of Finance, Ministry of Labour, Ministry of Land and Urban Development, Ministry of Education, and other relevant ministries towards transitioning to a resource-efficient and zero waste society	L	Japan	Different ministries following 3R concept
Goal 23	Promote green and socially responsible procurement at all levels, thereby creating and expanding 3R industries and markets for environmentally-friendly goods and products.	M – H	India, Japan, Republic of Korea	Changes in government procurement policies
Goal 24	Phase out harmful subsidies that favour unsustainable use of resources (raw materials and water) and energy, and channel the freed funds in support of implementing the 3Rs and efforts to improve resource/energy efficiency	L	Japan	Policy & Regulation
Goal 25	Protect public health and ecosystems, including freshwater and marine resources by eliminating illegal activities of open dumping, including dumping in the oceans, and controlling open burning in both urban and rural areas.	M – H	Major countries in the region	Implementation of MARPOL protocols

Summary of Progress of 3R Goals at Regional Level

Goals No.	Description	Ranges	Name of Country (Example)	Specific Interventions (Examples)
Goal 26	Facilitate the international circulation of re-usable and recyclable resources as well as remanufactured products as mutually agreed by countries and in accordance with international and national laws, especially the Basel Convention, which contributes to the reduction of negative environmental impacts and the effective management of resources.	L		
Goal 27	Promote data collection, compilation and sharing, public announcement and application of statistics on wastes and the 3Rs, to understand the state of waste management and resource efficiency.	M – H	Japan, Singapore, India	Public disclosure ex. websites, annual reports of ministries
Goal 28	Promote heat recovery (waste-to-energy), in case wastes are not re-usable or recyclable and proper and sustainable management is secured	M – H	China, Japan & India	Waste to energy & RDF Plants
Goal 29	Promote overall regional cooperation and multi-stakeholder partnerships based on different levels of linkages such as government-to-government, municipality-to-municipality, industry-to-industry, (research) institute-to-institute, and NGO-to-NGO. Encourage technology transfer and technical and financial supports for 3Rs from developed countries to less developed countries.	L	NA	NA
Goal 30	Pay special attention to issues and challenges faced by developing countries including SIDS in achieving sustainable development.	L	NA	NA
Goal 31	Promote 3R + “Return” concept which stands for Reduce, Reuse, Recycle and “Return” where recycling is difficult due to the absence of available recycling industries and limited scale of markets in SIDS, especially in the Pacific Region.	L	Palau	Take back program
Goal 32	Complete elimination of illegal engagement of children in the informal waste sector and gradually improve the working conditions and livelihood security, including mandatory provision of health insurance, for all workers.	L	NA	NA
Goal 33	Promote 3Rs taking into account gender considerations.	L	NA	NA

Summary of Progress of 3R Goals at Regional Level

Country wide Policy, Programs, Plans & Projects Implementation as per Ha Noi 3R in Asia and the Pacific Region

Sr. No.	Country	Goal - 1	Goal - 2	Goal - 3	Goal - 4	Goal - 5	Goal - 6	Goal - 7	Goal - 8	Goal - 9	Goal - 10	Goal - 11	Goal - 12	Goal - 13	Goal - 14	Goal - 15	Goal - 16	Goal - 17	Goal - 18	Goal - 19	Goal - 20	Goal - 21	Goal - 22	Goal - 23	Goal - 24	Goal - 25	Goal - 26	Goal - 27	Goal - 28	Goal - 29	Goal - 30	Goal - 31	Goal - 32	Goal - 33		
1.	Bangladesh																																			
2.	Bhutan																																			
3.	Cambodia																																			
4.	Cook Islands																																			
5.	Federated States of Micronesia																																			
6.	India																																			
7.	Indonesia																																			
8.	Japan																																			
9.	Kiribati																																			
10.	Kyrgyzstan																																			
11.	Lao PDR																																			
12.	Malaysia																																			
13.	Marshall Islands																																			
14.	Mauritius																																			
15.	Mongolia																																			
16.	Nauru																																			
17.	Nepal																																			
18.	Pakistan																																			
19.	Palau																																			
20.	Philippines																																			
21.	Republic of Korea																																			
22.	Russian Federation																																			
23.	Singapore																																			
24.	Solomon Islands																																			
25.	Sri Lanka																																			
26.	Thailand																																			
27.	Tonga																																			
28.	Tuvalu																																			
29.	Vietnam																																			

 Data not available / not applicable  Policies / Regulations Implementation

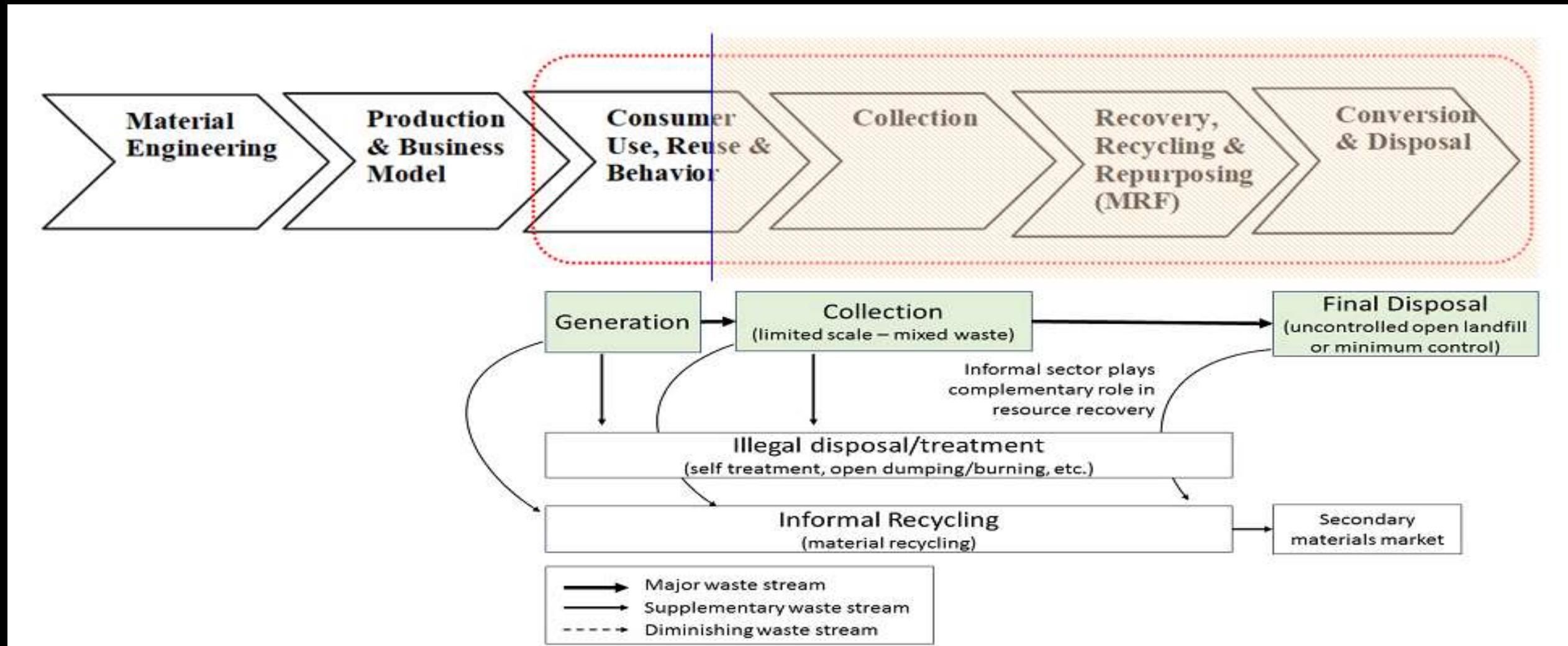
Existing and Emerging Waste Management System Trends Contd...

- The evaluation of Ha Noi 3R goals gets reflected in the waste management systems in Asia and the Pacific.
- The three different types of models, Model 1, Model 2 & Model 3 are describing Country wide Status of Waste Management System.

Country	Waste Management Systems		
	Model 1	Model 2	Model 3
Bangladesh	√	√	
Bhutan	√	√	
Cambodia	√	√	
Cook Islands	√		
Federated States of Micronesia	√		
India	√	√	√
Indonesia	√	√	
Japan			√
Kiribati	√		
Kyrgyzstan	√		√
Lao PDR	√		√
Malaysia	√		√
Marshall Islands	√		
Mauritius	√		√
Mongolia	√		√
Myanmar	√		√
Nauru	√		

Existing and Emerging Waste Management System Trends Contd...

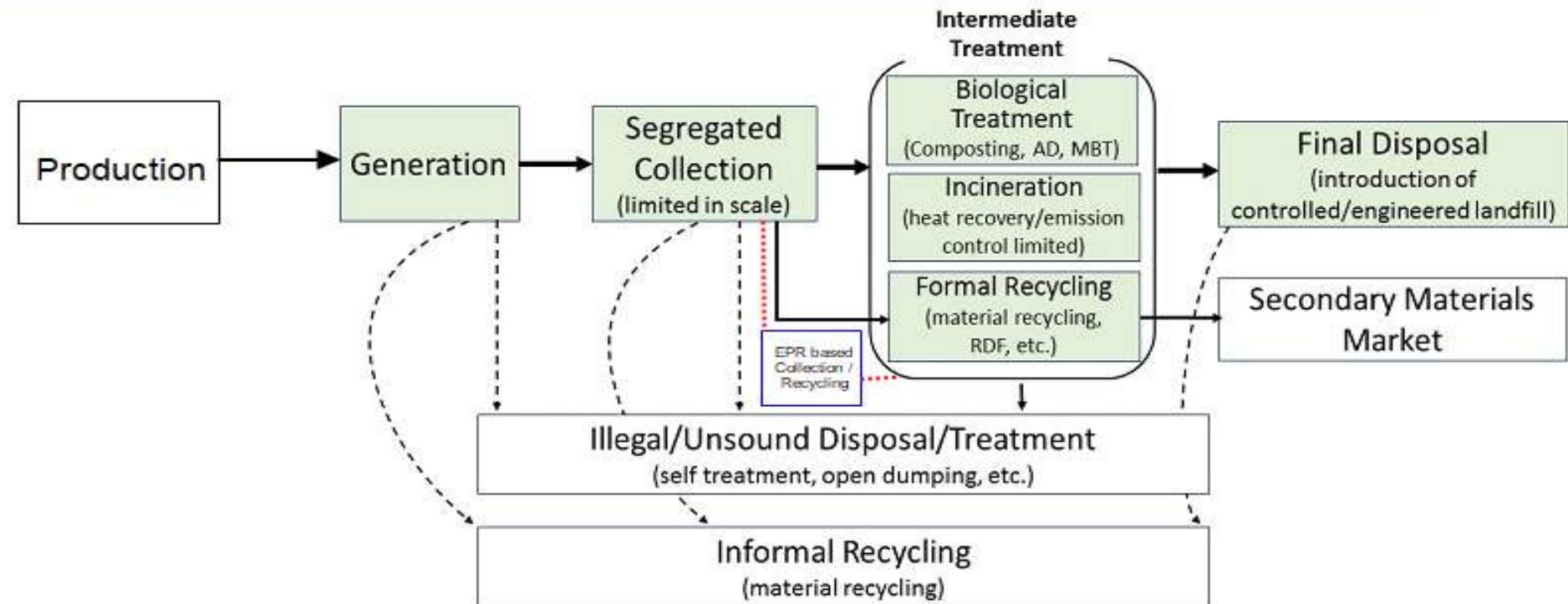
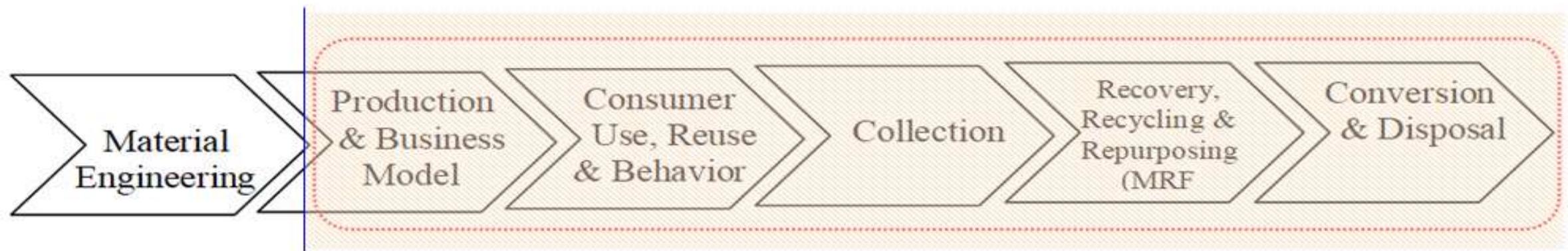
Country	Waste Management Systems		
	Model 1	Model 2	Model 3
Nepal	√	√	
Pakistan	√	√	
Palau	√	√	
Philippines	√	√	
Republic of Korea		√	√
Singapore		√	√
Solomon Islands	√		
Sri Lanka	√	√	
Thailand	√	√	
Timor Leste	√		
Tonga	√		
Tuvalu	√		
Vietnam	√	√	
China	√	√	√
Australia		√	√
Fiji	√	√	
Maldives	√		
Papua New Guinea	√		
Samoa	√		
Vanuatu	√		
Brunei Darussalam	√	√	



Model 1 - Emergence of Simple Waste Management System

Salient Features

- Limited segregation of waste in informal sector
- Minimum collection coverage in a geography
- Major valuable resources recovered by informal sector / very limited formal sector participation
- Limited no options for intermediate treatment
- Final disposal at dumpsite / open landfill / landfill with minimum control
- Rampant illegal disposal/treatment



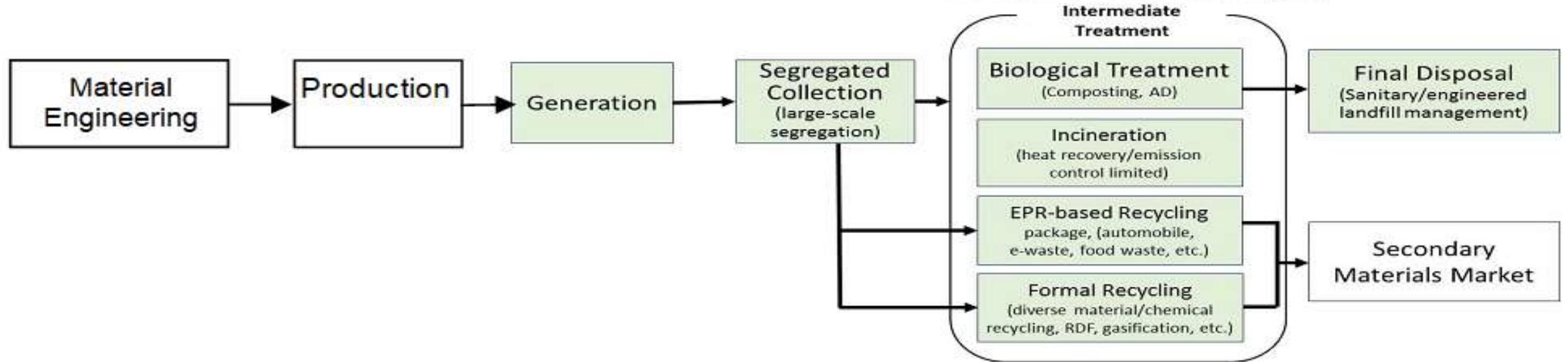
Model 2 – Waste Management System in Transition

Salient Features

- Both formal & informal segregation of waste depending on appropriate treatment option
- Improved collection coverage across geography
- Items of value are collected through informal and formal sector
- Different intermediate treatment options are explored and introduced, including incineration and other 3R technologies
- Infrastructure for disposal ex. controlled landfills are replicated across different geography
- Illegal disposal/treatment still exists while concepts like EPR / Product Stewardship and Circularity are introduced.



Emergence of IWMS upon foundations of developed social infrastructure, civil engagement, and diverse intermediate treatment options



Model 3 – Development of Integrated Waste Management Systems

Salient Features

- Segregation practices are widely practiced and customized available treatment options
- Complete waste collection coverage
- Recyclable waste collection conducted by formal sector leading to conversion and assimilation of informal sector into the formal chain.
- Recycling industry gets expanded
- Resource Efficiency and material engineering are introduced and practiced.
- Incineration with heat recovery representing the major treatment option while diverse options also exist including Sanitary landfill.
- Insignificant illegal disposal/treatment
- Environmentally benign alternate products are introduced in the market which are easy to segregate & recycle
- Material engineering undergoes transformation with internalization of design for environment.

Internalization & Evolution of Ha Noi 3R Goals & Strategic Evaluation

An analysis of internalization and evolution of Ha Noi 3R goals has been carried out considering “Circularity” and “Sustainability” in Asia and the Pacific region. Above analysis indicates the Ha Noi 3R declaration has made a significant impact in triggering transformation from “Linear’ to “Circular” economy.

Country Analysis

Japan

Republic of Korea

Singapore

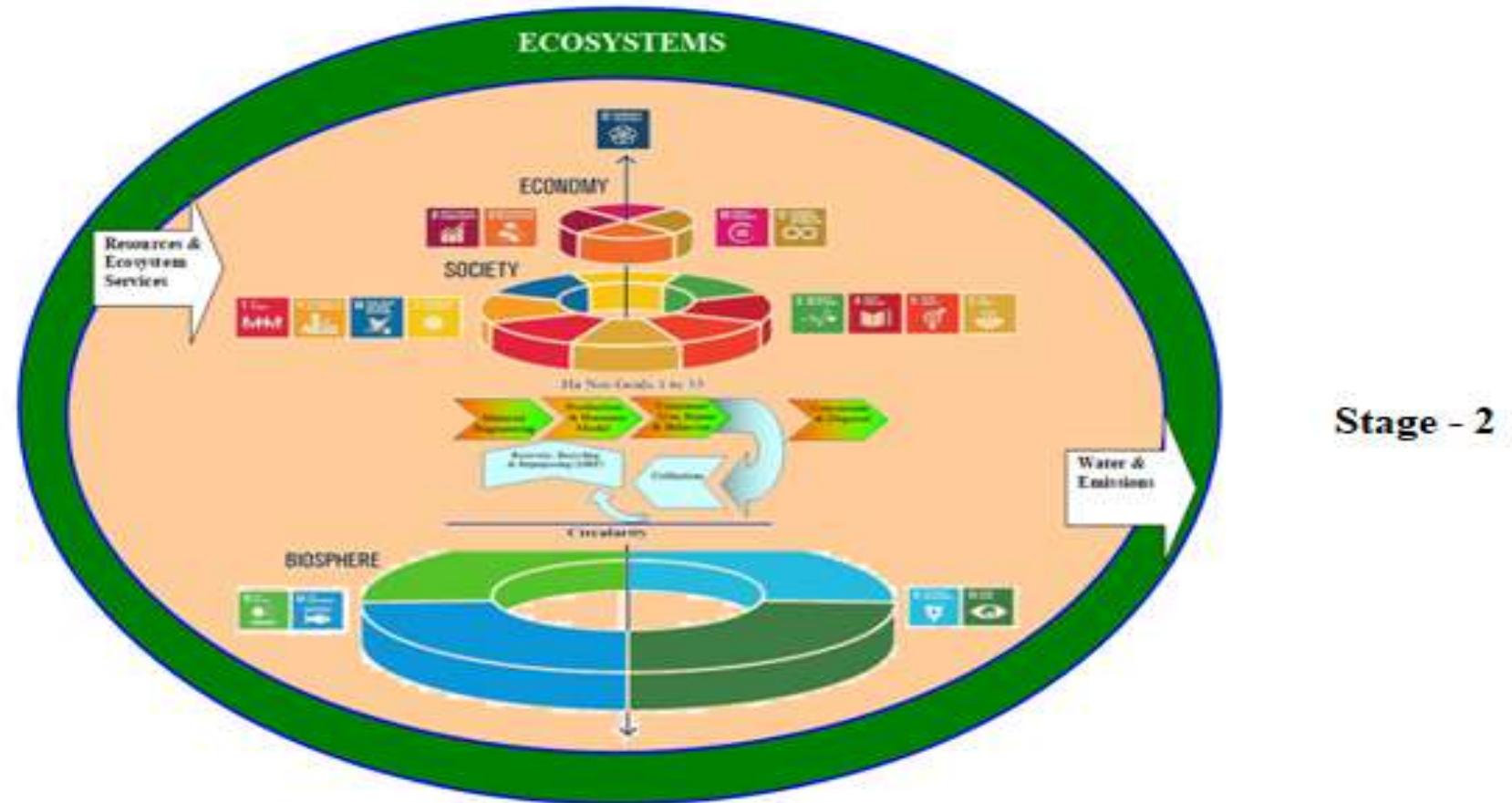
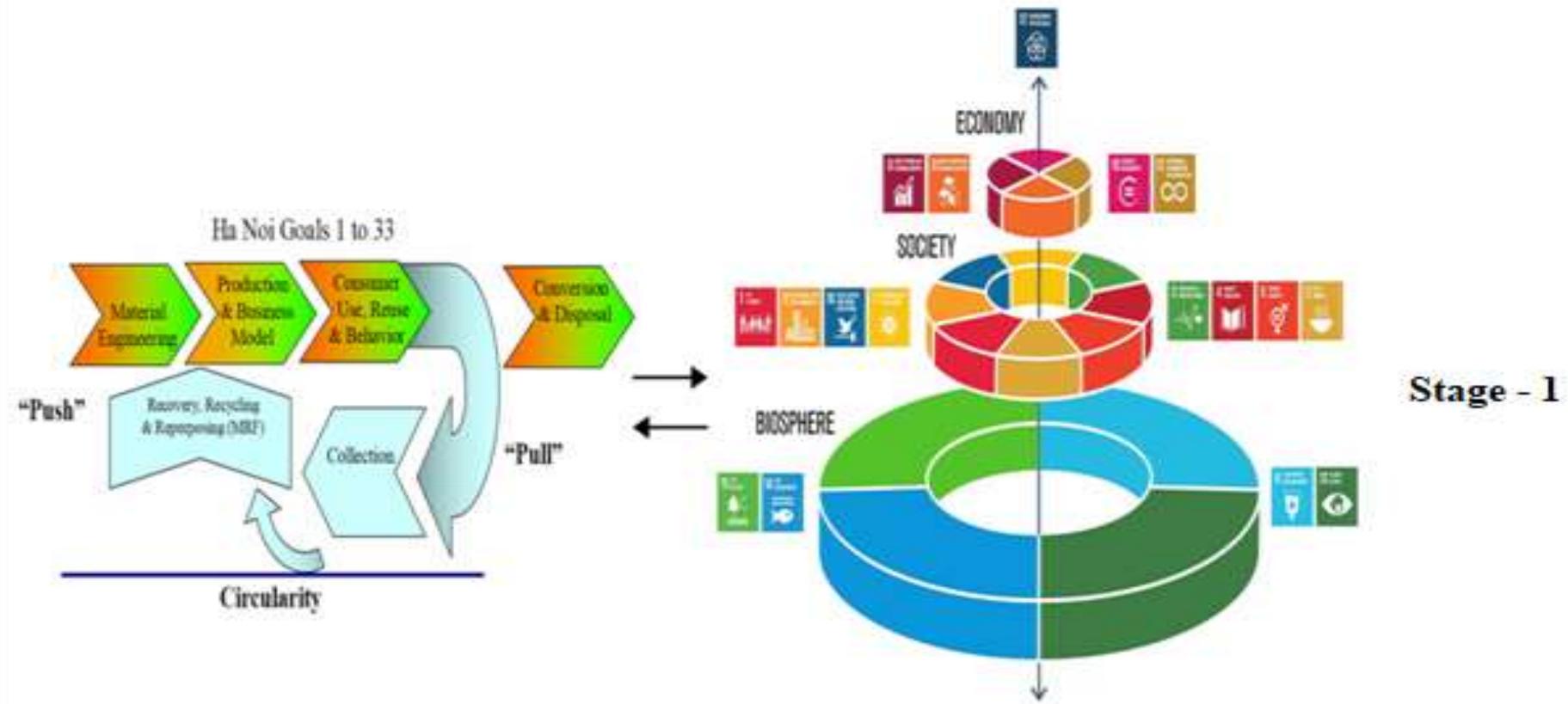
China

India

Thailand

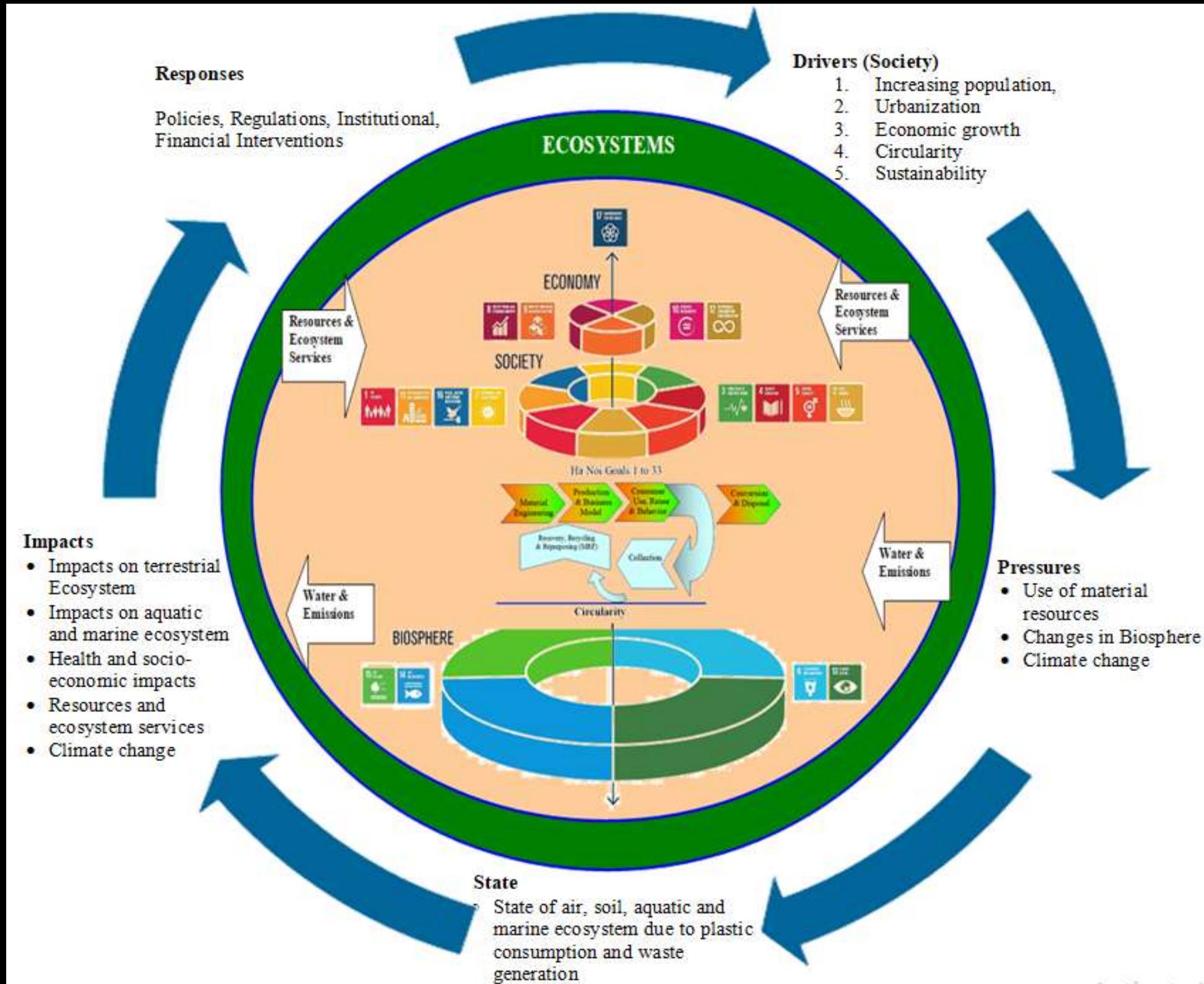
Vietnam

Sustainable Future Policy & Waste Management Ecosystem (linear vs circular) in & the Pacific



Strategic Evaluation

The strategic DPSIR framework shows major drivers, pressures, the state and response. Analysis of the response in the region is fraught with constraints and barriers in the region.



Asia and the Pacific, summary of drivers, pressures, state and trends, and impacts

Contents

CHAPTER 5: MAJOR RECOMMENDATIONS AND THE WAY FORWARD

5.0 Introduction

5.1 The Challenges

5.2 Way Forward

5.3 Convergence with Sustainability and Rebooting the Economy with Circular Solutions

The Challenges Contd...

Summary of Challenges under Each Head

Policy / Regulatory

- Uncontrolled dumping and burning of municipal wastes.
- Compliance to the regulations
- Illegal trafficking in waste.
- Transboundary movement

Technology

- Problematic including additives in the product.
- Limited collection schemes and treatment technologies for different countries.
- Non applicability of available technology.
- Lack of available infrastructure
- Lack of technology adoption & assimilation

Institutional

- Poor data on the recycling industry and waste management chain.
- Regulatory burdens of materials classified as waste.
- Concerns over environmental standards for recycling in emerging markets.
- Waste collection systems for wastes not available for a substantial proportion of the value chain.
- Lack of segregation of waste.
- Global markets concentrated in a small number of countries

Financial

- Costs of collecting, sorting and processing waste.
- Limited resilience of the sector to market shocks.
- Lack of differentiated demand for recycled products.
- Competition between recycling and energy from waste.
- Regulatory burdens of materials classified as waste.

Way Forward

A way forward has been proposed in terms of summary of interventions across the upstream, downstream and the entire chain.

No.	Challenges
Policy / Regulatory	
1.	Mandate requirement for recycled content to create demand.
2.	Ban or reduce contaminants including hazardous contaminants & additives.
3.	Mandate labelling for biodegradable items and improve associated standards.
4.	Use taxes or trading mechanisms to internalise the externalities associated with primary plastics. This will support the price of recycled plastics.
5.	Ban plastics from landfill to drive supply of material and increase economies of scale, reduce costs and increase resilience.
6.	Use Extended Producer Responsibility (EPR) regulation to drive supply of material and increase economies of scale, reduce costs and increase resilience.
7.	Ensure regulation is proportionate and clarify end-of-waste requirements.
8.	Develop effective voluntary standards for recycling sector to limit need for regulation.
9.	Industry-led initiatives to prevent waste crime including transboundary movement.
10.	Regulation and enforcement to ensure consistent environmental standards in global markets.
11.	Mandate sellers to establish and audit end- destinations for environmental standards.

Way Forward **Contd...**

No.	Challenges
Technology	
1.	Develop alternatives to problematic and hazardous additives and design for environment including effects of problematic additives in recycled waste.
2.	Support development of domestic reprocessing capacity to reduce reliance on global markets.
3.	Support development of better and more cost- effective technologies including digital & smart for collecting, transporting and sorting waste.
4.	Business must promote design for environment and agree to use materials that are recycled and ensure that their raw material extractions are sustainable & socially responsible.

No.	Challenges
Institutional	
1.	Use public sector procurement policies to create demand for recycled content.
2.	Provide information and training to designers and manufacturers to encourage use of recycled content.
3.	Provide information to consumers to encourage purchase of products using recycled content and drive demand.
4.	Encourage openness about standards and provide information on end-destinations.

No.	Challenges
Institutional Contd...	
5.	Work with supply chain to encourage use of recycled content.
6.	Standardise waste collection systems to increase economies of scale and reduce costs.
7.	Introduce mandatory data reporting mechanisms for plastics recycling.
8.	Enforcement action to reduce illegal dumping, particularly in low and middle income countries where dumping is common place.
9.	Enforcement action to reduce illegal waste trafficking.
10.	Charge waste producers for collection and disposal of non-recyclable waste.
11.	Raise public awareness in order to create demand for recycled products, and to reduce littering and dumping.
12.	Share best practice on all aspects of the collection, segregation and reprocessing supply chain.
13.	Industry-led initiative to ensure consistent environmental standards in global markets.
14.	A plan needs to be in place for consumers to use products responsibly and reduce the amount of waste created during the use phase
15.	Circularity needs to be introduced with materials.

No.	Challenges
Financial	
1.	Set statutory targets for recycling to drive supply of material, increase economies of scale, reduce costs and increase resilience of the supply chain.
2.	Mobilise investment for developing collection, sorting and processing systems, particularly in low income countries including Island Nations.
3.	Direct or indirect government support for recycled products.
4.	Incentivise recycling over energy from waste by introducing a tax to reflect the relative environmental burden/benefit.
5.	Support the development and demonstration of commercially viable technologies for mixed and/ or low value waste.
6.	Use financial market mechanisms to increase the resilience of the market to fluctuations in prices (e.g. futures markets).
7.	Business need to invest in technologies and innovation that make it possible to avoid materials that are unrecyclable because of toxicity.

Way Forward **Contd...**

Broadly these interventions can be classified as:

- (i) Strengthening Institutional Foundation – legislations, policies, strategies, and standards**
- (ii) Securing Finance and Promotion of Private Sector Investment**
- (iii) Filling Implementation Gaps between Rural and Urban Areas**
- (iv) Promoting Capacity Development for emerging ecosystem, Operation and Maintenance**

Convergence with Sustainability and Rebooting the Economy with Circular Solutions

Need of the hour.....

- The major studies indicate that the world is only 8.6 per cent circular. The circular economy presents many opportunities for businesses.
- Measures to reduce emissions and stay within the 1.5 degree target has surged considerably
- Taking steps to achieve the Sustainable Development Goals is becoming increasingly urgent.
- Therefore, digitalization for collaboration, innovation and education will increase the adoption and impact of sustainable lifestyles. It will also lead to clean recycling.

For Example: The Italian bank Intesa San Paolo is funding projects and businesses under a Euro 5 billion credit facility to support the circular economy transition. Thirdly, reach of the new technology with consumers will be enhanced.

Way Forward **Contd...**

Further, this approach works hand in hand :

- 1. with the other 2030 Agenda agreements,**
- 2. The Sendai Framework,**
- 3. The frameworks as per Basel,**
- 4. Rotterdam & Stockholm conventions,**
- 5. The Paris Agreement on Climate Change,**
- 6. The Addis Ababa Action Agenda on Financing for Development,**
- 7. the New Urban Agenda,**
- 8. and ultimately the Sustainable Development Goals.**

Therefore,

- the 3R momentum need to be sustained in future.**
- Continue the reporting of goals provide a regional framework of comprehensive reporting,**
- Converge towards sustainability and other UN conventions.**

THANK YOU

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