

# Challenges and Good Practices for the 3R and Circular Economy in ASEAN and East Asia Region

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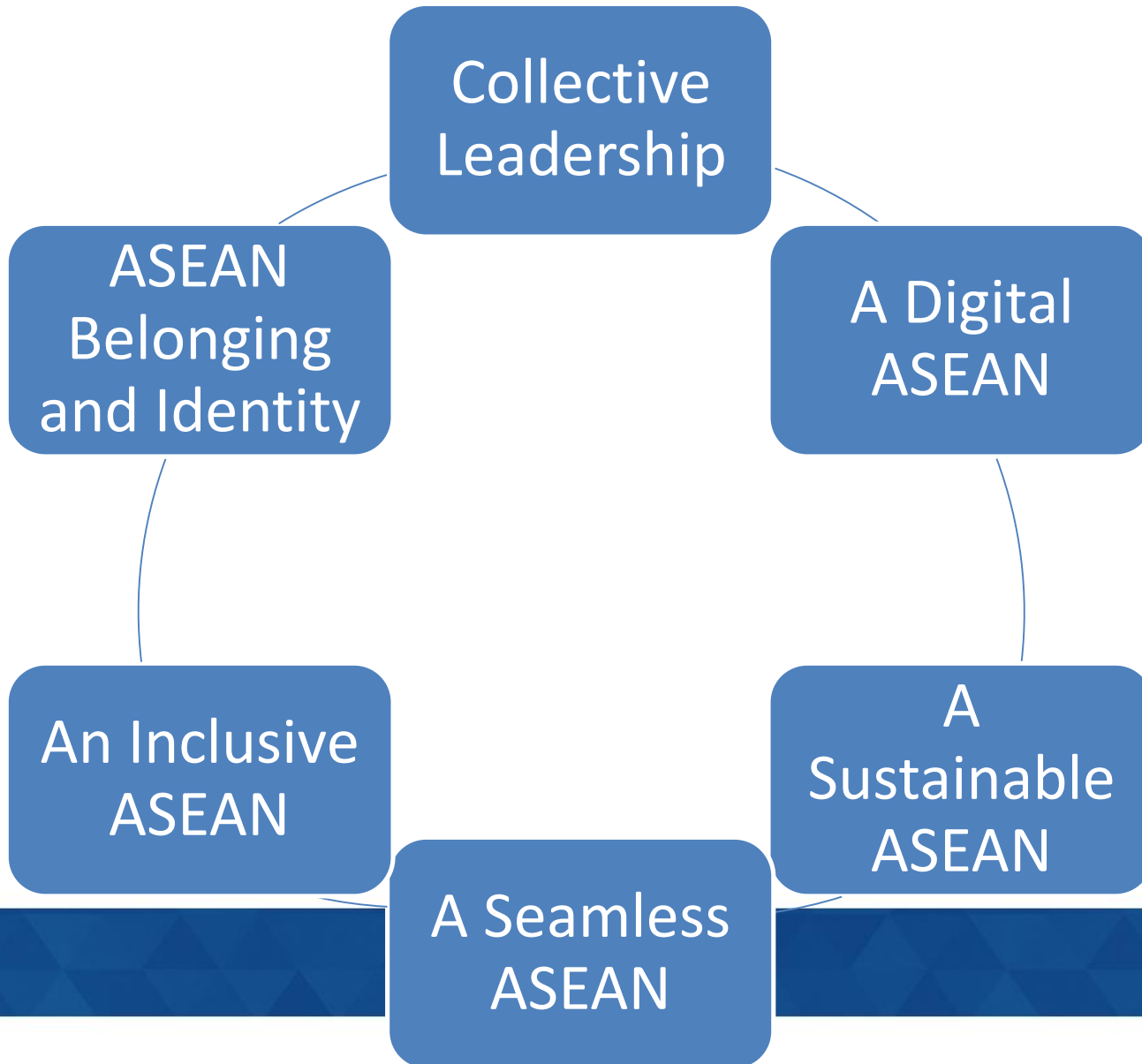
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# ASEAN Vision 2040

- ASEAN adopted the ASEAN Vision 2020 in December 1997, a few months after the outbreak of the East Asian financial crisis. The ASEAN Vision 2020 was adopted at the height of the financial crisis – a testament to the determination of ASEAN leaders to move boldly forward. Such dogged persistence over the subsequent nearly 2 decades has borne fruit: an increasingly integrating and cohesive ASEAN community that has become the hub of economic and political-security architecture in the wider region.
- The geo-economic, geopolitical, and technological landscape has changed tremendously since the ASEAN Vision 2020 was adopted. It is time for ASEAN to develop the ASEAN Vision 2040, with a similar 20-year window. The ASEAN Vision 2040 seeks to assess the challenges ASEAN faces and set out a vision for the next 2 decades and the strategies to achieve it.
- ERIA, collaboration with the MOFA of the Government of Thailand conducted the ASEAN Vision 2040 Project, and the results were submitted on the last ASEAN Foreign Ministers Meeting on January 2019.

# Key Messages of ASEAN Vision 2040



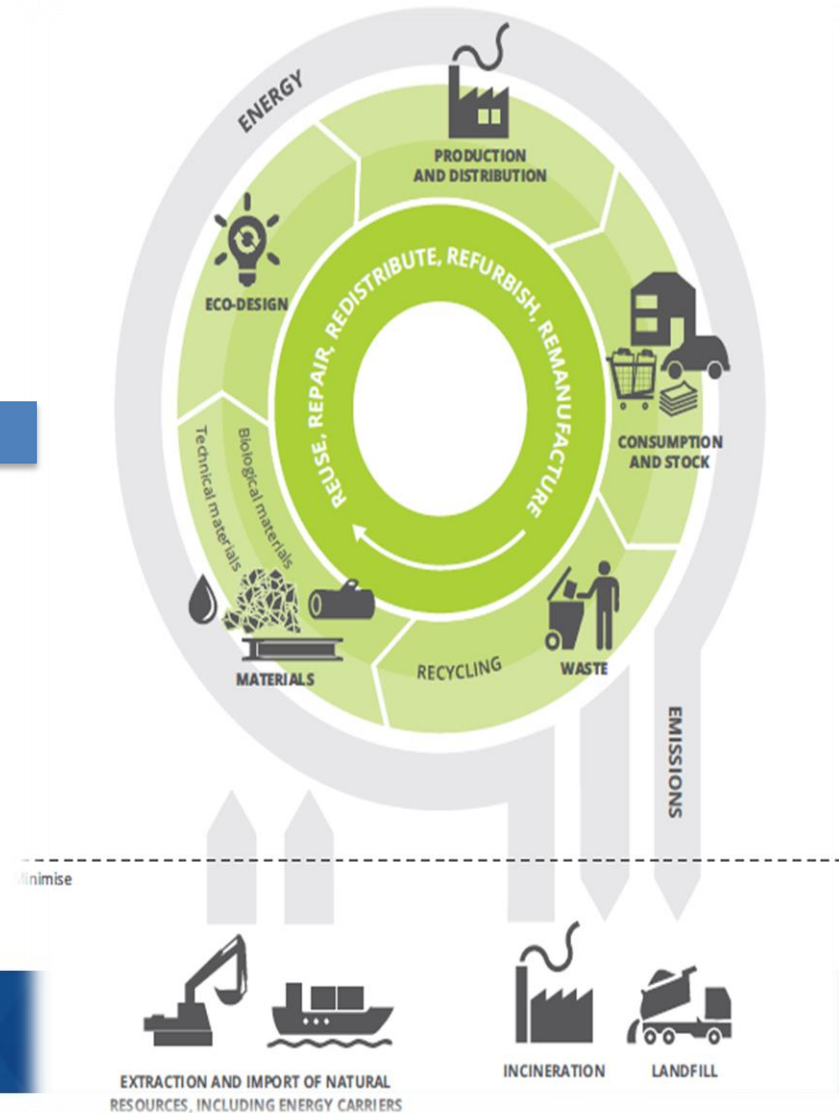
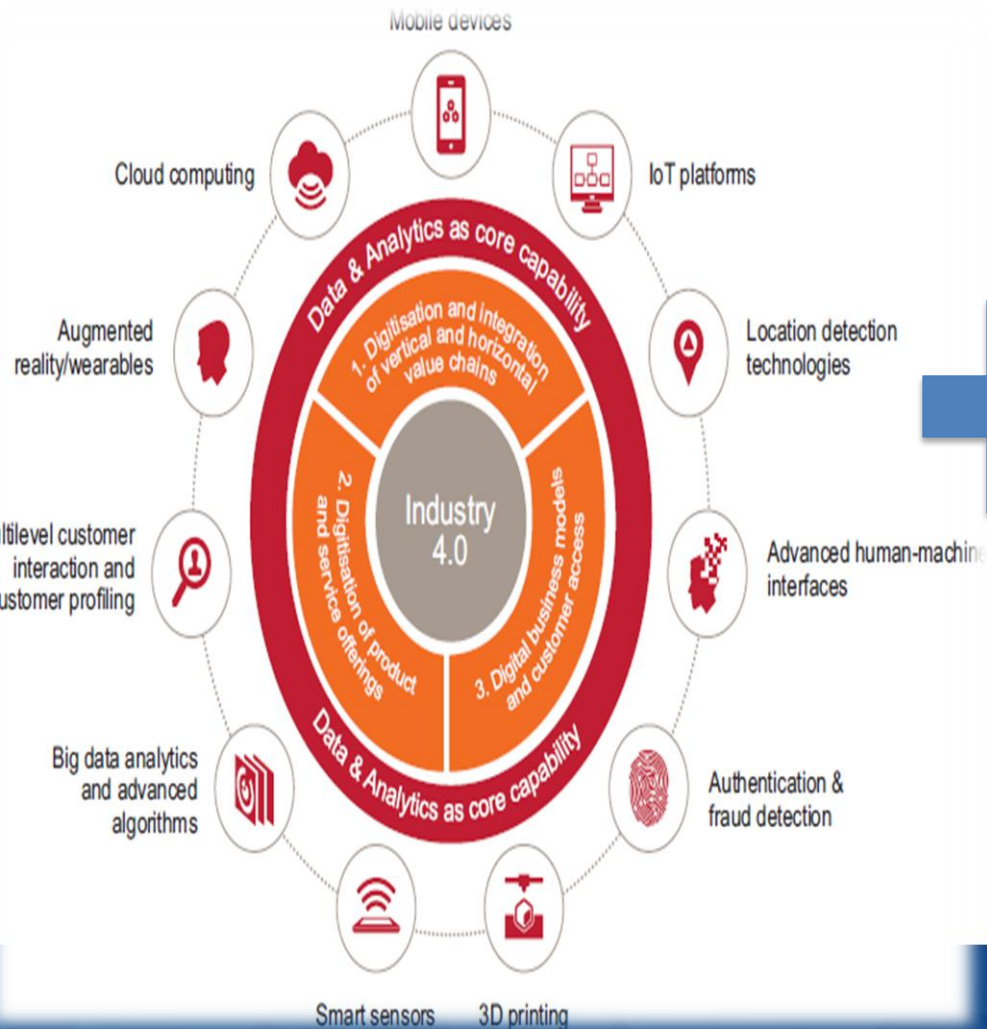
# ASEAN 2040: Environmental Sustainability Challenges

- **Biodiversity:** The region – the second richest is rapidly losing its biodiversity at mass extinction rates, such that 40% of its genetic biodiversity has become extinct.
- **Deforestation:** Current deforestation rate in tropical forests lead to an 7% drop in regional rainfall. As the region rapidly urbanizes, more people than ever before demand land, wood, mineral and other resources.
- **Water Cycle.** The regional water bodies are facing severe impacts through over abstraction of groundwater and uncontrolled pollution of surface water that it may face a 30% shortfall in the freshwater needed for to support economy by 2030
- **Solid and Industrial waste.** As economies grow, individual become rich, they consume and discard more. ASEAN's 600 million people account for 4% of world population but produce but produces 9% of rubbish but is expected to double in 2050.
- **Climate Change and Disasters.** The impacts of natural disasters are more pronounced in ASEAN than in part of the world. By 2050, climate change is estimated to reduce annual GDP of ASEAN by up 6 six percent

# Impact of Digital Economy and Industry 4.0 on Sustainability

- The progress of the digital economy and the fourth industrial revolution technologies Industry 4.0 may have a large impact not only on our consumption and production patterns, but also on sustainability. We need to utilize this new technology to improve sustainability.
  - The rise of the internet of things and artificial intelligence can empower SMEs to produce in a more eco-efficient way
  - Energy efficiency guidelines and regulations for data centres should be developed at the ASEAN level.
  - Connectivity between public transport and self-driving cars should be carefully designed in that digital-driven city economy.

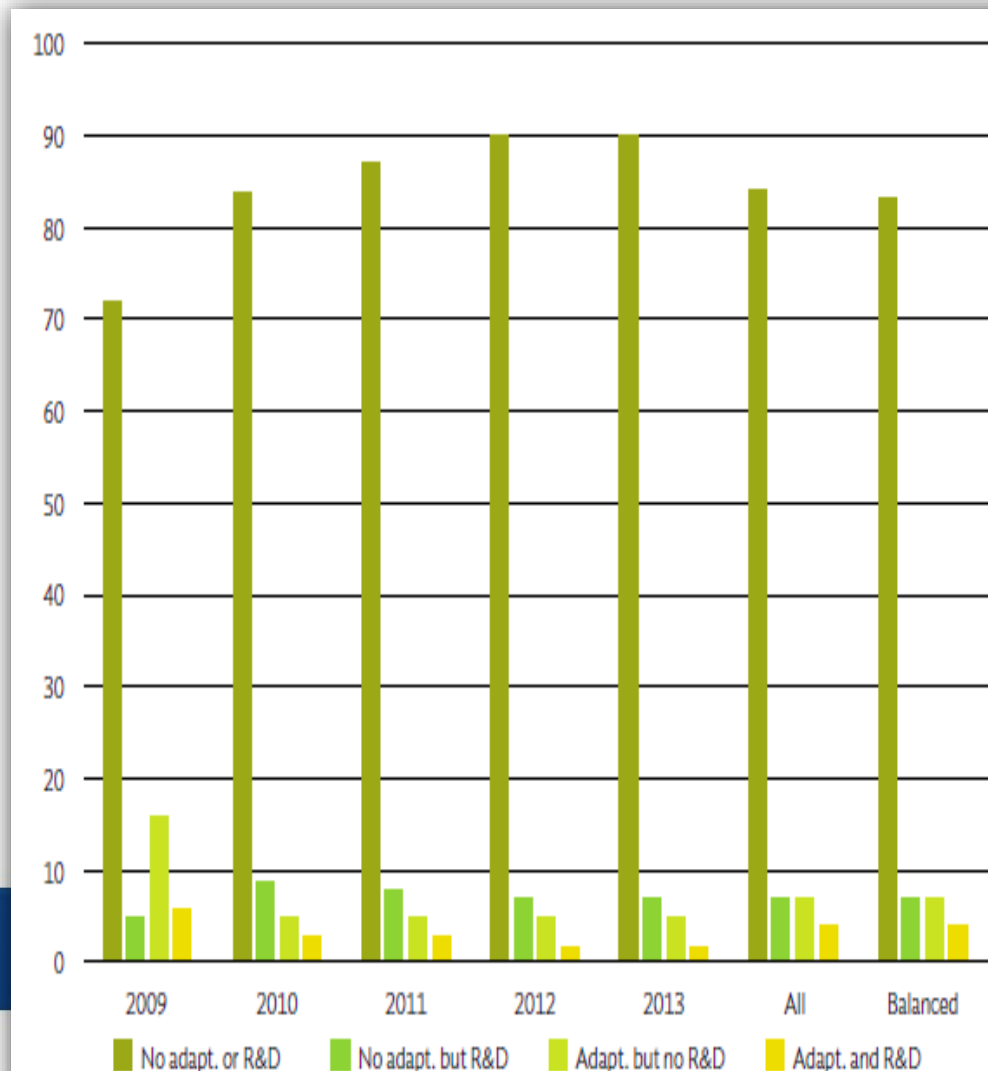
# Challenge : Integrating Industry 4.0 for Circular Economy



# Does ASEAN has an efficient innovation for integrated systems ?

*Share of Vietnamese firms doing research on and adaptation of technology (Unit in %)*

- ASEAN has relatively greater innovation efficiency than the rest of developing countries.
- Efficient in converting inputs (R&D, Researchers, IP etc) into high tech exports, trade mark applications and patent applications.
- Lag behind OECD in-terms of level of innovation inputs and outputs



# Circular Economy Enhancers Ratings of ASEAN

Country	Higher Education and Training	Goods Market Efficiency	Labour Market Efficiency	Financial Market Development	Technological Readiness	Market Size	Overall Rating
Cambodia	2.8	4.2	4.5	3.9	3.0	3.0	3.6
Indonesia	4.5	4.4	3.7	4.2	3.5	5.7	4.3
Lao PDR	3.2	4.3	4.5	3.8	2.8	2.9	3.6
Malaysia	5.0	5.4	4.9	5.2	4.6	5.0	5.0
Myanmar	2.5	3.6	4.2	2.4	2.2	4.2	3.2
Philippines	4.5	4.2	4.1	4.2	3.9	4.9	4.3
Singapore	6.2	5.7	5.7	5.6	6.2	4.8	5.7
Thailand	4.6	4.7	4.2	4.4	4.2	5.2	4.6
Viet Nam	3.8	4.2	4.4	3.7	3.3	4.8	4.0



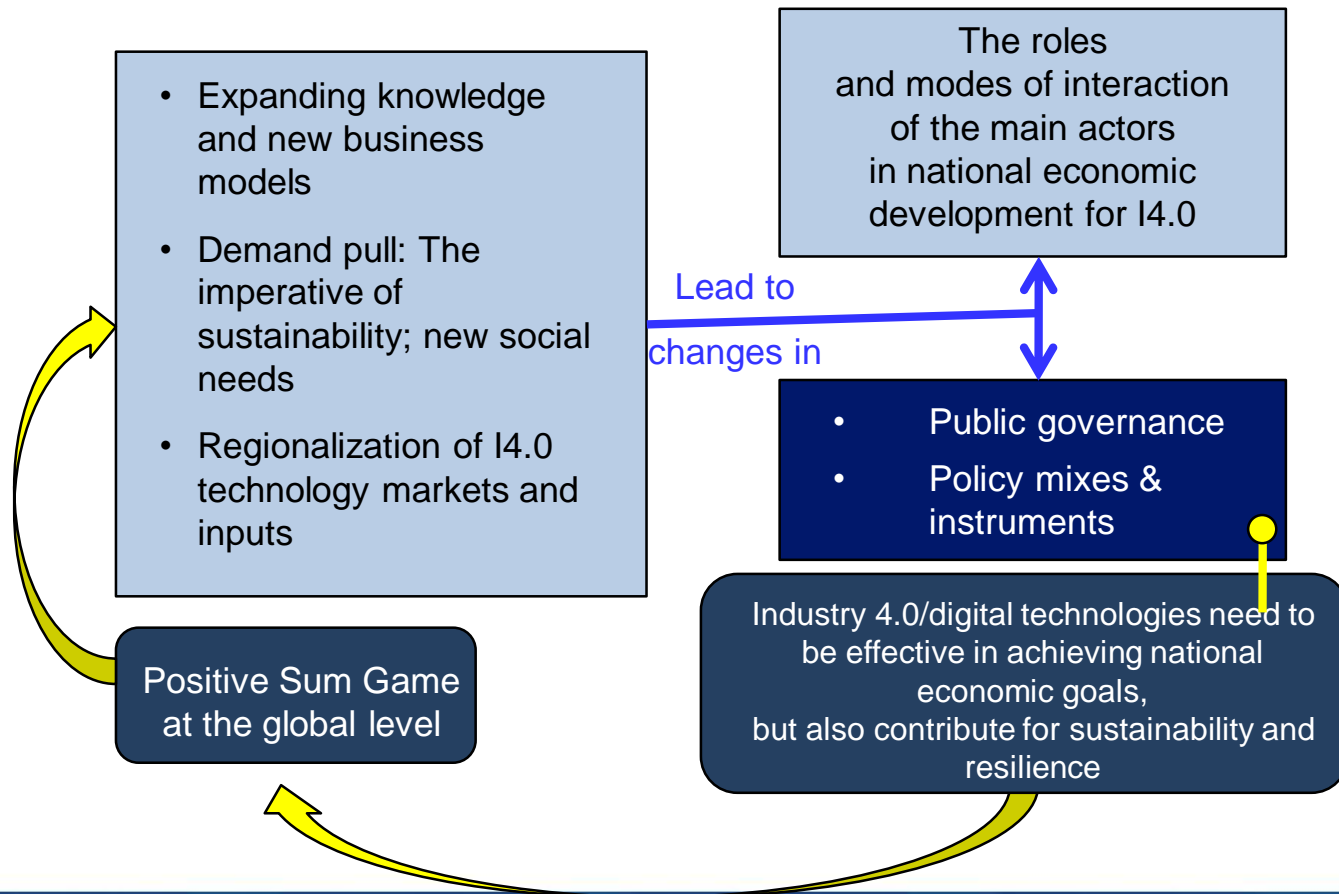
# Possible Approaches for Accelerating Circular Economy in ASEAN

Country Clusters	Strengthening Production and Innovation Capabilities	Partnering Industry Leaders in Production and Incremental Innovation	Partnering Industry Leaders in Architectural and Modular Innovation	Assuming Industry Leadership
Potential Innovators (Singapore, Malaysia)	Exists at high-level. Strengthen further	High priority area	Short-term priority area	Medium-term priority area
Efficiency Seekers (Indonesia, Philippines, Thailand),	Exists. Strengthen further as a matter of high priority.	Short-term priority area	Medium-term priority area	Long-term
Transitioner (Vietnam)	High priority area	Medium-term priority area	Long-term	Long-term
Slow Movers (Cambodia, Lao PDR, Myanmar)	High priority area	Long-term	Long-term	Long-term

# Readiness of Technologies for meeting the Sustainability challenges

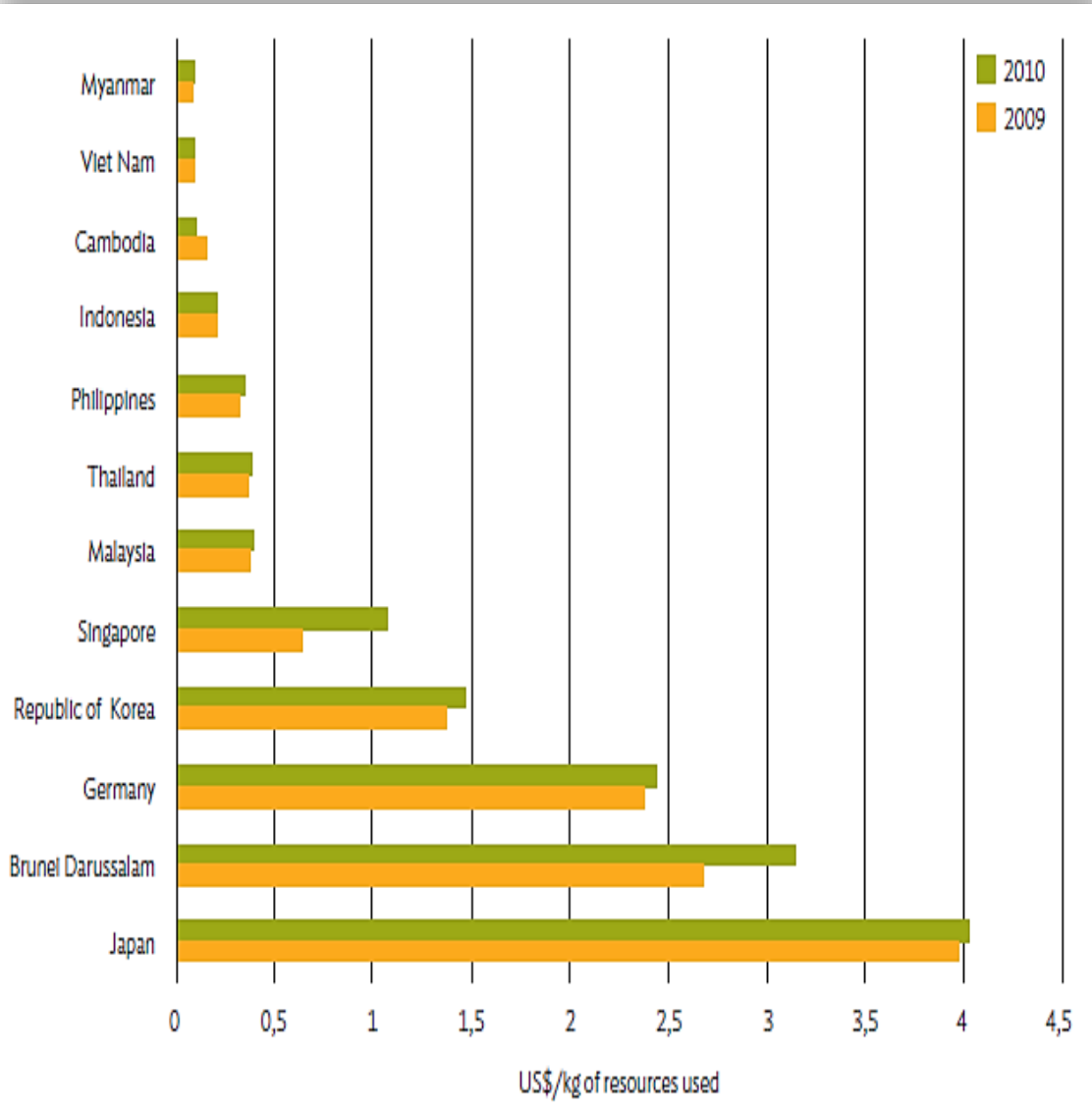
Industry 4.0 Technologies	Energy use and sharing economy	Resource management and circular economy	Preventing Pollution	Protecting biodiversity	Resilience and climate change adaptation
3D printing					
Artificial Intelligence					
Advanced materials					
Advanced Sensor Platforms					
Bio-technologies					
Blockchain					
Drones and auto driven vehicles					
The internet of Things					
Robotics					
Augmented realities and new computing technologies					

# ASEAN's Industry 4.0 Strategy as a starting a call for modernizing the Circular Economygovernance systems



# ASEAN's Prerogatives for Circular Economy

## Resource Productivity



## Waste Management

Case of BKK

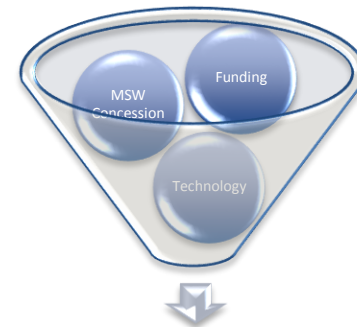
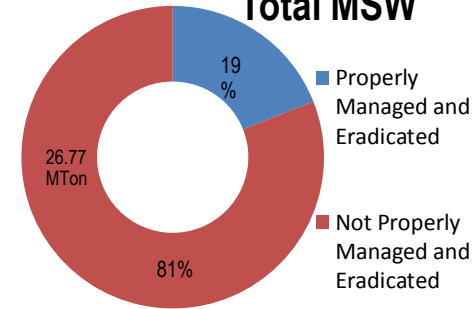
MSW produced per head per day



1.03Kg  
In 2008

1.15Kg  
In 2015

### Total MSW



Waste-to-Energy

# Circular Advantages

Circular Economy: a new economic model/business strategy – which take into consideration the resource constraints and find the ways to reuse and recycles products.



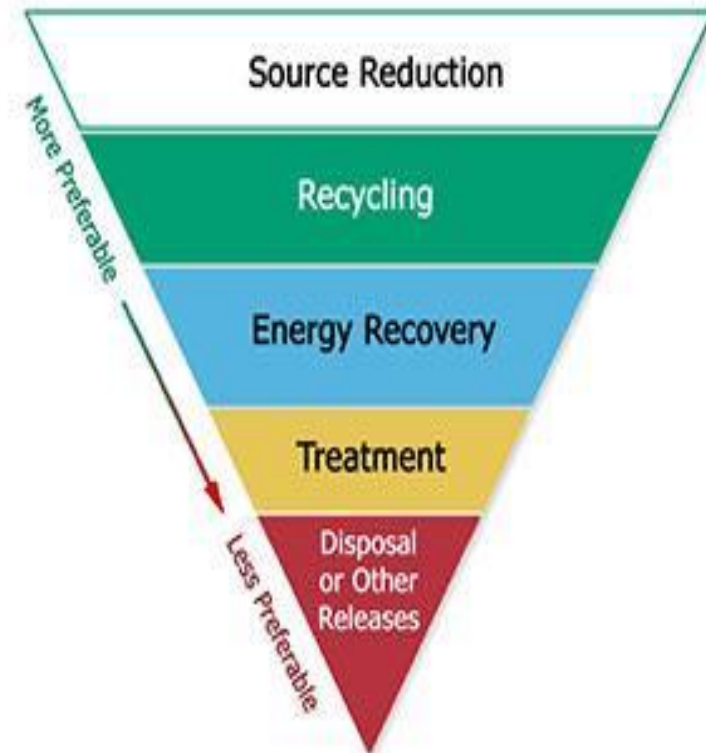
## CE focuses on:

- Minimizing the use of resources
- Reusing the product, service
- Sustainably designing the product and services
- Improving the system efficiency
- Minimizing the system externalities

# Innovations for Circular Economy - 3R

## Experiences in SEA

- Circular Economy concept through 3R approach is gaining a momentum in ASEAN
- Malaysia, Philippines, Thailand, & Vietnam are group of developing Asian countries that are systematically planning to achieve better waste management through progressive policies & plans.
- Cambodia & Laos are also aspiring nations looking forward to proactive policies on waste management.
- Singapore has been successful in enabling 3R



# Summary

- With rapid economic growth, resource consumption has been greatly increasing in ASEAN. Resource efficiency through circular economy concept is crucial for the future of manufacturing industries.
- It is critical to support the development of local capacity for a sustainable ASEAN. When indigenous innovations are connected with international models, they provide a different profile for circular, and sharing economies.
- The key aspects of such a new integrated paradigm should be addressed in a cross-sectoral manner. Issues such as taxation, social benefits, licenses, ecosystem payments, and employment conditions should be addressed to reduce vulnerability and enhance competition among key stakeholders.
- Current approaches to integrate CE concepts to be socially inclusive and – resource efficiency gains with business values - posits challenges and more comprehensive readiness indicators to measure the progress is needed.
- 3R approaches are effective entry points. But innovations –technical and financial models are important for the regionwide success of CE .

# Four strategies areas where we can work together toward 2040

- **Dialogues and partnerships** that bring industry 4.0 technology developers and providers together with environmental experts to co-develop these innovations and ensure that they are developed for the public good – sustainability and resilience – while minimizing the risks of united cyber security risks.
- **Innovative investment platforms, financing structure and business models** that can accelerate the scaling of promising eco-innovations that could be supported by a combination of industry 4.0 set of technologies, regardless of whether they have clear commercial proposition or are less profitable sustainability benefits.
- **Partnership with other and international institutions** to enable the development of common and agile institutions and governance systems, including the championing of common policy principles for managing new technologies and specific data protocols, and transparency mechanisms
- **Regularly review and where appropriate revise emerging legislative and regulatory framework** to clarify and explicitly articulate the precise roles for new type of technologies increasing circular benefits.



# Thank You

