

# **Plastics Circularity - Key Challenges & Opportunities for Future Development in Asia**

**SCIC SUSTAINABILITY CONFERENCE 2021**  
**‘Waste Management and the Circular Economy’**  
**8-9<sup>th</sup> April 2021**

# Agenda



## Plastic Recycling Value Chain

- Challenges
- Regulations
- Investments

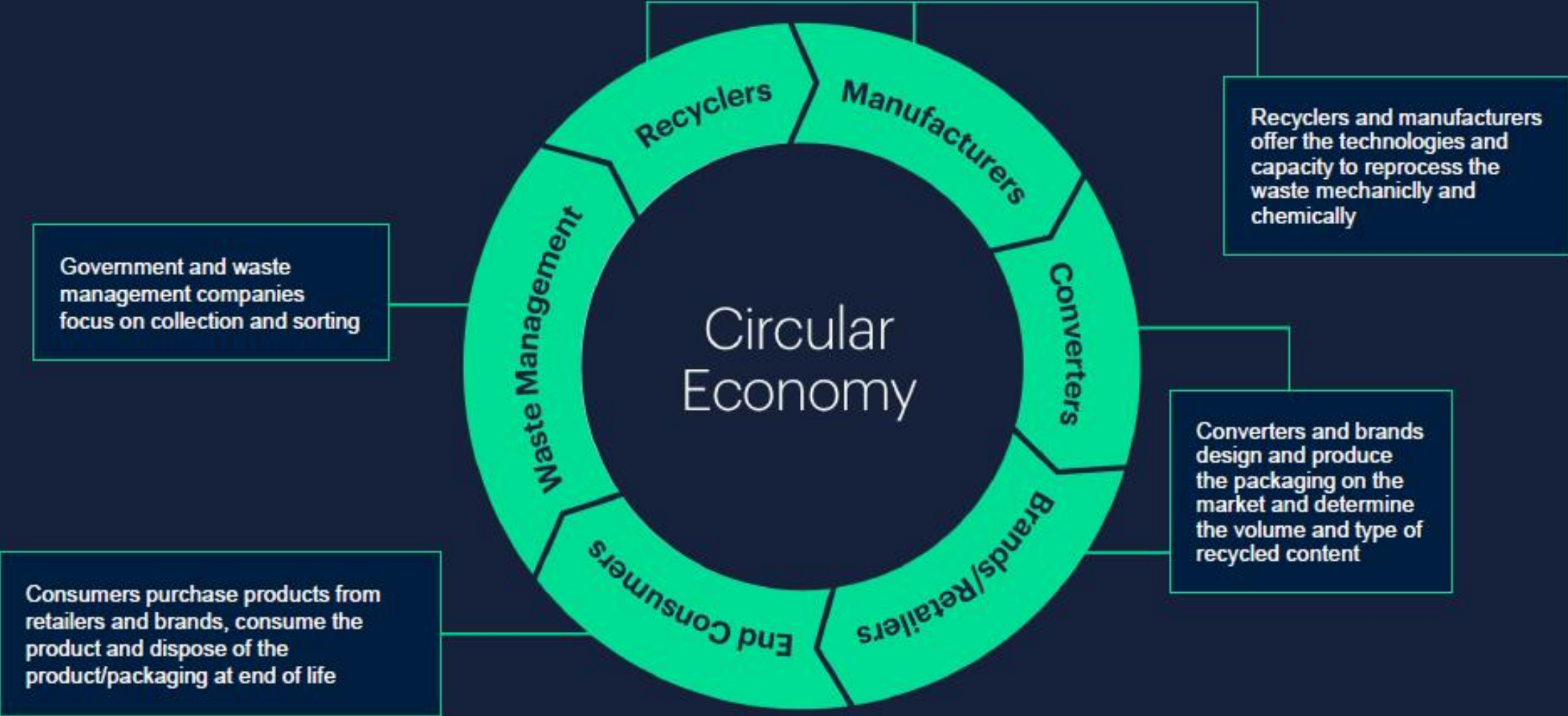
## Pricing Trends

- Developed vs Developing Markets

## Way Forward

- Opportunity Landscape

# The Recycling Value Chain



# What has led to the awakening in Asia?



## Global North frenzied – exported to Global South, especially countries in SEA

Malaysia the new top destination for the world's plastic in 2018. Indonesia saw a 250% increase in plastic waste imports. In Vietnam, inbound shipments surged 200%.

Countries like Vietnam & Thailand explore total waste ban.  
Australia announced a staged ban on waste exports.

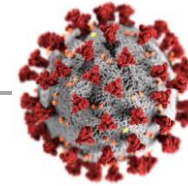
Basel Convention on Transboundary Movement of plastic scrap and waste.

Jan 2018

Early 2018

Mid 2018

End 2018



COVID-19

2020

2021

## National Sword Policy: China banned the import of 24 scrap materials

Estimated 111 million tones of plastic waste displaced

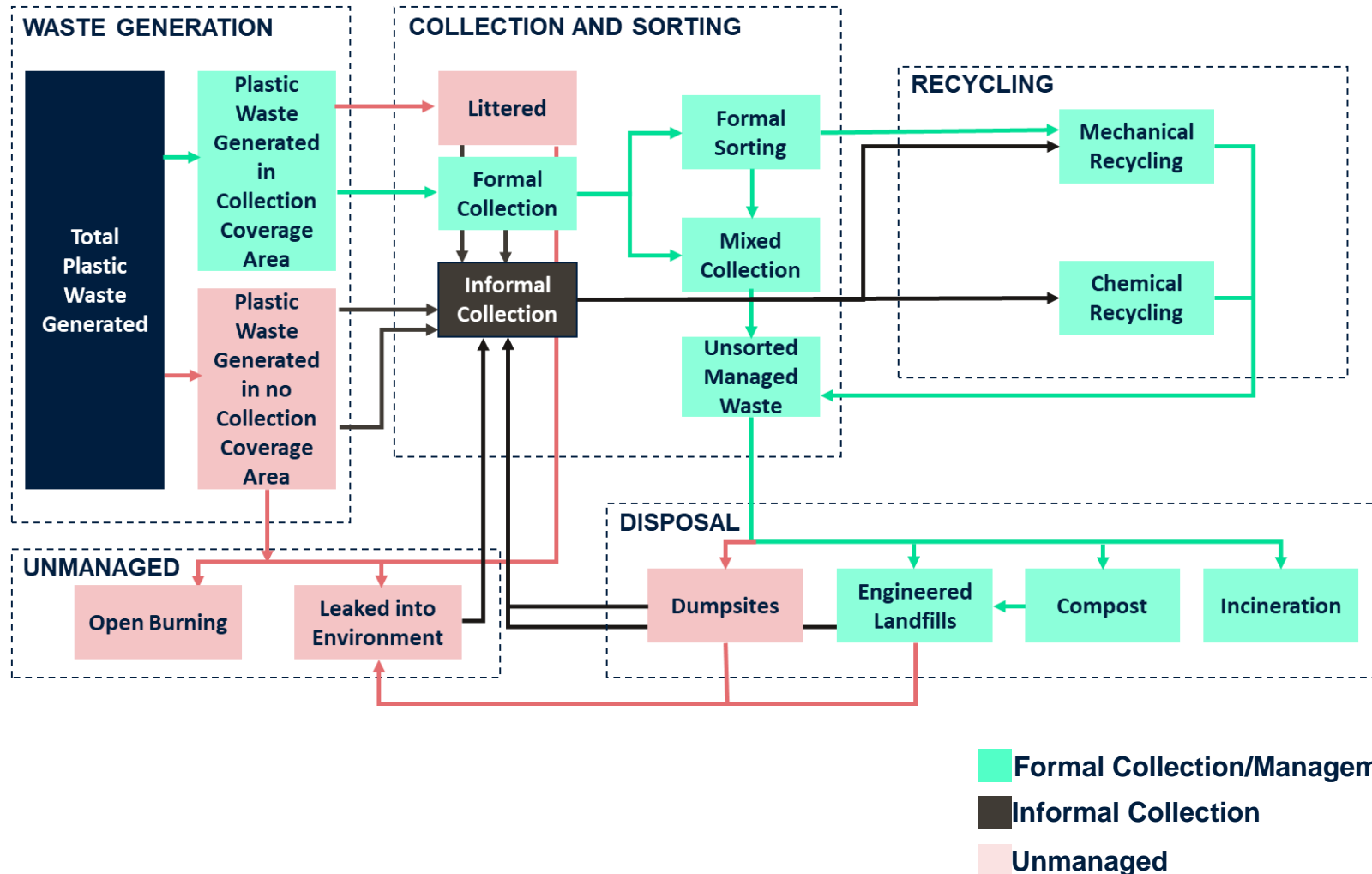
## SEA countries imposed tighter waste import restrictions

Malaysia repatriated 150 containers of illegal plastic waste. In September, Indonesia said it was returning containers of contaminated waste to Australia.

## Countries to manage own waste

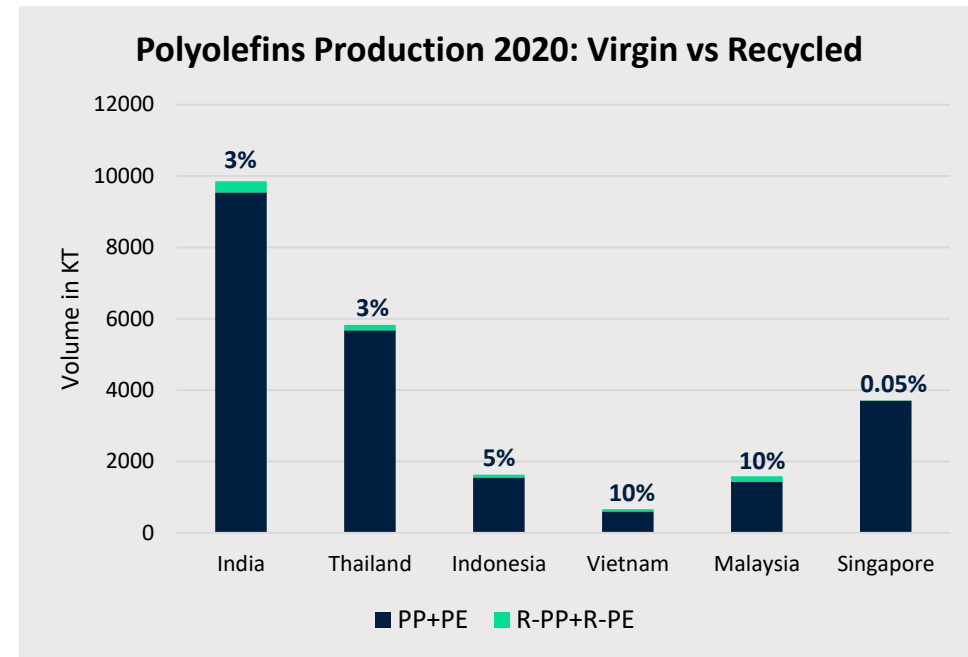
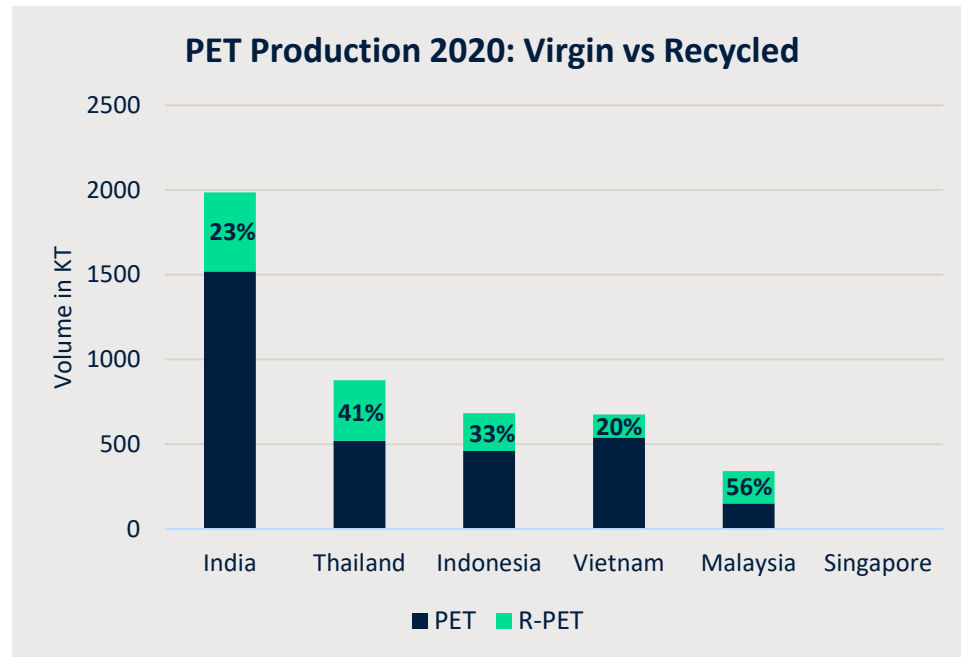
Australia announced Recycling Modernisation Fund

# Waste Management in Developing Asia



Waste collection and separation systems in developing Asian countries are largely dependent on the informal sector - leading to inconsistent feedstock availability for plastic recycling, along with a lack of quality standardization.

# Current Situation - Virgin vs. Recycled Production in Asia



**Volume of recycled PET is significantly higher than for Polyolefins, primarily due to the diverse applications of Polyolefins - thereby making chemical recycling critical for the circularity of Polyolefins.**



# Asian End-Applications for Recycled – skewed towards lower-end...



	SOURCE	COLLECTION RECOVERY	RECYCLING	CURRENT APPLICATIONS
LLDPE	 <p>Packaging Films- Shrink/Bubble etc.</p>	 <p>LD/LL Film Bales</p>	 <p>Pellets</p>  <p>Flakes</p>	 <p>Vacuum Bags</p>  <p>Garbage Bags</p>
HDPE	 <p>Crates</p>  <p>Bottles</p>  <p>Carboys</p>	 <p>Baled Bottles</p>  <p>Baled Waste Crates</p>	 <p>Regrinds</p>  <p>Pellets</p>	 <p>Hangers</p>  <p>Pails</p>
PP	 <p>Car Bumpers</p>  <p>Injection Molding</p>	 <p>Baled PP Waste</p>	 <p>Pellets</p>  <p>Sheet Regrinds</p>	 <p>Low-end Injection Molding Applications</p>
PET	 <p>Packaging</p> 	 <p>PET Bales</p>	 <p>Flakes</p>  <p>Pellets</p>	 <p>PET Fibres</p>

Currently the demand for recycled plastics in Asia is driven primarily by low-end applications more so as a cheaper substitute to virgin polymers.

# Legislations in South/SE Asia may need more specific targets and action plans.



## Do we need Regional mandates?

### India

- ♻️ Draft EPR Policy proposed, yet to be finalized
- ♻️ Under a proposed National Resource Efficiency Policy, targets for
  - ♻️ 100% recycling and reuse of PET plastic
  - ♻️ Recycling at least 75% of other types of plastics.

### Malaysia

- ♻️ EPR working group created under Malaysia Plastic Pact, to champion EPR discussions and implementation
- ♻️ Economic Planning Unit of Malaysia has proposed the adoption of an EPR scheme in the Twelve Malaysia Plan (12MP) 2021-2025

### Singapore

- ♻️ Mandatory Packaging Reporting & submission of 3R plans in 2021.
- ♻️ Deposit return scheme for various containers to be rolled out in 2022.
- ♻️ EPR for packaging waste to follow through in 2025.
- ♻️ NEA And Shell To Jointly Explore New Chemical Recycling Value Chain To Turn Plastic Waste Into Chemicals
- ♻️ Integrated Waste Management Facility (IWMF) by 2024/2027

### Thailand

- ♻️ The Department of Pollution Control in the process of drafting the country's first-ever plastic waste management bill, with a goal to make plastic 100% recyclable by 2027

### Vietnam

- ♻️ EPR mechanism introduced by the recent revision of the Law on Environmental Protection (LEP)

### Indonesia

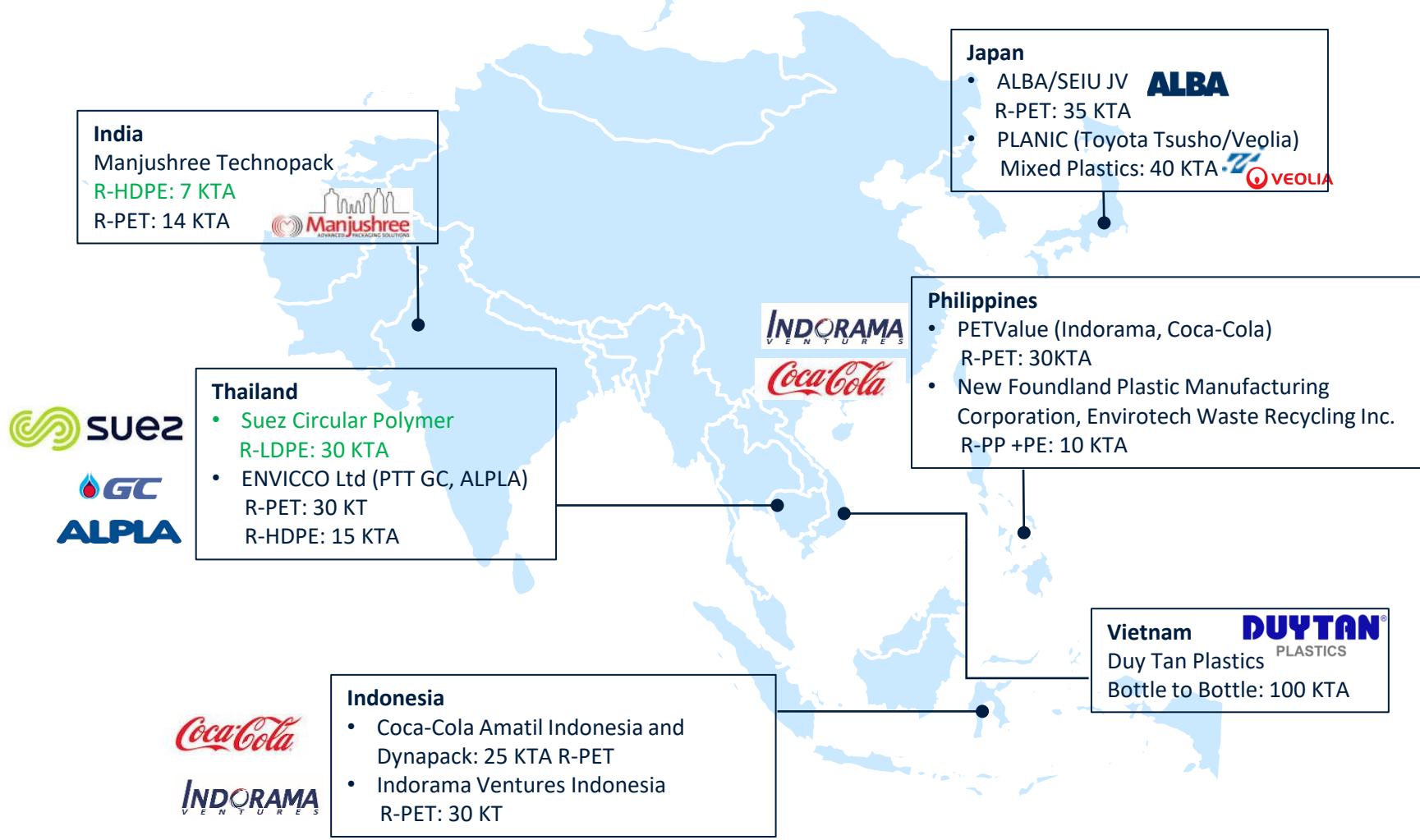
- ♻️ National Plastic Action Partnership (NPAP)
- ♻️ Double plastic waste collection to 80% by 2025.
- ♻️ Double recycling capacity.
- ♻️ 70% reduction in marine plastic debris by 2025.
- ♻️ Plastic pollution-free by 2040.



# There is a clear intent but how about Recycling investments in Asia?



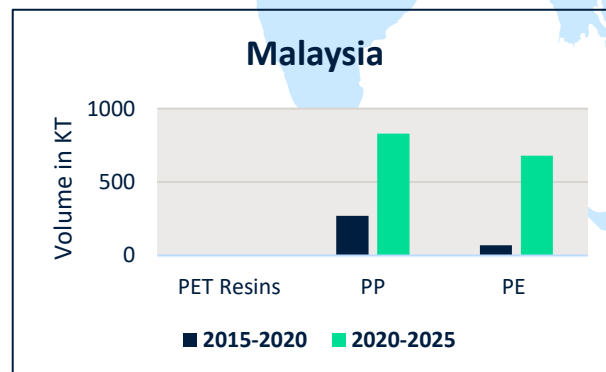
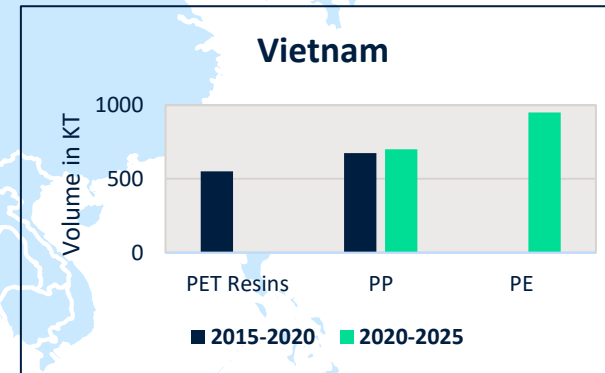
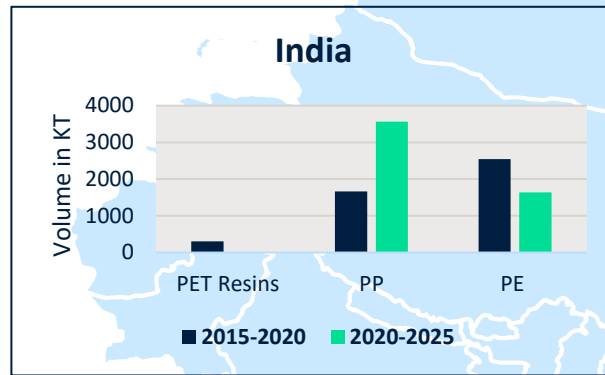
## Regulations could drive future Investments?



**Stakeholders across the recycling value chain are investing not only towards recycling capacities, but also to develop waste management infrastructure**

- ♻️ AEPW’s ‘Zero Plastic Waste Cities’ projects
- ♻️ Global Plastic Alliance
- ♻️ Circulate Capital’s \$106 M ocean fund
- ♻️ \$190 M fund from Government to boost recycling in Australia

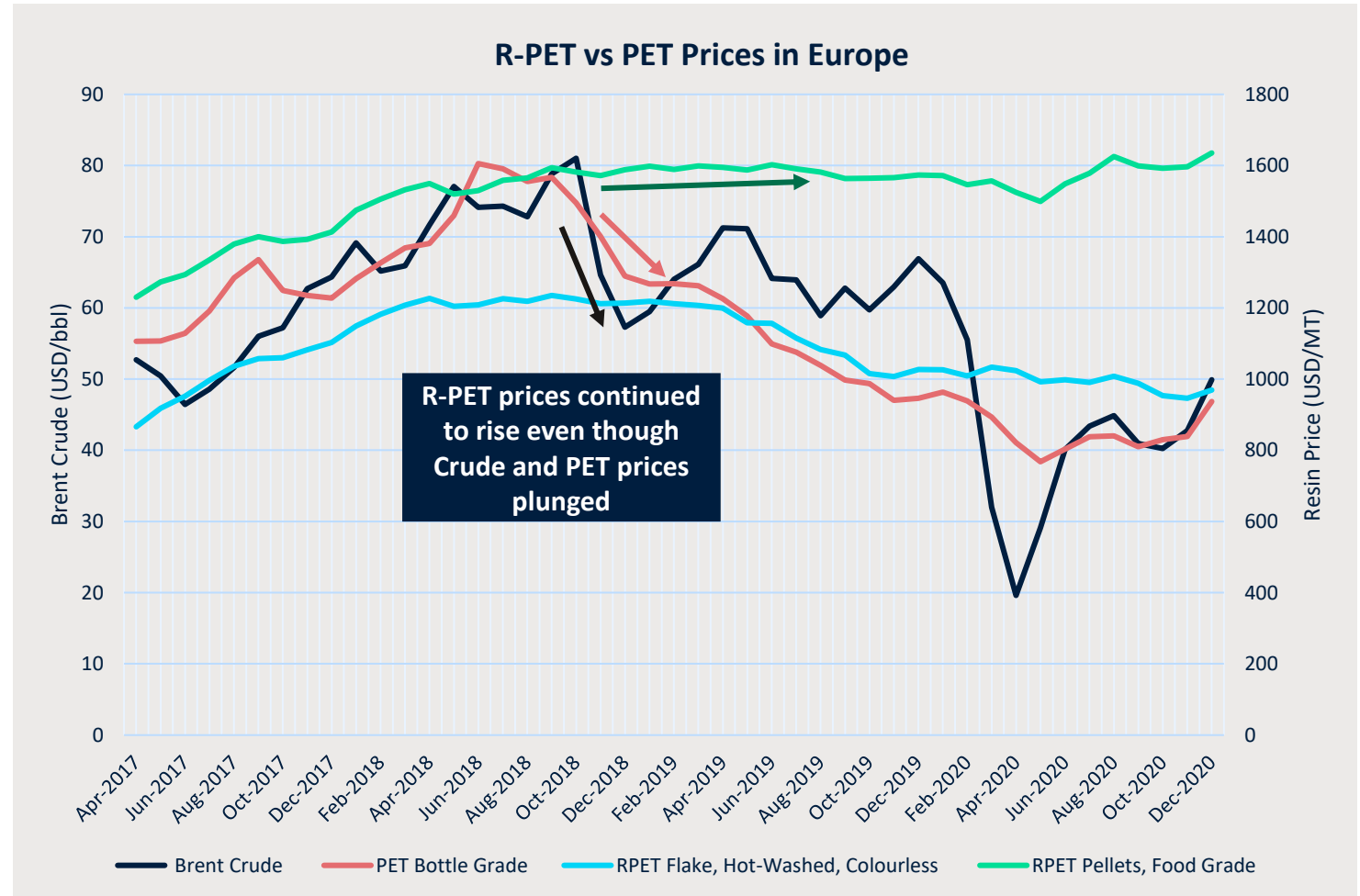
# ... meanwhile, millions of tonnes of Virgin Polymer capacity set to come online in South and South East Asia



# Pricing for Recycled PET – Europe vs. Asia



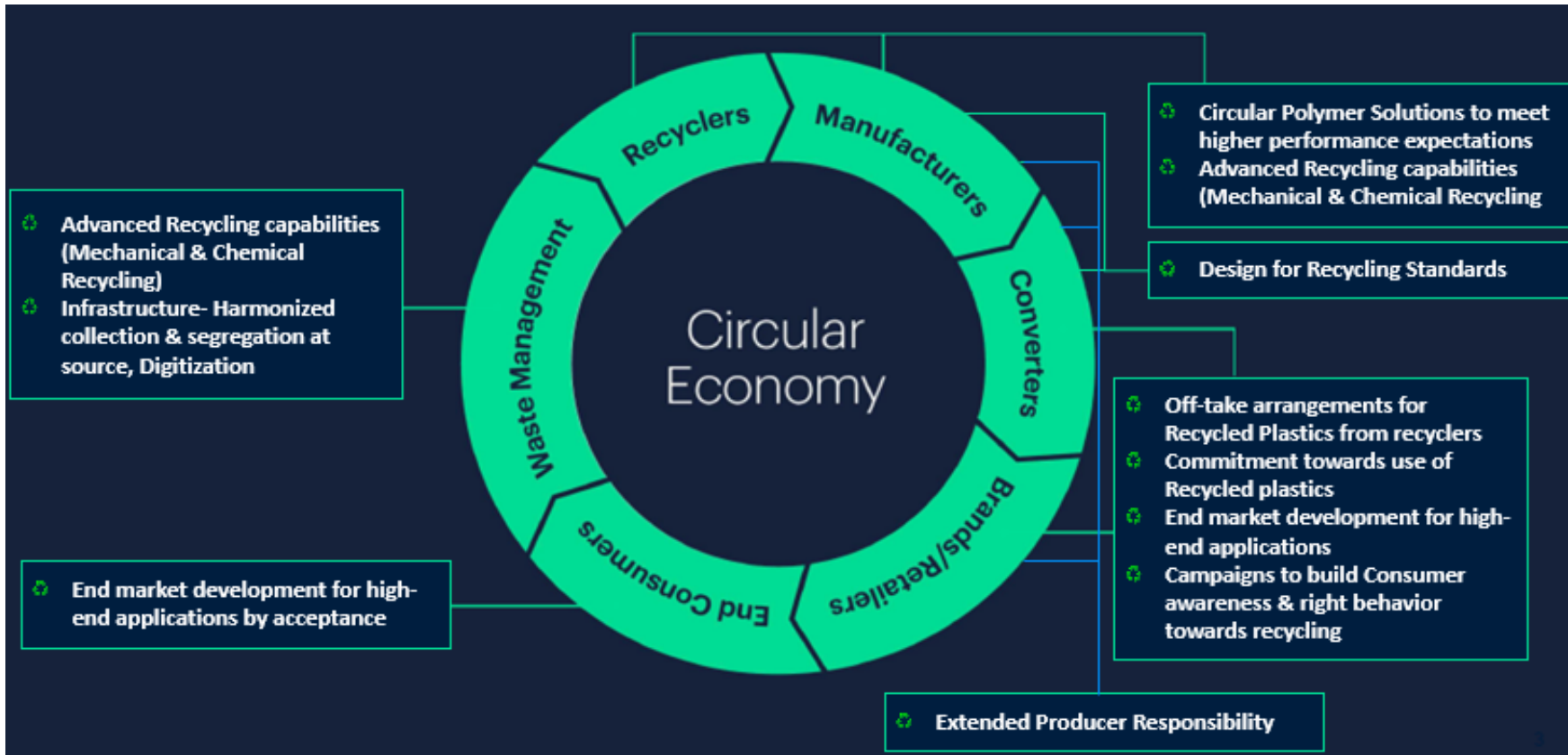
- In Europe, Food grade R-PET Pellet prices have decoupled from virgin PET and Crude as sustainability goals have increased, while virgin resin prices continue to follow crude.
- FOB SEA March price for PET flakes was 735 USD/MT against FD NWE price of 1164 USD/MT. This difference, if persists, could potentially lead to opening up of international trade for recycled plastics.
- End-applications for recycled plastics in Asia need to evolve towards more valuable applications like food-grade in order to establish a differentiated demand, as is seen in developed markets like Europe- leading to decoupling of prices.



# Way Forward - Value Chain Collaboration



*Sustainable market development for Recycled Plastics would require a balancing act between Demand, Prices and Supply.*





# ICIS Asia Recycled PET



Recycled PET - Asia

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 23-Feb-2021

Overview | Outlook | Prices | Analytics

## OVERVIEW

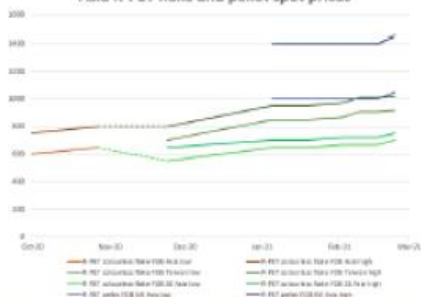
- PCB bale availability remains tight and buoys prices
- Bullish sentiment as some expect downstream substitutional demand returns for R-PET
- Some recyclers eye higher prices, discussions ongoing

Post-consumer polyethylene terephthalate (PET) bottle availability in Asia remains tight, supporting prices. Used and collected bottles are fewer than in previous years given the low season for consumption in the first quarter and continued suppression of tourism footfall and hence bottled beverage consumption to generate used bottles.

Sentiment was bullish, as some are expecting downstream end-users that have portions of substitutional volume between recycled and virgin PET to return for more recycled PET (R-PET) volumes, as virgin PET prices are on a steep increase.

Some recyclers are eyeing higher prices, while discussions are ongoing.

Asia R-PET flake and pellet spot prices



## OUTLOOK

- Virgin PET price surges expected to push higher demand for R-PET
- PCB bale supply limitation likely to remain near term
- Some players monitoring half-yearly Japan auction price for PCB bales in March

## PRICES

### SPOT PRICES

	Unit	Change	Price Range	Change
<b>Recycled PET Flakes, Hot-Washed, Colourless</b>				
FOB Taiwan	USD/tonne	+10	920-1020	+10
FOB SE Asia	USD/tonne	+30	700-750	+30
<b>Recycled PET Pellets</b>				
FOB NE Asia	USD/tonne	+50	1050-1450	+50

R-PET flakes exist across a spectrum of specifications. The price range reflects common R-PET flake specifications, typically with polyvinyl chloride (PVC) contamination content of 0-300 parts per million (ppm).

Taiwanese R-PET tends to contain fewer contaminants and consists of colourless flakes with no coloured flake fraction. As a result, it typically commands a higher price than southeast Asian R-PET that has more contaminants and usually comes as colourless flakes with light blue flake content of up to 30%.

Sentiment was bullish from recyclers on the back of tight PCB bale availability, and expectations of better demand. Export spot discussions were ongoing, while some recyclers mentioned the price increases in offers may take time to translate into higher-priced deals, given that many of their customers are long-term regular customers.

## Domestic prices

\$/tonne* (local currency/kg)	PET post-consumer bottles, colourless		Recycled PET flakes, hot-washed, colourless		Recycled PET pellets, colourless	
	23-Feb	16-Feb	23-Feb	16-Feb	23-Feb	16-Feb
Taiwan	358-394 (9-10)	357-393 (9-10)	895-1,021 (24-27.5)	892-1,017 (24-27.5)	1,182-1,469 (32-40)	1,178-1,463 (32-40)
Thailand	433-466 (13-14)	401-468 (12-14)	635-703 (20-22)	635-703 (19-21)	-	-
Indonesia	496-531 (7,000-7,500)	503-539 (7,000-7,500)	673-708 (10,000)	683-719 (10,000)	-	-

\*Converted to \$/tonne according to exchange rates

## ANALYTICS

With waste and sustainability targets in place for 2025, countries and brand owners are seeking to increase recycling capabilities. Chemical recycling is seen as one of the solutions, although the industry is still in its infancy in Asia, it is gaining traction in interest and investment.

Investments can be seen coming from across sectors – industry-funded by Alliance to End Plastic Waste (AEPW), government-funded in Singapore, and privately funded by companies in Australia, Japan and Korea via joint ventures.

AEPW launched a request for proposal (RFP) for projects related to chemical recycling technologies and business models, awarding up to \$20m to eligible projects. Agilyx Corporation (AGLX) and A.Eon Holdings evaluates the construction of a 50 tonne/day commercial scale plastics to energy facility; Kirin Holdings embarking on a joint technical analysis and feasibility study into recycling PET bottles with the broad aim of building a fully operational chemical recycling plant by 2027; in addition to Korea's SK Global Chemical and Brightmark 100,000 tonne/year plant. The National Environment Agency of Singapore is also studying the feasibility of chemically recycling plastic waste in Singapore.

Just this year, at least 6 feasibility studies and chemical recycling projects were announced in Asia. As chemical recycling technologies widens the range of what is technically feasible to recycle, waste-to-energy and landfill sectors can then focus on drawing in more of the plastic that leaks out of the system.

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For more information about analytical content, [click here](#).



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# Overview | Outlook | Prices | Analytics

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