Partnership as the Basis for Moving Towards Circular Economy and Resource Re-recirculation Society

Role of triangular cooperation (government-scientific & research organization-private sector) in advancing 3R and circular economy in Asia-Pacific (session on IPLA – a SDG partnership)

10th Regional 3R and Circular Economy Forum in Asia and the Pacific (Series of Webinars)

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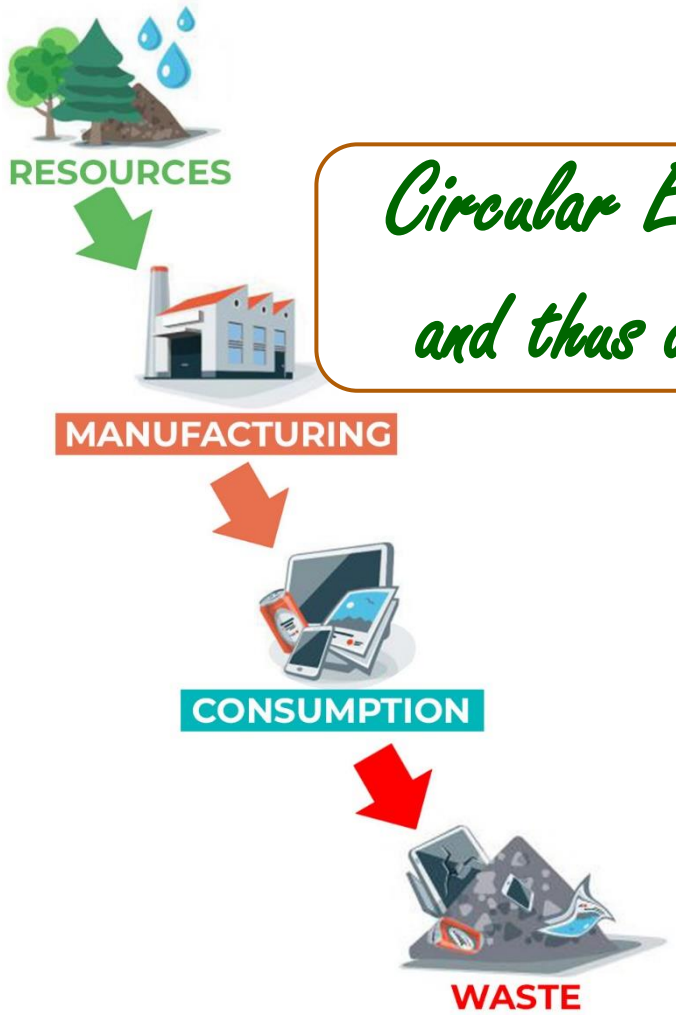
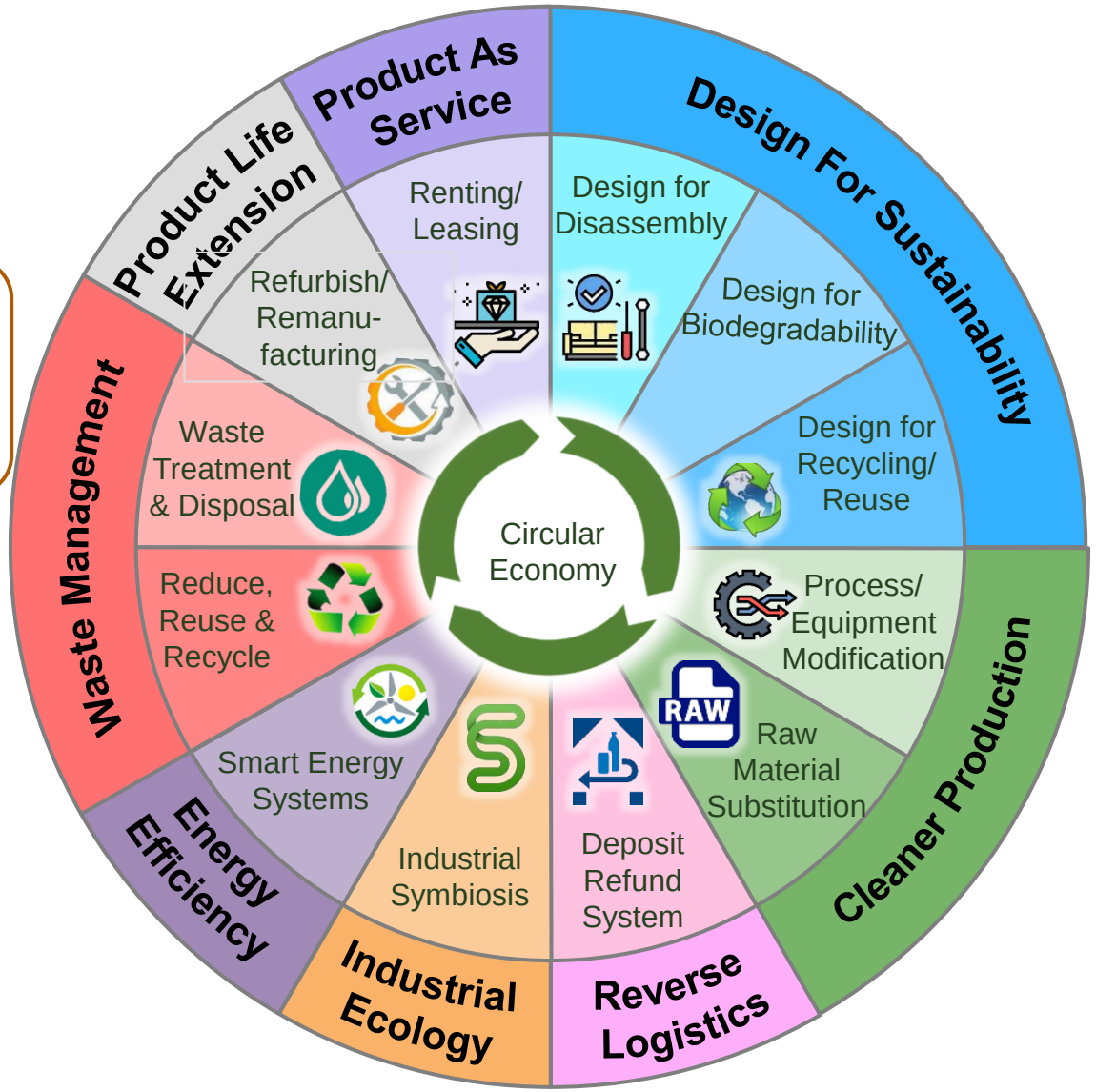
Circular Economy is Collaborative!

Linear Economy is Individualistic!

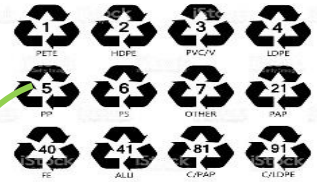


Circular Economy is collaborative and thus difficult to implement!



Is Circular Economy this Simple? (Plastic Waste Example)

Manufacturing

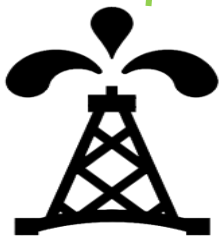


Plastic resins

Plastic products

Recycling plants

Plastic wastes



Oil, fuels

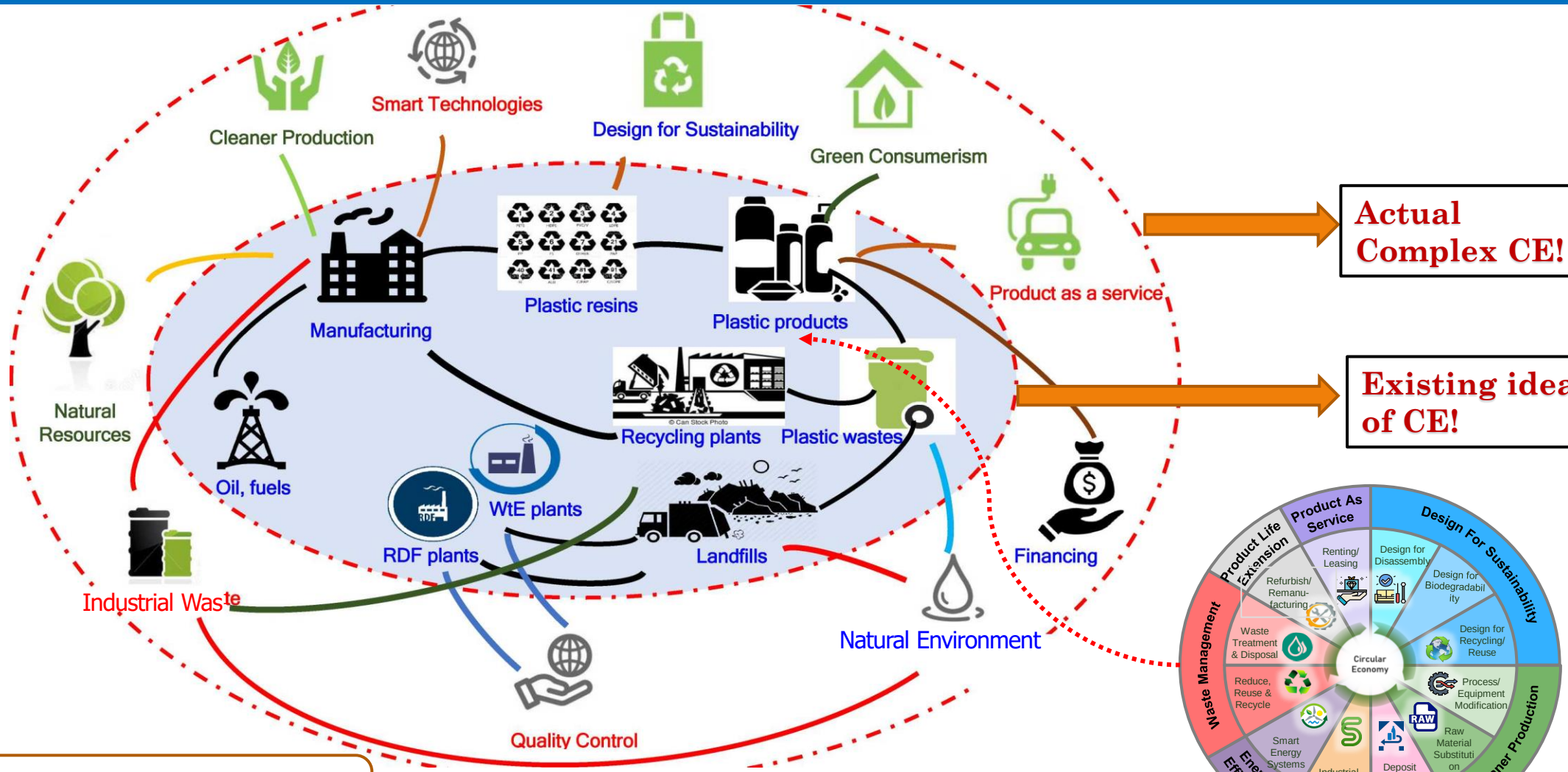
WtE plants

RDF plants

Landfills

Current Understanding of Circular Economy

What Circular Economy is!

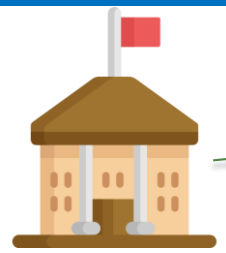


Real CE is more complex!

Triangular Cooperation for Accelerating Circular Economy

Knowledge/R&D Facilitator

- Technology Base
- Knowledge Base
- Capacity Building
- AI, Blockchain Technology
- Smart Systems & Robotics



Government

Facilitator

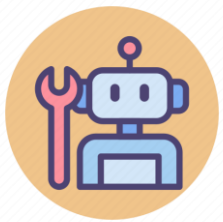
- Policy & Regulations
- Monitoring

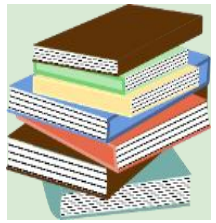
Research & Development Institutes

Private Sector/Business

Investment Facilitator

- New Business Vision
- EPR/ CSR/ ECR
- PPP





Triangular Cooperation Should Focus on – CURRENT GAPS

Lack of Reliable Data

Lack of reliable data and information, which results in a lack of customer awareness and demand

Limited access to funding

Entrepreneurs face numerous additional barriers including limited access to funding, mentors, networks, government support.

Government Policies

Most pressing regulatory barrier identified was obstructing laws and regulations.

Transboundary movement of certain plastic products are prohibited even though the recycling facilities are available in neighboring countries.

Perception

Discussions on CE are frequently restricted to the CSR/environmental departments of a firm

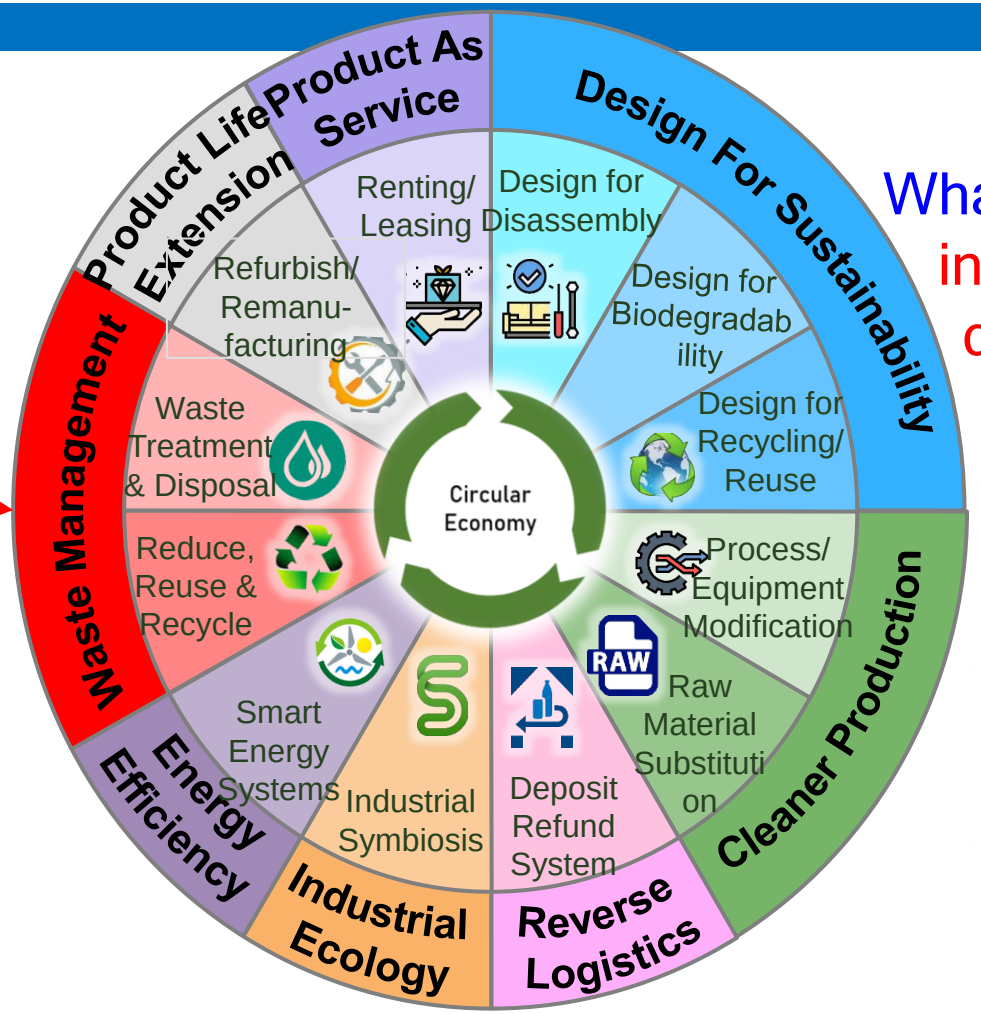
Science and policies should solve these issues!

No Holistic View of CE Indicators in Asia-Pacific

Indicators for Waste Management

a) Waste Collection Rate
b) Waste Segregation Rate
c) Waste Recycling Rate
d) Waste to Energy Conversion Ratio
e) Waste to Recycling Ratio

Indicators for Design for Sustainability, Product life extension, Education and training programs
??



What happened to the indicators of other domains of CE?

Should Science provide the Reliable Data?

Role of Policy Makers in Triangular Cooperation

Policymakers have a key role to play in advancing CE practices by

a) enacting effective regulations or eliminating regulatory hurdles to CE practices;

b) providing incentives to companies engaged in such practices,

c) providing financial support, and

d) raising awareness about the issue.

Policy makers are currently comfortable with linear economic policies. The mindset of the policy makers have to shift towards promoting a more circular-centric businesses.

Veleva, Vesela, and Gavin Bodkin. 2018. "Corporate-Entrepreneur Collaborations to Advance a Circular Economy." *Journal of Cleaner Production* 188: 20–37.

OPTOCE – Triangular Cooperation for Marine Litter

Public Sector

Govt. of Norway PCD, Thailand

Research & Academic Organizations

Private Sector

OPTOCE - Ocean Plastics Turned into an Opportunity in Circular Economy

What Can Private Sector Offer and Get In Return?

- Government: Reduced public costs for circular economic activities through private sector involvement

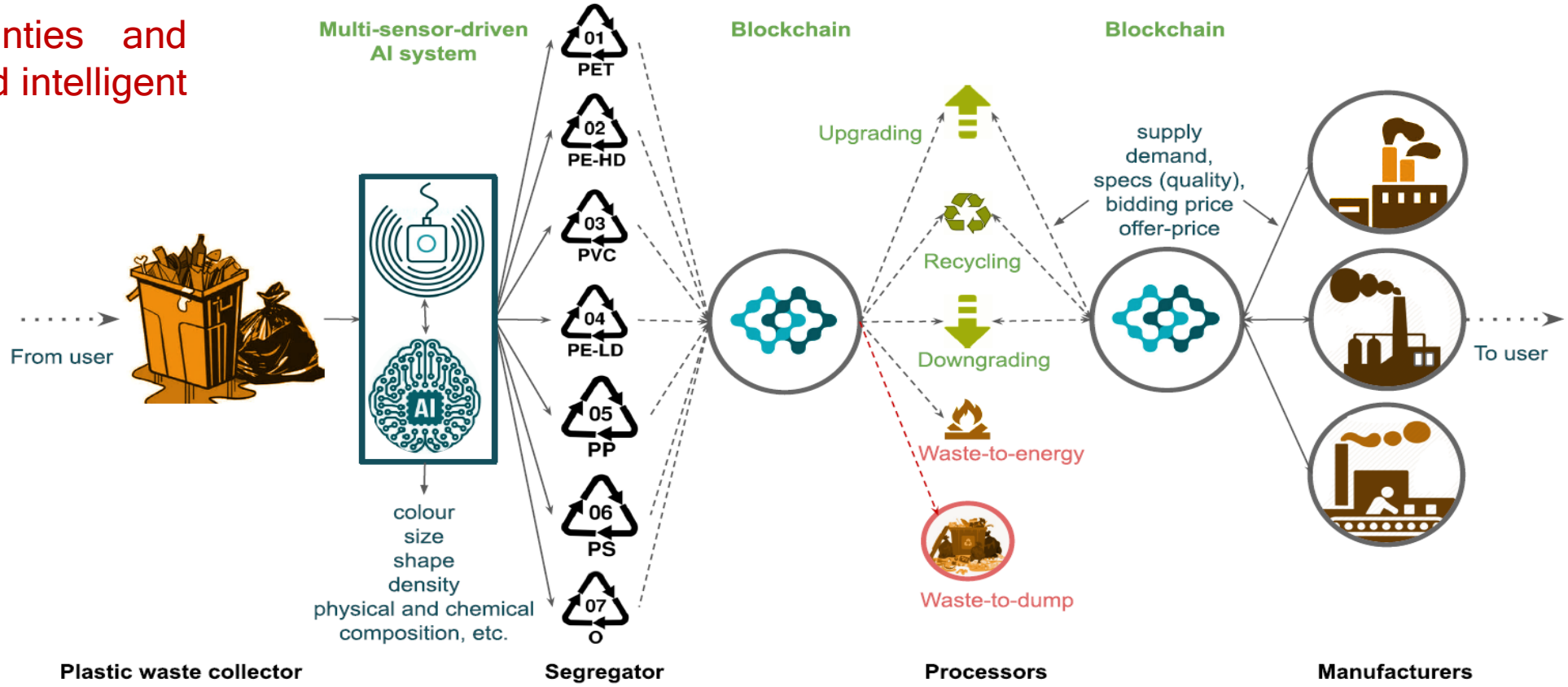
  Private sector involvement has reduced the waste service cost by at least 25% in UK, US & Canada and at least 20% in Malaysia

- Private Sector:
- Preventing waste is estimated to save business worldwide hundreds of billions of dollars each year on raw materials, energy and labour costs
- Circular Economy is a profitable business, and it generates green jobs, quality improvement and scientific management of various waste streams and inclusiveness

Private sector should take circular centric businesses!

Blockchain and Multi-Sensor-Powered Artificial Intelligence Interfaces

Minimize uncertainties and enable efficient and intelligent segregation



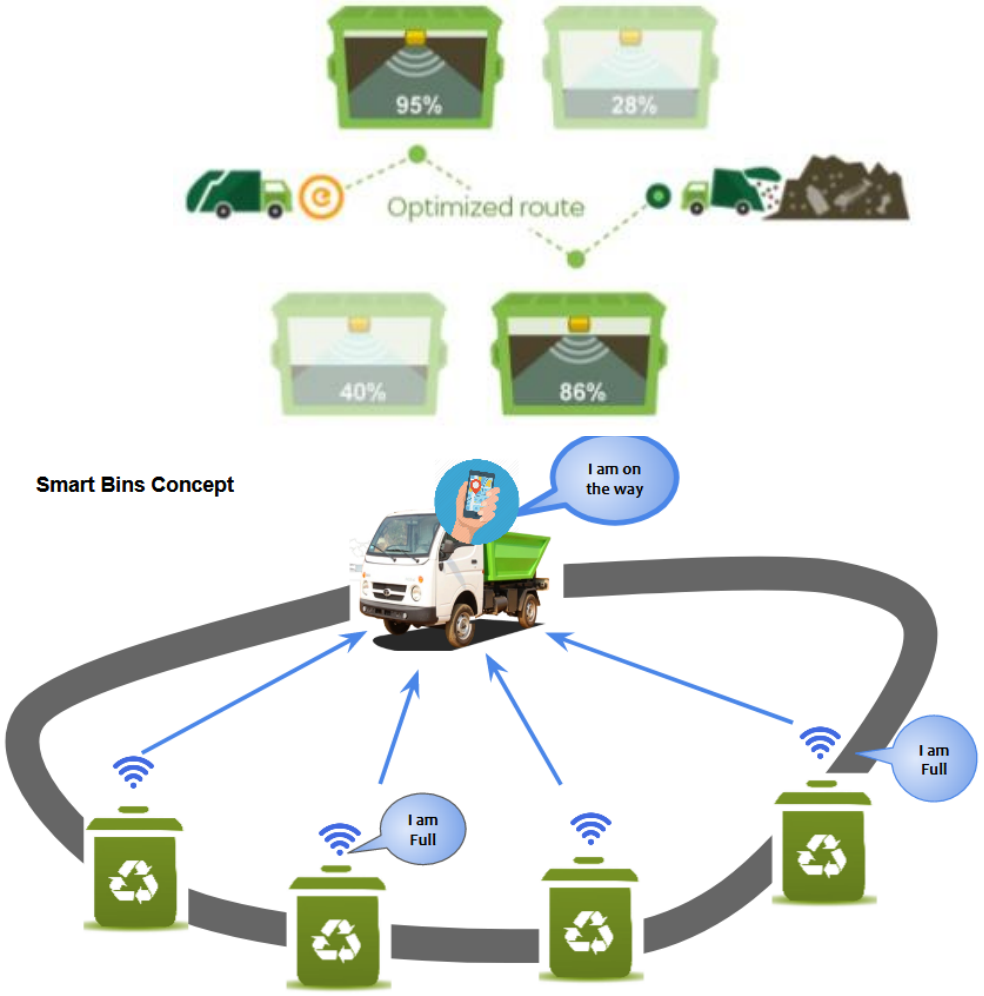
AI minimizing uncertainty and filling gaps

Source: From Trash to Cash: How Blockchain and Multi-Sensor-Driven Artificial Intelligence Can Transform Circular Economy of Plastic Waste?, Aditya Chidepatil, Prabhleen Bindra, Devyani Kulkarni, Mustafa Qazi, Meghana Kshirsagar and Krishnaswamy Sankaran (2020)

AI and Segregation of Plastic Waste at Source

SmartBin Volume Control and Collection

- Can be equipped with a piston that is useful for compression of the garbage
- Once the threshold level is reached:
  - locks prevented additional waste entry in order to avoid overflow
  - notification to the server to initiate cleaning process
- Radio Frequency Identification (RFID) tag placed in the bin and RFID reader placed with the antenna in the truck.
- The model establishes a stronger waste collection system which reduces the overflowing trash cans by the factor of 4.
- As the regular trash pickup is indicated by the trash cans, the regularity of collection improves



Source: The Use of Modern Technology in Smart Waste Management and Recycling: Artificial Intelligence and Machine Learning, Praveen Kumar Gupta, Vidhya Shree, Lingayya Hiremath and Sindhu Rajendran (2019)

Companies Plead for Circular Economy

- Businesses everywhere generate trash, but trash also generates new businesses

VEOLIA ENVIRONMENTAL SERVICES

Market Cap $11 Billion (as of December 2020)

suez environnement

€ 10.15 Billion (2020)

WM WASTE MANAGEMENT

Waste Management Market Cap $2080 billion (As of 2019)

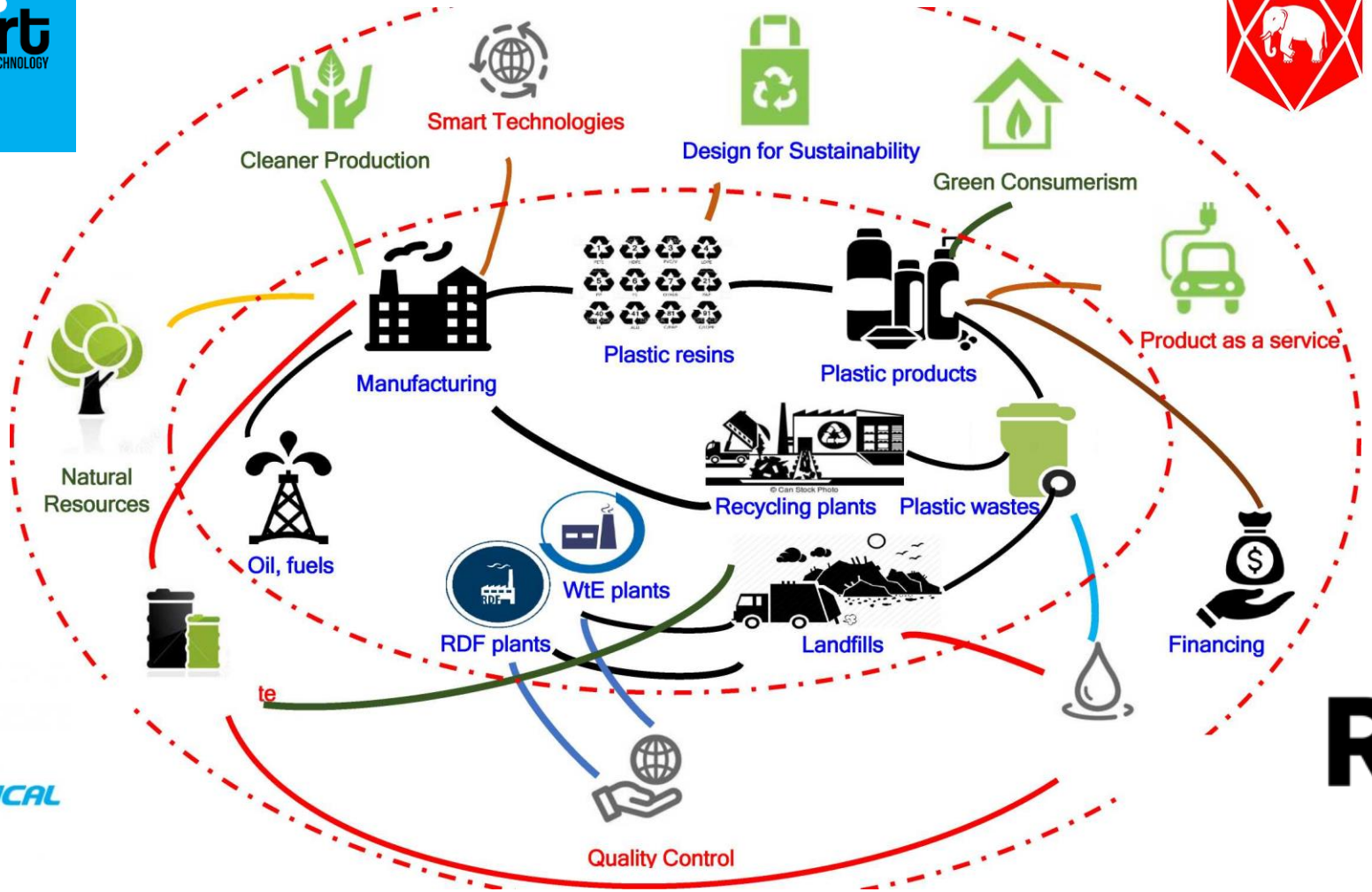
Fortune 500 Companies

ptt GLOBAL CHEMICAL

Tupperware®

PHILIPS

Possible Business Opportunities in Every Sector!



Case Study: First Solar – An Example to Industry's Best Practices!

- First Solar - American solar panel manufacturer!
- First Solar is involved in discussions with EU officials to ensure a level playing field for all companies in the sector, such as the take-back mandates for solar panels under the WEEE directive adopted in 2012.
- Prior to the inclusion of PV panels in the WEEE directive, First Solar had already established a voluntary collection and recycling program, which was viewed as an industry best practice for end-of-life management by the EU.
- Tellurium is a scarce material and by taking back its products the company ensures a continuous supply, reducing risk and increasing raw material security.

First Solar®

Solar, 2017. Corporate Responsibility. http://www.firstsolar.com/en/About-Us/Corporate-Responsibility.

Case Study: SUEZ Plant to Recycle Plastic Waste in Thailand

- SUEZ, a company that has had expertise in waste and water management for 160 years.
- Thailand has set a bold target for a 100 per cent plastic waste-recycling mandate by 2030.
- It has been operating waste management projects in partnership with Bangkok's Metropolitan Authority (BMA) and academic and research institutions such as Harbin Institute of Technology (China) and University of Bordeaux (France).
- The new plastic recycling plant at Bang Phli will convert 30,000 tons of low-density and linear-low-density polyethylene plastic waste per year into high quality recycled plastic that can be reused in new products, completing a circular mandate that the company upholds.

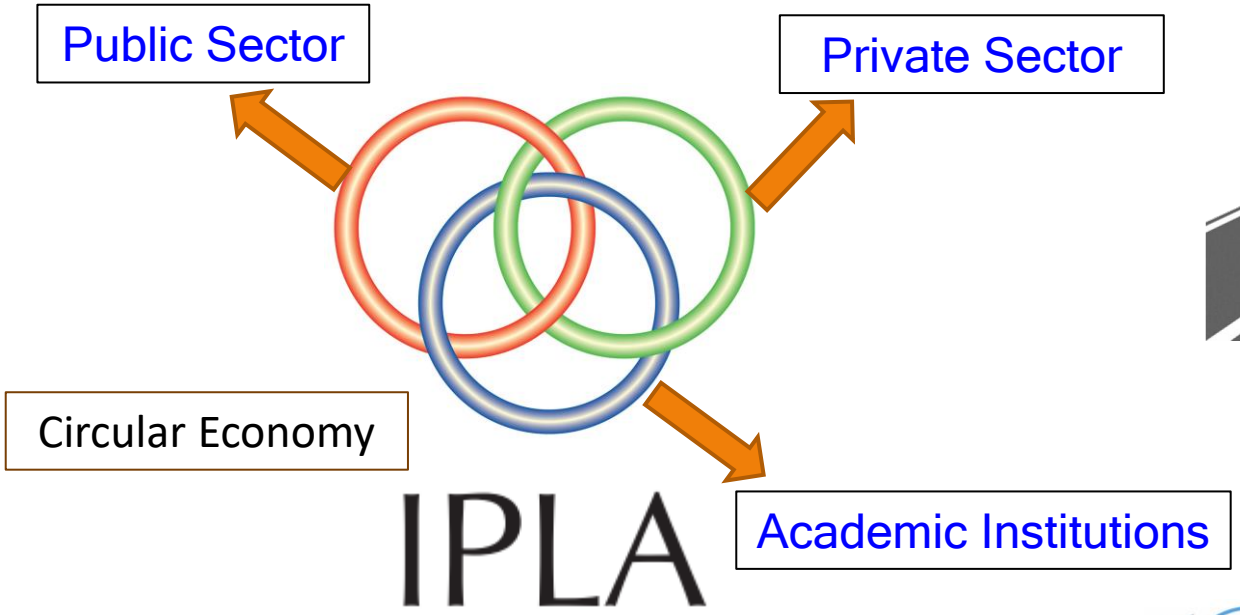
IPLA Mission & Vision for Moving Forward

Waste Management

Circular Economy

- International Partnership for Expanding Waste Management Services of Local Authorities
- Long term vision of IPLA is to facilitate expansion of waste management services world- wide by **fostering partnership** among various **stakeholders** including local authorities, national government, financial institute & civil society.
- Moving from Waste Management to Circular Economy should be the way forward.

IPLA – Public Private Academia Partnerships



Making Better Partnerships;

Not for the sake of partnerships!

SWEEPNET SACEP South Asia Co-operative Environment Programme UNCRD abrelpe Griffith UNIVERSITY iwwg international waste working group

IPLA - International Partnership for Expanding Waste Management Services of Local Authorities
IPLA - https://www.uncrd.or.jp/index.php?menu=378

Take Home Messages!

- Linear Economy is individualistic while CE is collaborative and thus difficult to implement.

- CE transition involve lack of reliable data, limited access to funding, Government policies and perception of CE in public sector. Indicators for measuring circularity are not wholesome and do not give a holistic picture to evaluate CE performance.

- Stakeholder Actions:

1. **Public sector** and International organizations should promote conducive policies and support partnerships among various stakeholders.
2. **Private sector** should introduce new technologies promoting radical innovation and smart waste management. (Discussion point 3)
3. **Research and Academic** institutions should provide technical and financial guidance and enhance capacity building. (Discussion point 4)

Thank You!