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# MOVING FROM A LINEAR ECONOMY TO CIRCULAR ECONOMY

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**MELISSA TAN**

CEO, WAH & HUA PTE LTD

DIRECTOR, ALBA WH SMART CITY

CHAIRMAN, WMRAS

# SINGAPORE'S SUSTAINABILITY IN 2030



Climate change is a global challenge, and Singapore is taking firm actions to do our part to build a sustainable future.

The Singapore Green Plan 2030 is a national sustainability movement with ambitious and concrete targets, which builds on our existing climate mitigation and adaptation measures.

It is a living plan which will evolve as we work with Singaporeans and partners from all sectors to co-create solutions for sustainability.

Our collective action will make a difference. Let's build a greener and more liveable home together.

## 1. City in Nature

A Green, Liveable and Sustainable Home for Singaporeans

- ✓ Add 1000ha of green spaces and 160km of park connectors
- ✓ Every household will live within a 10-min walk from a park
- ✓ Plant 1 million more trees across Singapore by 2030

## 2. Sustainable Living

Strengthen Green Efforts in Schools

- ✓ Work towards two-thirds reduction of net carbon emissions from schools sector by 2030
- ✓ At least 20% of schools to be carbon neutral by 2030

Green Commutes

- ✓ 75% of all trips to be on mass public transport by 2030, up from 64% today
- ✓ Triple cycling path network to 1,320km by 2030 from 460km in 2020

Green Citizenry: Less waste and consumption

- ✓ Reduce amount of waste to landfill per capita per day by 20% by 2026, with the goal of reaching 30% by 2030
- ✓ Encourage water conservation and water efficient practices for households and industries

## 3. Energy Reset

Cleaner-energy Vehicles

- ✓ Require all newly-registered cars to be of cleaner-energy models from 2030
- ✓ Expand network of electric vehicle charging points to 60,000 by 2030

Sustainable Fuels

- ✓ Promote sustainable fuels for international trade and travel

Greener Infrastructure & Buildings

- ✓ Raise sustainability standards of our buildings through the next edition of the Singapore Green Building Masterplan

Sustainable Towns & Districts

- ✓ HDB Green Towns Programme to reduce energy consumption in HDB towns by 15% by 2030

Green Energy

- ✓ Quadruple solar energy deployment by 2025
- ✓ Green Singapore's electricity supply by tapping on cleaner electricity imports

## 4. Green Economy

Sustainability as New Engine of Jobs and Growth

- ✓ New Enterprise Sustainability Programme to help local enterprises adopt sustainability practices
- ✓ Develop Singapore as a carbon services hub, and as a leading centre for green finance in Asia and globally
- ✓ Develop Jurong Island to be a sustainable energy and chemicals park

New Investments to be Carbon and Energy Efficient

- ✓ Seek out new investments that are among the best-in-class in carbon/energy efficiency

## 5. Resilient Future

Safeguarding our Coastlines against Rising Sea Levels

- ✓ S\$5b dedicated to coastal and drainage flood protection measures
- ✓ Complete engineering design & implementation plans for coastal protection measures at East Coast, Lim Chu Kang, Sungei Kadut, & Jurong Island by 2030

Safeguarding Food Security

- ✓ Produce 30% of our nutritional needs by 2030 by growing our agri-food industry through key strategies, including developing land and sea space

Keeping Singapore Cool

- ✓ Moderate the rise in urban heat with cool paint and by increasing greenery



For more information, visit [www.greenplan.gov.sg](http://www.greenplan.gov.sg)

# LIVING IN A LINEAR ECONOMY



# LIVING IN A LINEAR ECONOMY

DEMAND FOR RAW  
MATERIALS INCREASING



INCREASE IN  
POPULATION



CONSEQUENCES IF WE  
CONTINUE

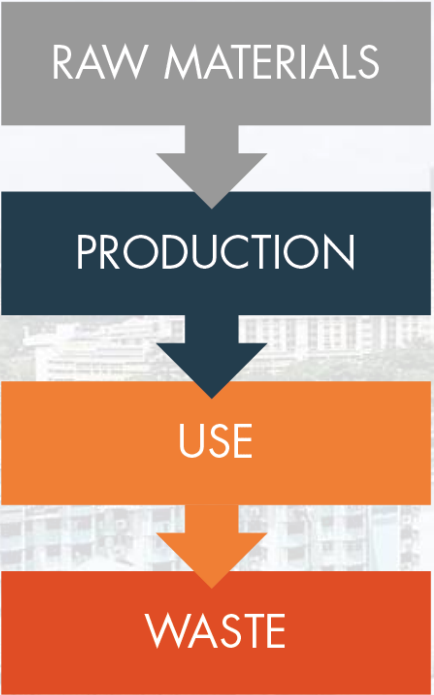
RAW MATERIALS DEPLETION

.....  
ENVIRONMENTAL IMPACT

.....  
RISKS FOR REGIONAL AND  
NATIONAL ECONOMIES

# MOVING FROM LINEAR TO CIRCULAR ECONOMY

LINEAR ECONOMY



CHAIN ECONOMY WITH RECYCLING

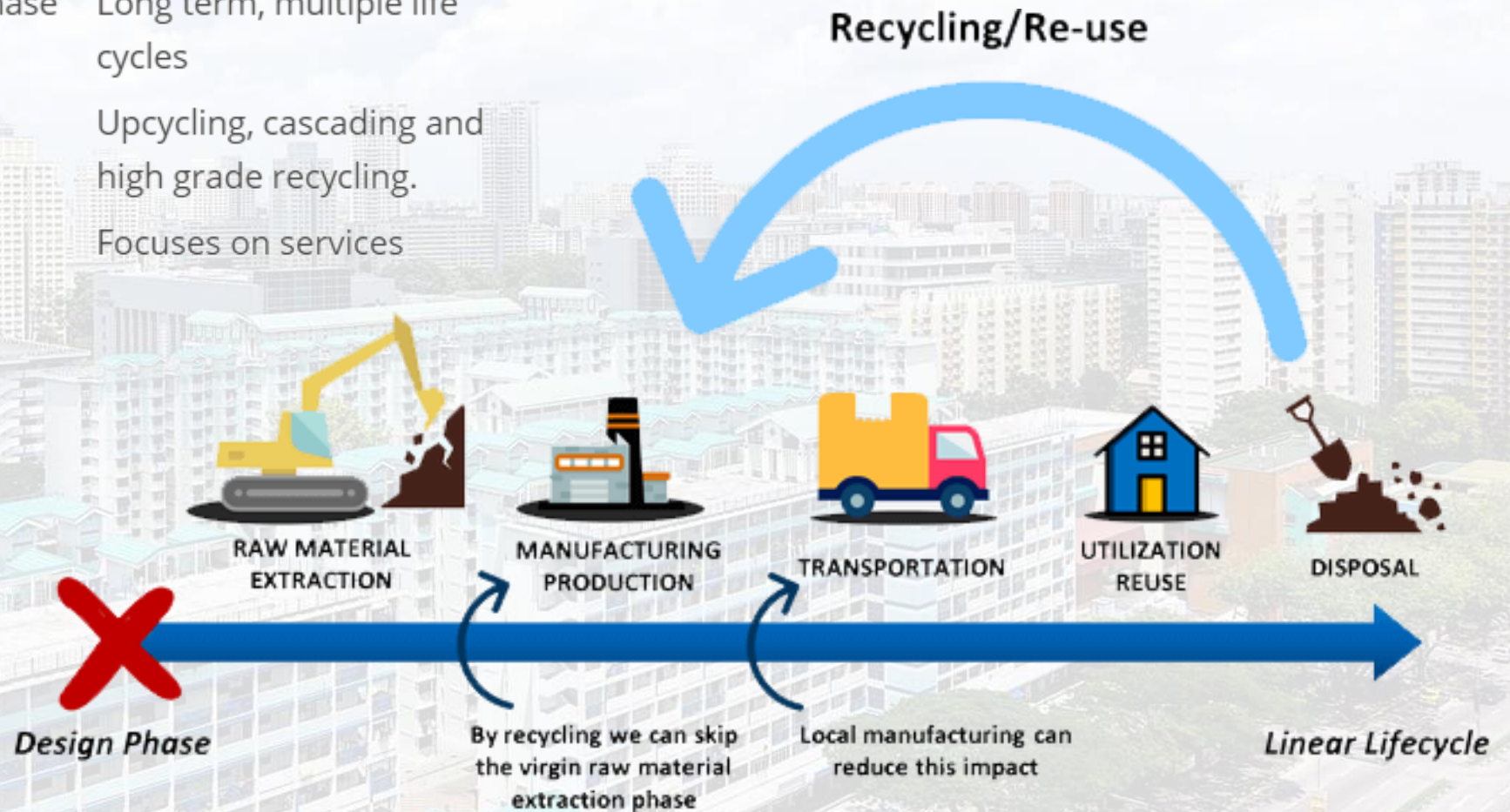


CIRCULAR ECONOMY

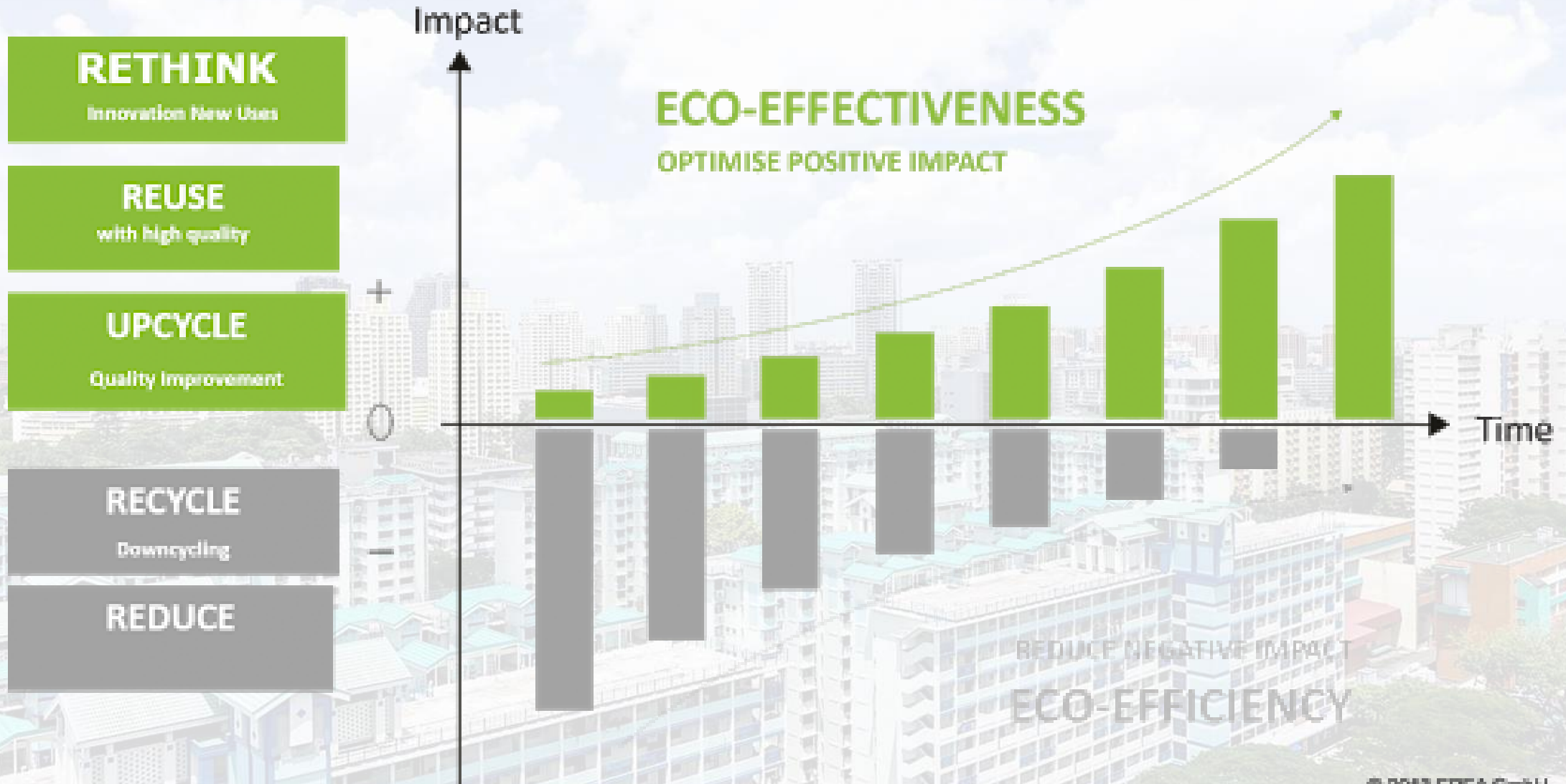


# CIRCULAR ECONOMY: WHY?

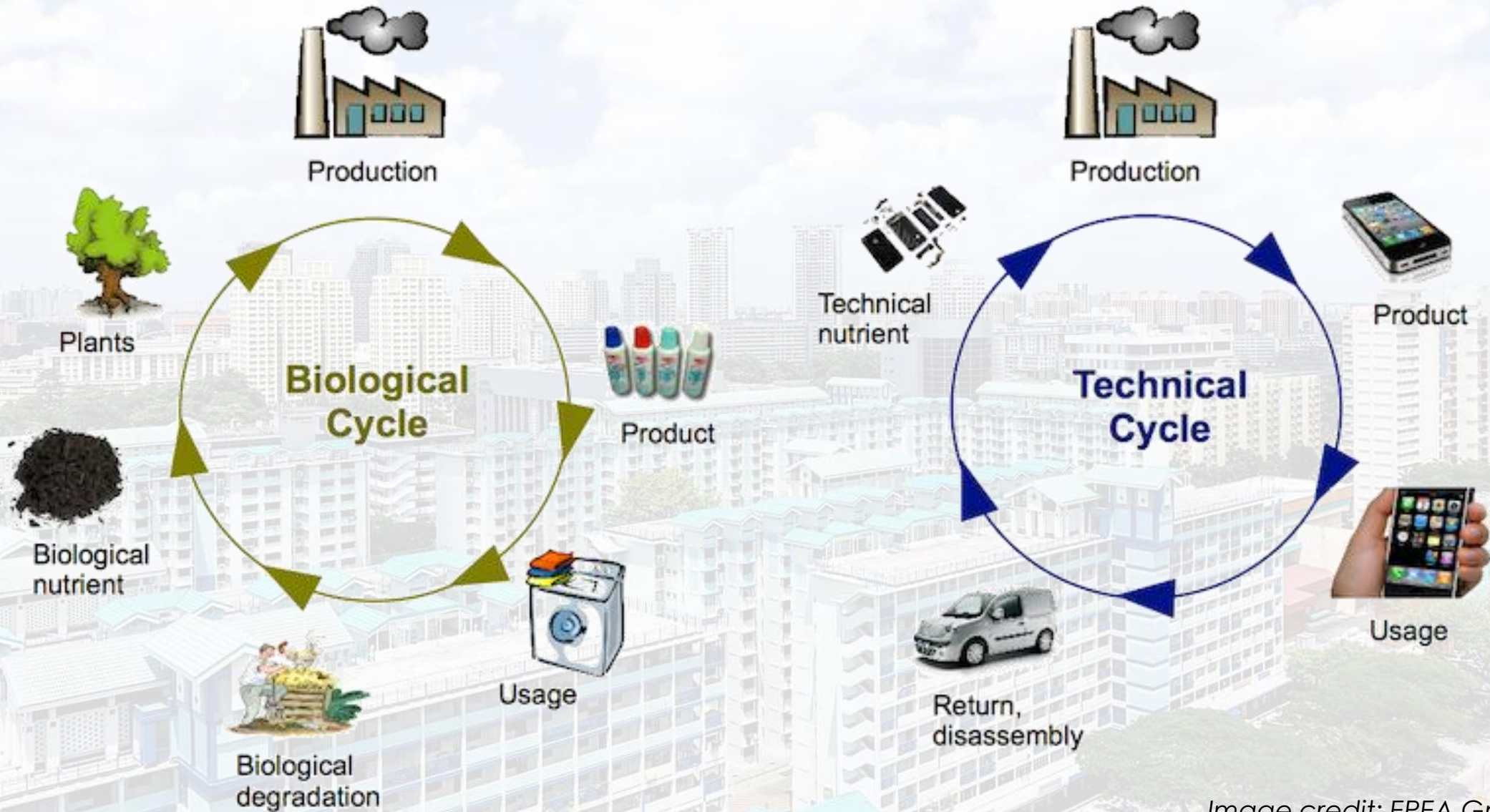
	Linear	Circular
Step plan	Take-make-dispose	Reduce-reuse-recycle
Focus	Eco-Efficiency	Eco-Effectivity
System boundaries	Short term, from purchase to sales	Long term, multiple life cycles
Reuse	Downcycling,	Upcycling, cascading and high grade recycling.
Business model	Focuses on products	Focuses on services



# CIRCULAR ECONOMY: WHY?

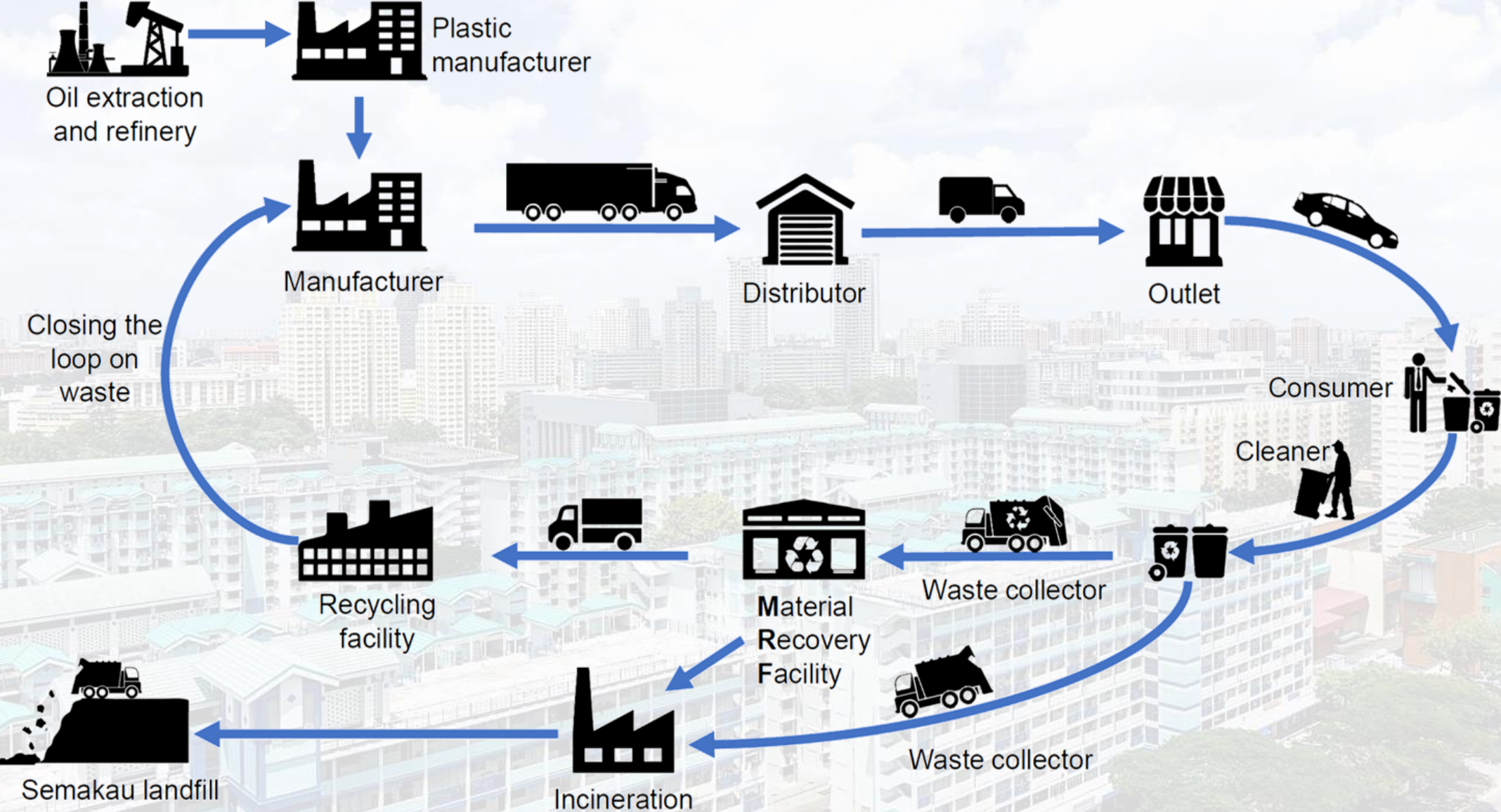


# CIRCULAR ECONOMY: HOW?





# CIRCULAR ECONOMY: WHY?



# CIRCULAR ECONOMY: WASTE MANAGEMENT

To achieve a sustainable, affordable  
and integrated waste-to-resource management system for all

Minimise &  
Segregate Waste  
at Source

Achieve an overall  
recycling rate of  
70% by 2030

Ensure sufficient  
disposal capacity &  
optimise resources

Prolong lifespan of  
Semakau Landfill to  
2045 or beyond

Raise Solid Waste Management industry productivity, standards & capability

Build Strong 3R culture and promote greater awareness & participation

# KEY CHALLENGE FOR WASTE MANAGEMENT INDUSTRY



## Land Scarcity

- Prolonging lifespan of Semakau Landfill
- Minimizing footprint for waste treatment facilities



## Waste Generation Increase

- Requiring higher capacity and efficiency for future waste management facilities



## Manpower Shortage

- Heavy reliance on low-cost foreign workers
- Poor image and wage resulting in difficulty in recruitment



## Fragmented Industry

- Resulting in a less optimised deployment of resources



## Lack of Automation/Technology Innovation

- High dependency on low skilled labour
- Low productivity



## Other Local Operational Challenges

- Difficulty in source segregation for household waste (chute system)
- Daily collection (putrescible waste due to topic climate)

# SINGAPORE'S WASTE MANAGEMENT BY 2030

## To the Future of Waste Management from 2025...

### Material/Waste Handling Synergies

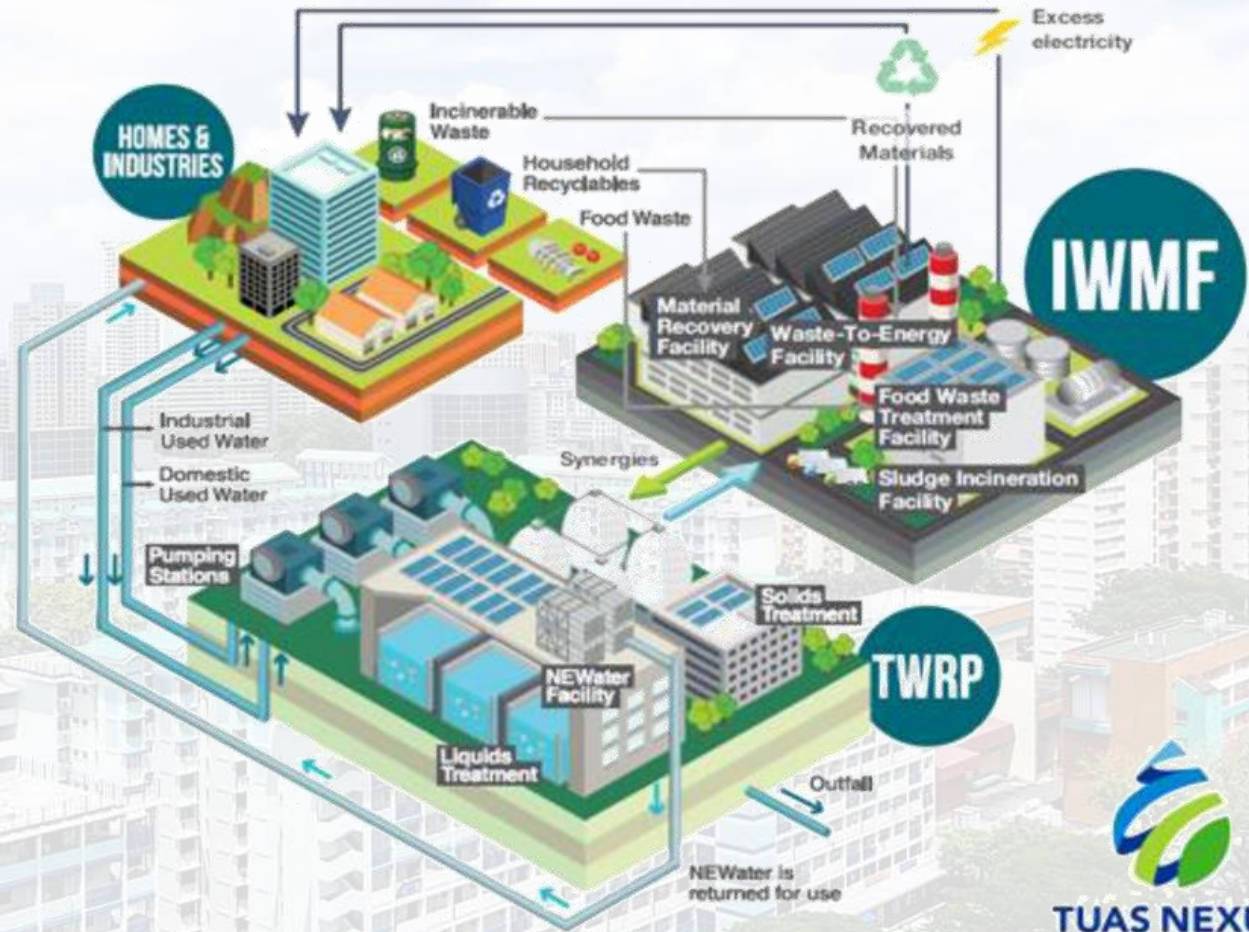
- 1) Food waste from IWMF to TWRP for co-digestion
- 2) Dewatered sludge from TWRP to IWMF for incineration
- 3) Screening and grit from TWRP to IWMF for disposal

### Energy Synergies

- 4) Power supply from IWMF to TWRP for plant operations
- 5) Steam from IWMF to TWRP for thermal hydrolysis of sludge
- 6) Biogas from TWRP to IWMF to increase overall thermal efficiency

### Water Synergies

- 7) Water from TWRP to IWMF for wet flue gas treatment process use
- 8) Sludge dryer condensate from IWMF to TWRP for treatment
- 9) Chilled water from IWMF to TWRP for air-conditioning



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# WASTE TO WONDER

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**YOUR TRASH  
SOMEONE'S  
TREASURE!**





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**THANK YOU**

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