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# World's First Pilot



In June 2022, TRIA started the world's first closed-loop pilot with KFC Singapore for single-use packaging.





**Lynette Lee**  
General Manager  
KFC Singapore

“We are excited to launch a 6-month pilot at KFC Northpoint City, closing the loop for single-use dine-in packaging. **KFC is proud to partner TRIA** for its patented technology and **long term plans** are in the discussion with TRIA.”

If the pilot turns out well, KFC intends to implement this programme to all of its 80 outlets in Singapore.

## THE BUSINESS TIMES

### Circular economy solutions can break cycle of escalating waste: Low Yen Ling



From left: Ng Fui Keng, CEO of TRIA, Low Yen Ling, Minister of State for Trade and Industry, and Lynette Lee, General Manager of KFC Singapore at the launch of the pilot programme between Singapore startup TRIA and KFC to launch a six-month pilot programme of recycling food and packaging waste into fertiliser. Photo: Singapore Press Photo Agency

WITH rising global demand for food supplies and fast-depleting resources being issues at play, clever circular economy solutions have the potential to break the cycle of escalating waste, said Low Yen Ling, Minister of State for Trade and Industry (MTI) on Tuesday (Jun 21).

“Increasingly, businesses are expected to show greater responsibility toward protecting the environment as their customers feel the growing impact of climate change,” Low said. “On the whole, this creates great potential for food and beverage (F&B) brands to innovate and become

## 联合早报

与肯德基合作进行试点 把炸鸡店厨余垃圾包装回收成肥料



## today

### 'Clever solution': S'pore firm launches pilot to turn KFC packaging, food waste into farm fertiliser



## Eco-Business

News • Food & Agriculture

### Has KFC found the secret sauce to circular packaging?

Fast food giant KFC and packaging company TRIA are testing a concept in Singapore which they say combines sustainability and cost-efficiency.



From left: Lynette Lee, General Manager of KFC Singapore, and Ng Fui Keng, CEO of TRIA, at the launch of the pilot programme between Singapore startup TRIA and KFC to launch a six-month pilot programme of recycling food and packaging waste into fertiliser. Photo: Singapore Press Photo Agency

By Chee Hin | Singapore Press Photo Agency | Singapore Press Photo Agency | Singapore Press Photo Agency

Fast food restaurants are big waste generators. However, the lack of viable sustainable alternatives to single-use plastic and the country's expansion

## THE STRAITS TIMES

Wednesday, June 22, 2022

### S'pore firm Tria, KFC pilot to recycle food, packaging waste into fertilisers



From left: Lynette Lee, General Manager of KFC Singapore, and Ng Fui Keng, CEO of TRIA, at the launch of the pilot programme between Singapore startup TRIA and KFC to launch a six-month pilot programme of recycling food and packaging waste into fertiliser. Photo: Singapore Press Photo Agency

Singapore-based sustainable packaging firm Tria is partnering with fast food giant KFC to launch a six-month pilot programme of recycling food and packaging waste into fertiliser for agricultural use, the companies said on Tuesday.

The pilot started earlier this month at KFC outlets at Northpoint City in Singapore.

Ng Fui Keng, CEO of TRIA, said the pilot programme is a first-of-its-kind initiative in Singapore. He said the six-month pilot will demonstrate the commercial viability of the pilot to make a product that is compliant with international standards.

“We can further improve and optimise our circular economy and our customers’ green footprint, making this a full ring right from cradle to the farm,” said Ng Fui Keng, adding that the project is to identify sustainable alternative sources of fertilisers to meet more government

said Mr. Martin Suter, vice president of Tria International, before and after the launch. “We are excited to partner with KFC to launch this pilot programme and we see the potential to break the cycle of escalating waste. Innovation is critical for sustainable development, especially with rising global de-

importance of innovation in Singapore. Farming, industries, before and after the launch. “We are excited to partner with KFC to launch this pilot programme and we see the potential to break the cycle of escalating waste. Innovation is critical for sustainable development, especially with rising global de-

KFC at Northpoint City to use plants that will be recycled into fertiliser

mothership

SINGAPORE TODAY

Business, Thursday 23 June 2022, Friday 5pm-7pm

Lynette Lee & Ng Fui Keng

Tatler

SUSTAINABLE PACKAGING FROM TRIA TO TURN KFC PACKAGING AND FOOD WASTE INTO FARM FERTILISER

SINGAPORE TODAY

Business, Thursday 23 June 2022, Friday 5pm-7pm

Lynette Lee & Ng Fui Keng

# Sustainability as a Category Enabler for QSR

2020



**plant-based**  
meat menu

2021



**reduction of**  
**packaging** and  
use of **renewable**  
**materials**

2025



**circular packaging**  
**system** factoring in  
waste management  
through to **quantifiable**  
**footprint**

2027



**regenerative and**  
**circular food supply**  
**chain**



How do we close the loop for single-use food packaging?

Can modern-day convenience and circularity co-exist?

# Stalemate in addressing Single-use Packaging for Fast-food sector

~~REDUCE~~

~~REUSE~~

~~RECYCLE~~

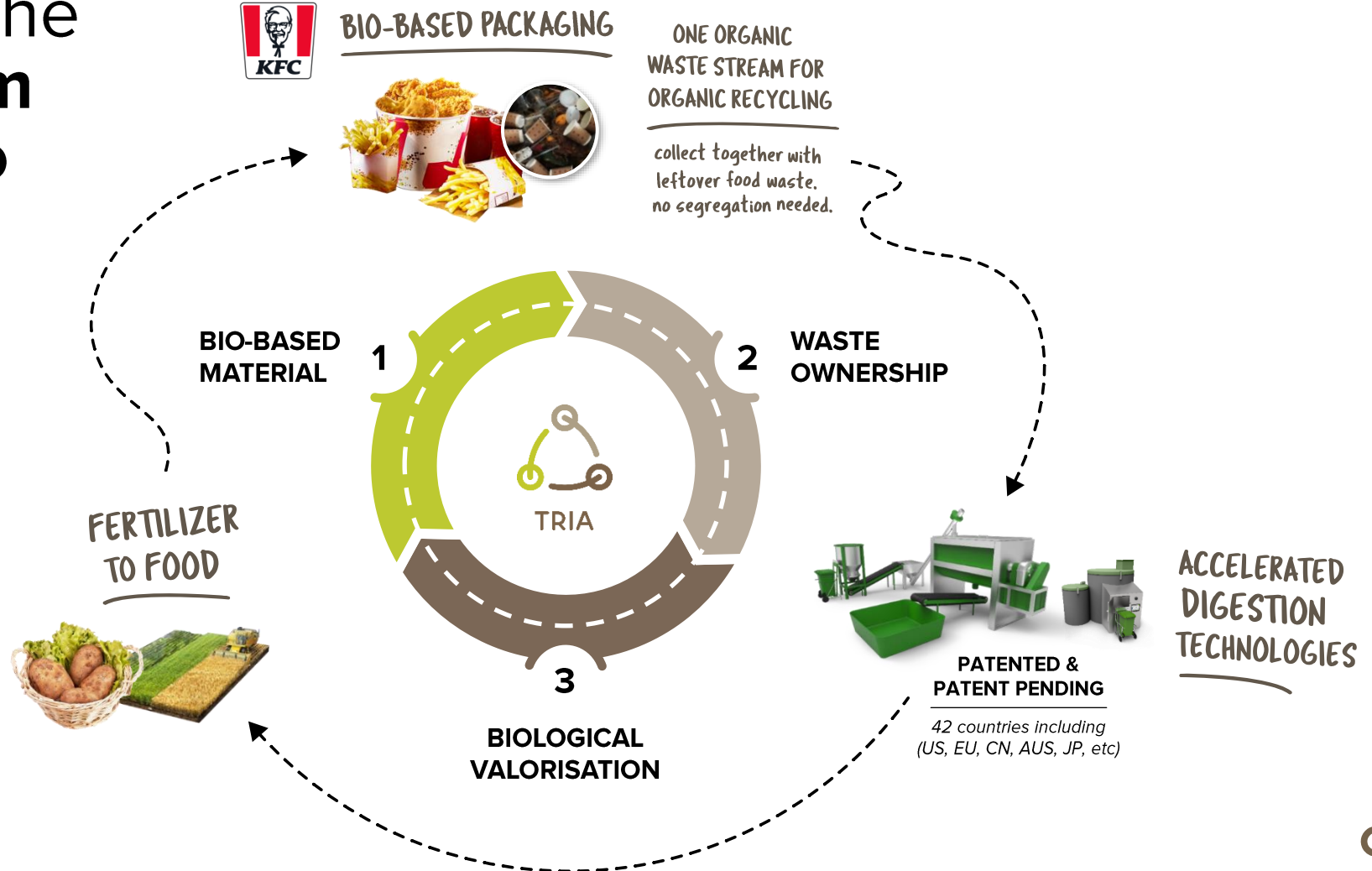
Reached a saturation point with less than 1% packaging reduced. Not much further than removal of straws.

Prohibitive overhaul of operations, not scalable.

No means to recycle foodservice packaging in practice. Limited by technological constrains and requires expensive waste segregation - equivalent to 5x the cost of packaging.



# Closing the loop from cradle to table.

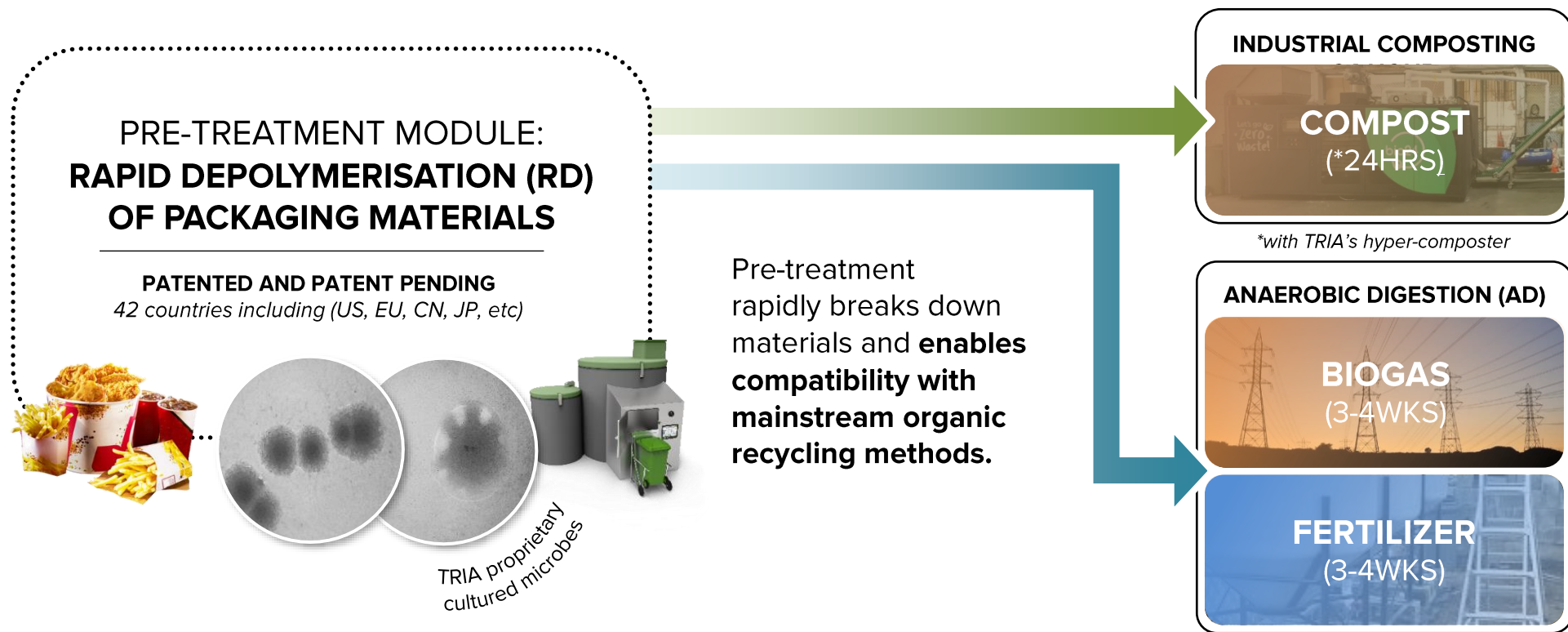


# TRIA closes the loop for Single-use Packaging



- Bio-based material + food waste as **ORGANIC WASTE STREAM**. Recycle together without the need to segregate.
- **Avoid x5 cost** of segregation compared to traditional recycling.
- For fast-food restaurants, this means **no change in operation**.
- **Scalable, business-as-usual solution** that closes the loop and paves the way for a circular food system.

# TRIA enables Organic Recycling for packaging



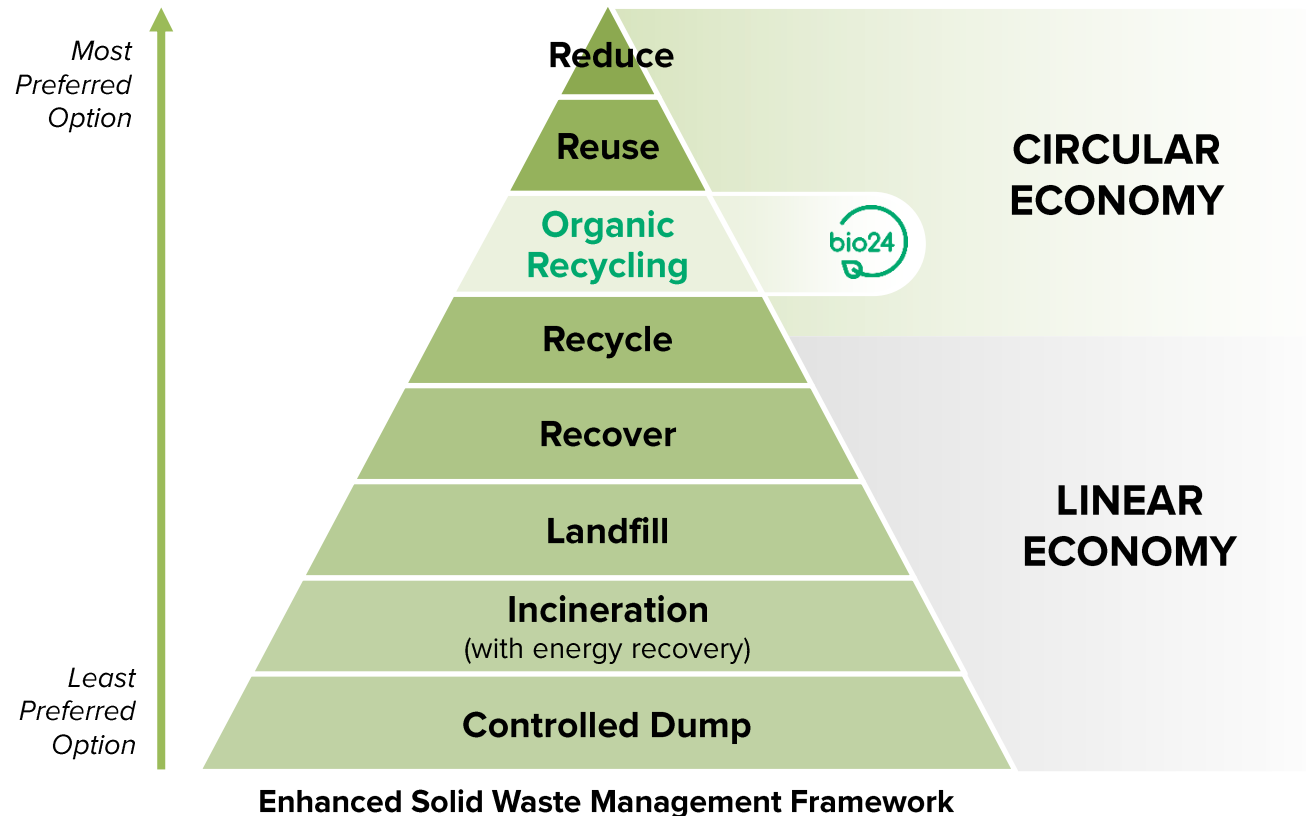


# Going circular with **organic recycling**

“..it is technologically possible for disposable foodware to achieve circularity with organic recycling and industrial symbiosis.”  
(Tan and Ramakrishna 2021)

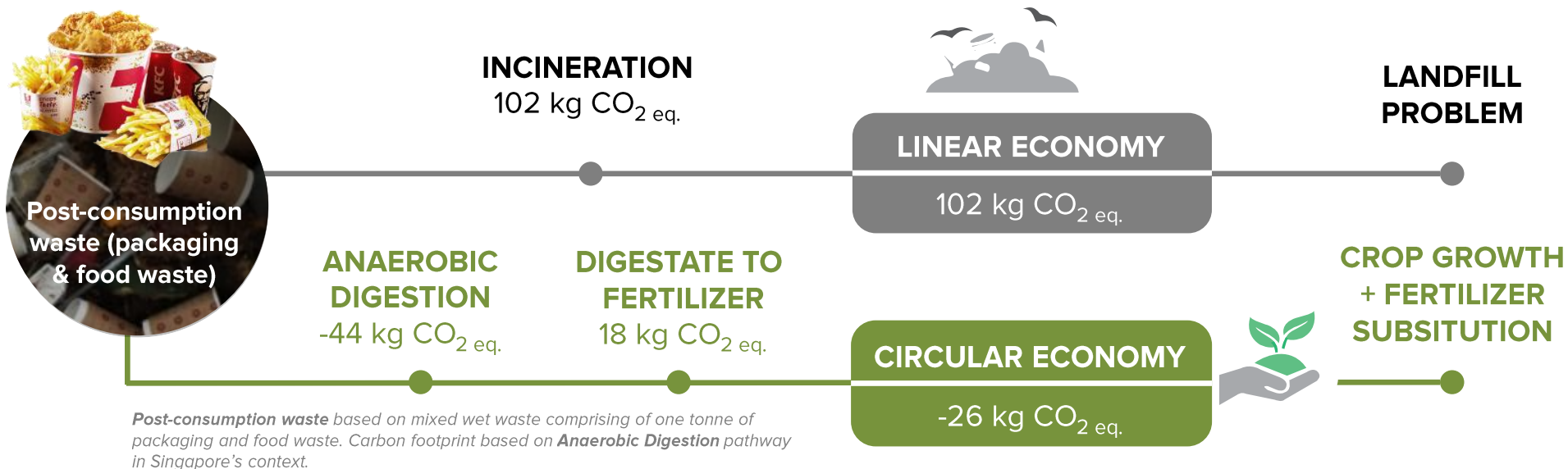
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**Single-use Plastics in the Food Services Industry: Can it be sustainable?**  
Springer Nature, Materials Circular Economy, April 2021



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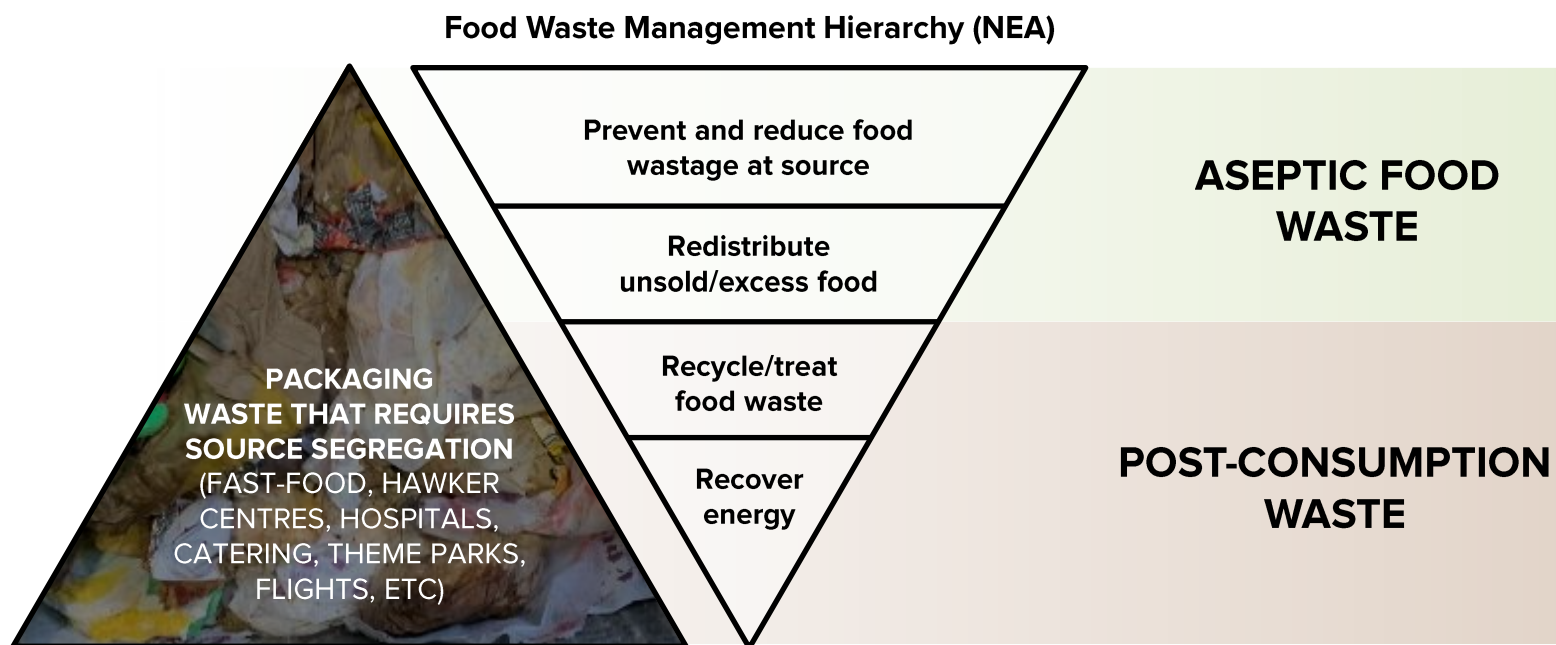
# Organic Recycling vs. Incineration: Carbon Footprint equivalent



## References

- Huanhuan Tong, Ye Shen, Jingxin Zhang, Chi-Hwa Wang, Tian Shu Ge, Yen Wah Tong. A comparative life cycle assessment on four waste-to-energy scenarios for food waste generated in eateries
- Gilles Adama, Alexis Mottet, Sébastien Lemaigre, Bella Tsachidou, Emmanuël Trouvé, Philippe Delfosse. Fractionation of anaerobic digestates by dynamic nanofiltration and reverse osmosis: An industrial pilot case evaluation for nutrient recovery

# Post-consumption waste from foodservices



In Singapore, while actions has been underway to tackle food waste, they are largely confined to aseptic grade food waste which are relatively 'clean', such as from factories, and easier to valorise. **Post-consumed food waste however is a lot more difficult** and require much efforts to source segregate, which also translate to cost and resources and remains a major obstacle to implement.

# Ongoing Cases



## KENTUCY FRIED CHICKEN

Close-loop system for single-use packaging in Quick Service Restaurants (QSR)

Cross-boundary Value-chain Analysis, Value Engineering, Material Compounding, Packaging Innovation, Consumer Experience Journey, Fertiliser Formulation, Carbon Footprint Assessment



## SINGAPORE AIRLINES

A system redesign for closed-loop flights

Operations Service Blueprint, Workflow Redesign, Packaging Development, Impact Assessment



## TRIA

Plant-based bottle and organic recycling

Market insights, Cross-boundary Value-chain Analysis, Business Modelling, Concept & Prototyping, Precision Engineering, Design for Automation, Impact Assessment

# TRIA is a leading voice in **circularity, design and innovation.**

- Emerging Enterprise Award, Pentawards, ASEAN-Korea Excellent Design Award Singapore Packaging Star Awards, Eco-Business's A-list.
- Featured in over 80 global events/media channels including Eco-business, Plasticity Thailand and Channel News Asia, and Asian Development Bank (ADB) sustainability platforms.



# We are studying the feasibility of financing partners to support the Organic Recycling of post-consumption waste.

- To finance the build of Anaerobic Digestion facilities through debt financing or equity investment.
- Qualified scope with foodservice giants such as KFC, with contracts for collection of post-consumption waste (single-use packaging and food waste).
- Decarbonising potential vs. incinerator/landfill.
- Take part in circular waste ownership.

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