

Advancing a Circular Economy for Food: Key Drivers and Recommendations to Reduce Food Loss and Waste in Singapore

*Addendum to the Position Paper by the
Singapore Environment Council*

September 2019



Introduction and Background

This document is an addendum to the attached “Advancing Circular Economy of Food: Key Drivers and Recommendations to Reduce Food Loss and Waste in Singapore” ('Position Paper'). On 27 September 2019, Singapore Environment Council ('SEC') hosted the Singapore Environmental Achievement Awards (SEAA), held in conjunction with the SEC Conference Day 2019 where the Position Paper was presented. Themed “EATNOVATE: The Circular Truth Dealing with Food Loss and Food Waste”, the conference provided a platform to spark conversations and discussions for business and government leaders to ascertain, develop and share innovative solutions to address food loss challenges from farm to market. Insights from the panel discussions and participants’ responses via online polling have been captured in this addendum to the Position Paper.

The SEAA and SEC Conference Day 2019 included two-panel discussions to further explore the innovative solutions to tackle food loss and waste and explore collaborative initiatives for greener solutions. The panels were led by various industry professionals.

PANEL 1: INNOVATIVE SOLUTIONS TO TACKLE FOOD WASTE	PANEL 2: COLLABORATIVE INITIATIVES FOR GREENER SOLUTIONS
Moderator	Moderator
Mr Mohit Grover Executive Director Deloitte Singapore	Mr Tan Szue Hann Managing Director Miniwiz Co. Ltd.
Panellists	Panellists
Mr Ng Pei Kang CEO TRIA	Mr Roshith Rajan Director, Corporate Responsibility, Asia Pacific Sodexo
Dr Lee Hui Mien, Mandai Park Development Vice President for Sustainable Solutions	Mr Nicholas Ng Co-founder Food Bank Singapore

Dr Jonathan Low Sze Choong
Scientist
A*STAR's Singapore Institute of
Manufacturing Technology (SIMTech)

Mr Anthony Tan
Senior Vice President
Sustainable Operations at DBS Bank

Mr Veera Sekaran
Director
VertiVeggies

Mr Arun Ratnaa
Head of Marketing
4FINGERS

Mr Rayner Loi
Co-founder and CEO
Good for Food

Mr Christopher Chan
General Counsel & Head of Government
Affairs
RedMart

Mr Oliver Truesdale-Jutras
Head Chef
Open Farm Community

Ms Esther An
Chief Sustainability Officer
City Developments Limited (CDL)

Mr Augustine Tan
Director, Business Development
Ugly Food

Ms Julie Haw
Managing Director
Frosts Food and Beverage Pte Ltd.

Chef Robert Stirrup
Director of Culinary Operations
Fairmont Singapore & Swissotel The
Stamford, ACCOR GROUP

Panel Discussion 1

Panel Discussion 1 during the Singapore Environmental Achievement Awards (SEAA) aimed to explore creative solutions to tackle food loss and waste in Singapore. The discussion titled 'Innovative Solutions To Tackle Food Waste' was moderated by Mr Mohit Grover, Executive Director of Deloitte Singapore, and included seven panellists. The panellists represented various stakeholders of the food supply chain in Singapore – including farmers, researchers, and chefs.

Mr Mohit Grover opened the panel discussion by asking the panellists some of the innovative solutions out there to reduce food loss.¹

Some of the **innovative solutions to reduce food loss** as explained by the panellists are:

1. Adopting technologies and opportunities along the supply chain to iron out the inefficiencies in Singapore
2. Working with partners to manage upstream food losses
3. Educating the consumer on the use of food (for example, education on portioning the food, the difference between a fast serve and slow serve buffet)
4. Homogenelise the packaging of food items to address all types of waste.
5. Promoting local products to influence consumers that local produce is also of high quality.
6. Designing smart labels that let users decide and make informed decisions (for example, using IoT and Blockchain technologies on labels to determine the source of the country from where the food comes from)

The panellists were then asked to highlight **what and where are the information gaps along the food supply chain** that contributed largely to the food loss in Singapore.

¹ Observing Chatham House Rules during the conference, the source of the inputs for the panel discussion has not been explicitly implied in this document.

Based on the responses of the panellist, the following were some of the information gaps found along the supply chain:

1. Mis-information on the import side due to which more people bring in more stocks that do not get sold.
2. The problem of visibility – there is a lot of focus on consumer food waste, whereas the consumers are not able to see the wasted resource.
3. In Asia, excess food represents glamour and status due to which food waste is not given importance
4. Lack of skilled labour in farms - Singapore is not an agrarian economy and due to which Singaporeans do not want to farm.
5. Obtaining finance from local banks for agri-tech

The final discussion point was on **transformation in the local production of food, and innovative solutions to reduce losses during production**. The panellists were asked to highlight some of the learnings for urban farmers, and the fish and seafood industry.

The panellist highlighted the following learnings:

1. Due to the limited land space in Singapore, there is a need to convert old buildings to farms in order to produce more food.
2. Need to develop Singapore as a production hub by building an agri-tech economy.
3. Need to build a national narrative; there is a need to sell local produce by selling “freshness” – Local farms sell fresh produce which is to be used to appeal to consumers.
4. Supporting local production is important
5. Maximising every single ingredient by using every part of the animal/plant product for food. For example, every part of the chicken can be used (avoiding “ugly chicken” waste)
6. Making farming a noble profession in Singapore

Audience Polling

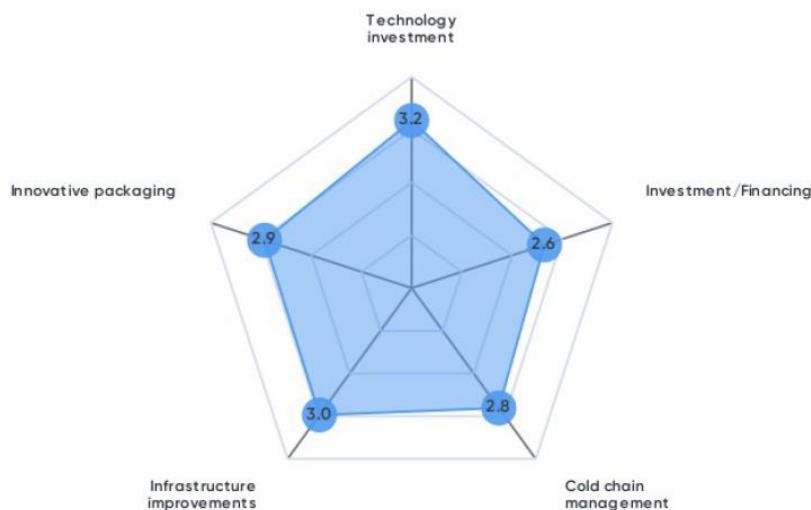
During the panel discussion, audiences were asked a series of questions to obtain their opinion regarding the topics discussed. Questions to the audience polls and the answers for the same are given below:

Question 1: Resources needed for food loss and waste management

Please assign importance to each factor (Priority: 1 – Low; 2 – Pressing but not immediate; 3 – Highly relevant; 4 – Critical)

1. Technological investment
2. Investment/Financing
3. Cold chain management
4. Infrastructure improvements
5. Innovative packaging

Audience Response:



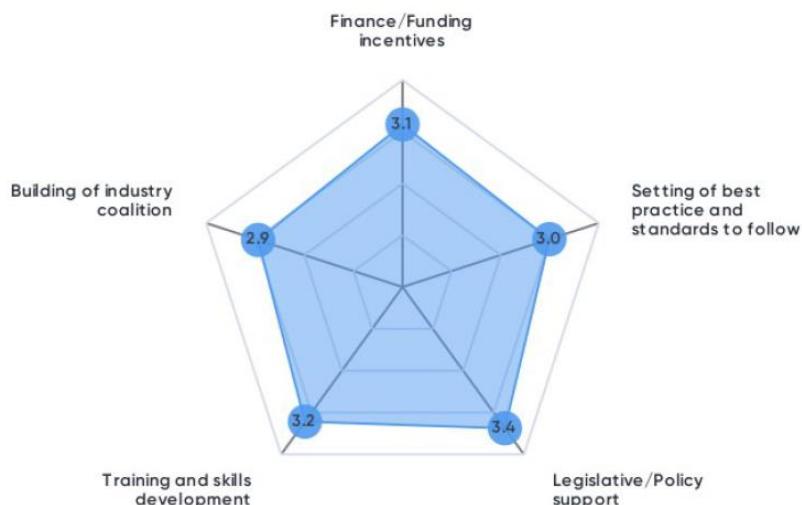
The audience polling results revealed that technology and automation, as well as infrastructural improvements, were the key resources to support any progress on food loss and waste management. The mentimeter voting also showed a resounding call for action that any reasonable progress must be supported with the necessary resources in terms of modern technology, funding and packaging know-how.

Question 2: Overcoming constraints

Please assign importance to each factor (Priority: 1 – Low; 2 – Pressing but not immediate; 3 – Highly relevant; 4 – Critical)

1. Finance/funding incentives
2. Setting of best practice and standards to follow
3. Legislative/Policy support
4. Training and skills development
5. Building an industry coalition

Audience Response:



The audience polling results revealed that legislative/policy support is crucial to lend a hand in pushing for change and for overcoming constraints on food loss and waste in Singapore. Coming in a close second was the need for training and skills development in the sector. This emphasizes the need for acquiring skills and knowledge in a growing sector that is gaining prominence. The audience consensus on overcoming constraints also showed Finance/funding incentives and setting best practices and standards as critical. Setting best practice and standards requires an independent body to lay the groundwork and establish practice standards.

Panel Discussion 2

Panel Discussion 2 during the Singapore Environmental Achievement Awards (SEAA) aimed to explore collaboration actions to implement solutions for food loss and waste in Singapore. The discussion titled 'Collaborative Initiatives for Greener Solutions' was moderated by Mr Tan Szue Hann, Managing Director of Miniwiz Co. Ltd., and included eight panellists. The panellists represented various stakeholders of the food supply chain in Singapore.²

Mr Tan Szue Hann opened the panel discussion by asserting that the food loss is a complex challenge that requires collaboration from all stakeholder groups. He then asked the panellists, that aside from communication and information gaps, what are the other impediments that the panellists have encountered and how did they overcome these impediments.

Some of the responses given by the panellists on **the impediments that have prevented positive action among stakeholders to address food loss** are given below:

1. The mindset in terms of food – as per culture, it is always about abundance in the Asian culture that catalyses food losses and waste.
2. Agility to look for solutions and partners for collaboration is the issue.
3. People monitoring temperature controls for imported food are not trained. They do not know where to point the infrared guns to monitor the temperature. This leads to food losses.
4. Customers are picky about aesthetics – such as, if a waffle is darker than usual, or if mushrooms stick together, they will throw the food away.

The discussion was then led to insights drawn from the panel points to highlight industry practice and expectations as a major contributor to food loss at the upstream and midstream. Singapore considered a small market with various stakeholders in the supply chain caught up to have little choice or room to manoeuvre. The moderator asked the panellists some of these **systemic**

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contributors to food loss and how can we iron it out for a more equitable outcome to tackle food loss?

Some of the responses by the panellists were:

1. Understanding your clients is crucial. The biggest challenge is in buffet restaurants and being creative on the buffet set-up. It is important to talk to the guests so that they are more aware of not wasting the food.
2. Enabling end-of-life for food waste – by turning food waste into compost. Residential properties in Singapore are exploring in-sync grinders that turn food waste into compost. This is the solution.
3. Monitoring and tracking food loss and waste through legislative requirements.
4. Using the network to collaborate on food loss/waste reduction strategies. Need to look beyond personal business model. Need to engage women and look at healthy lifestyles.

The discussion was then steered to **understanding the current practices to reduce food loss in the upstream and midstream food supply chain**.

The panellists provided the following responses:

1. Use of technology to pre-determine food loss and waste along the supply chain and take necessary steps to avoid such losses
2. Ability to maintain customer convenience while ensuring proper end-of-life for food waste. This includes treating food packaging and food waste together in a digester for composting.

Finally, the moderator steered the conversation to understand the **panellist's experiences on developing solutions to tackle food loss at the retail stage**. The panellist gave the following responses:

1. Identifying the gaps in the operations is the first step to tackle food loss.
2. The responsibility lies with the retail to help consumers make the right decision
3. Collaboration is the key to identify, monitor and reduce food waste.

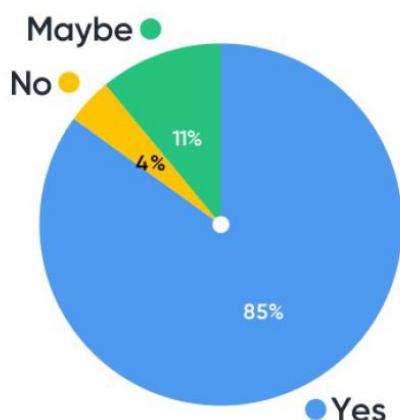
Audience Polling

Question 1:

Is industry collaboration amongst food supply chain actors key to reducing food loss and waste generated?

- Yes
- No
- Maybe

Audience Response:



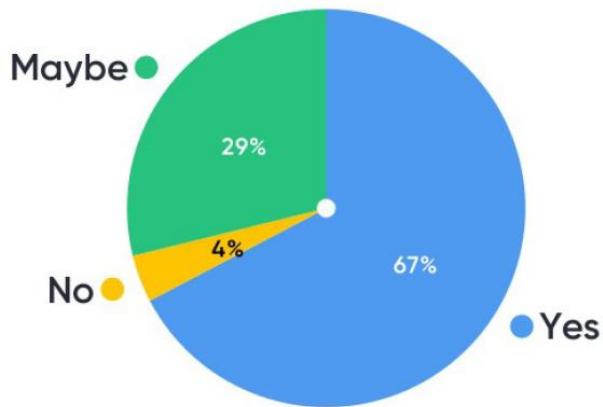
The audience responses showed a need for greater industry collaboration. This consensus highlights the need to call for an industry forum of relevant stakeholders to brainstorm effective solutions to the food loss and waste issue in Singapore.

Question 2:

Will the adoption of flexible commercial agreements between supply chain actors reduce excess orders and contribute to lower food loss?

- Yes
- No
- Maybe

Audience Response:



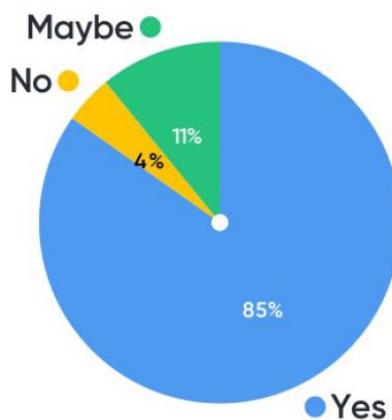
There was a large consensus from the audience on the adoption of flexible commercial agreements between supply chain actors to reduce food loss. However, close to 30% of the audience was unsure if that was the right approach to manage food loss.

Question 3:

Should midstream players redistribute surplus food to food manufacturing/processing industries and food charities to reduce food loss and waste?

- Yes
- No
- Maybe

Audience Response:



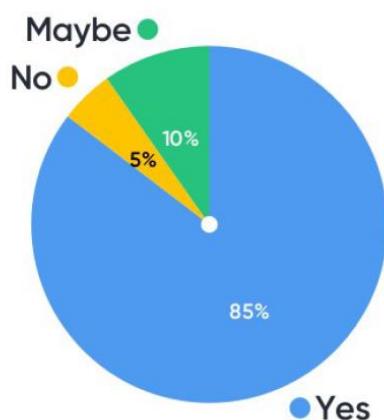
Based on audience responses, close to 86% indicated that midstream players like retail outlets, supermarkets, etc. need to work more diligently and closely with partners to redistribute surplus food.

Question 4:

Is public education key to moderating consumers' expectations and behaviours to reduce food loss?

- Yes
- No
- Maybe

Audience Response:



The audience poll revealed that 85% believe consumer education holds the key to help downstream audiences understand and moderate/change their mindsets and behaviours.

In the closing speech, Mr Seah Seng Choon mentioned that Singapore has what it takes for the local farms, entrepreneurs and businesses to transform food loss into new economic activities, jobs and meaningful contributions to make Singapore more sustainable. There is a unanimous call for action to be taken at the midstream and downstream food supply chain – such as greater industry collaboration, redistribution of surplus food, and a greater need for consumer education. The responses from the panel indicated that Singapore is confident of realizing and achieving the 30 by 30 vision (produce 30% of Singapore's nutritional needs by 2030).

Call for Action Items

Topic	Stakeholders	Targetted Action Items
Resources for food loss and waste management in Singapore	All	<ol style="list-style-type: none"> 1. Technological investment 2. Infrastructural improvements
Actions on overcoming constraints on reducing food loss and waste	Government	Legislative/policy support
	Importers, Retail outlets, Wholesalers, F&B outlets	Training and Skills development
Transformation in the local production of food	Investors Government	<ol style="list-style-type: none"> 1. Financially support the agri-tech economy 2. Convert old buildings to farms 3. Promote farming as a noble profession
Innovative solutions to reduce food loss	Manufacturers	<ol style="list-style-type: none"> 1. Homogenelise the packaging of food items to address all types of waste. 2. Designing smart labels that let users decide and make informed decisions
Tackling food loss along the supply chain	Government	Monitoring and tracking food loss and waste through legislative requirements
Developing a targeted action plan on overcoming food loss and waste	All	Industry forum of relevant stakeholders to explore effective solutions on reducing food loss and waste generated in Singapore

Topic	Stakeholders	Targetted Action Items
Redistribution of food	Retail outlets, supermarkets, F&B outlets	Work closely with partners to redistribute surplus food
Changing behaviour and mindsets	Consumers, NGOs	Consumer education on food handling, storage and waste



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