

**SINGAPORE ENVIRONMENT COUNCIL LAUNCHES  
“ADVANCING A CIRCULAR ECONOMY FOR FOOD: KEY DRIVERS  
AND RECOMMENDATIONS TO REDUCE FOOD LOSS AND WASTE  
IN SINGAPORE” STUDY**

***Circular economy for food is key to dealing with food loss and waste***

**Singapore, 27 August 2019:** Every year, around 342,000 tonnes of food loss occurs in Singapore from farm to market, contributing to an estimated \$2.54 billion worth of loss annually.

Food loss and waste occurs at every stage of the supply chain, from upstream to midstream and downstream. Singapore imports more than 90 per cent of its food needs, and out of this, more than 144,000 tonnes are lost when imported food lands in Singapore. For locally produced food within Singapore, more than 5,000 tonnes is lost at production, and close to 2,000 tonnes of food is lost during post-harvest handling and storage. During the processing and packaging of imported and locally produced food items, there is a food loss of close to 75,000 tonnes and more than 116,000 tonnes during distribution.

A joint Singapore Environment Council study with strategic international partner Deloitte Singapore indicates that all is not lost. Launched today at the SEC Conference, held in conjunction with the 22<sup>nd</sup> Singapore Environmental Achievement Awards, the study – Advancing a Circular Economy for Food: Key Drivers and Recommendations to Reduce Food Loss and Waste in Singapore – suggests that building a circular economy for food can help reduce food loss by plugging leakages and gaps in the food supply chain, while at the same time, create new economic opportunities.

The study also showed how reducing food loss and waste can help achieve the national Year Towards Zero Waste and “30 by 30” goals by uncovering possibly a fourth “food basket”.

As a land-constrained small city-state with the need to balance economic development with ensuring sustainability of materials for future generations, Singapore has to move from the traditional linear model of “take-make-waste” where natural resources are taken out of the earth to make a product, and after usage, will end up as waste.

A circular economy is one which keeps resources in use as long as possible, get the maximum value from them during usage, then recover and regenerate new products and materials at the end of every life cycle. It is envisioned that once a circular economy is built up in Singapore, whatever that is generally thrown away or wasted now, can be reintroduced into the food supply chain as useful by-products.

With regards to the food supply chain, this would call for a holistic set of strategies to prevent food loss at source, facilitate distribution of foods, encourage recycling and composting and exploit food waste-to-energy recovery processes that will deliver business and economic opportunities, and social and environmental benefits, says the study.

### **Three approaches for Singapore to build a circular economy for food**

To minimise food waste locally, the study spotlighted three approaches to consider:

1. **Source and consume locally grown food** regeneratively that replenishes and improves the overall health of the ecosystem. Building a strong partnership between consumers and local farmer organisations can provide the opportunity for a community-supported agricultural practice to ensure better security for local farming practices. Connecting city dwellers with farmers and farming practices can benefit the local environment, improve the health of citizens, and also form resilient local food supply.

2. Create **Singapore as a hub where food by-products innovation can be transformed** through emerging technologies and innovations into an array of valuable materials. One example is valorisation, the process of transforming food waste streams into useful by-products which could provide economic opportunities in the country whilst preventing waste. Similarly, the use of technology to extend the shelf life of food items can be explored by stakeholders in the food supply chain to prevent losses.
3. Reduce food loss and waste by **building multilateral collaborations between different players** in the entire food supply chain in Singapore to identify opportunities for food loss reduction. Collaborative efforts between different stakeholders in the supply chain can act as catalyst to spark action to reduce food loss along the supply chain. Such collaborations can not only prevent losses but also provide an economic advantage to the collaborating stakeholders.

The study which also included a consumer survey revealed that an estimated 26,000 tonnes of unconsumed food is thrown away from households annually. Data was collected from more than 1,000 respondents in Singapore through an online survey which looked at food storage behaviour, purchasing patterns and food handling habits.

It showed that there is still much work in progress to get consumers to do their part in cutting down on food waste. Only about 20 per cent of respondents can be classified as smart consumers as against about 80 per cent who generally throw away 10 per cent or more of uncooked and unconsumed food items. “Smart shoppers” exhibit the following traits:

- Do not throw away unconsumed food
- Are effective and organised planners who always or often make a shopping list of food items to buy
- Not swayed by promotional offers to buy excess food items that are potentially wasted

- Make sure that they consume all food items bought and do not buy more than what they need
- Shop at least once a week without contributing to an increase in food waste

Isabella Huang-Loh, Chairman, Singapore Environment Council, says: “There is an urgent need to reform the current food supply chain in Singapore. Food waste is a major concern in Singapore, one that is complex and where there is simply no one solution. The findings from our study will help to sharpen our focus on the urgency of food loss and prevention as part of climate change mitigation.

“Our study sheds light on the drivers and practices that cause such losses as that will allow the implementation of appropriate procedures and methods that will help minimise food losses and waste which happen at every stage in the supply chain, more so on the importation of food.”

The study also looks at possible solutions to improve the situation. Based on the value drivers identified in our study, it is recommended that Singapore look towards an economy for the food chain to be both sustainable and circular. This would also present tremendous opportunities for development of new businesses through technological enablement and other creative solutions that will benefit the food industry and the country as a whole. ”

### **Some key drivers of food loss and waste**

**Upstream** (production, storage and handling): A key driver for food loss and waste for vegetables and fish is natural climatic conditions.

**Midstream** (processing, packaging): For fruits and vegetables, key drivers are the aesthetical requirements and business contractual agreements.

**Downstream** (retail): For fruits and vegetables, these drivers are lack of stipulated rules or regulations and demand for “perfect looking” produce.

**Downstream** (consumption): For all food groups, key drivers are rising affluence and organisational aspects of food related habits and practices at home.

The study identified the supply chain for eggs produced in Singapore as a good example in the food supply chain, where the amount of food loss and waste generated is minimised. The egg farms in Singapore use automation to enable maximum output and minimise loss during production, resulting in around 1 per cent loss of eggs along the food supply chain and the optimisation of operations for the creation of a more circular economy for eggs.

Good practices in these farms include the use of damaged eggs during production to create by-products such as liquid eggs and powdered eggs. Chicken waste that is obtained from coop is used as fertiliser in vegetable farms in Singapore. These characteristics of valorising food from waste generated has the potential to be used as a model to exhibit circularity of food in Singapore.

#### **Creating 4<sup>th</sup> “food basket” to enhance food security**

Food security is critical to Singapore and the country takes a three “food basket” approach. Food imports – the first “food basket” – will remain the largest food basket for Singapore for some time to come. Local food production is Singapore’s second “food basket”. The third “food basket” is about companies expanding and growing overseas so that their produce can be exported back.

The study pointed out that moving into the circularity of food will help reduce food loss and waste to possibly create a fourth “food basket” that could enhance Singapore’s food security for the foreseeable future, and help achieve Singapore’s “30 by 30” goal to produce 30 per cent of the population’s nutritional needs. To unlock this \$2.54 billion in food loss from farm to market within Singapore, collaboration between multiple stakeholders along the entire food supply chain can help to establish a fourth “food basket”, while some can be diverted to the creation of other opportunities such as processed food, including frozen foods.

Ms Huang-Loh adds: “Choosing homegrown local produce will help to reduce Singapore’s heavy dependency on imported food, help support our local farmers and encourage them to invest more in innovative technology and other creative solutions to meet the increase in demand.

“The economic, social and environmental price we pay as a people and country for food loss and waste can be better utilised to drive local farming initiatives, better international standards of cold chain management and infrastructure to improve Singapore’s food security.”

In Singapore, food waste is largely monitored at the post-consumer or downstream stage with little awareness of the losses occurring at the upstream and midstream stages. SEC’s “Advancing a Circular Economy for Food: Key Drivers, and Recommendations to Reduce Food Loss and Waste in Singapore” study aims to identify drivers and plug the gaps at the upstream and midstream stages to look at uncovering opportunities for possible solutions through innovations and help close the loop on food loss and waste.

The study is supported by qualitative and quantitative information gathered through comprehensive interviews with more than 30 stakeholders in the local food supply chain, intensive research on past literature focused on food loss and waste, and a consumer survey on food storage behaviour, purchasing patterns and food handling habits covering more than 1,000 respondents. It is also verified by Deloitte Singapore, independent auditors and SIMTech.

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### ABOUT THE SINGAPORE ENVIRONMENT COUNCIL

Established in 1995, the Singapore Environment Council (SEC) is an independently managed, non-profit and non-governmental organisation (NGO). As Singapore's first United Nations Environment Programme (UNEP)-accredited environmental NGO, we influence thinking of sustainability issues and coordinate environmental efforts in the nation.

We are also an approved charity and offer tax exemption to donors. SEC continuously engages all sectors of the community by formulating and executing a range of holistic programmes, such as the Singapore Environmental Achievement Awards, Asian Environmental Journalism Awards, School Green Awards, Singapore Green Labelling Scheme, Project: Eco-Office, Project: Eco-Shop and Project: Eco-F&B. In addition, we build a pool of committed volunteers under our Earth Helpers programme. Our Training and Education arm provides the people, public and private sectors with the opportunity to develop awareness, knowledge, skills and tools in order to protect and improve our environment for a sustainable future.

Strong partnerships with corporations, government agencies and other NGOs are valued by us. These partnerships are vital for sustaining our programmes, leading to positive action and change. Over the years, SEC has given strength and direction to the environmental movement in Singapore.

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## 新加坡环境理事会简介

新加坡环境理事会(SEC),成立于 1995 年,是非政府组织(NGO),也是非盈利机构。我们致力于推广新加坡可持续发展项目同时协调环境改善事务。在 2018 年,新加坡环境理事会被联合国环境规划署授予认证。

我们是一个获得认可的慈善机构,捐赠者可享受税务优惠。通过举办一系列整体项目如新加坡环境成就奖(Singapore Environmental Achievement Awards)、亚洲环境新闻奖(Asian Environmental Journalism Awards)、SEC-星和校园绿化奖(SEC-StarHub School Green Awards)、新加坡绿色标签计划(Singapore Green Labelling Scheme)、绿化办公室计划 (Project: Eco-Office)、绿化商店计划(Project: Eco-Shop)和绿化餐饮计划(Project: Eco-F&B),新加坡环境理事会持续在社会各个领域发挥作用。

通过志愿环保战士 (Earth Helpers)项目新加坡环境理事会组织了一支队伍协助和改善环境。我们的培训与教学部门旨在提高人民、政府部门及社会各领域的环保意识,知识与技能,并提供相关教材。多年以来,新加坡环境理事会一直支持并引导着新加坡的环保运动,通过与企业、政府机构和其他非政府组织建立密切的合作关系以更积极的行动达成改善环境的远景,这对于我们项目的可持续发展是至关重要的。