



## Food wastage must stop

Sheith Khidhir  
21 April 2019



While Indonesia has been an ISO 14001 certified waste management company since 2012, it also has a waste management program for food distribution through the program.

## ASEAN's hungry children

Sheith Khidhir  
1 February 2019



In this photo children with their parents eat rice, dried fish and instant noodles in Manila. (Joy Direct / A)

While Southeast Asia is gearing up for the Fourth Industrial Revolution, and its c

## Tackling Plastic Waste Pollution In ASEAN

The ASEAN Post team  
28 January 2020



This photo shows a woman sifting through a pile of waste on the side of a road in Bac Ninh, east of Hanoi on 18 December, 2019. (AFP Photo)

Southeast Asia stands to gain the most from the addition of plastic waste to the Basel Convention in 2019. All 10 ASEAN member states are signatories to the Basel Convention, a

TheStar Brunei highest waste generator in Asean

## Brunei highest waste generator in Asean



BRUNEI

Wednesday, 07 Oct 2020  
8:34 PM MYT



Marzuki (left) with participants at the workshop. - Borneo Bulletin

BANDAR SERI BEGAWAN (Borneo Bulletin/ANN): The waste sector in Brunei

Based on a study by UN FOA, every around 1/3 of food suitable for human consumption is wasted.

Source: The ASEAN Post and The Star



# Food Waste Minimisation Towards a Sustainable World

## Team StartUp

Siti Safwannah binti Haji Abas  
Nur'Aqmal Fazeera binti Mohammad Mahady



# SDG Target, ASCCBP and AECBP

**TARGET** 11•6



**REDUCE THE  
ENVIRONMENTAL  
IMPACT OF CITIES**

Reduce the adverse per capita environmental impact of cities, such as paying special attention to air quality.

## ASCC Blueprint 2025

**Section B.2.** (iii and viii)  
Equitable Access for All

**Section C.3.** (v)  
Sustainable Climate

**Section C.4.**  
Sustainable Consumption  
and Production

**Section E.1.** (viii)  
Towards an Open and  
Adaptive ASEAN

## AECBP Blueprint 2025

**Section B.8.** (41 – vi and vii)  
Sustainable Economic  
Development

**TARGET** 12•3

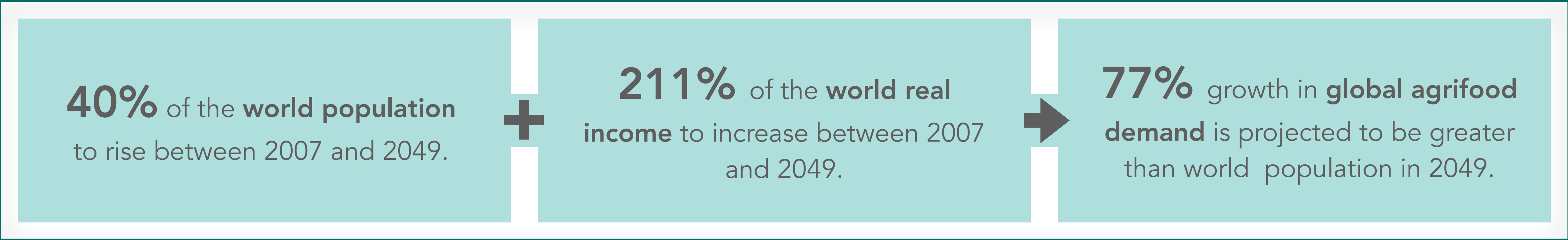


**HALVE GLOBAL PER  
CAPITA FOOD WASTE**

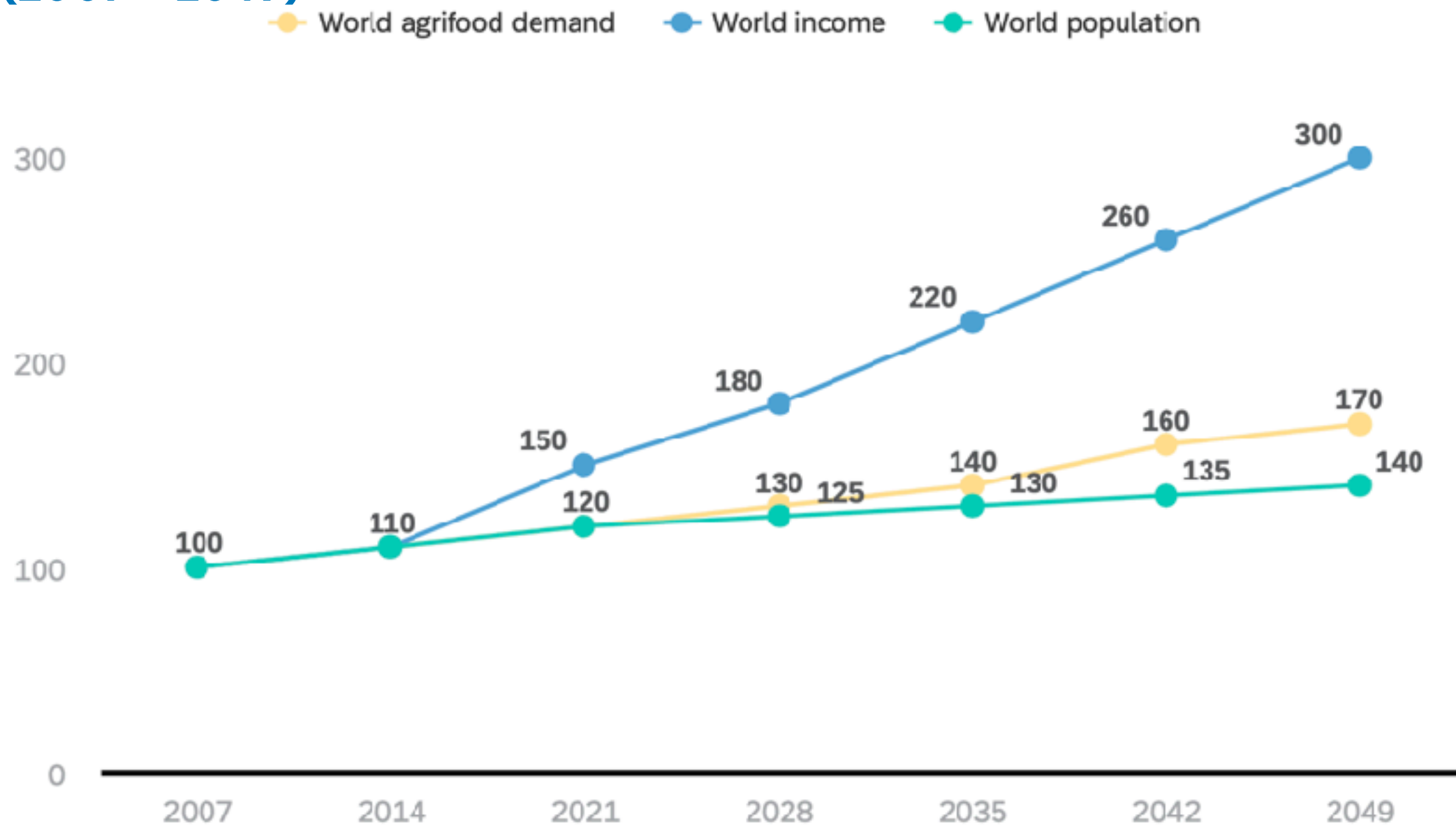
Halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.



# Income, Population and Agrifood Demand

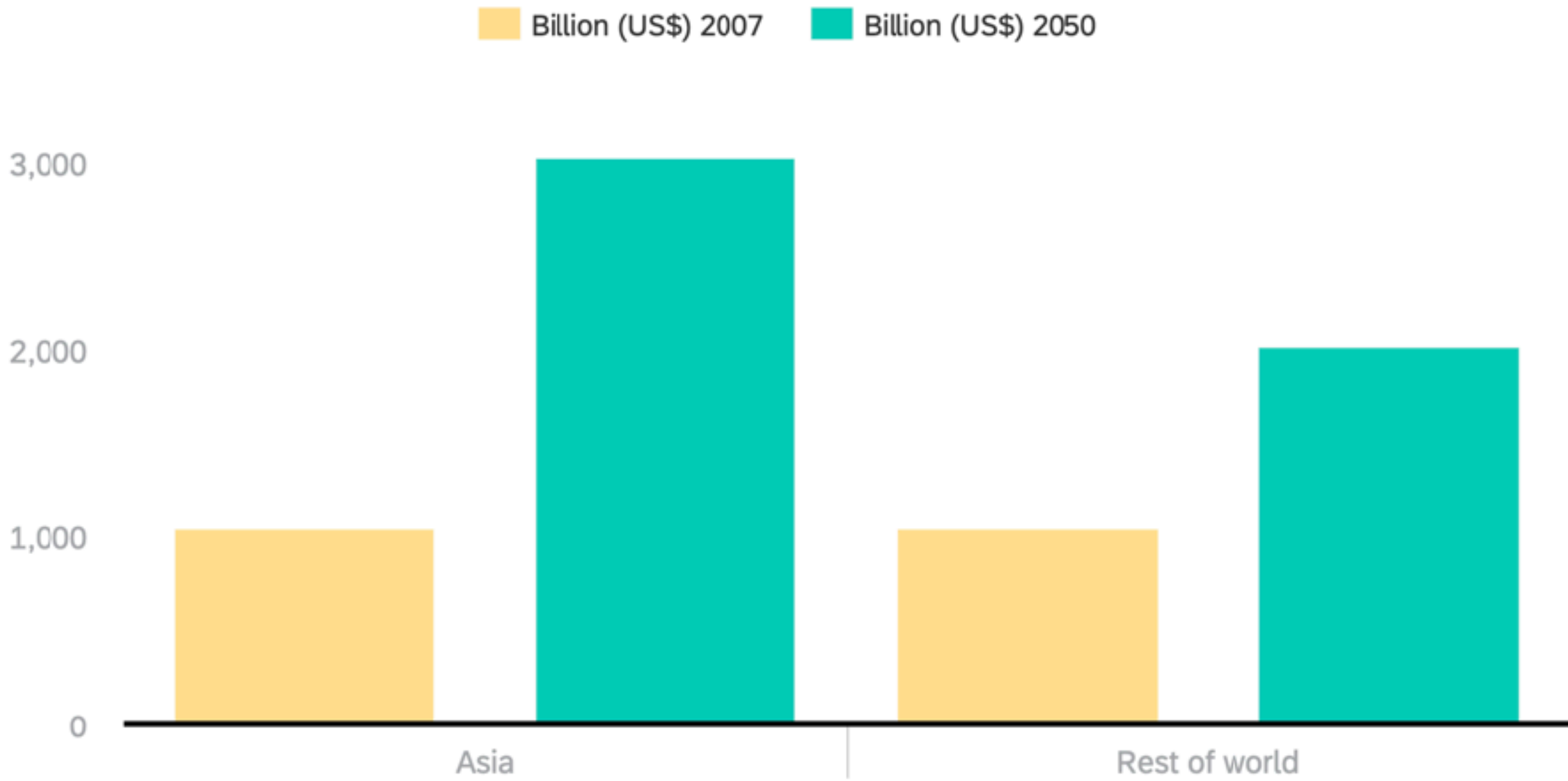


World Agrifood Demand, World Income and World Population (2007 - 2049)



Source: ABARES Model Output

World Agrifood Demand by Region (2007 & 2050)



Source: ABARES Model Output

# Per Capita MSW Generation vs. Urban Population in ASEAN (2016)

# Per Capita MSW Generation vs. Per Capita GDP in ASEAN (2016)



ASEAN urban population to increase nearly **525 million** in **2050**.

vs



The per capita Municipal Solid Waste (MSW) generation in ASEAN is **1.14 kg/capita/day**.

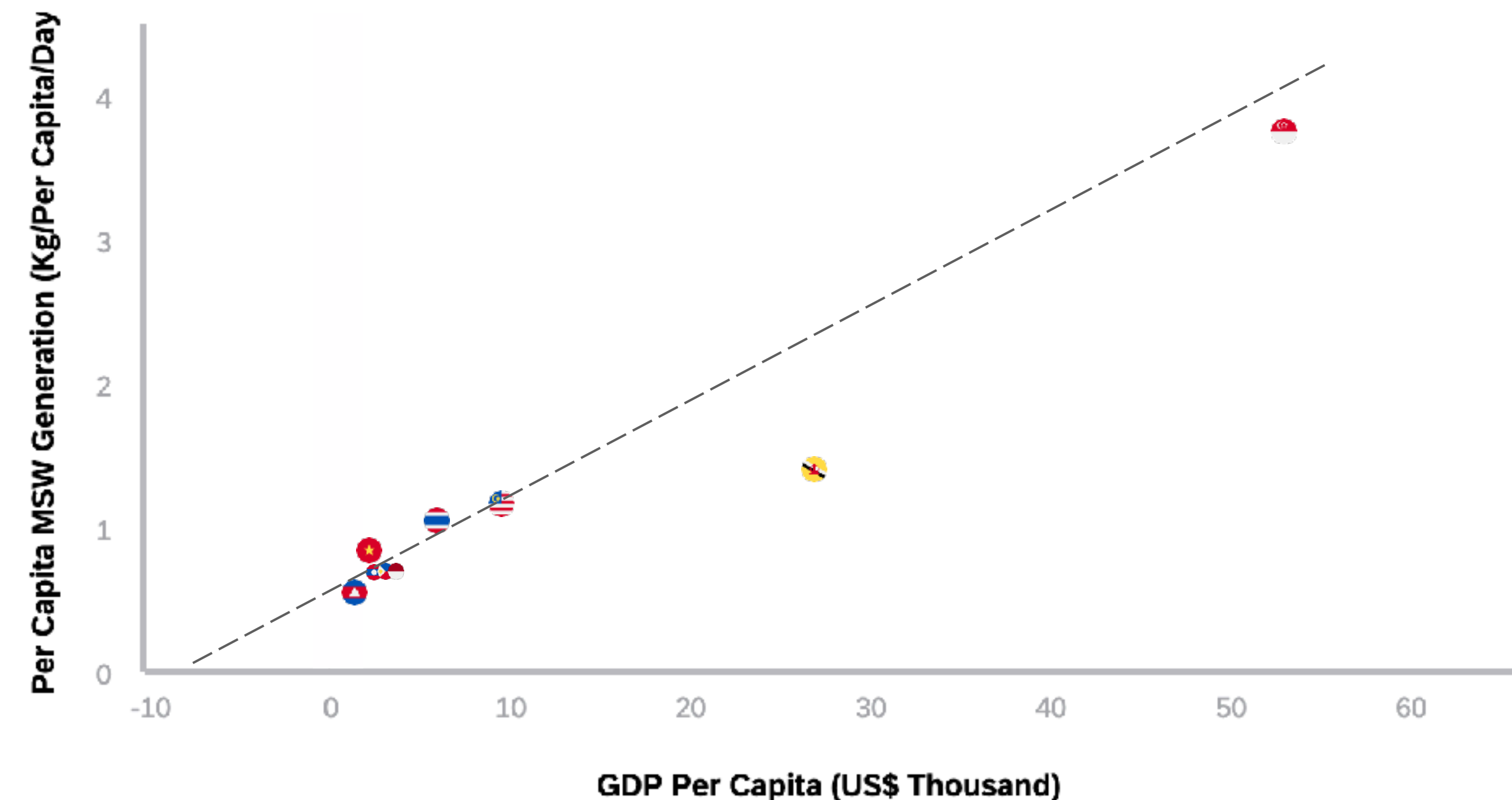
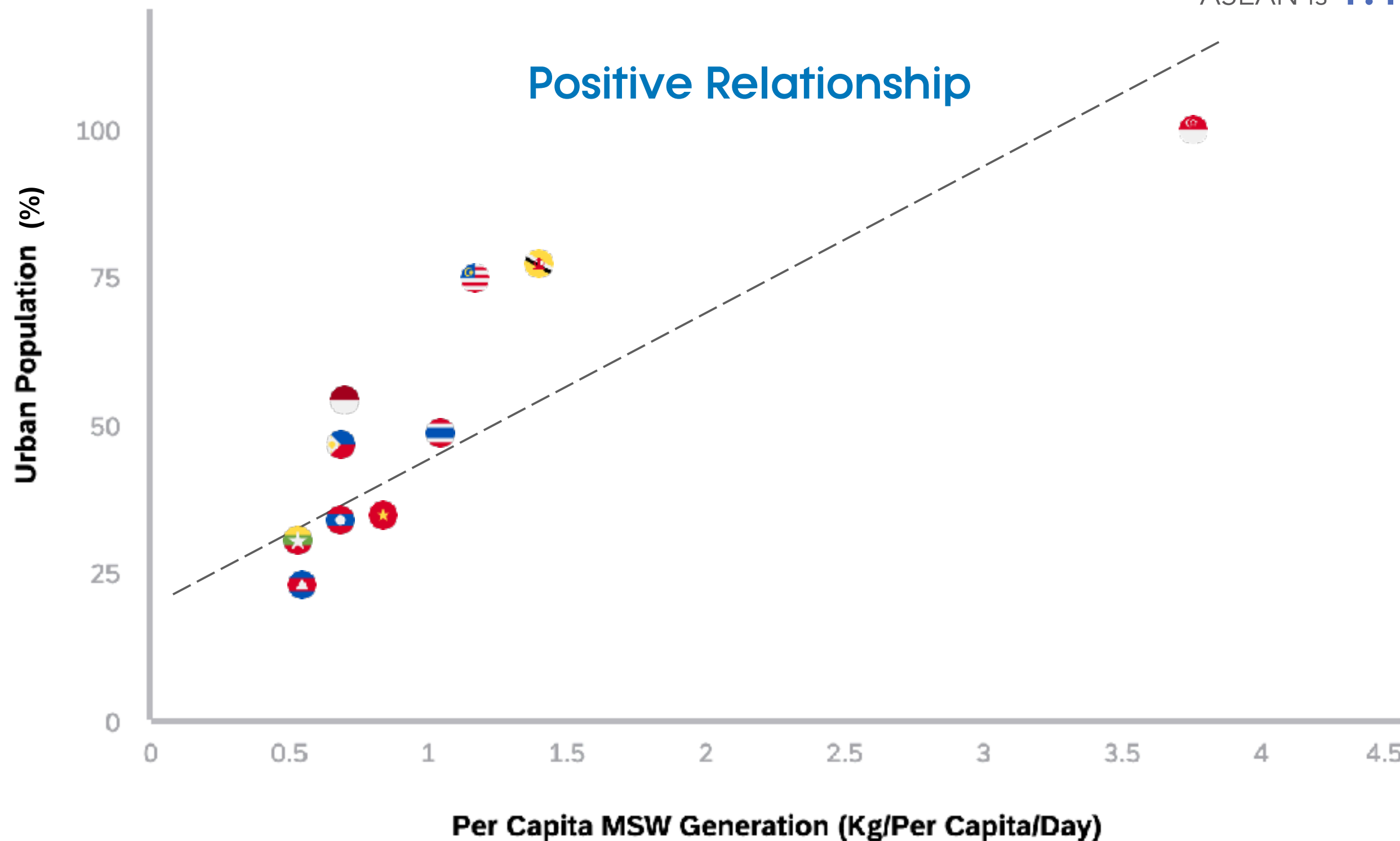
vs



ASEAN's combined GDP of US **\$2.5 trillion** comprises **3.4 per cent** of the world's GDP.

Positive Relationship

Positive Relationship



Source: Statistics and UN Report (2017)

Source: World Bank (2016)

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Food Waste Minimisation Towards a Sustainable World

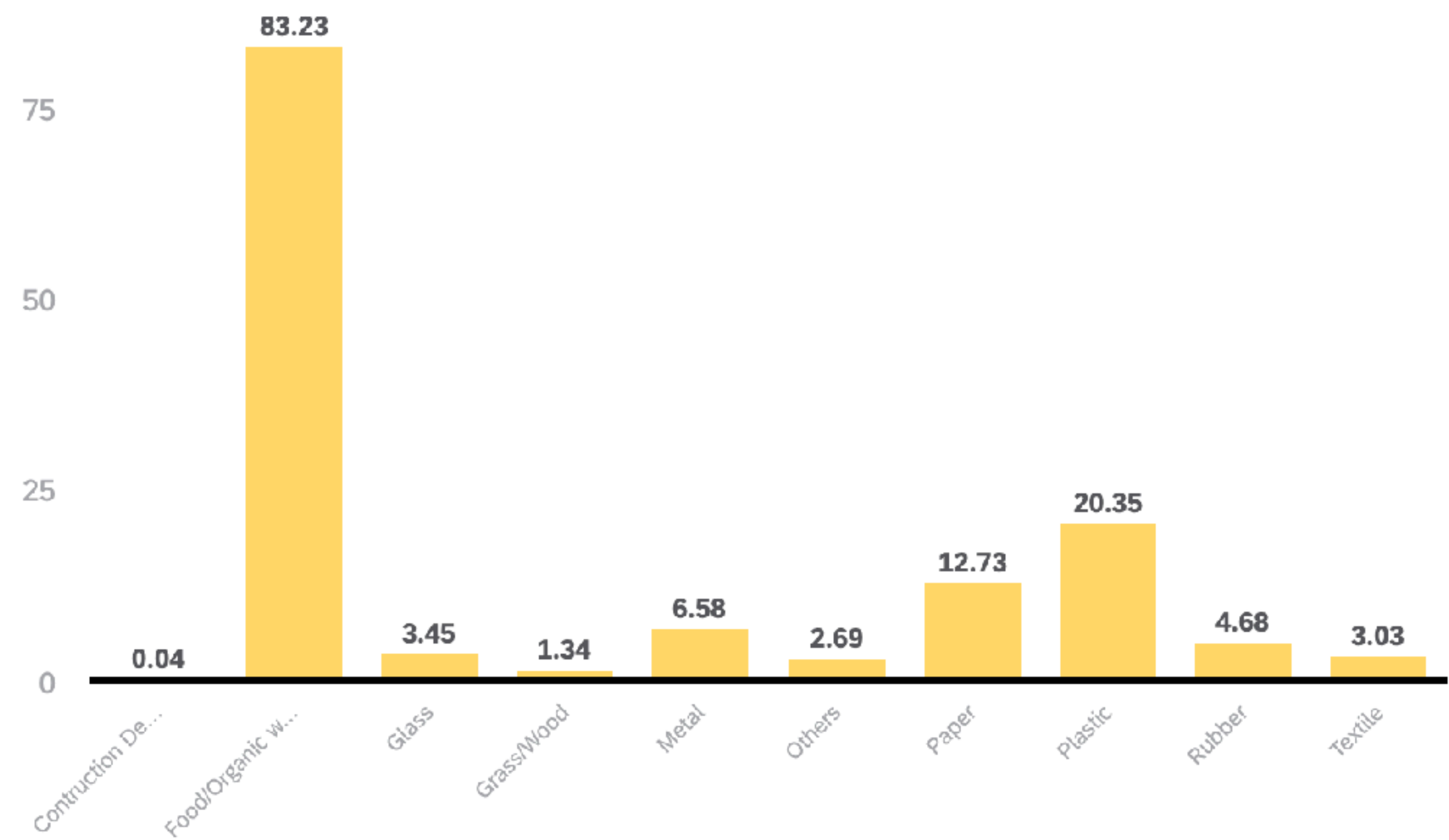


Sustainable Cities  
And Communities



# Total Amount of Waste Generation (ton) in ASEAN Countries in 2016

Total MSW (ton) per Types of Waste




Source: UN Report (2017)

Food/organic waste, paper and plastic are the highest waste among ASEAN countries.



Top 3 ASEAN countries with the largest waste on food/organic products.

- 1



Myanmar

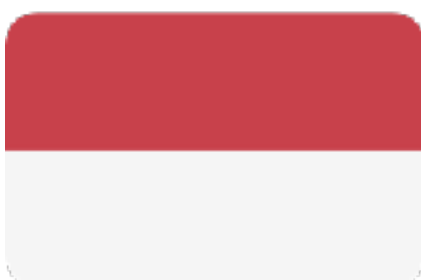

73%
- 2



Thailand

Laos


































64%
- 3



Cambodia

Indonesia

60%

Countries	Composting	Incineration	Landfill	Open Dumping	Open Burning	Recycling (%)
Brunei Darussalam						<15%
Cambodia						<50%
Indonesia						<50%
Laos						<50%
Malaysia						50% to 60% (Metal, Paper, Plastic); Others (<50%)
Myanmar						<70% (Plastic, Paper Metal)
Philippines						20% to 33% (Paper) 30% to 70% (Aluminium) 20% to 58% (Other Metals) 23% to 42% (Plastic) 28% to 60% (Glass)
Singapore						50% to 60% (Paper, Horticulture) >90% (Fe, CandD, Used Slag) >80% (Scrap Tire) >80% (Wood) >50% (Others) Overall (60%)
Thailand						>90% (Metal) 50% to 60% (Paper, Construction) <50% (Others)
Vietnam						>90% (Metal) >70% (Plastic, E-waste) 50% (Paper) <50% (Others)

Source: UN Report (2017)

# Municipal Solid Waste in ASEAN

## Findings:

- ✓ Landfills and open dumps are the primary forms of waste management.
- ✓ Composting and incineration are very limited in usage.
- ✓ Open dumping and open burning of MSW are practiced in countries where recycling rate is less than 50%.



# Issues on Food/ Organic Waste

## Issue 1: Economic Loss

**1.3 billion tons** of food is wasted annually worldwide.

In **2030**, annual food loss and waste will hit **2.1 billion tons**, worth **US\$1.5 trillion**.

Southeast Asia accounts for **25%** of the world's food waste.

Source: FoodCycler

High **waste management** costs:



Maintenance  
of landfills.



Operational  
costs in treatment  
plants.



Transportation  
costs.

## Issue 2: Environmental Problem



Food/Organic Waste

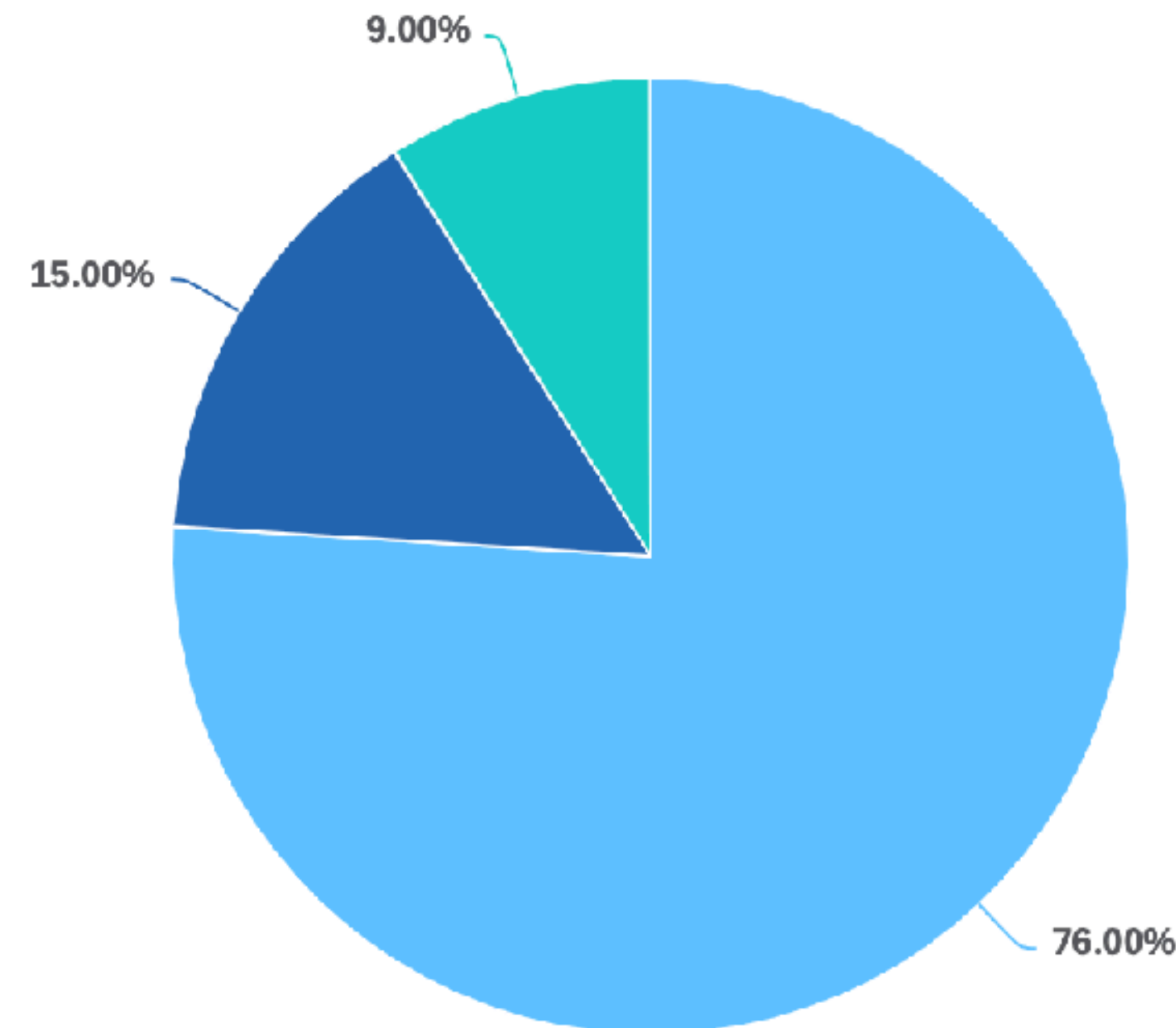


Landfill/Incineration



Greenhouse Gas  
(21x more potent than CO2)

**6%** of global greenhouse gas emission come from food loss and waste.



GHS emissions in the ASEAN region will almost double by **2040**, reaching **2.3 billions tons**.

Food eaten by consumers    Food emission from lost in supply  
Food thrown away by retailers and consumers

Source: Our World in Data (2020)



# Issues on Food/ Organic Waste

## Issue 3: Social Problem



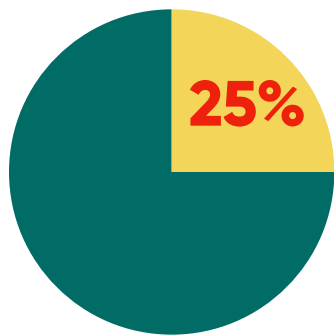
Increase in the global price of foods by **39.7%** from May 2020 to May 2021.



**1/4** of food waste can feed 870 million people (**12%** of world population).

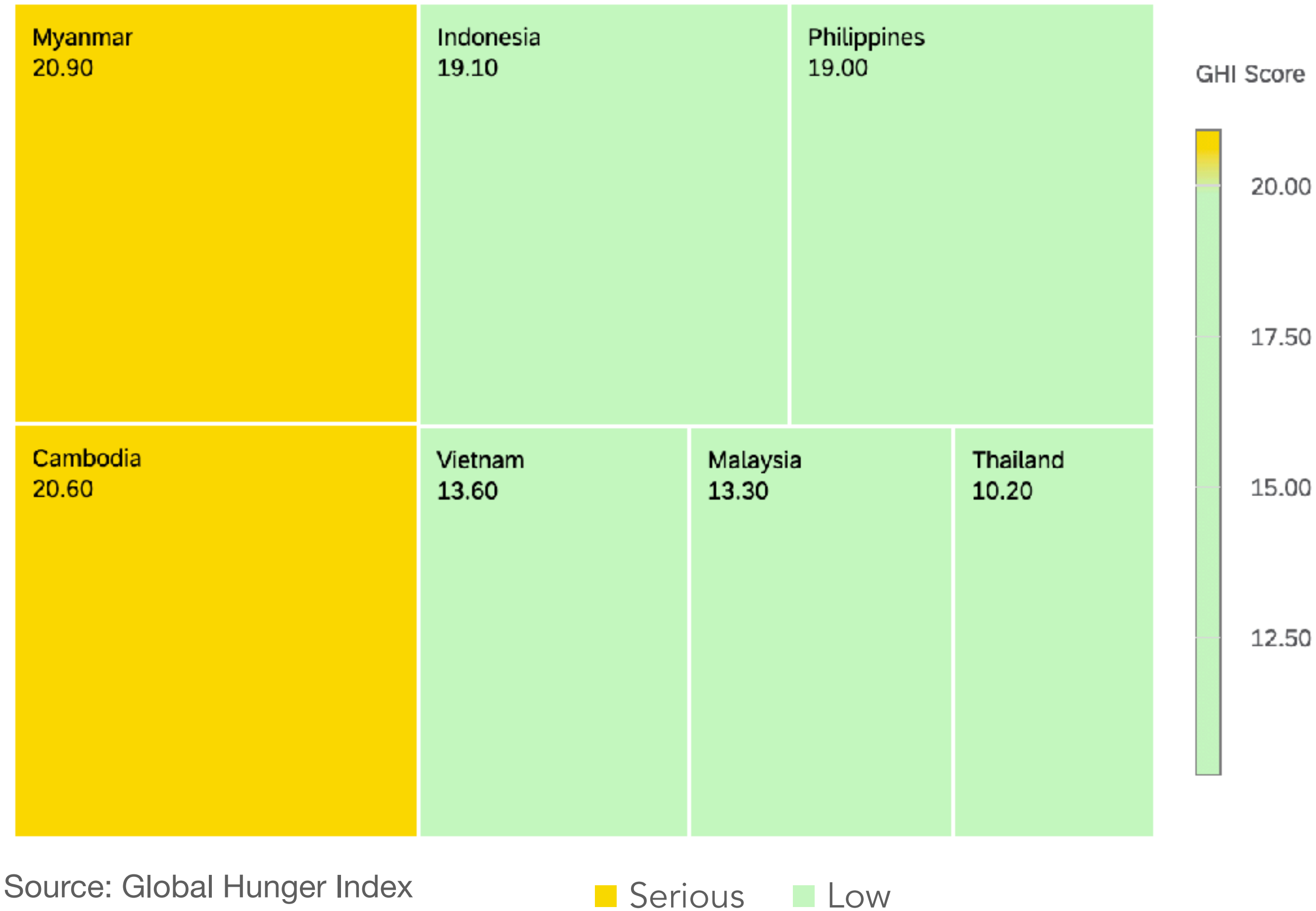


World Food Programme: **815 million** people in the world have food shortages.



**25%** of total populations in developing countries are undernourished.

## ASEAN's Global Hunger Index 2020





# Proposed Recommendation

## Food Saver Management Programme

### Objectives:



Reduce food waste and loss, along food supply chain including retailers and consumers.



Conserve energy and resources.



Reduce greenhouse emissions.



Support community in needs.

### Stakeholders

#### Government and Institutional

- ✓ Track, measure and evaluate the progress on food loss and waste goals and targets.
- ✓ Develop guidelines and policies on food loss and waste.
- ✓ Increase accountability on issues related to food loss and waste.
- ✓ Create awareness among public.

#### Industrial and Retailers Organisations

- ✓ Comply with the guidelines and policies set by the authority.
- ✓ Track employee and operational performances.
- ✓ Adopt IOT for tracking of food loss and waste.

#### NGOs

- ✓ Raise awareness and influence policy development on food loss and waste reduction.

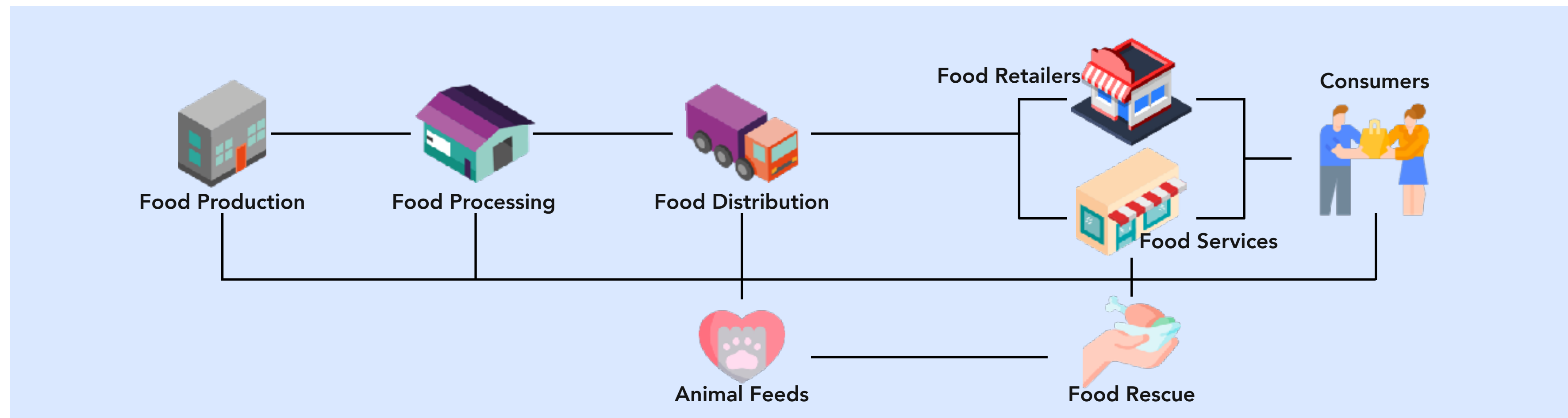
#### Consumers

- ✓ Comply with guidelines and policies set by authority.
- ✓ Understand the impacts of food loss and waste.
- ✓ Take necessary actions to reduce food loss and waste.



# Food Saver Management Programme

Goal: 50% reduction in food waste by 2030



Food chain supply

Food loss and waste

## Sources Reduction Strategy

Improve the sustainability and efficiency of production, processing and distribution.

✓ Utilise IOT on the supply chain of relevant food industries to manage tracking of food loss and waste efficiently.

✓ Provide guidelines on food safety, food labels, and donations for businesses and consumers.

✓ Facilitate a sustainable food procurement for better inventory management & procurement practices.

## Animal Feeds Strategy

Provide food scraps for animal feeds.

✓ Cooperate between relevant agencies to provide nutritious food for strays animals.

## Food Rescue Strategy

Donate extra foods to social services and supporting local communities.

✓ Provide food donation guidelines to facilitate the recovery and redistribution of safe and edible foods.

✓ Collaborate with relevant stakeholders to collect, produce and redistribute excess foods to low-income communities.

## Industrial Use Strategy

Employ industrial processes for the production of biofuels.

✓ Development of renewable energy. i.e off grid electricity (Thailand, Malaysia and Indonesia).

## Composting Strategy

Convert organic waste into nutrients rich soil/fertilisers.

✓ Encourage households on organic recycling.

✓ Develop advance facilities that create high quality compost and soil amendment products.

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Sustainable Cities  
And Communities



ASEAN  
DATA SCIENCE  
EXPLORERS





# Proposed Timeline 2022 - 2030

## ESTABLISH COLLABORATION AND GATHER INFORMATION

1

2022 - 2023

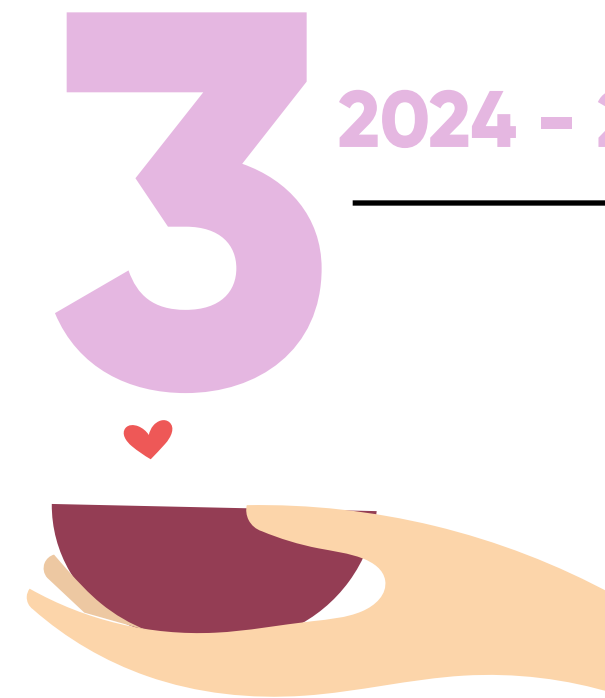
- Cooperate and collaborate between governments and other stakeholders.
- Review policy instruments to identify gaps in waste & materials management.
- Learn and share the best practice and results of food waste management in different countries.

## DEVELOP A STRATEGIC PLAN

2

2023 - 2025

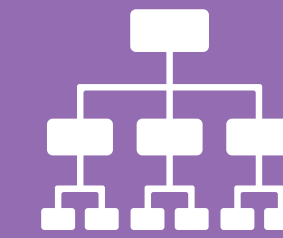
- Develop strategic objectives and create their measurements.
- Attract funding for food recovery investment eg; Investment in IOI.
- Prepare budget estimation for plan strategic implementation.
- Set out relevant national legislation policies on food waste management.
- Establish national standards and procedures for food waste minimisation.



## Implementation of Food Saver Management Programme

2024 - 2030

Supported by



## Building Awareness

1. Educate and guide businesses and consumers on food saver management.
2. Design specific programmes to increase public awareness.
3. Improve coordination and guidance on food loss and waste measurements.

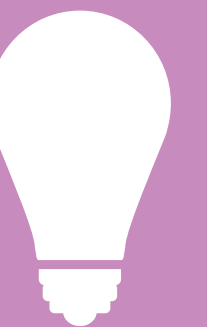
## Monitoring & Evaluating Progress



- Adopt IOI for monitoring and tracking of food loss and waste.
- Review & feedback from relevant stakeholders.

## Providing Incentives & Support

- Provide incentives to business/ organisations in the country.
- Garner support by all stakeholders.



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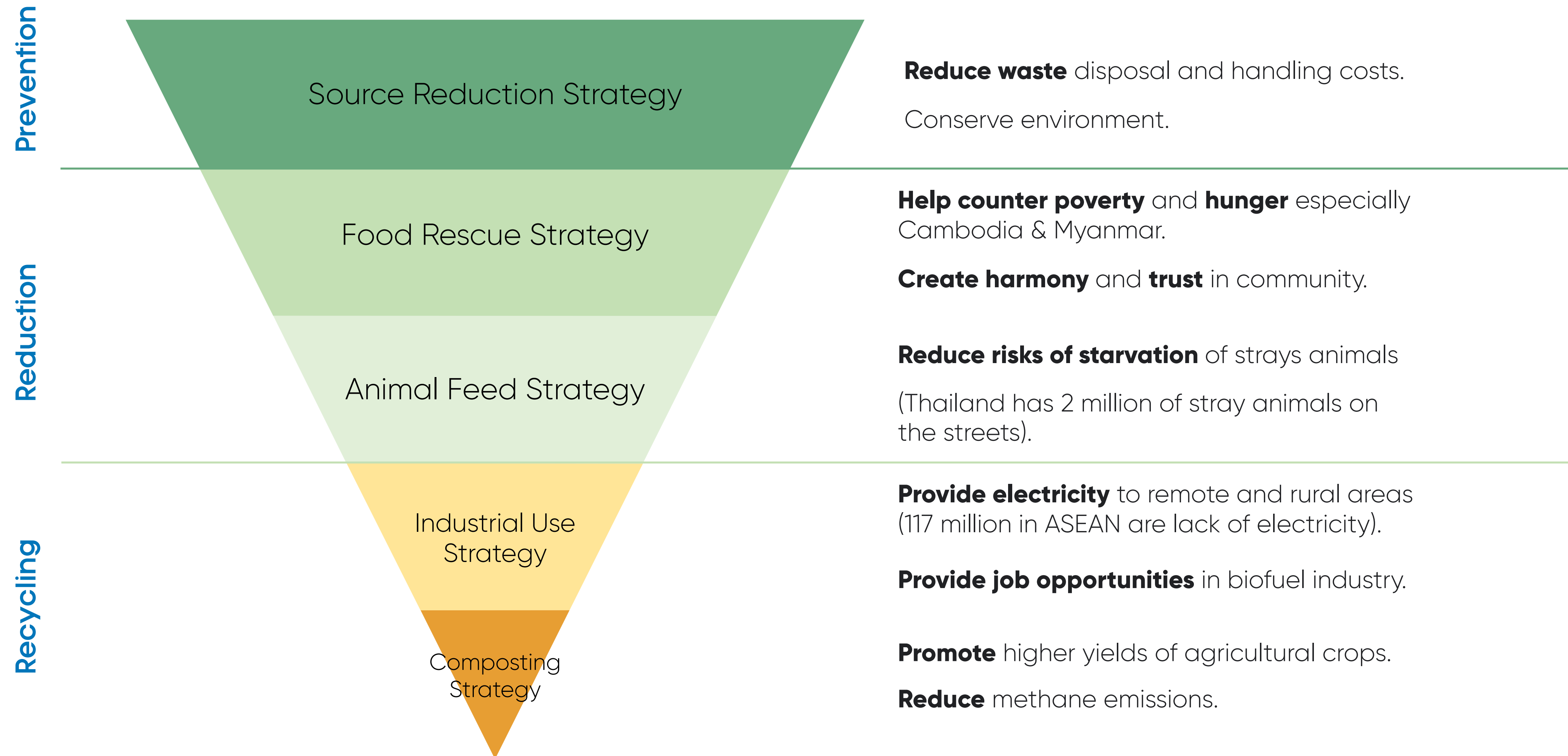


Sustainable Cities  
And Communities





# Benefits of Food Saver Management Programme to ASEAN



Source: Channel News Asia (2020)

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# Appendix - Case Study - Challenges and limitation of Implementation of Food Saver Management Programme



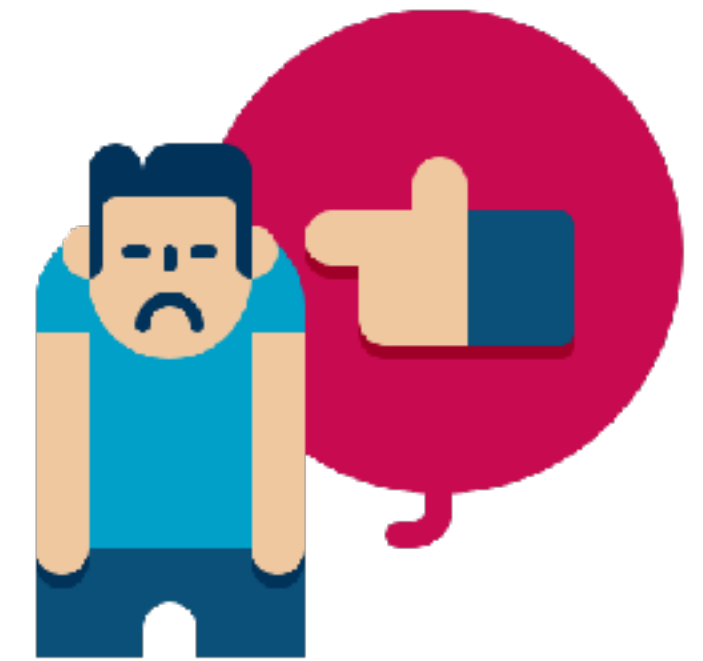
**Time Consuming** in research and development.



**Costly** as a result of high quality product.



Trying to reduce waste but **more waste** are created.



Blame on **consumer** instead of government and industry.



# Appendix - Case Study - Using Public Procurement To Fight Food Waste

A meal provider from Burges called Rudderstove awarded contracts for tenderer who able to achieve SDG specifically on reducing food waste.

Reduce food waste from production until distribution to catering facilities by encouraging tenderer.

Award contract based on price and quality.

ELEMENTS	EVALUATION	SCORE
<ul style="list-style-type: none"><li>• Provide description on the measure use.</li><li>• Specify their preparation and consistency in donating food.</li></ul>	<ul style="list-style-type: none"><li>• Opportunity to learn on how the tenderer using the cascade of value retention in their process.</li><li>• Based on ranking.</li></ul>	<ul style="list-style-type: none"><li>• High score given when food donate to Bruges Distribution Platform.</li></ul> <ol style="list-style-type: none"><li>1. 80% to 100% - very good</li><li>2. 51 to 79% - good</li><li>3. 50% - moderate</li><li>4. 25% to 49% - very weak</li></ol>

Source: Flavour2seas.eu

# Appendix - Case Study - AI



**wasteless**  
Reducing food waste.

**Wasteless** is a start-up formed in 2016 with the goal of utilising dynamic pricing algorithms to reduce food waste in supermarkets.

## How Wasteless AI can help to reduce food waste?



Wasteless AI helps in lowering the cost of near-expired food.



Consumers will pay less for food that is closer to the expiry date.



Supermarket able to minimize waste and boost their earnings.

## Expected Results

**- 50%** Reduction in food waste

**+ 20%** Increase in revenue

**+ 3%** Increase in margins

Source: Wasteless

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# Appendix - Case Study - Successful Policies

## South Korea's successful management of food waste

In 2005, South Korea was one of the world's largest producers of food waste, producing 17,000 tons a day.



South Korea banned all landfill food dumping in 2005.

In 2013, South Korea introduced new policy called "Pay As You Throw"



South Korea now recycles more than 95% of its food waste, up from less than 2% in 1995.



Since then, the South Korean government had saved \$600,000 a day, which was previously spent on food waste disposal.



As the result of the new policy (PAYT), South Korea has decreased the volume of food waste by 10% or 300 tons per day.