Solving the Waste Management Problem in ASEAN

11 SUSTAINABLE CITIES AND COMMUNITIES

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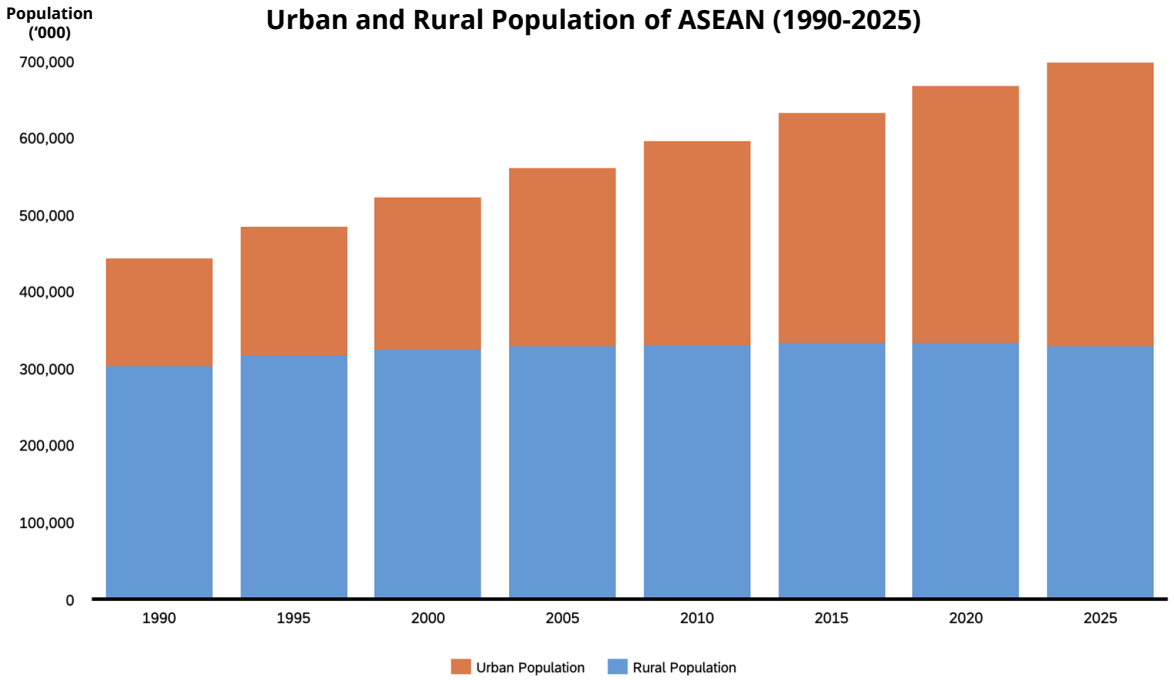
ASEAN is experiencing rapid urbanisation, with almost half of its population living in cities today



48.9%

of ASEAN population live in urban areas in 2018

130%

increase in urban population between 1990 and 2018

70 million

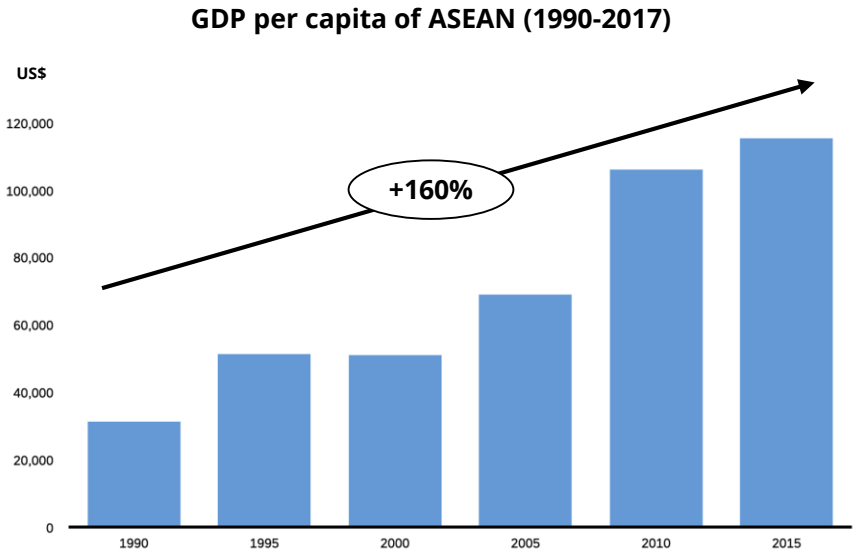
more people are expected to live in urban areas in ASEAN by 2025

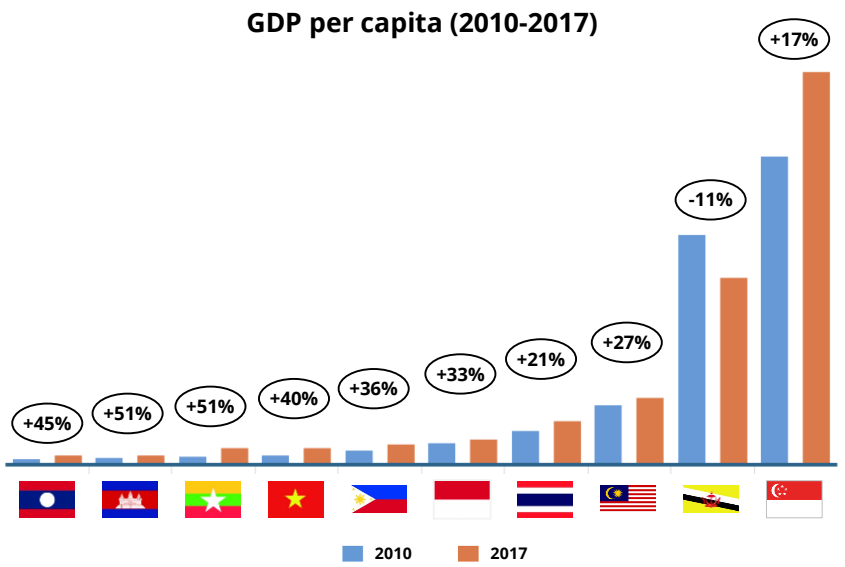
Source: United Nations Economic and Social Commission for Asia and the Pacific, United Nations Department of Economic and Social Affairs

ASEAN is one of the largest economic zones in the world and it has seen rapid economic growth and development in the past few decades

GDP per capita of ASEAN has grown steadily since 1990

All ASEAN countries (except Brunei) have seen an increase in GDP per capita between 2010 and 2017





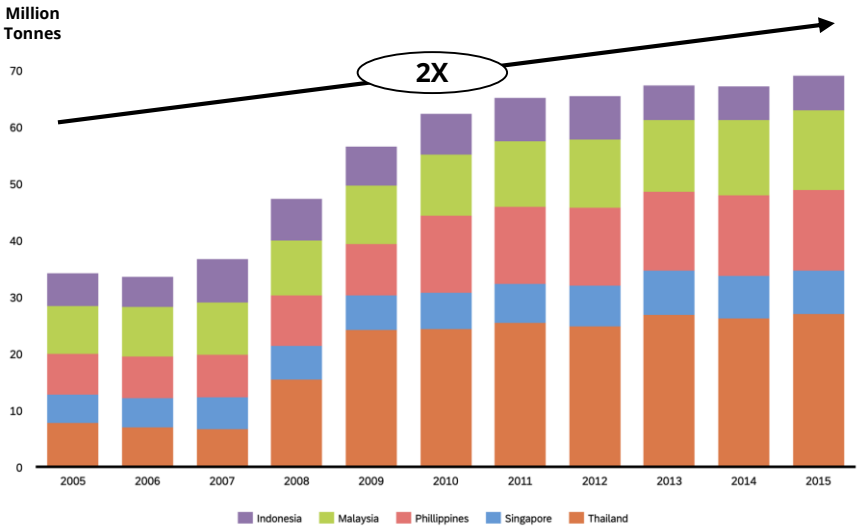
Source: United Nations Economic and Social Commission for Asia and the Pacific

The amount of solid waste generated in ASEAN has grown tremendously, especially among Thailand, Singapore and the Philippines

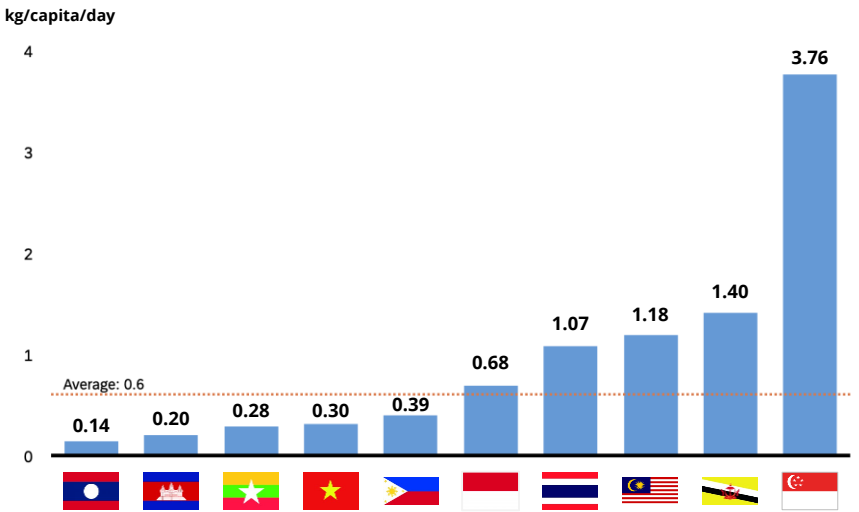
Amount of waste generation have doubled since 2005

0.6kg of waste generated per capita per day on average

Amount of Waste Generation in ASEAN (2005-2015)



Daily Waste Generation per capita (2016)

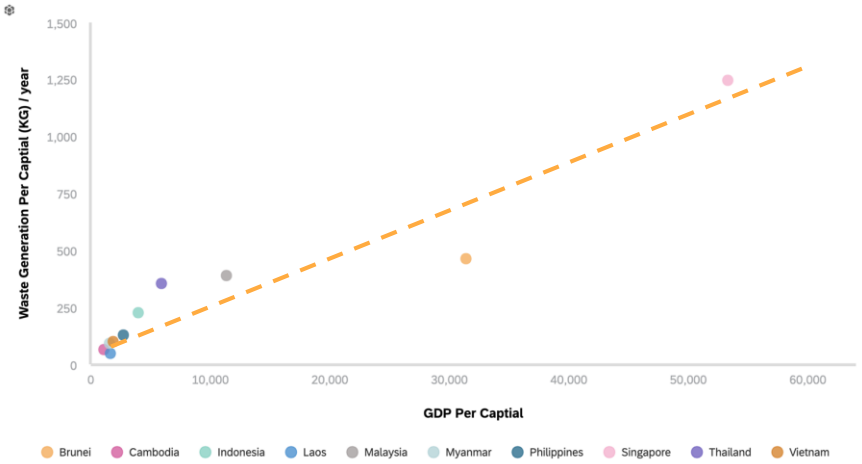


Source: World Bank, United Nations Statistics Division

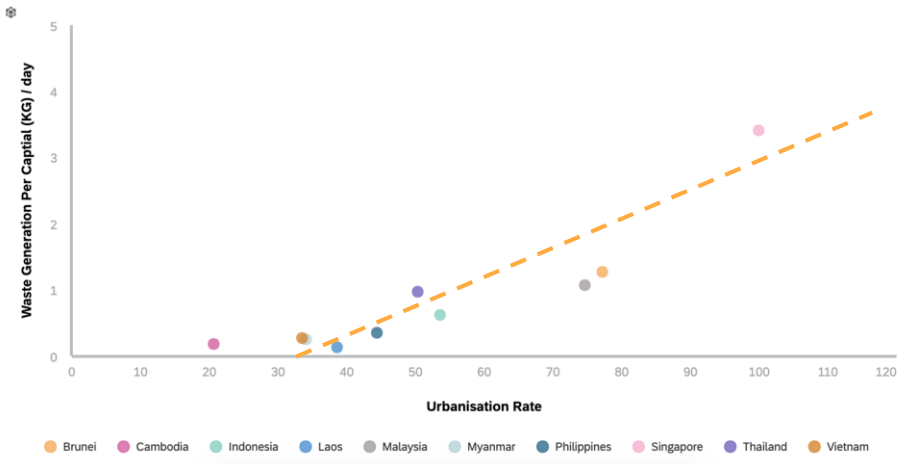
Waste generation volumes are positively correlated with income levels and urbanisation rates

Rise in prosperity of urban residents is closely linked to increased consumption and waste production patterns

Waste Generation versus GDP (2016)

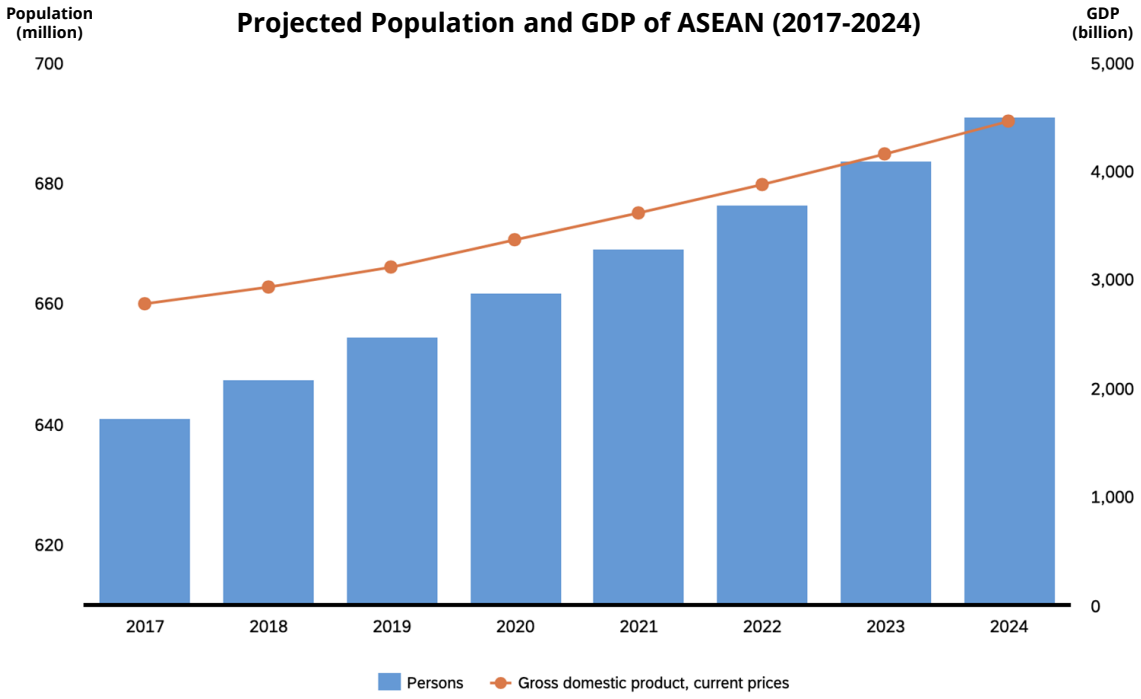


Waste Generation versus Urbanisation Rate (2016)



Source: World Bank

Rising income levels and urbanisation rates in ASEAN will lead to an unsustainable increase in waste generation volumes



Source: International Monetary Fund, United Nations, World Bank

Goal 11: Sustainable cities & communities

"By 2030, reduce the adverse per capita **environmental impact of cities,** including by paying special attention to air quality and **municipal and other waste management**"

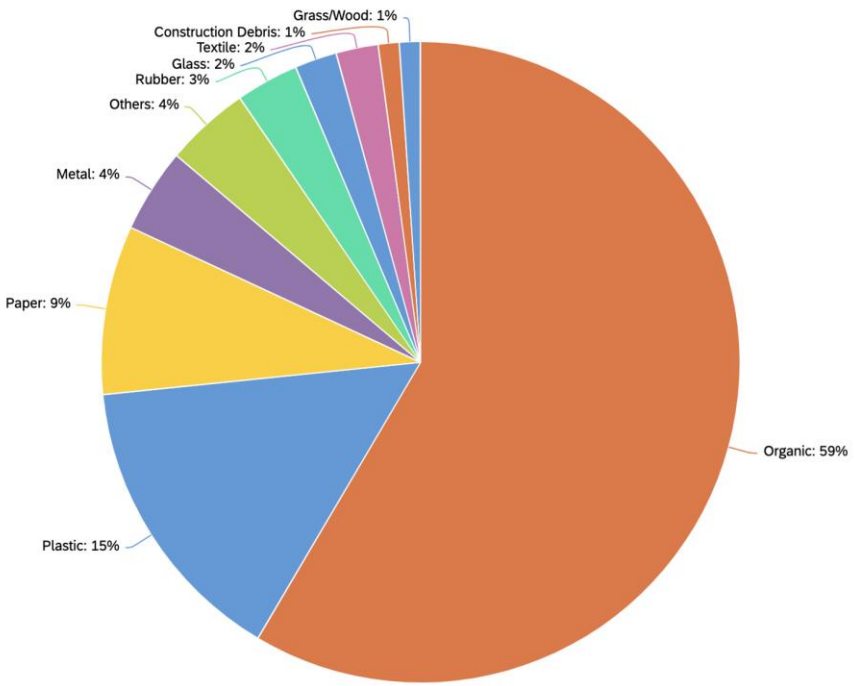
Effects of Poor Waste Management

- Soil contamination
- Water pollution
- Air pollution from burning of waste
- Flooding due to clogged waterways
- Death of land and marine animals
- Disease transmission via breeding of vectors and pests
- Climate change due to emission of greenhouse gasses
- Reduced economic development through investments or tourism

Recommendation 1: Reduce Food Waste across the supply chain

Food waste represents about 60% of all solid waste in ASEAN

Waste Composition in ASEAN (2016)



Food waste reduction strategies across the supply chain

Agriculture

- Improve on-farm storage facilities to reduce post-harvest losses
- Facilitate market access for farmers to increase distribution of produce beyond local market

Manufacturing

- Invest in new technologies such as High Pressure Processing (HPP) to extend shelf-life of food products
- Use data analytics and market data to improve forecasting models

Distribution

- Expand cold chain logistics capabilities with digital sensors to monitor temperature and humidity
- Train employees on inventory handling and recycling

Retail

- Enhance stock management using enterprise software
- Provide consumers with the option to purchase “ugly produce” to reduce waste caused by cosmetic filtering
- Donate surplus food to Food Banks and NGOs

Consumption

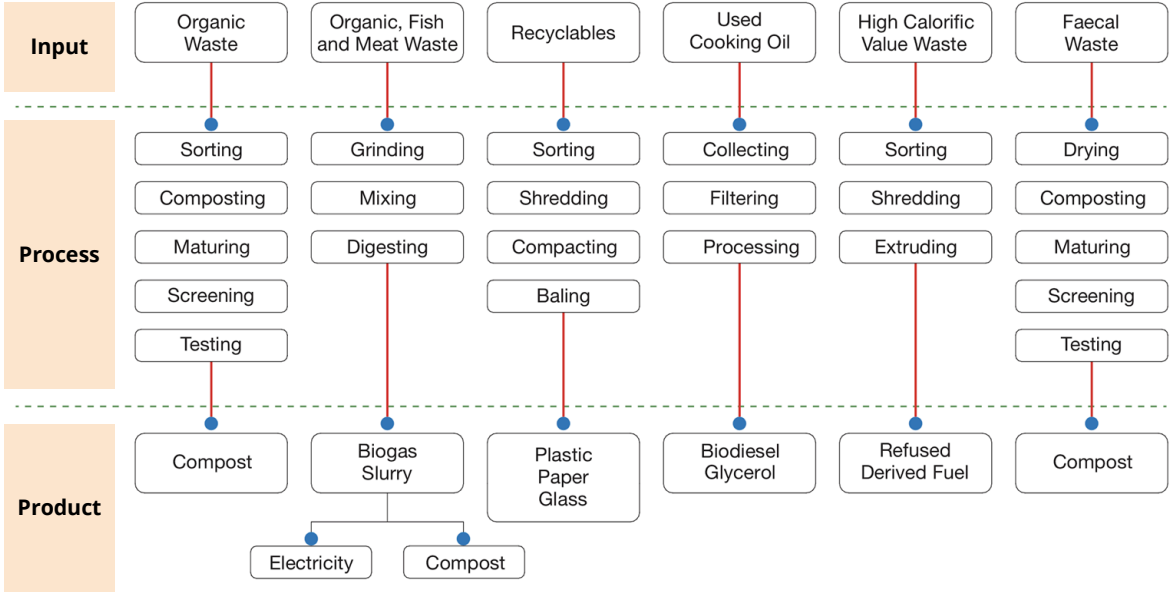
- Conduct public education campaigns to increase awareness of food waste, especially among children
- Implement weight-based disposal fees for food waste (Eg. South Korea)

Source: United Nations Environment Programme (2017) and Food and Agriculture Organization (2017)

Recommendation 2: Embrace Circular Economy

Adopt Integrated Resource Recovery Centre model to transform waste into resources

Waste Transformation in Integrated Resource Recovery Centres



Strategies towards a Circular Economy

Use Waste as a Resource
Utilise waste streams as a source of secondary resources and recover waste for reuse and recycling

Rethink the Business Model
Consider opportunities to create greater value and align incentives to foster interaction between products and services

Design For the Future
Adopt holistic perspective during the design process, to design for appropriate lifetime and for extended future use

Collaborate to Create Joint Value
Work together throughout the supply chain and internally within organisations to increase transparency and create joint value

Preserve and Extend Lifespan
Maintain, repair and upgrade resources to maximise their lifetime and give them a second life when applicable

Source: United Nations Economic and Social Commission for Asia and the Pacific (2015) and Circle Economy

Thank you

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