

Key Environmental Statistics

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Agenda

1. Climate Change and Energy Efficiency
2. Air Quality Management
3. Solid Waste Management

1. Climate Change and Energy Efficiency

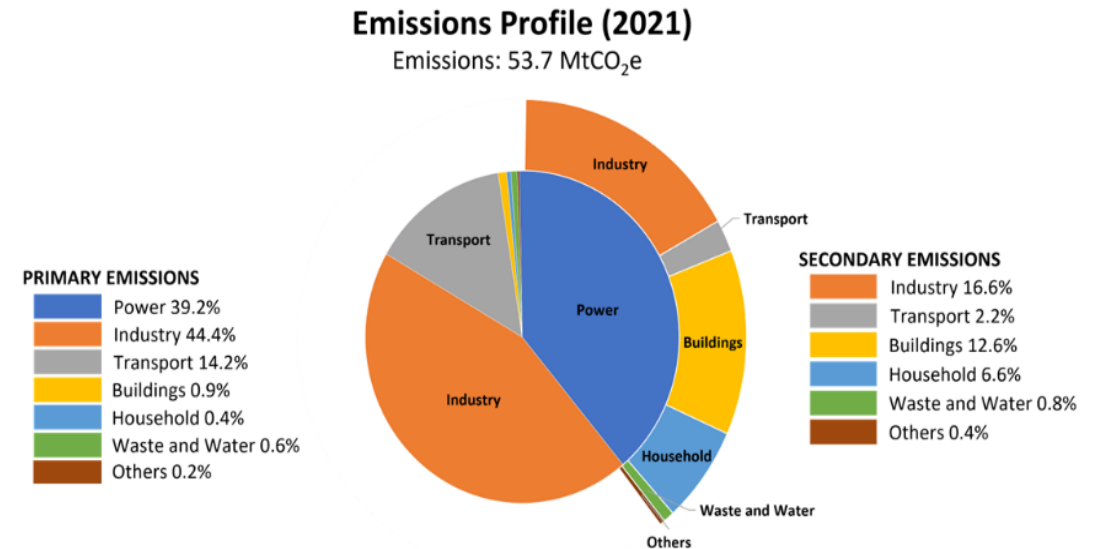


Climate Change and Energy Efficiency

- In October 2022, Singapore pledged to achieve net zero emissions by 2050, contingent on technological maturity and effective international cooperation.
 - We also announced that we will enhance our 2030 Nationally Determined Contribution (NDC) to reduce emissions to around 60 Mt CO₂ eq in 2030 after peaking emissions earlier.
- Since then, we have been focusing our efforts on implementation and delivering progress, to ensure that our climate targets remain backed by concrete policies and plans.
 - A key pillar of Singapore's strategy to mitigate GHG emissions is to improve energy efficiency across different sectors of the economy.
 - Singapore does not subsidise energy costs, and has taken steps to use a cleaner fuel mix for electricity generation, switching from fuel oil to natural gas.
 - At the start of 2024, we raised our carbon tax level to S\$25 per tonne of emissions. We will progressively raise it to S\$50-80 per tonne by 2030.

Climate Change and Energy Efficiency

- Our current 2021 GHG emissions are around 54 MtCO₂eq.
- Industry is the largest energy consumer (both primary and secondary energy) at around 60%
- Specifically for emissions from the chemical industry, particularly from industrial processes or non-fuel combustion sources (for example, flares and vents), we observed that the emissions are still growing, with CAGR of 6.7% from 2000-2016 and 21.3% from 2016-2022.
- Note: An updated timeseries would be published for year 2000 to 2022 in Singapore's first Biennial Transparency Report (BTR1) after submission to the UNFCCC by end of 2024.

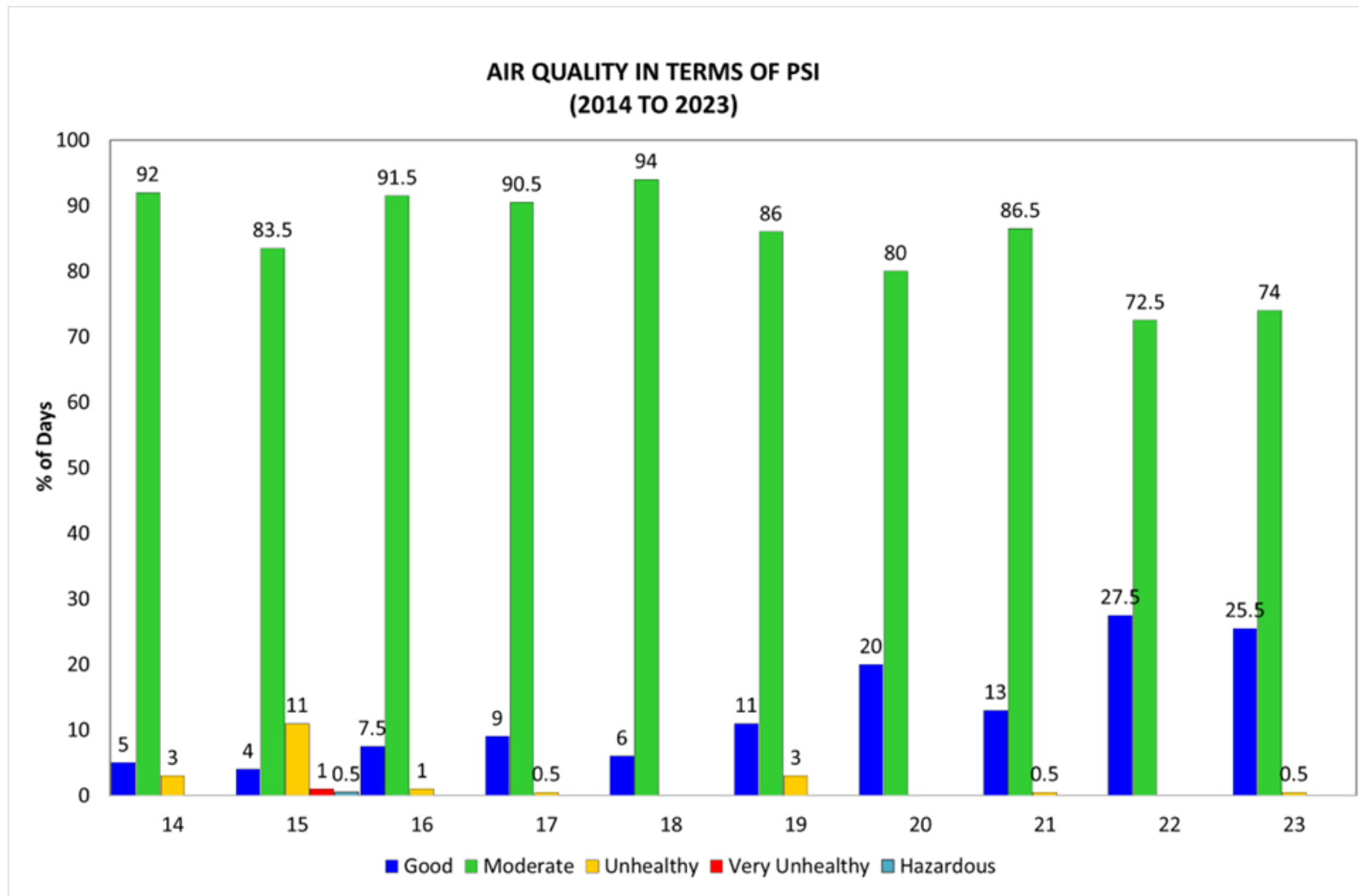


Singapore's emission profile published on NCCS' website (2021 data)
To give a sense of proportion

2. Air Quality Management



Performance of Singapore's Air Quality



Note: Air quality was affected by transboundary smoke haze from the land and forest fires in 2014, 2015, 2016, 2019 and 2023.

Performance of Singapore's Air Quality

Pollutant	Averaging Time	WHO Air Quality Guidelines (2005)	2023
Sulphur Dioxide (SO ₂)	24-hour ¹	50 µg/m ³ (Interim Target) 20 µg/m ³ (Final)	20 µg/m ³
Fine Particulate Matter (PM _{2.5})	Annual	15 µg/m ³ (Interim Target) 10 µg/m ³ (Final)	11 µg/m ³
	24-hour ²	37.5 µg/m ³ (Interim Target) 25 µg/m ³ (Final)	39 µg/m ³
Particulate Matter (PM ₁₀)	Annual	20 µg/m ³	24 µg/m ³
	24-hour ²	50 µg/m ³	62 µg/m ³
Ozone	8-hour ¹	100 µg/m ³	154 µg/m ³
Nitrogen Dioxide (NO ₂)	Annual	40 µg/m ³	23 µg/m ³
	1-hour ¹	200 µg/m ³	122 µg/m ³
Carbon Monoxide (CO)	8-hour ¹	10 mg/m ³	1.5 mg/m ³
	1-hour ¹	30 mg/m ³	1.8 mg/m ³

In 2023, PM and Ozone did not meet WHO(2005) targets.

¹ Maximum X-hr mean
² 99th Percentile

Air Quality Control Measures

Industrial Emission Standards

- Industries are required to install air pollution control equipment to comply with emission standards
- New industrial plants to meet tighter industrial emission standards with effect from 1 July 2015. Existing industrial plants granted a grace period, until 1 July 2018, to meet the revised standards for compounds of mercury, lead, cadmium, ammonia and hydrogen fluoride, and until 1 July 2023 to meet the revised standards for particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO) and sulphur dioxide (SO₂).

Vehicle Emission / Fuel Quality Standards

- **New Vehicles:**
 - a) Euro VI standard for diesel and petrol vehicles.
 - b) Euro IV standard for motorcycles.
- **In-Use Vehicles:**
 - a) Smoke emission limit of 40 HSU for diesel vehicles.
 - b) Emission limits for in-use petrol vehicles and motorcycles to be complied with during mandatory periodic inspections.
- **Fuel quality standard**
 - a) Euro V for diesel and petrol (latest Euro standard)

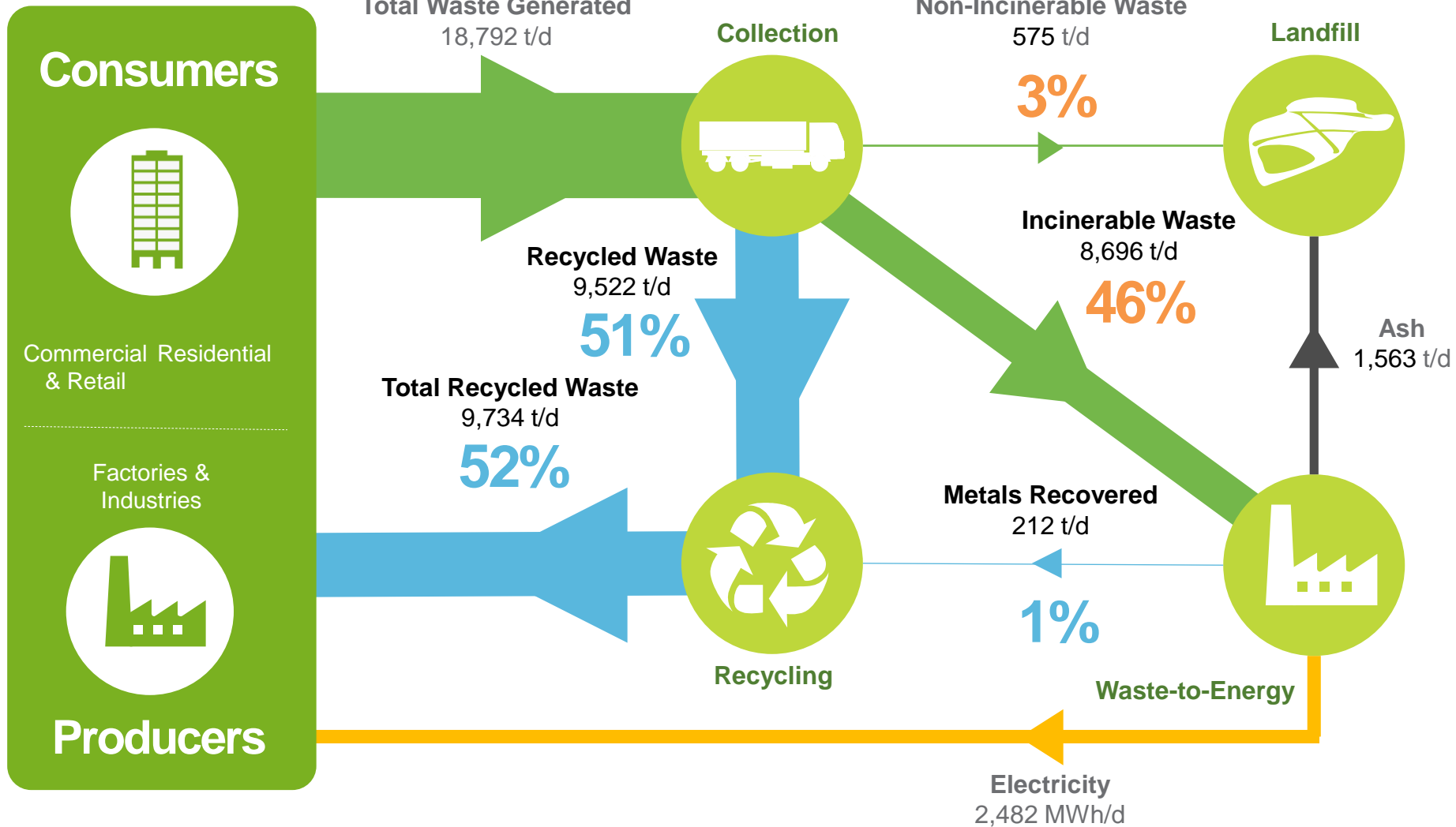


3. Solid Waste Management



Solid Waste Management: Overview of Singapore's Waste Management System

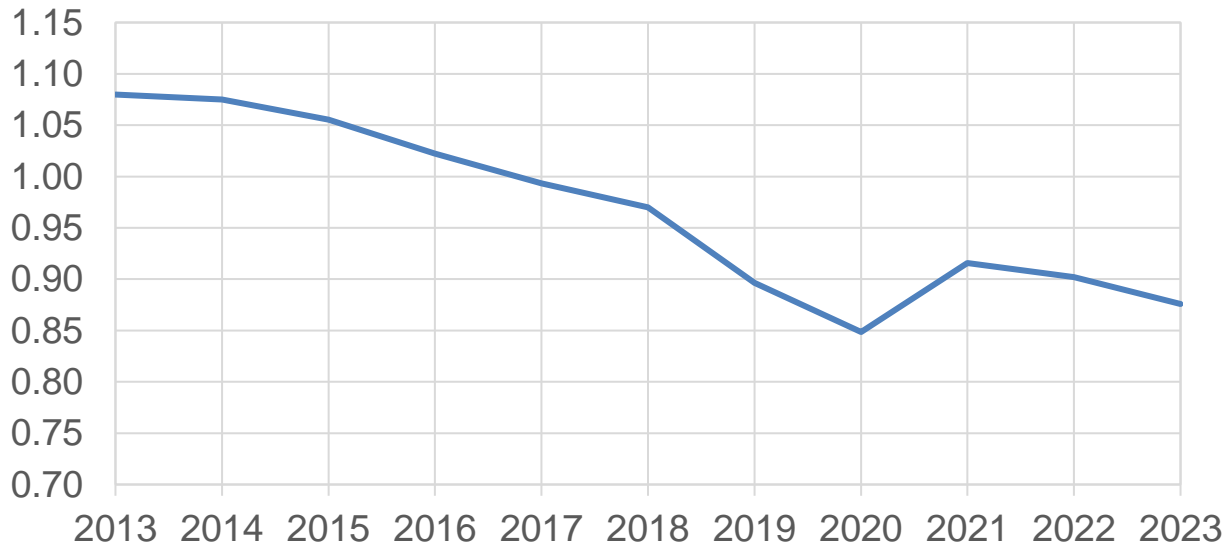
2023



Solid Waste Management: Per capita and per GDP waste generated decreased in past decade

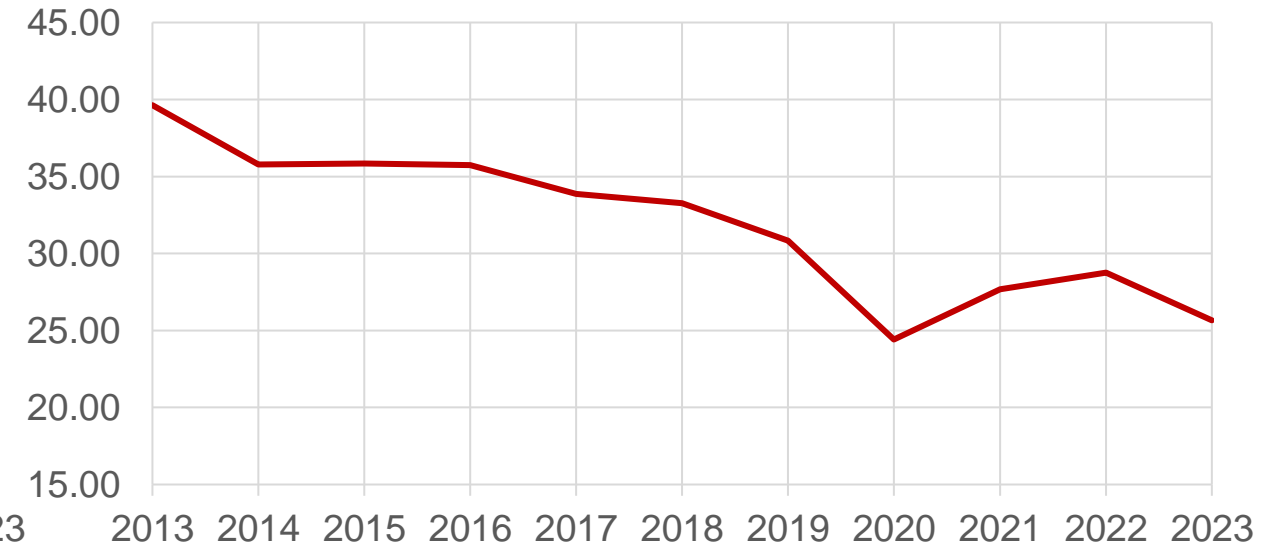
- **Domestic waste generated per capita decreased by more than 15%, while non-domestic waste generated per dollar GDP decreased by more than 30% over the past decade**
 - This indicates that households and companies have taken heed to reduce and reuse
 - Daily domestic waste generated per capita decreased from 1.08 kg in 2013 to 0.88 kg in 2023
 - Daily non-domestic waste generated per dollar GDP decreased from 40 tonnes in 2013 to 26 tonnes in 2023

Domestic Waste Generated Per Day Per Capita
(2013 to 2023)



— Domestic waste generated per day per capita (kg/day/capita)

Non-Domestic Waste Generated Per Day Per Dollar GDP
(2013 to 2023)



— Non-Domestic Waste Generated per day per dollar GDP (t/day/\$bn)

Solid Waste Management: Overview of 2023 Waste and Recycling Statistics

- The overall recycling rate fell from 57% in 2022 to 52% in 2023.
- Largely due to the amount of construction & demolition (C&D) waste, which is completely recycled, dropping significantly last year.
- 6.86 million tonnes of solid waste were generated, which comprised 4.97 million tonnes of non-domestic waste and 1.89 million tonnes of domestic waste
- Domestic Recycling Rate remained stable at 12%
- Non-Domestic Recycling Rate decreased to 67%, compared to 72% in 2022

Waste type	Total Generated (‘000 tonnes)	Total Recycled (‘000 tonnes)	Recycling Rate	Total Disposed (‘000 tonnes)
Ferrous metal	1,296	1,289	99%	7
Paper/Cardboard	1,251	387	31%	863
Construction & Demolition (C&D)	832	828	99%	5
Plastics	957	48	5%	909
Food	755	132	18%	623
Horticultural	256	218	85%	38
Wood	447	299	67%	149
Ash & sludge	231	32	14%	199
Textile/Leather	211	5	2%	207
Used slag	176	173	98%	3
Non-ferrous metal	106	105	99%	1
Glass	75	6	8%	69
Scrap tyres	27	26	95%	1
Others (stones, ceramics, etc.)	238	6	N.A. ¹	232
Total	6,859	3,553	52%	3,306

¹The recycling rate for the 'Others' category is not meaningful as it is an aggregation of miscellaneous waste types that are managed and recycled differently, hence N.A.

Solid Waste Management: Redoubling efforts to improve recycling and resource recovery

Improvement to household recycling participation

- Household recycling participation has been on an uptrend
- According to NEA's 2023 survey on household recycling:
 - 72 per cent of households recycle compared to 64 per cent in 2021.
 - Higher proportion of survey respondents are aware of common items that can be deposited into the recycling bins and chutes
- There is a greater urgency for each of us to build a sustainability culture where we reduce, reuse and recycle

Going forward

- Continue promoting the 3Rs (reduce, reuse, recycle) in working towards the goal of a Zero Waste Nation
- Develop suite of initiatives to shift attitudes to make the 3Rs the norm for citizens and business
- Study and develop new ways to close the various resource loops, which includes exploring the use of mixed materials from Semakau Landfill as reclamation fill

Thank you!

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Carbon Credit

For eligible ICC projects, Taxable Facilities (TFs) will be able to see the status from the website hosted by NCCS: www.carbonmarkets-cooperation.gov.sg

On queries on the use of ICCs towards Carbon Tax offset, they may visit these links with contact details:

- General enquiries and feedback on carbon credits: climate_cooperation@pmo.gov.sg
- Specific enquires on carbon tax process (eg submission on notice of ICC use): NEA_ICC@nea.gov.sg