



Decarbonization strategy in Hong Kong

Figure 1 – Total and per capita greenhouse gas emission

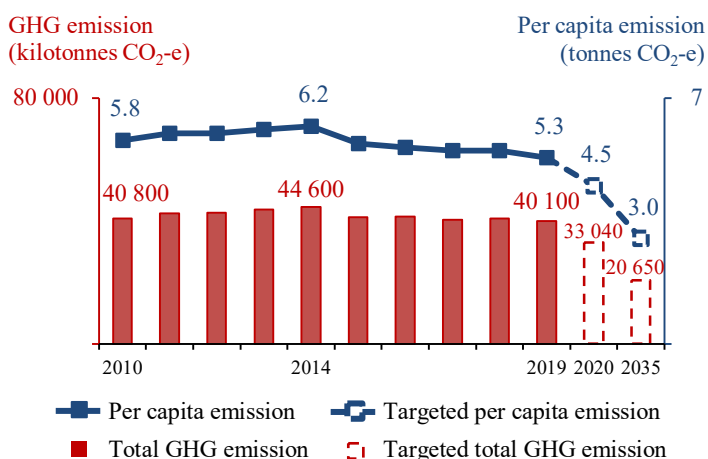
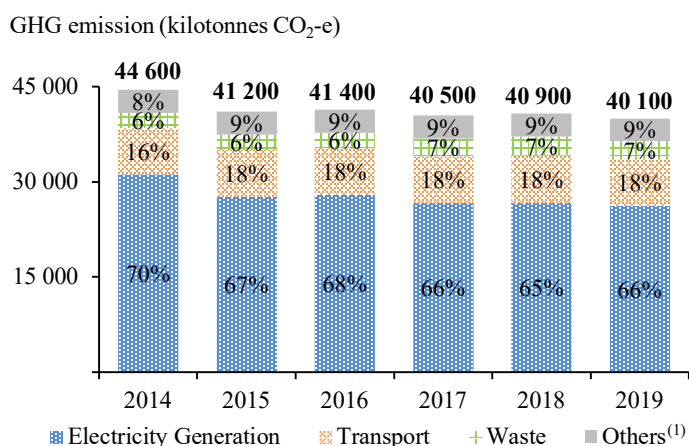
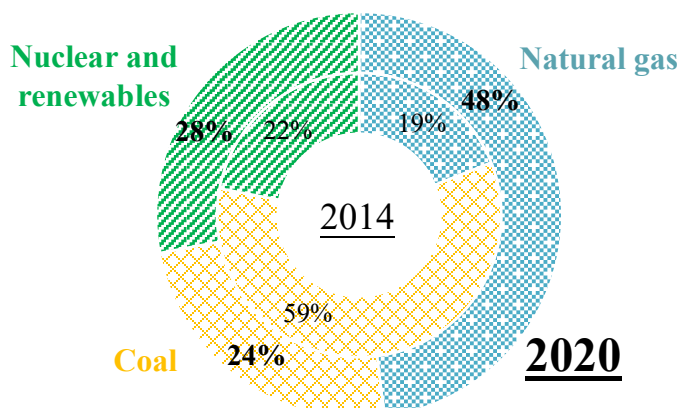


Figure 2 – Greenhouse gas emission by source



Note: (1) Such as “other end use of fuel” and “industrial processes”.

Figure 3 – Fuel mix for electricity generation in Hong Kong, 2014 and 2020



Highlights

- In November 2021, the global conference on climate change held in Glasgow renewed the earlier commitments to reduce greenhouse gas (“GHG”) emissions. Likewise, the Hong Kong Government updated its Climate Action Plan in October 2021, pledging to (a) cut GHG emission by half by 2035 over the 2005-level; and (b) achieve carbon neutrality before 2050.
- GHG emission in Hong Kong has followed a downtrend in recent years, falling by 10% from the peak level in 2014 to 40 100 kilotonnes CO₂-e in 2019 (**Figure 1**). Per capita emission declined more steeply, by 15% to 5.3 tonnes over the same period.
- Analyzed by source, this downtrend was largely attributable to the visible cut in GHG emission from electricity generation by 16% between 2014 and 2019 (**Figure 2**). That said, electricity generation remained as the largest GHG emitter in Hong Kong, taking up 66% of overall GHG in 2019, followed by transport (18%) and solid waste (7%).
- Decarbonization strategy was introduced to tackle these GHG emissions. First and foremost on fuel used in electricity generation, coal is increasingly replaced by cleaner natural gas. As each of the two power companies had one new gas-fired generating unit coming into operation in 2020, the share of natural gas in fuel mix for electricity generation surged from 19% to 48% during 2014-2020, alongside the visible decline in coal to 24% (**Figure 3**), resulting in a dramatic drop in GHG emissions that year. Yet as the fuel cost of natural gas is two to three times higher than coal, the shift in fuel mix will have implications on electricity tariff in the medium to longer term (especially upon expiry of the monthly relief of HK\$50 on electricity charges by end-2023). By 2035, coal is targeted to be phased out completely, along with concurrently rising contribution from nuclear and renewable energy.

Decarbonization strategy in Hong Kong (cont'd)

Figure 4 – Energy saving measures, 2015-2020

Energy saving measures	Electricity conserved (million kWh)
1. Buildings Energy Efficiency Ordinance	1 500
2. Energy Efficiency Labelling Scheme	450
3. Government's energy saving targets ⁽¹⁾	115
4. District cooling system	9
Total	↓2 074

Note: (1) The Government saved 7.8% of electricity in five years.

Figure 5 – Carbon emission by type of vehicles, 2019

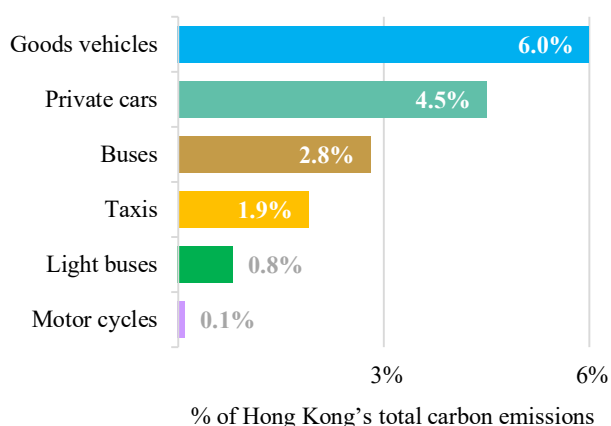


Figure 6 – Carbon reduction by major WtE facilities

Facilities	Year	GHG reduction (tonne/year)
(1) Existing WtE facilities		
T • PARK	2015	237 000
WEEE • PARK	2018	36 500
O • PARK1	2018	42 000
Tai Po Sewage Treatment Works	2019	650
Y • PARK	2021	300
Sub-total		316 450
(2) WtE facilities to be built		
Sha Tin Sewage Treatment Works	2022	650
O • PARK2	2023	67 000
I • PARK	2025	440 000
(1) + (2) Total		824 100

Highlights

- Energy usage in buildings is another key issue of concerns, as they account for over 60% of carbon emission in 2019. To address this, a few energy saving measures were launched, such as (a) regulating energy efficiency standards on four types of building installations (e.g. air-conditioning and lighting) since 2012; and (b) mandating energy efficiency labelling on eight types of electrical products (e.g. air-conditioners and televisions) since 2009. During 2015-2020, these measures helped conserve about 2.1 billion kWh of electricity and 4% of local GHG emission (Figure 4).
- Secondly on transportation (which accounted for 18% of carbon emission), goods vehicles and private cars (“PC”) contributed to 6.0% and 4.5% of local carbon emission respectively (Figure 5). The Government is thus keen to push forward transport electrification, waiving the first registration tax (“FRT”) for electric commercial vehicles in full until March 2024 and subsidizing trials of over 170 electric goods vehicles under New Energy Transport Fund. Likewise, concessions of FRT up to HK\$287,500 are offered to electric private cars (“e-PC”) owners, whereas new registration of petrol and diesel-propelled PC will not be allowed by 2035. With a mix of these carrot and sticks, one-fifth of newly registered PC was e-PC in first half of 2021.
- Thirdly on solid waste, about 6% of local GHG emission originated from decomposition in landfill, partly due to inadequacy of waste-to-energy (“WtE”) facilities. While existing WtE facilities can reduce up to 316 kilotonnes or 1% of total GHG emission only, commissioning of several new WtE facilities scheduled for 2022-2025 could double the reduction capacity to 2% (Figure 6). In the longer term, implementation of municipal solid waste charging scheduled for 2023 at the earliest should also help cut GHS emission from solid waste.

Data source: Latest figures from Environment Bureau.

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