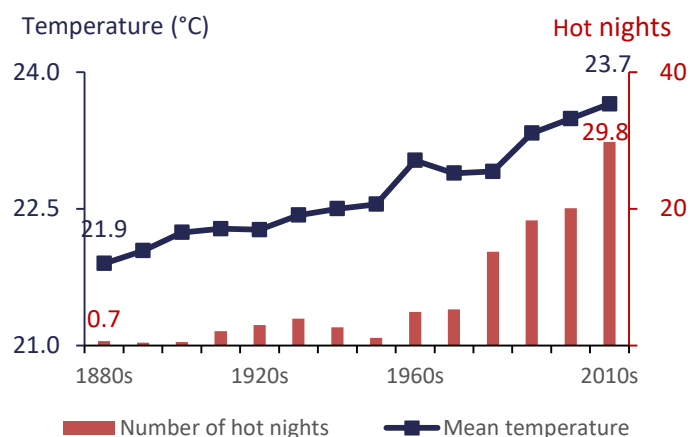


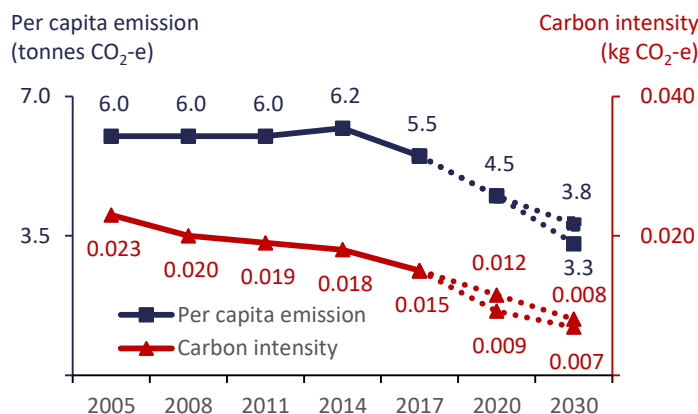


## Climate change and carbon emissions in Hong Kong

**Figure 1 – Annual average temperature and hot nights in Hong Kong**

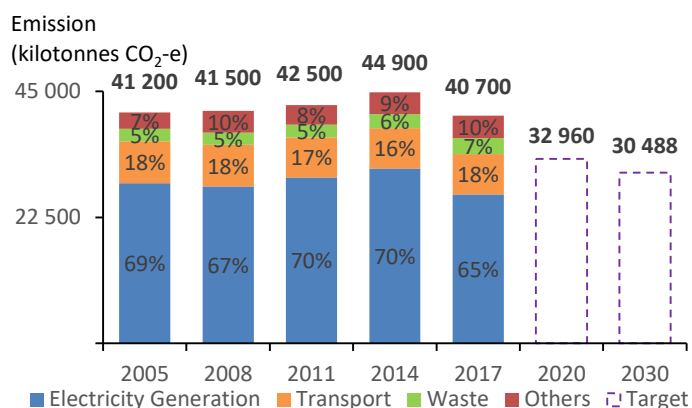


**Figure 2 – Per capita emission and carbon intensity<sup>(1)</sup>**



Note: (1) GHG emission is often expressed in terms of carbon dioxide equivalent ("CO<sub>2</sub>-e").

**Figure 3 – Greenhouse gas emissions by source**



### Highlights

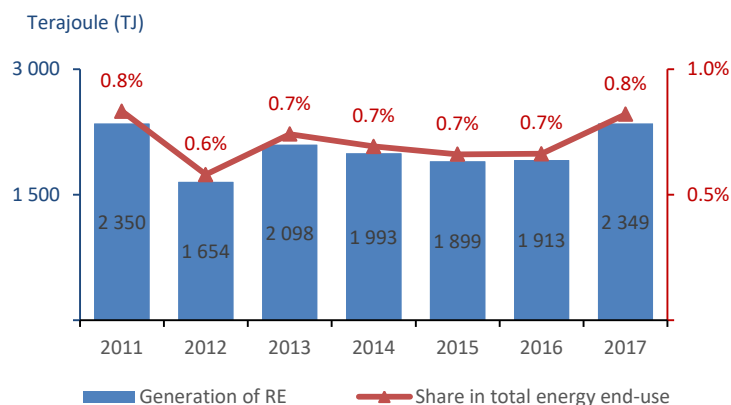
- Over the past 130 years or so, the annual average temperature in Hong Kong has increased by a total of 1.8 degree Celsius (°C) to 23.7°C, while the annual number of hot nights (with temperature of at least 28°C) surged by 24 times to 30 days (**Figure 1**). It is widely believed that global warming is attributable to surging emission of greenhouse gases ("GHG", e.g. carbon dioxide) from human activities over the past two centuries. It is projected the annual number of hot nights in Hong Kong could increase to five months by the end of the 21st century.

- In a consultation document on climate change strategy released in September 2010, the Hong Kong Government first pledged to cut carbon intensity (i.e. ratio of GHG emissions relative to Gross Domestic Product ("GDP")) in 2020 by 50-60%, as compared with 2005 level. In January 2017, the Government pledged further to bring down carbon intensity by 65-70%, whilst making a new commitment of reducing per capita emission by 37-45% by 2030 (**Figure 2**). On actual performance during 2005-2017, carbon intensity and per capita emission in Hong Kong have decreased by 35% and 8% respectively, largely due to the 49% growth in GDP and 8% growth in local population. Yet they are still far from the aforementioned policy targets.

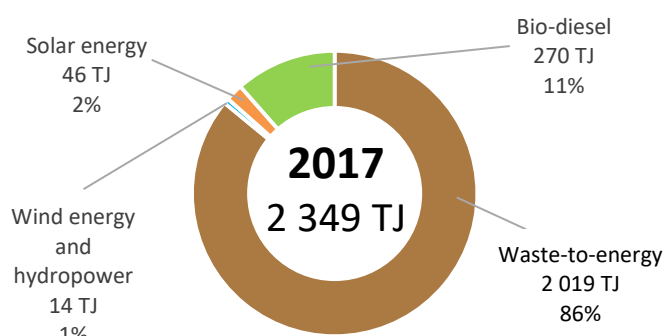
- Actually, overall GHG emission edged down by only 1% during 2005-2017 to 40 700 kilotonnes CO<sub>2</sub>-e (**Figure 3**). Electricity generation is the largest contributor, taking up 65% of GHG emission in 2017, followed by transport (18%) and waste (7%).

## Climate change and carbon emissions in Hong Kong (cont'd)

**Figure 4 – Renewable energy and its share in total energy end-use in Hong Kong**



**Figure 5 – Renewable energy by sources in 2017**



**Figure 6 – Feed-in tariff schemes as at September 2019**

	CLP	HKE
<b>Systems with generating capacity</b>		
10 kW or below	3 913	57
11 kW - 200 kW	595	16
Above 200 kW	5	0
Sub-total	<b>4 513</b>	<b>73</b>
<b>Customers by type</b>		
Residential	83%	52%
Commercial and industrial	8%	24%
Schools	4%	17%
Others	5%	7%
<b>Emission reduction</b>		
Electricity purchased (kWh)	3 500 000	250 000
Emission intensity (kg CO <sub>2</sub> -e/kWh) <sup>(1)</sup>	0.51	0.79
Emission reduced (tonnes CO <sub>2</sub> -e)	<b>1 785</b>	<b>198</b>

Note: (1) Emission intensity data as in 2017.

### Highlights

- To achieve the 2020 target, the Government has been switching the fuel mix in electricity generation (i.e. from coal to natural gas) over the past decade, with some initial effects. However, there is further advocacy that Hong Kong should use more renewable energy ("RE") for decarbonization, as the Government recognizes that "realisable RE potential" could take up 3-4% of overall electricity usage by 2030. RE generation remains on a low side now, accounting for about 0.8% of total energy usage during 2011-2017 (**Figure 4**).
- Analyzed by source of RE, waste-to-energy processes (e.g. biogas collection and sludge incineration) from landfills and sewage treatment plants is the largest contributor, with a share of 86% in 2017 (**Figure 5**). Biodiesel recycled from waste cooking oil is the second largest contributor (with a share of 11%). By contrast, natural processes (e.g. solar and wind) take up only 3% in aggregate.
- To accelerate the uptake of solar energy, the Government and the two local electricity companies introduced feed-in tariff ("FiT") schemes in 2019, purchasing RE generated from their customers at HK\$3-5 per kilowatt-hour ("kWh"). As at end-September 2019, 4 586 applications have been approved, with a total of 3.75 million kWh of electricity generated mostly from solar panels of residential premises (**Figure 6**). It is estimated that FiT helped reduce 1 983 tonnes of CO<sub>2</sub>-e, equivalent to less than 0.001% of overall GHG emission in 2017.

Data sources: Latest figures from Hong Kong Observatory, Environment Bureau, Electrical and Mechanical Services Department, CLP Power Hong Kong Limited and Hongkong Electric Company.

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