

LCQ1: Fuel mix for electricity generation

Following is a question by the Hon Kenneth Leung and a written reply by the Secretary for the Environment, Mr Wong Kam-sing, in the Legislative Council today (May 6):

Question:

The Government released Hong Kong's Climate Action Plan 2030+ (Action Plan) in January 2017, and stated its plan to phase down coal-fired electricity generation in order to reduce carbon emissions, with one of the targets being that by around 2020, natural gas will meet about half of Hong Kong's electricity demand while coal-fired electricity generation will drop to about 25 per cent. On the other hand, the Government pointed out in 2014 that it was doubtful as to whether there would be an economic case to develop and use off-shore wind farms in Hong Kong. In this connection, will the Government inform this Council:

(1) of Hong Kong's greenhouse gas emissions in 2018 and 2019, and set out a breakdown in the table below;

Year	Greenhouse gas emissions (in kilotonnes CO ₂ -e)						
	Energy			Waste	Industrial processes and product use	Agriculture, forestry and other land use	Total
	Electricity generation	Transport	Other end use of fuel				
2018							
2019							

(2) of the respective percentages of (i) coal, (ii) natural gas, (iii) nuclear energy and (iv) renewable energy in the fuel mix for electricity generation in Hong Kong as at April this year, and whether such fuel mix has met the target set out in the Action Plan; if so, of the next target; if not, the follow-up actions; and

(3) as some research findings have indicated that the costs of off-shore wind power electricity generation have gone down by 60 per cent over the past decade, whether the Government will assess afresh the feasibility and economic case of developing off-shore wind farms; if so, of the details and timetable; if not, the reasons for that?

Reply:

President,

(1) Each year, the Environmental Protection Department compiles a greenhouse gas (GHG) inventory in accordance with the guidelines published by the United Nations' Intergovernmental Panel on Climate Change. As the process is complex, there is usually a time lag of two to three years in the local authorities' publication of their inventories. We expect that Hong Kong's inventory in 2018 and 2019 can be released in the third quarter of this year and next year respectively.

The GHG emissions by source in 2017 are set out as follows:

Year	GHG emissions (in kilotonnes CO ₂ -e)						
	Energy			Waste	Industrial Processes and Product Use	Agriculture, Forestry and Other Land Use	Total+
	Electricity Generation and Towngas production	Transport	Other End Use of Fuel @				
2017	26,600	7,230	2,280	2,810	1,740	30	40,700

Remarks:

@ including the use of fuel for combustion in commercial, industrial and domestic premises.

+ because of rounding, individual items may not necessarily add up to the total.

(2) In the overall fuel mix for electricity generation in Hong Kong in 2019, coal-fired generation accounted for around 44 per cent, gas-fired generation accounted for around 29 per cent, nuclear electricity imported from the Mainland and local renewable energy (RE) accounted for around 27%.

In 2020, the two power companies have one new gas-fired generating unit each coming into operation. The percentage of local gas-fired generation will thereby increase to around 50 per cent, while that of coal-fired generation will correspondingly drop to about 25 per cent, as envisaged in Hong Kong's Climate Action Plan 2030+. To achieve the target of further reducing carbon intensity by 2030, the two power companies will continue to gradually replace the retiring coal-fired generating units with gas-fired generating units and non-fossil fuel sources in the next decade.

In order to formulate the decarbonisation strategy for the longer term, the Government has invited the Council for Sustainable Development to gauge the views of the community. The report to be submitted by the Council later will help the Government consider how to reduce carbon emissions from electricity generation.

(3) The development of local RE is restricted by objective factors such as Hong Kong's geographical environment. In exploiting the RE potential of offshore wind power within Hong Kong, we need to resolve technical and financial issues, as well as consider the tariff impact.

According to the assessment of the power companies, there are two offshore sites within Hong Kong (off the sea of Ninepin Group and the waters near Lamma Island) which are more suitable for developing wind farms on a commercial scale. The two power companies have also been conducting wind measurement work at these locations. Yet, the combined cost of the two projects will be over \$10 billion and their total capacity is about 300 megawatts. The amount of electricity provided is estimated to be less than 1.5 per cent of Hong Kong's total electricity consumption. The cost is relatively higher than using natural gas for electricity generation.

The development of offshore wind farms within Hong Kong faces uncertainties in various aspects. Nonetheless, we will continue to keep in view the development in this area, and actively explore its feasibility and cost effectiveness.