LCQ6: Fuel mix for electricity generation

Following is a question by the Hon Kenneth Leung and a reply by the Secretary for the Environment, Mr Wong Kam-sing, in the Legislative Council today (October 23):

Question:

In 2014, the Government conducted a public consultation on the future fuel mix for electricity generation and put forward two options, namely "grid purchase" under which electricity would be purchased from the China Southern Power Grid (CSG), and "local generation" under which more natural gas would be used for local electricity generation. A majority of the respondents supported the local generation option. On the other hand, the Government consulted the public from June to September this year on the Long-term Decarbonisation Strategy, proposing, among others, that 80 per cent of the energy supply to Hong Kong should have zero carbon emissions by 2050. In this connection, will the Government inform this Council:

(1) whether it knows the quantity of electricity currently imported from CSG and its percentage in the overall power supply to Hong Kong, the fuel mix adopted for electricity production, and the supply reliability;

(2) as the Government indicated in July last year that the CLP Power Hong Kong Limited would enhance the clean energy transmission system with CSG, whether the Government knows the details, including the quantity of electricity import, the fuel mix adopted for electricity production, the production cost, and the progress of the relevant work; and

(3) as the outcome of the public consultation in 2014 showed that a majority of the respondents supported the local generation option, why the Government still heads towards the direction of grid purchase; whether it will first focus on promoting the local development of renewable energy or other clean energy to maintain Hong Kong's power autonomy; if so, of the details; if not, the reasons for that?

Reply:

President,

My responses to the three parts of the question are as follows:

(1) Through its Clean Energy Transmission System (CETS), CLP Power Hong Kong Limited (CLP) connects its electricity system to the power network of the China Southern Power Grid and the Daya Bay Nuclear Power Station (DBNPS). The CLP has been importing nuclear power from the DBNPS via the CETS since 1994. In 2018, the CETS transmitted about 12 billion units of electricity from the DBNPS, accounting for around 27 per cent of Hong Kong's total fuel mix for electricity generation. The CETS has maintained steady power supply in recent

years, and the system reliability is over 99.99 per cent.

(2) The CETS enhancement project currently under planning by the CLP will involve the replacement of some 160 kilometers of overhead lines, which have been used for more than 25 years, with lines that have higher transmission capacity so as to enhance the overall reliability and transmission capacity of the system. In this connection, a small portion of the overhead line towers will have to be relocated in accordance with the latest technical and environmental requirements. Neither new interconnection circuit nor new network connection point will be added, and the current interconnection arrangement and operation mode will be maintained upon completion of this enhancement project. The estimated capital expenditure on CETS enhancement is about $2 billion.

The enhancement project, expected to be completed by 2025, will provide Hong Kong with greater flexibility to use more clean energy of up to around 30 per cent to 35 per cent of our fuel mix, thereby enabling us to achieve our 2030 carbon intensity reduction target, i.e. reduction of carbon intensity by 65 per cent to 70 per cent as compared to the level in the base year of 2005, as much as five years earlier.

The CETS can be used to import clean energy generated from various sources including hydro, wind and solar energy or nuclear power. At this stage, the CLP has yet to decide on the sources of clean energy for its enhanced system, but will need prior approval from the Government before importing more power in future.

(3) As electricity generation accounts for about two-thirds of Hong Kong's carbon emission, changing the fuel mix for local electricity generation is the primary way to reduce carbon emissions.

At present, coal remains the major fuel used for electricity generation in Hong Kong, accounting for around half of the fuel mix, while natural gas and non-fossil fuels, including imported nuclear power, each accounts for around 25 per cent.

Having regard to the views collected during the Public Consultation on Future Fuel Mix for Electricity Generation in Hong Kong in 2014, the power companies will mainly use more natural gas to replace coal for electricity generation in the coming decade to help achieve our carbon intensity reduction target by 2030. That said, using natural gas for electricity generation still generates carbon emission. To achieve a carbon reduction target in 2050 that is compliant with Paris Agreement's well below 2 degree Celsius target, we will have to use more zero-carbon energy.

To this end, the Government has pressed ahead with promoting the local development of renewable energy (RE). We take the lead in enhancing RE development by earmarking $2 billion to implement various projects at government premises, and are actively considering the development of large-scale RE projects at suitable locations in reservoirs and landfills. Beyond the Government, we have introduced Feed-in Tariff (FiT) and implemented various facilitation measures, including suitably relaxing the restrictions

on "village house" rooftop installations. While there were only some 200 private RE systems connected to the power grids over the last decade, the two power companies have received over 5 300 and approved over 4 500 FiT applications from 2018 till end of September this year. Besides, we launched the Solar Harvest in March this year to assist eligible schools and non-governmental welfare organisations in installing solar photovoltaic systems. Response to the scheme has been overwhelming, with over 210 applications received within three months.

Despite the above progress, without significant technical breakthroughs, Hong Kong only has modest realisable RE potential given our geographical constraint. Many metropolitan cities facing similar constraints are moving towards deep decarbonisation through regional cooperation on clean energy. If we are to achieve Paris Agreement's well below 2 degree Celsius target in the long term, we will have to give serious consideration to regional cooperation, which may come in various forms. For instance, in terms of clean energy, through investment by the power companies in Hong Kong or joint research and development on the use of zero-carbon energy with regional enterprises, and is thus not confined to grid purchase.

At present, the Government is open to different options and has no predetermined position. As invited by the Government, the Council for Sustainable Development has just concluded on September 20, 2019 a three-month public interaction phase of the public engagement on Long-term Decarbonisation Strategy. Views collected during this phase have been passed to an independent analysis and reporting agency, i.e. The Social Sciences Research Centre of The University of Hong King, for analysis. Upon receiving the Council's recommendations, the Government will formulate a long-term decarbonisation strategy for Hong Kong, including initiatives to decarbonise the electricity sector.

Thank you, President.