LCQ4: Development of hydrogen energy

Following is a question by the Hon Chan Siu-hung and a reply by the Secretary for Environment and Ecology, Mr Tse Chin-wan, in the Legislative Council today (December 13):

Question:

In this year's Policy Address, the Government has announced that it will formulate the Strategy of Hydrogen Development in Hong Kong (the Development Strategy) in the first half of next year and commence the preparatory work for relevant legislative amendments. In this connection, will the Government inform this Council:

(1) whether, in addition to relevant legislative amendments, the Government will make specific development planning in the Development Strategy for the production, storage, transportation, refuelling and safety standards of hydrogen energy in Hong Kong; if so, of the preliminary plan; if not, the reasons for that;

(2) as the Government will develop a large-scale floating solar system with a generating capacity of five megawatts at the Plover Cove Reservoir, which is expected to supply six million kilowatt-hours of electricity per annum for direct use by the nearby waterworks facilities, whether the authorities will consider expanding the scale of such system and developing such system at the High Island Reservoir to increase the total generating capacity of the system, and converting the excess electricity into green hydrogen for transmission to other parts of Hong Kong for use, so as to conduct a practical test on processes such as production, storage and transportation of hydrogen energy; if so, of the details; if not, the reasons for that; and

(3) as it is learnt that the United States, Japan, Germany and the European Union have issued relevant certification and grading standards for hydrogen energy and green hydrogen production respectively, and the Mainland is also actively promoting the international standardisation of hydrogen energy, whether the Government will consider establishing a set of internationally recognised certification and grading when formulating the Development Strategy, so as to facilitate the entry of the hydrogen energy industry of the Guangdong-Hong Kong-Macao Greater Bay Area and even the whole country into the international market?

Reply:

President,

As a secondary carrier of energy, hydrogen energy possesses the "clean" trait of traditional renewable energy sources and has a wide range of applications, making it one of the highly regarded new energy sources in pursuance of the target to achieve carbon neutrality before 2050. Hydrogen

energy can be used in transportation, power generation and energy storage, as well as construction site equipment. In the field of transportation, it is particularly relevant to the green transformation of commercial vehicles and heavy goods vehicles. The Medium and Long Term Plan for the Development of Hydrogen Energy Industry (2021-2035) (National Hydrogen Plan) jointly issued by the National Development and Reform Commission and the National Energy Administration in March 2022 recognises hydrogen fuel as an important component of the national energy system in the future. The Chief Executive announced in this year's Policy Address that we will formulate the Strategy of Hydrogen Development in Hong Kong in the first half of next year, and commence the preparatory work for legislative amendments pertinent to the production, storage, transportation and application of hydrogen energy with a view to introducing an amendment bill into the Legislative Council in 2025, in order to foster a conducive environment for the development of hydrogen energy in Hong Kong.

In consultation with the Electrical and Mechanical Services Department (EMSD) and the Water Supplies Department, my reply to the question raised by the Hon Chan Siu-hung is as follows:

(1) In formulating the Strategy of Hydrogen Development in Hong Kong, the Special Administrative Region (SAR) Government will adopt the basic principles set out in the National Hydrogen Plan, and make reference to the experiences and research and development (R&D) results of cities in our country and overseas, for the purpose of exploring and promoting comprehensive development of hydrogen production, storage, transportation, refuelling and adoption, with a view to preparing Hong Kong for the wider application of hydrogen energy in the future. Currently, the hydrogen industry is still an emerging industry, and the technologies of low-carbon hydrogen are still at the R&D stage in various parts of the world. In this context, we must maintain flexibility when formulating the strategy for hydrogen development in Hong Kong, so that the scale and pace of the development of hydrogen energy can be adjusted in tandem with future technological and market developments for the purpose of maximising the development potential of hydrogen energy in Hong Kong.

In addition to formulating the Strategy of Hydrogen Development in Hong Kong, the SAR Government will also introduce legislative amendments to the Gas Safety Ordinance to cover hydrogen as fuel, with a view to laying a solid foundation for the high quality and safe development of hydrogen energy. As hydrogen energy is particularly suitable to the green transformation of vehicles, the EMSD has developed safety guidelines for hydrogen fuel system of vehicles and hydrogen refuelling stations, as well as technical guidelines for Quantitative Risk Assessment of hydrogen refuelling stations by benchmarking relevant regulations and standards in Mainland China and overseas in the fields of hydrogen storage, transportation, and refuelling, etc. The EMSD is currently consulting the professional bodies, trade and stakeholders to refine the guidelines and to prepare for the incorporation of the Codes of Practice into the regulatory framework in future.

The SAR Government will accumulate practical experiences through the

implementation of trial projects to prepare for the wider application of hydrogen energy in Hong Kong in the future. The Inter-departmental Working Group on Using Hydrogen as Fuel led by the Environment and Ecology Bureau has examined and given agreementâ€‘inâ€‘principle to nine applications of trial projects on hydrogen fuel cell (HFC) double-deckers, hydrogen fuelled light rail vehicles, hydrogen tube trailer, hydrogen refuelling facilities and hydrogen power generation at construction sites, etc. Amongst them, the trial of the first HFC double-decker had commenced last month. Trial of the second batch of vehicles comprising another five double-deckers, and the first three hydrogen street washing vehicles will commence next year. More trial projects are expected to commence shortly in support of the strategies for developing hydrogen in Hong Kong.

Technological development plays a pivotal role in facilitating the wider application of hydrogen energy. The Government will continue to support suitable green R&D projects and green technologies and innovations through the Green Tech Fund and the New Energy Transport Fund, and proactively promote and encourage innovation in hydrogen energy technologies, products, adoption and commercial applications, with a view to breaking through the current technological bottleneck and strengthening the stability and competitiveness of the supply chain of hydrogen energy industry in a holistic manner.

(2) Regarding the proposed 5-megawatt floating solar power system at Plover Cove Reservoir, all of its electricity output will be transmitted to the nearby Harbour Island Raw Water Pumping Station and be fully consumed to meet the daily electricity demand of the pumping station. Hence there will be no surplus electricity for feeding into the grids of power companies or supporting other facilities. The development of solar energy generation systems at reservoirs is subject to a number of considerations, and cost-effectiveness is an important factor. At present, the overall development cost of solar energy generation system remains relatively high. We may consider developing larger scale of solar energy generation system at High Island Reservoir only if the cost could be further reduced.

(3) Establishment of standards and certification systems for hydrogen energy and green hydrogen production can facilitate low-carbon transformation and promote international co-operation. Although the International Organization for Standardization (ISO) has established a standard for carbon emission calculation, there is currently no uniform and internationally recognised certification system for hydrogen energy. On the other hand, ISO has been setting up a technical group to prepare for the establishment of a greenhouse gas emission standard specifically for hydrogen production and transportation, with the aim of drafting a set of international standards by 2025. As for Mainland China, our country's National Hydrogen Plan pointed out the need to establish comprehensive standards and systems for hydrogen energy industry, with a view to promoting the establishment of quality certification system for hydrogen energy. The SAR Government will maintain liaison with stakeholders and make reference to the development of certification standards and systems for hydrogen energy in the Mainland and internationally, so as to set up an appropriate certification system in Hong Kong, with a view to

promoting the application of hydrogen energy and its long-term development in Hong Kong.

Thank you, President.