

CONTROLLING OFFICER'S REPLY

(Question Serial No. 2454)

Head: (39) Drainage Services Department

Subhead (No. & title): Not specified

Programme: Not specified

Controlling Officer: Director of Drainage Services (MOK Wing-cheong)

Director of Bureau: Secretary for Environment and Ecology

Question:

The Drainage Services Department (DSD) has earlier mentioned that Shing Mun River, San Tin Polder and Kai Tak Nullah will be selected as sites for trials of floating solar power systems. In this connection, would the Government inform this Committee:

1. of the progress of the trials of floating solar power systems at the 3 sites; if the trials have ended, of the effectiveness of the 3 trials;
2. regarding the 3 trials of the floating solar power systems, of the capacity of the water surface for supporting the solar systems and their performance in adverse weather conditions;
3. of the respective installation costs and monthly operating costs of the 3 trials, and the average monthly rate of electricity production; and
4. whether DSD will commence installation of floating solar power systems in view of the trials; if so, of the details, including the location(s) being considered for installation; if not, of the reason(s)?

Asked by: Hon LEUNG Hei, Edward (LegCo internal reference no.: 146)

Reply:

1&4. The Drainage Services Department (DSD) successfully completed trials and related works of the floating solar power systems at two sites, namely, the Shing Mun River in Sha Tin and the San Tin Polder. The results showed that the power generation efficiency of the floating solar power systems at the two trial sites, which benefit from the cooling effect of water, was approximately 20% higher than that of land-based solar power systems of the same rating.

During the trial at the Shing Mun River in Sha Tin, the DSD not only successfully assessed the feasibility of installing a floating solar power system, but also successfully collected hydrological data, by which the objectives of the trial were achieved. However, in the light of the trial results, the DSD expected that the cost-effectiveness of a floating solar power system on the river would be relatively low on account of many challenges the installation may face, including difficulties with the transport of materials, the extreme water level and water flow velocity, as well as bird excrement. At present, the DSD does not have a plan to install any floating solar

power system on the Shing Mun River.

Drawing on its experience in the successful trial of a floating solar power system at the San Tin Polder, the DSD installed two small-scale floating solar power systems at the Ha Mei San Tsuen Polder and the Chau Tau Tsuen Polder with the installed capacities of 37 kW and 30 kW respectively. Meanwhile, the DSD is currently expanding the capacity of the floating solar power system at the San Tin Polder from 37 kW to 350 kW.

During the planning stage of the proposed trial of a floating solar power system in the Kai Tak Approach Channel, the DSD received some comments and encountered various site constraints and interfacing problems with the construction works nearby. Having taken into account various factors including energy efficiency, the DSD decided not to conduct the trial.

The DSD will continue to identify other suitable water bodies for installation of similar floating solar power systems subject to technical viability, energy efficiency and cost-effectiveness.

2. Despite several severe weather events after the floating solar power systems at the Shing Mun River in Sha Tin and the San Tin Polder came into operation in August 2022 and March 2022 respectively, these systems remain intact and are still in proper function.
3. For the trial of the floating solar power system at the Shing Mun River in Sha Tin, the installation and monthly operating costs are some \$2.3 million and \$50,000 respectively. As the system is relatively small in scale, the electricity so generated is only barely enough to support the electrical equipment on the floating platform.

For the trial of the floating solar power system at the San Tin Polder, the installation and monthly operating costs are some \$2.9 million and \$4,000 respectively. On average, the system can generate 3 600 kWh per month.

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