

APEC Workshop on
Promoting Digital Solar Resources Maps and Management Technologies
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Distinguished guests, ladies and gentlemen,

Opening "靠山吃山，靠水吃水"

Renowned as a global culinary paradise, Hong Kong, China offers many must-try dishes, including dim sum and street food. With three sides surrounded by the sea, the seafood here is irresistible.

There is an ancient Chinese proverb that goes, "靠山吃山，靠水吃水", which translates to "near mountains eat from the mountains", and near seaside eat from the sea".

The wisdom of the proverb is simple: "we should make the best use of local resources."

We are all surrounded by sunlight for many hours a day, so we should maximise the harvest of renewable energy from the sun for our sustainable future!

RE developments in HKC

Initiatives

Renewable energy development in Hong Kong, China aligns with the APEC energy goal of doubling the proportion of renewables in the APEC energy mix by 2030. The Government's objective is to increase the contribution of renewable energy in the fuel mix for electricity generation to 7.5% to 10% by 2035 and then raise it to 15% through local projects and regional cooperation by 2050.

WtE

To meet the targets, due to Hong Kong, China's constraints on harvesting solar and wind energies, our major efforts are to build advanced waste-to-energy facilities to handle municipal waste, food waste, and sewage sludge, as well as to phase out landfills.

Operating facilities include the Food Waste/Sewage Sludge Anaerobic Co-digestion

Trial Scheme at Sewage Treatment Works and food waste and sewage sludge treatment facilities. These facilities treat food waste and sewage to produce biogas and fertiliser, as well as use advanced incineration technologies to generate electricity.

We have two other larger scale projects, O-PARK2 and I-PARK1, to treat food and municipal wastes. O-PARK2 was recently commissioned, while I-PARK1 is currently under construction and expected to commence operation in 2025.

When all these facilities are fully operational, the annual electricity generation is estimated to reach 737 million kWh, which is about 1.5% of yearly electricity consumption in 2035.

For your information, Hong Kong, China is planning to build another larger municipal waste treatment facility, namely I-PARK2. Its both the treatment capacity and electricity generation will be double those of I-PARK1.

Solar

Hong Kong, China, is mountainous, with limited flat areas near the coast. Notwithstanding the constraints on harvesting solar energy, we adopted various strategies to maximise the capture of renewable energy from the sun.

We are providing financial incentives and capacity-building measures, such as the Feed-in Tariff (FiT) scheme for buying back generated electricity at higher prices from the private sector, the "Solar Harvest" scheme to fund the installation of PV systems at schools, and welfare organisations, publishing Operation and Maintenance Best Practices Booklets and Handbooks on Solar Photovoltaic Systems and Solar Water Heating Systems, and providing funding support to local universities and private enterprises for scientific research projects that promote decarbonisation and environmental protection.

We are also conducting a pilot project to install Building Integrated Photovoltaic systems at our EMSD Headquarters building, which will explore the application of photovoltaic technology to building facades.

Global Solar developments

In the global context, according to the Snapshot of Global PV Markets 2024¹ published by the International Energy Agency, the total global capacity of solar PV installations increased from 1.2 Terawatt (TW) in 2022 to 1.6 TW in 2023, over 33% in just one year.

Our motherland, China, with its proactive development policies, is the no. 1 in the PV market in 2023, accounting for over 60% of the new global capacity, i.e. 277 Gigawatt (GW) to a total of 446 GW.

The cumulative PV capacity of China reached 662 GW out of the total 1624 GW of the global cumulative capacity, which means a share of over 40% and contributes the highest generation globally.

There are approximately 150 GW of PV modules in stock worldwide to supply new PV modules. After experiencing high materials and transportation costs for several years, module prices dropped significantly in the market. The price reduction allowed PV to remain competitive even as electricity prices decreased after reaching record highs in 2022. So, it would be a good time for us to consider installing more PV systems.

Synergy of integrating RE with Innovative Technologies

Integrating innovative technologies is important for maximising the efficiency and benefits of harvesting solar energy, and digitalisation is a vital strategy to generate data to enhance workflow patterns and make better decisions.

Digital solar monitoring systems are more common now and play a crucial role in our transition to sustainable energy. These systems enable real-time monitoring and control of solar energy production and consumption. By analysing energy patterns and optimising solar energy, companies can achieve maximum energy efficiency and reduce their reliance on conventional energy sources. Accurate data on energy production and consumption empowers businesses to identify and address inefficiencies, minimising wastage of energy and optimising resource utilisation. This not only leads to cost savings, but also contributes to creating a greener and more sustainable future.

Showcasing EMSD's invention - iSEE

Allow me to showcase an invention developed by EMSD: the integrated Self-sustained

¹ <https://iea-pvps.org/snapshot-reports/snapshot-2024/>

renewable-energy Explorer, or iSEE in short.

iSEE offers a comprehensive one-stop solution for investors, owners, and operators, revolutionising ways for data collection and sharing, as well as enhancing data quality. Unlike traditional modelling, which only uses predictions based on statistics and historical data, iSEE measures the on-site climate parameters that reflect the impacts on solar energy generation. It's artificial intelligence software analyses system to increase renewable power generation, proactively monitors system performance, and use predictive analytics to identify potential problems. Real-time data is readily accessible through mobile apps, enabling instant alerts and maintenance orders, and minimising downtime and maximising returns for owners and operators.

We are proud that this patented invention has received international recognition and that the trial projects have been completed successfully.

Ending

To summarise, the development and deployment of renewable energy, particularly solar energy, are vital to driving renewable power generation and capacity expansion in the share of the energy mix.

Today, our speakers will share the deployment of digital solutions for solar energy systems, as well as the latest generation of solar cells. I hope you will enjoy the schedule and arrangements.

Last but not least, I would like to thank all of you for joining the workshop. I would like to encourage all the APEC member economies to plan energy transition by adopting innovative technologies.

Thank you.