

Semakau landfill to get green power grid

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THE world's prettiest landfill will soon become greener.

Singapore will start building a power grid at the lush Semakau Landfill next year, to show how renewable energy from the sea, sun and wind can be combined with other technologies to provide a stable source of electricity.

The hybrid micro-grid is the first in the region and is believed to be the largest in the tropics.

It will produce about 1MW of power for a start, which will be used on Semakau. That amount of power is enough for small islands and villages, and can act as an emergency power supply for cities.

In Singapore, it would be enough to power about 250

four-room Housing Board flats.

Minister in the Prime Minister's Office S. Iswaran announced the project yesterday at the opening of the inaugural Asia Clean Energy Summit, which is part of this year's Singapore International Energy Week.

He said the project could allow Singapore and its partners to provide electricity to island communities and remote villages. The research could also be used to improve cities' power grids.

"All of these are acute needs in Asia... and Singapore aims to play a meaningful role in Asia's clean-energy journey despite our geographical limitations," said Mr Iswaran, who is also Second Minister for Home Affairs and Trade and Industry.

The Economic Development Board (EDB) and the Nanyang

Technological University (NTU) will invest a total of \$8 million in the grid infrastructure, and the project is expected to attract some \$20 million in investments from clean-technology companies in the next five years.

NTU will build the grid and develop the technologies with 10 multinational companies, for a start. These include some of the world's biggest renewable-energy players, such as Vestas, the world's largest manufacturer and installer of wind turbines.

The National Environment Agency and the Sustainable Energy Association of Singapore will also support the project.

The grid will use energy storage systems and algorithms to tackle renewable energy's traditional limitations. Sunlight is needed to produce solar power,

for instance, but storage systems can store the power for later use.

Professor Hans Puttgen, senior director at NTU's Energy Research Institute, said that a key research area will be technology that converts power to fuel.

One method uses electricity to split water into hydrogen and oxygen.

The hydrogen is combined with carbon dioxide, and the two gases are converted to methane, which is then fed into a natural gas power grid. This also helps to reduce carbon dioxide's impact on the environment.

EDB executive director of clean technologies Goh Chee Kiong said such power-to-gas technology "is a very exciting frontier for a lot of major companies today", and that the Singapore project could catalyse research here in the field.

Clean energy test bed

Singapore will start building a hybrid micro-grid on the Semakau Landfill next year to show how different types of renewable energy can be combined. This is how it will look.



PHOTO: NANYANG TECHNOLOGICAL UNIVERSITY

Prof Puttgen said that the work will evolve as new technologies and partners come on board.

"It will never be finished, and

it has been designed to be that way," he said.

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