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Solar vital to energy plans

With the Energy Ministry having recently set a new target for Thailand to make a gradual transition away from fossil fuels to decarbonise energy generation in the country, recent research by two Harvard University scholars provides useful information for the policymakers.

It gives a realistic assessment of the pros and cons of two renewable energy sources — wind and solar.

In two papers, published on Thursday in the journals *Environmental Research Letters* and *Joule*, the two researchers, David Keith and Lee Miller, report on what has been acclaimed as the most accurate modelling yet of how increasing wind power would affect the climate.

They used data on the locations of 57,636 wind turbines around the US along with other data sets to quantify the power density of 411 wind farms and 1,150 solar photovoltaic (PV) plants operating in the US during 2016.

Their research finds that to meet present-day US electricity demands, large-scale wind farms would warm average surface temperatures over the continental US by 0.24 degrees Celsius. This is the result of wind turbines redistributing heat in the atmosphere by altering atmospheric flows.

The direct climate impact of wind power is instant while the benefits accumulate slowly.

They found that, for the same energy generation rate, solar power's environmental impact would be about 10 times less than wind. The average power density of solar is also 10 times greater than that of wind power.

The research findings should help Thai energy planners prioritise renewable energy sources for the country's power development plan.

Renewable energy in Thailand has risen to 14% of power capacity last year from 7% 10 years ago. In August, Energy Minister Siri Jirapongphan announced the government had set a new goal for renewable energy to make up 30% of total power capacity by 2036 and 50% in 40 years' time.

So far, the government has promoted development of solar, hydro, waste-to-energy and wind power.

In the past, solar energy might have been seen as a fairytale or luxury option due to the high cost of investment. Now it stands as the most promising choice.

The PV cost for solar has declined by 50% over the past three years. With more advancements in the technology expected in the near future, it is predicted that the cost of solar power systems will become even cheaper.

To achieve its renewable energy target, the government must accelerate its plan to integrate and connect a solar photovoltaic rooftop system with the national grid of the Electricity Generating Authority of Thailand (Egat).

There has been widespread interest from households and small power producers in installing and running solar power systems. Connectivity with the national grid would enable them to sell their surplus power to Egat or the other two national state enterprises — the Provincial Electricity Authority (PEA) and the Metropolitan Electricity Authority (MEA).

The Energy Minister's plan to allow very small power producers to serve as peer-to-peer electricity traders is also a good step. This will allow generators and users to exchange surplus power output and encourage startups in renewable energy.

But the energy policymakers must make their commitment to shift away from fossil fuel a reality. A few months ago, Mr Siri said the government would alter the country's Power Development Plan by cancelling the fixed quota for fossil power generation and shift to a flexible one.

In reality, the state's decision-making will also be influenced by proponents of fossil fuel. The government itself has been reluctant to kill the two coal-fired power plant projects in the South even though they have been faced with local opposition.

Moreover, the three state enterprises — Egat, MEA and PEA — may lose substantial revenue if solar power becomes adopted more widely. However, these complaints should not be used as an excuse to delay the development and promotion of solar energy in Thailand.