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Coal-dependent Indonesia starts tapping huge solar power potential

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JAKARTA (Jan 6): Aji Tri Atmojo lives in a traditional Javanese house with wooden walls on the outskirts of the Indonesian capital of Jakarta, but his rustic home got a modern touch after he installed a row of solar panels on his roof.

Since putting them up in 2020 at a cost of 10 million rupiah (\$702.25), he has halved his monthly electricity bill and within five years the investment should break even.

With a patchy track record on renewables, Indonesia's energy mix is still heavily dependent on coal but if early signs of a jump in the take up of solar are sustained, it could have a transformative impact on Southeast Asia's biggest economy.

"Because nearly all electricity generation in Indonesia ... comes from coal. This way (my family) can reduce greenhouse gas emissions," Aji told Reuters. Indonesia aims to wean itself off coal and become carbon neutral by 2060 or sooner.

Despite being a tropical archipelago of 17,000 islands blessed with year-round sunshine, Indonesia ranks last for solar power capacity among the G20 nations.

But demand is starting to pick up in the world's fourth-most populous country, driven by policy changes, a steep fall in the prices of Chinese-made photovoltaic cells (PV) and environmentally conscious middle-class consumers such as Aji, an engineer at a dairy company.

From the end of 2018 to November 2021, the number of private rooftop solar panel users has risen more than sevenfold to about 4,500, with an installed capacity of 44 megawatts (MW), up from just 1.5 MW, according to state-owned power utility Perusahaan Listrik Negara (PLN).

Rising electricity needs

The Indonesia Solar Energy Association (ISEA) predicts installed capacity for rooftop solar panels could top 1,000 MW next year and rise by between 3,000 MW and 5,000 MW per year starting in 2025.

"People are becoming more aware about the importance of renewable energy," said Amarangga Lubis, co-founder of engineering, procurement, and construction (EPC) firm SolarKita. "Since the pandemic, the work from home culture has been established and electricity needs at home are rising."

Lubis predicts massive growth in solar power installations over the next five years. "People will be more picky and they will invest in things that are more beneficial" for the environment, he said.

To be sure, solar remains a minor energy source in Indonesia, the world's biggest exporter of the thermal coal used in power plants.

Coal powers about 60% of Indonesia's 73,000 MW of electric generation capacity, compared with solar's 180 MW, which includes solar farms and private rooftop PV cells.

But, Indonesia has the potential for 400,000 MW of solar power, its energy ministry has forecast.

Falling prices for Chinese PV cells has driven the rise in private installations since the solar power produced from the panels is cheaper than power sold from PLN.

The systems from western countries that were the only ones previously available were also 10 times more expensive, said Ilham Rizky, founder of solar installer Batara Energi.

New financing methods, such as solar panel leasing for commercial users, have also helped businesses invest in solar, said Solarkita's Lubis.

Carbon market

Regulatory changes have also spurred growth, with PLN reducing its minimum energy charges in late 2019, which lowers the amount of time for solar users to recoup their installation costs.

Commercial solar users can also fully export their excess power to PLN as of August, up from only 65% previously, and they can participate in an Indonesian carbon market due to launch in 2025.

These changes, as well as agreements by multinational companies to curb carbon emissions, mean higher solar demand from companies, factories and commercial buildings in coming years, said Fabby Tumiwa, the ISEA executive director.

In addition to the commercial demand, Tumiwa also expects at least 2% of PLN's 77 million household customers to put up solar PV cells in the next three to five years.