Economy

Renewable energies

Egypt looks to the future with renewable energy plan

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Cairo

The vista in the central province of Minya is as empty as far as the eye can see except for rows and rows of solar panels and the blue sky above.

The panels are helping Amr al-Saad's 8-month-old power station address the worsening issue of brownouts and blackouts in the area.

"A few years ago, power supply was intermittent, which made the life of the residents of the province very tough," he said. "That is why I decided to establish my project where it is most needed."

After generating electricity, Saad's station feeds it into the national grid where it is used to power houses, farms and workshops in Minya's villages.

Saad's project, which cost $100,000 and produces 650 kilowatts of electricity each month, is part of a national drive to reduce Egypt's dependence on fossil fuels by shifting to renewable energy. Egypt plans to produce 20% of its electricity from renewable sources by 2022 and 37% by 2035. It is an ambitious plan given that just 3% of electricity produced annually in Egypt today is from renewable sources.

■ Egypt plans to produce 20% of its electricity from renewable sources by 2022.

The Egyptian government is investing billions of dollars into new renewable energy projects and looking to establish wind farms and solar power plants in around the country.

Several projects are slated for the Western Desert, on the northern coast and near the Suez Canal, where tens of thousands of wind turbines and solar panels dot the once-empty desert.

■ Incentives in Egypt's renewable energy law seek to attract investors.

"Utilising renewable energy is part of a national plan to diversify electricity generation sources to meet growing demand and secure the continuity of the electricity supply," said Ayman Hamza, spokesman for the Ministry of Electricity. "Egypt has a great, untapped potential to turn into an international renewable energy hub."

Egypt's climate gives it massive wind and solar energy potential. The North African country experiences high sunshine duration of from 3,300 hours a year in the north to 4,000 hours in the interior. Egypt's coastal zones have high wind energy potential, particularly along the Red Sea coast, which experiences average wind speeds of 7-12 metres per second.

"Exploiting renewable energy isn't a matter of choice for this country," said renewable energy expert Wael el-Nashar. "Fossil fuels will start running out in a matter of a decade or two, which means that we should start dependence on renewable sources today, not tomorrow."

Egypt is part of the "sun belt", which includes the rest of North Africa and the Arabian Peninsula, Nashar said. This geographic position means Egypt can become a major solar energy producer.

Renewable energy projects are getting state support, easy and long-term loans from banks and a long list of clients, including government agencies, ready to buy the electricity produced.

Diversifying resources. Wind turbines are seen on the Zafarana Wind Farm, near Ain Sokhna port in Suez, 140km east of Cairo. (Reuters)

The government is considering a mechanism to allow the feed-in tariff (the price of electricity fed into the national grid) to rise when the price of electricity produced from fossil fuel rises. The Electricity Ministry said the aim would be to ensure that renewable energy producers can profit from their projects.

Nine government agencies have signed contracts to buy electricity produced by renewable energy plants in different parts of the country.

Incentives in Egypt's new renewable energy law seek to attract investors, Hamza said.

"One of the incentives is that the government is committed to buying all the electricity produced by renewable energy plants," Hamza said. "Apart from free plots of land and free infrastructure, the feed-in tariff ensures that investors make enough profits to keep their projects running and ensure expansion."

The same feed-in tariff is also drawing in a growing number of ordinary Egyptians to participate in the renewable energy field. Some of those living in Cairo and other urban areas are installing solar power plants on their rooftops, producing enough electricity to power their homes. Some sell surpluses of electricity to the national grid.

Saad said he expects to recoup half of his initial investment in his power station in Minya in about four months.

"This means that I will collect my investments in a matter of two years," Saad said. "This continuous flow of cash will help me expand my project in the future."

Lebanon set to have its first wind farm as it faces shortages

Samar Kadi

Beirut

Lebanon has long suffered from chronic power shortages due to a decaying infrastructure and limited supply produced by its poorly maintained, fuel-powered power plants. This situation may begin to change as the country's first wind farm project is expected to materialise soon.

Hawa Akkar, a private company developing the first utility-scale project in northern Lebanon's Akkar region, is planning to harness green wind energy sufficient to power some 60,000 households a year.

In a country that has no oil or gas and lacks sufficient water resources to generate hydro energy, investing in renewable wind and solar energy is a winning bet to Hawa Akkar Chairman Albert Khoury.

"To develop the production of electricity you have to see what natural resources you have," Khoury said. "If you are Canada, you do hydro. If you are Qatar, you do gas. If you are Saudi Arabia, you do oil. In Lebanon, we don't have water, we don't have oil and gas but we have fabulous wind resources and fabulous solar resources.

■ Hawa Akkar will have 20 wind turbines with a production capacity of 60 megawatts generating power for 60,000 households.

"The resources are there. We do not need to import them. We cannot build something in the hope that the resource will come, inshallah, as it happened with gas."

Lebanon built two power plants in Deir Ammar and in Zahrani in the 1990s based on a technology that uses gas, which was supposed to be channelled through pipelines. However, more than 15 years later, the gas has not arrived. The plants that were devised to work on natural gas are functioning on gas oil.

■ The Hawa Akkar project would reduce power rationing, preserve the environment and create employment.

The wind farm project took its first steps in 2008 when Khoury led an experienced team in a study on wind currents in Lebanon. The group determined that the best areas to establish wind farms were concentrated in Akkar, where exists the principal passage of air between Syrian land and Lebanon's Bekaa plains on one side and the Mediterranean on the other.

"We conducted a measurement campaign of the wind in that area of Akkar and we got the confirmation that the wind patterns in Lebanon are fabulous. Wind power in that specific spot is more than 7 metres per second," Khoury said.

The Lebanese government estimated the energy potential of Akkar's wind to be around 2,000 megawatts of renewable energy, requiring about $3 billion of investments in one of the most neglected, underprivileged and poorest regions in the country.

While Hawa Akkar is an environmentally friendly project, it has a huge socio-economic dimension for the Akkar region, which lacks proper infrastructure and services.

Transition to green economy. Albert Khoury, chairman of Hawa Akkar, presenting his project in Beirut. (Hawa Akkar)

"You need everything there," Khoury said. "Better infrastructure and better roads to transport the huge wind turbines, better services and accommodations for the engineers and workers who will be on the site. The project is expected to bring in much-needed development and economic activity in a long-neglected area, especially in the first period of construction with the creation of hundreds of jobs for the local population."

"The benefits of the project are huge. You will be producing electricity without polluting the environment, reducing power rationing in the country and creating employment opportunities," Khoury added.

The farm will use an area of 3 million square metres, will have 20 wind turbines with a production capacity of 60 megawatts, enough to generate power for 60,000 households. The cost, estimated at $107 million, is to be financed by private local and international investors.

Hawa Akkar said wind energy was competitive when compared with traditional forms of power generation in the country, and where the average cost per kilowatt-hour (kwh) is about 17.14 US cents.

"We would be selling electricity to the government much cheaper than the cost they are incurring now to produce power and we will finance 100% of the project," Khoury said. "There should not be any obstacle to the project as it will be beneficial for both the state and the people."

While the initial cost of building renewable energy projects could be higher than fuel-based energy ones, the cost of operation is much less and it is not harmful to the environment.

"With renewable sources of energy, be it wind or solar, the cost of production is relatively steady, whereas in fuel energy the cost of production cannot be projected in the long term as it is linked to the fluctuating oil prices. This is among the many advantages of renewable resources," Khoury explained.

Hawa Akkar expects to produce green wind power within 18 months, once agreements with the government are signed.

After nine years of effort, Lebanon is expected to have its first wind farm up and running. The official procedure is under way and the required laws that will enable the company to start the production process have been approved, Khoury said.

"We are 95% there," he said. "The signing could happen any time in the next few weeks."

Samar Kadi is The Arab Weekly Travel and Society sections editor.