

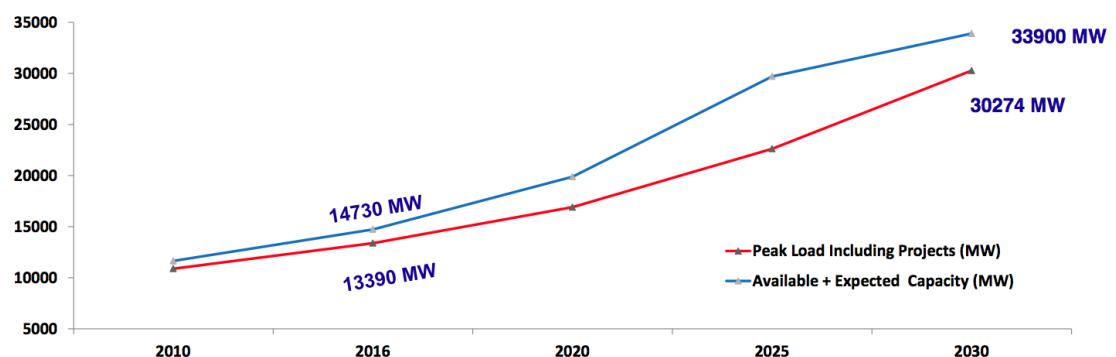
Kuwait's booming solar industry – Insights from Eng. Suhaila Marafie, Ministry of Electricity & Water

Kuwait looks set to become a significant Middle Eastern renewable energy market as it moves to save oil for the export market. Peak load, expected in 2017 to reach 13.4 GW, is increasing at around 8% a year and is expected to hit more than 30 GW by 2030.

On current forecasts, the state could be using up to a third of its oil production, expected to use 900,000 barrels a day, to cover domestic energy demand by 2030.

Against this backdrop, the Emir Sheikh Sabah Ahmad Al-Jaber Al-Sabah has launched in 2012 a plan to cover 15% of the country's peak load with renewables by 2030.

This should translate to around 4.5 GW of generation, which policymakers are aiming to have installed ahead of the 2030 deadline, if possible. The country is already seeing demand outstrip generation capacity in the July and August summer months.



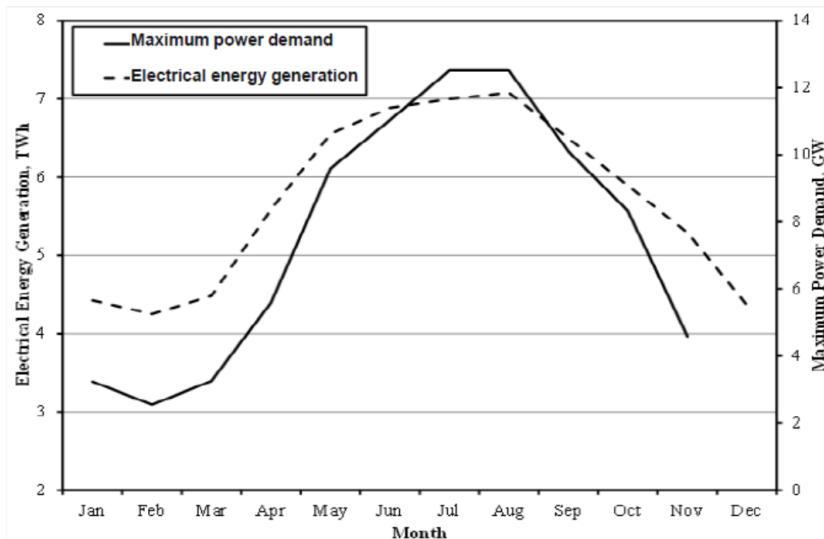
Kuwait peak load and capacity forecasts.

PV will likely be the main focus of the renewable energy program, given Kuwait's high solar resource. The country's global horizontal irradiance averages 2,089 kWh/m² a year.

In addition, an average annual direct normal irradiance of 1,861 kWh/m² could also favor the development of concentrated solar power (CSP).

And unlike some Middle East and North African states, which are dependent on international funding schemes for renewable energy development, financing should not be a problem in oil-rich Kuwait, according to insiders. But there could be other challenges.

The first is that the country lacks a single coordinating body for solar development. Instead, multiple stakeholders are working towards the renewable goal, but the initial interface for developers interested in the market remains unclear.

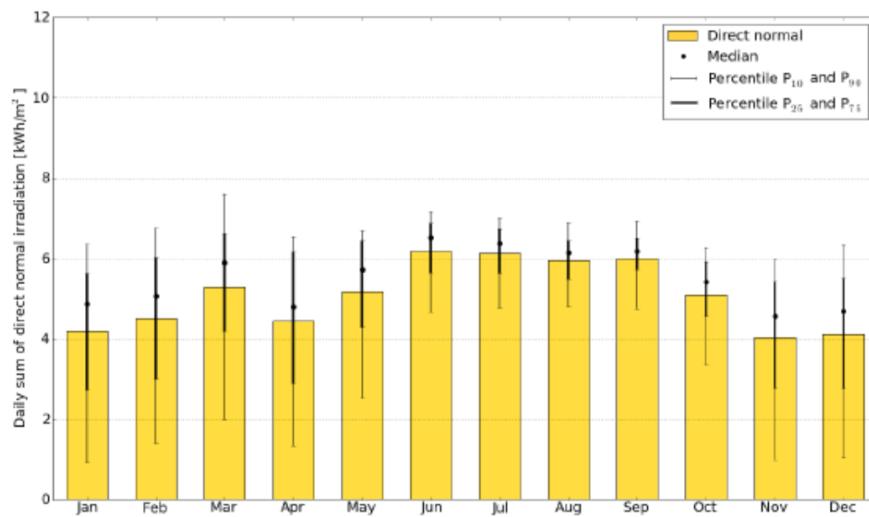


Kuwait monthly generation versus demand.

Other roadblocks that developers will have to address include land costs and ownership, challenging weather conditions, the need to work with a local agent and differences in terminology between renewables development and the prevalent oil and gas industry.

To date, solar power development in the country has not been sufficient to iron out these wrinkles.

In 2014, the Ministry of Electricity and Water commissioned a 1 MW rooftop solar project, and the country's emblematic Kuwait Towers has installed 117 kW of PV on its car parks.



Kuwait direct normal irradiance.

At utility scale, the country has just two plants: the 10 MW Sidrah 500 solar plant and Shagaya 1, which includes 10 MW of PV and 10 MW of wind.

Going forward, KWD2M (\$6.6M) has been set aside for a 1,000 Homes Rooftop Project which has already accepted tenders for rooftop PV on 150 homes, and a proposed new international airport is planned to have a 16 MW roof-mounted thin-film solar array.

Around 50 MW of CSP plus storage is due to be added to Shagaya. Plans for a further 1.5 GW of PV and wind are being debated, along with an integrated solar combined cycle plant with 60 MW of CSP.

This is just the start, though: developers should stay tuned for further opportunities.