Central Asia's solar awakening

Uzbekistan is providing a model for solar development in Central Asia as it rolls out its first large-scale projects. With the support of multilateral financial institutions, the government is prioritizing its electrical infrastructure as it pursues economic development goals. And as Amjad Khashman reports, the engagement of developers from fossil-fuel- rich neighbors in its solar projects points to a bright, renewable future for the region.

In a matter of only a few months, the Republic of Uzbekistan managed to strike its first large-scale PV project. This is only the start, as the the Central Asian country has another 1.1 GW of projects under tender, with the ambition to install a total PV capacity of 5 GW by 2030.

Uzbekistan's Ministry of Energy has launched three PV tender rounds. The latest third round is the largest, comprising two 200 MW projects and one with a capacity of 100 MW. Similar to the previous two rounds, each project will be developed on a design, build, finance, and operate basis under a 25-year power purchase agreement (PPA). The co-signer alongside the solar developer is state-owned JSC National Electric Grid of Uzbekistan.

As per International Finance Corp. (IFC), which was appointed by the Uzbek government to structure the tender mechanism, a two-stage process is envisaged where developers must first meet prequalification criteria, and then submit bids by July 2021. The projects are expected to achieve financial close before the end of the year.

In 2019, Abu Dhabi-based renewables giant Masdar submitted a bid price of $0.027/kWh – an impressive figure, given it is the first solar project of its kind in the country. Similarly, French joint venture Total Eren is putting its final touches on a secured 100 MW project expected to reach financial close in the near future.

A second tender round is progressing in parallel, as 15 developers were prequalified and eligible to submit an offer for the construction of two PV plants, with a capacity of 200 MW each, in the Samarkand and Jizzakh regions. This round seems to have faced delays amid the Covid-19 pandemic, as the original submission date was slated for August 2020, and appears not to have been met. In parallel to the three rounds, the Asian Development Bank (ADB) is assisting the Uzbek government in tendering an additional 200 MW project in the Sherabad region.

Key companies

The considerable pipeline of projects and the low-risk public-private partnership scheme have succeeded in attracting developers from around the globe. The Uzbek solar tenders attracted as many as 84 developers that prequalified for the second ongoing tender round.

Among the bidders to the second round are China's JinkoPower, Japan's Marubeni, and the Scandinavian developer Scatec, besides the winners, Masdar and Total Eren. Another heavy hitter engaging in the market is Saudi Arabia's ACWA Power, which hopes to leverage its recent success in securing 2.5 GW of gas and wind power projects in the country.

As Uzbekistan is only now kickstarting its large-scale PV segment, the EPC players looking to execute the projects have not yet stepped forward publicly. Indian contractor Sterling and Wilson, which has been active in the region, has expressed interest in the Uzbek market, hoping to secure a large pipeline. METKA EGN, which has just completed the 100 MW in Uzbekistan with Total Eren, is another candidate that is well positioned to take EPC market share.

The ice has been broken for solar development in Central Asia, as well-designed large-scale tenders in Uzbekistan deliver a path to the PV peak for neighbors Azerbaijan, Kazakhstan, and (pictured) Kyrgyzstan.

Photo: Amjad Khashman

On the money side, almost all multilateral financial institutions are present. These institutions have provided financing and loan commitments to the ongoing projects, in addition to offering advisory services and policy support. For instance, the IFC and the ADB have played leading roles in structuring the public-private partnership scheme of solar projects. Similarly, the European Bank for Reconstruction and Development (EBRD) is heavily engaged, leveraging its long involvement in Central Asia.

"Besides the robust and clear regulatory framework, Uzbekistan has the political will to harness the huge potential of renewable energy in the country," says Aida Stidikova, the director of energy for EBRD in Eurasia. The EBRD has played a role in both of the country's lighthouse solar projects by providing a $60 million equity bridge loan to Masdar. And it is expected to soon close a financing agreement for the second project with Total Eren.

Stidikova confirms that the bank is in discussion with other developers in the country as possible sponsors. "A day-to-day product that we offer would be a senior loan as a co-financier," Stidikova explains. However, she confirms the bank's flexibility and that the factors going into structuring a facility are unique to each project. When it comes to financing cost evolution, Stidikova remains positive: "Cost of financing is a function of risk, actual or perceived. If the renewables sector gets momentum and attracts commercial lenders in addition to DFIs [development finance institutions], the cost of financing becomes more market driven and [will] potentially go down."

Stidikova notes that a battery storage facility may well be coupled to one of the third-round Uzbek projects. "It is good to see Uzbekistan thinking two steps ahead. With the large scale-up of intermittent renewables, we will see the need for system reinforcement and investment in the transmission grid and storage. We at EBRD would certainly be very interested in supporting projects like this."

Suitable for solar

Until 2019, Uzbekistan had almost no solar or wind capacity, as per the latest statistics from the International Renewable Energy Agency (IRENA). It is quite remarkable that now the country aims to install 3 GW of wind alongside 5 GW of PV by 2030. The conditions are sunny, especially in the central and southern regions, where irradiation can reach 1800 kWh/m². In addition, almost 80% of the country's territory is flat desert, which is highly suitable for solar.

However, Ebby Adhami, the director of Corporate Solutions, a management consultancy active in Central Asian power markets, believes that political will and reforms were the decisive enablers of the current green boom. "The country has a new administration since 2016 which has extremely ambitious plans of claiming Uzbekistan's rightful place in the region. During the Soviet times, Uzbekistan was the regional center … inheriting widespread infrastructure," says Adhami.

Photo: EBRD

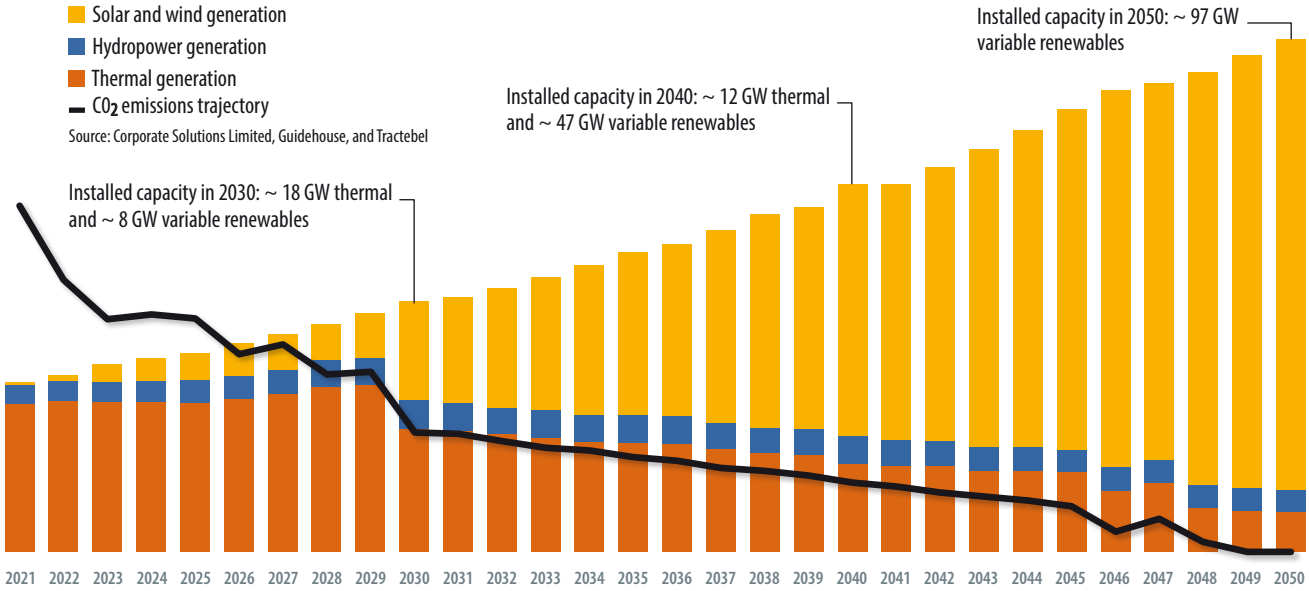
"We will see the need for system reinforcement and investment in the transmission grid and storage"

Aida Stidikova, director of energy for EBRD in Eurasia

As one of the first large-scale solar power plants in Kazakhstan, the Burnoye project has became an example of the successful implementation of project-financing for renewable energy in Central Asia.

Photo: EBRD

Evolution of electricity generation mix and CO_2 emissions under carbon neutral scenario in Uzbekistan



"That infrastructure still exists, although it needs upgrading."

Adhami says that the government has recognized that it needs to revamp its infrastructure if economic development goals are to be achieved – with energy a top priority. Indeed, the Uzbek economy has experienced steady growth over the past decade, leading to a significant increase in energy consumption. The government forecasts demand for electricity increasing 6% annually – representing an almost doubling by 2030 on 2019 demand. The government estimates that as much as $14.4 billion will need to be invested to install the required generation capacity.

Azerbaijan, Kazakhstan

In the past, Kazakhstan was the solar star of the region. As early as 2014, the country started its renewables journey and had around 800 MW of installed capacity, mostly solar, by 2019. More recently, Kazakhstan has switched to an auctions system instead of the previous feed-in tariff scheme, achieving a lowest price of $0.035/KWh in the latest round, which was held in late 2020.

Toward the west bank of the Caspian Sea, positive signs are also emerging from Azerbaijan. The local energy ministry has disclosed that negotiations are underway with Masdar for a first-of-its-kind 230 MW solar project in the country. It is understood that the country will define the terms of renewable auctions after wrapping up its first project.

Other countries in the region are still lagging in the race for renewables. Indeed, Tajikistan and Kyrgyzstan already have a considerable capacity of hydropower, but still, neither wind nor solar technology has been implemented in either country.

Potential threats

Despite its strong start, the Uzbek solar market has some aspects that must be handled with caution. Grid integration of variable renewables is still in question. In January, a major incident hit the transmission network, leading to power supply failures in some parts of the country.

Multilateral financial institutions play important role in Uzbek renewables

The Uzbek renewables awakening has been achieved in partnership with multilateral financial institutions. Exceeding their traditional role in providing finance for development projects, the organizations have been active in policy-making and capacity building.

Notably, the EBRD assisted the government in preparing a roadmap that targets a carbon-neutral Uzbek power sector by mid-century. Cristian Carraretto, EBRD's associate director for sustainable resource investments, shared the motivation behind engaging in this study. "[The EBRD is] proud of our Green Economy Transition approach," says Carraretto. "In practice, over the years we have been often the first institute to provide foreign direct investment for renewable energy projects in many developing countries. When it comes to Uzbekistan, we saw an opportunity to push on the climate agenda in the economic development path of the country."

Carraretto adds that such engagement falls in line with the bank's strategic objective of working with governments in designing such Paris Agreement-aligned roadmaps. The study – prepared by the consultants of Tractebel, Guidehouse and Corporate Solutions – not only specifies the future power mix, but also advocates market reforms and calls for a carbon pricing mechanism.

Solar and battery storage play a major role in the road to zero-carbon, as per the technical expert behind the study, Deltcho Vitchev. A capacity of 47 GW of variable renewable energy sources of solar and wind are envisaged by 2040, accompanied by 15 GW of electric storage. These capacities more than double in 2050 to reach climate neutrality in the central scenario. Even though the study sets ambitious and challenging targets, it was well-received by Uzbek decision-makers.

JSC, the national electric network of Uzbekistan, stated that the malfunction was caused by a false trigger in the protection equipment that led to an unscheduled shutdown of a combined-cycle gas generator. Local authorities acknowledge the need to upgrade the existing transmission infrastructure and are already constructing new high-voltage lines. Similarly, the operator is gradually revising existing standards and norms to align with international ones. Moreover, permitting processes and the availability of local expertise remain possible challenges, as in any new market for renewables.

Geopolitical implications

It is somewhat counterintuitive to see companies from fossil-fuel strongholds like Saudi Arabia's ACWA and Masdar in the United Arab Emirates invest and engage in renewable energy projects in other oil and gas-rich countries like Uzbekistan. Whether it is the financial reasoning to engage in such opportunities, or a new form of renewable energy diplomacy, it proves that such countries are accepting the inevitable and joining the renewables wave instead of watching it from the sidelines.

It is often stated that renewable energy projects in fossil-fuel-rich countries aim to save valuable gas and oil for export, instead of for their own consumption. However, the extent of renewable energy implementation suggests that sooner or later, the demand for these exported resources will decrease and revenue streams will shrink.

Patrick Willems, an independent consultant and expert in the green energy sector in Russia and Central Asia, sees renewable developments in the region as an enabler for cooperation and resilience. "Central Asian countries face many challenges in the energy and water sectors. They need to develop inter-regional trading and embrace that the weakness of one country can be the strength of the other and vice versa" he concludes. pv

Amjad Khashman

Photo: EBRD

This 50 MW solar PV power plant, and its subsequent 26 MW extension array, are located in the Karaganda region, in central Kazakhstan.