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Mexico: 'The place to be'

Market update | Mexico as yet has only a small installed base of solar PV. But with widely lauded market reforms beginning to take effect, and a succession of highly competitive tenders under its belt, this is a market whose time is about to come. Danielle Ola reports

Mexico's solar market is deceiving. With just under 400MW of PV currently installed, it's not much compared to other international markets. Relatively on the smaller side, solar energy currently accounts for just 19% of Mexico's renewable energy capacity.

However, the country is at a cross-roads as the amount of growth that is expected in the sector within the next couple of years is extremely high.

"In my opinion this is going to be the most enjoyable country from an energy point of view all around the world," says Paolo Romanacci, head of renewable energies for Central America for Italian developer Enel, which is currently building what is set to be the largest PV project in the Americas. "Mexico is going to be the place to be in the next three to seven years."

A recent energy reform opened up the country's electric power sector to private players, allowing installers and

investors to tap into Mexico's expansive renewable energy potential. The Energy Secretariat (SENER) and the National Energy Control Centre (CENACE) expect the reforms, approved in 2014, to bring up to US\$9 billion in investment to the sector by 2019.

Mexico's strong outlook is underlined by the successful power auctions the country held in March and September last year, which drew in some of the biggest international renewables energy players such as Enel Green Power and Engie. The first auction brought in 1,860MW of renewable energy capacity – with solar constituting 74% of that. The first auction also saw some of the lowest PPA prices globally, at an average contract price at just US\$50.7/MWh.

"With the creation of the auction structure, it's really made it very enticing for developers and large consumers of electricity to look at cleaner options, and adopt technologies like wind and solar," says Manan Parikh, Latin America

With the foundations now laid, Mexico's solar market is expected to witness rapid growth from 2018

expert and senior solar analyst at GTM Research. "I think the real driving force behind a lot of that policy is the targets."

Mexico is working for renewables to account for 25% of power generated by 2018, 30% by 2021, 35% by 2024, and 60% by 2050. It is this incentive alongside the auctions that sets Mexico on the path to leading Latin America in solar power generation a lot sooner than you might think.

Second long-term power auction

The second auction saw a total investment of US\$4 billion and 2,871MW of new capacity coming in at an even lower US\$33.47/MWh. Solar energy dominated once again, securing 54% of the supply and 53% of the contracts awarded.

A total of 23 winners were selected by CENACE, winning both long-term energy contracts and clean energy certificates (CELs). Among the qualified bidders were Iberdrola, Enel

Green Power, IEnova, Engie, Fotowatio, Canadian Solar, Recurrent Energy and Gestamp, along with local developers and independent power producers (IPPs). The tariff rate revealed a "highly competitive price", according to Mexico's energy ministry. Joaquín Coldwell, secretary of energy, confirmed this price was down 30% from the March auction.

Preliminary results revealed an economic surplus of 32.91%, which represents the savings achieved between the maximum prices that national utility Comisión Federal de la Electricidad (CFE), who purchased the energy in PPAs, offered to buy, and the price that bidders have offered to sell.

Over the next three years, the winners will build 36 new power plants cumulatively, including solar projects across 15 Mexican states. Projects are focused in the state of Yucatán – with one third of all capacity awarded allocated here, despite having the highest nodal prices. According to GTM Research, the most competitive prices were achieved in the northern state of San Luis Potosí, at US\$26.99/MWh, and the highest in Chihuahua, at above US\$49/MWh.

Realisation of the projects awarded in the auction is expected to spur exponential growth in the country's installed capacity.

"Next year we're forecasting a little over 2GW in 2018 alone – and that is pretty significant because 2GW in a whole year is quite a bit," says Parikh. "If you look at the cumulative forecast that I have for 2017-2022, that's about 18GW of combined solar in Mexico. 2018 is kind of the take-off year, and then the market will continue growing in subsequent years after that."

Project progression

Construction is already well underway by developers that won projects in the last round. Analysts are reporting a lot of movement, especially for the plants with a 2018 commercial operation date, with the vast majority of those projects expected to be completed on time.

"There have been situations in certain markets where projects are won but it turns out that those projects are just sitting there. But the Mexico pipeline is really advancing quite a bit and at least 85% of those projects will certainly complete," confirms Parikh.

Many market veterans are already

setting up shop by putting projects in the ground already.

Italian power giant Enel Green Power is one such contender. Already operating 500MW worth of clean power plants in Mexico, it secured a contract to build a 93MW wind farm in Tamaulipas that is set to be operational by 2019, when it will generate around 400GWh of electricity annually.

Likewise, France's Engie was drawn to the market following its comprehensive reforms.

"We've been in operation in Mexico for 16 years or so, but in terms of renewables we've been focusing on other parts of Latin America," says

"2018 is kind of the take-off year, and then the market will continue growing in subsequent years after that"

Fernando Tovar, head of Engie Mexico. "The reform here in Mexico changed things for us significantly; the Mexican government has instituted the changes to create more possibilities for renewables projects to be offered. The reform was when we really started putting our focus on Mexico."

Engie netted contracts for 15 years for 209MW of wind and solar projects last March. The company has announced plans for a 157MW Trompezón solar farm that will be built in the central state of Aguascalientes. Construction is scheduled to begin in early 2018 with commissioning the following year.

Engie says its internal team is designing the project, and is currently selecting the right technology, which includes single-axis trackers to increase the yield. Altogether the company invested between US\$250-300 million in its renewable energy projects from the previous round, reflecting its staunch belief in the market.

Spanish renewable energy firm Acciona Energía won a contract in a 50-50 joint venture with Tuto Energy. The duo plan to build an 180MW solar PV plant in Sonora state, known as the Puerto Libertad. Construction is expected to start in late 2017 with completion in early 2019. Acciona said that the average bidding price repre-

sents 44.2% below the maximum price set by the CFE.

The company intends to capitalise on that project with further developments.

"We want to join that 180MW of PV with a private project in the same area so that the plant will have a total of 270MW," says Miguel Ángel Alonso, director for Acciona Energía in Mexico. "Our intention is to make it even bigger for a total of 330MW. We are looking at future developments because these things are modular."

Fellow Spanish firm IEnova won 141MW of solar projects in the auction: the 100MW Tepezala II single-axis PV farm and the 41MW Rumorosa PV farm. The projects are to be built in Aguascalientes and Baja California, respectively. The 100MW project is reportedly being developed in conjunction with Chinese module manufacturer Trina Solar. Construction of both projects is scheduled for 2018 with operation likely in the first half of 2019.

Third long-term power auction

The energy ministry announced that the third power auction will be held in November 2017, with bid guidelines published 8 May, as this publication went to press. Developers must submit technical bids between 12-20 September.

There have been a large number of bidders in both rounds, indicating a lot of interest in the Mexican market, spurred on by the successes and bankability displayed so far.

That being said, the key players are poised to do it all again, bigger and better in the upcoming round.

"Right now we are working on putting some portfolios together for both solar and wind projects," says Tovar. "We are obviously trying to find projects that are in nodes where there is less congestion, and we are also trying to get projects that are sizeable and hoping to present several hundred megawatts in total."

"For the third auction, we are developing another 130MW of PV, so will probably be close to 500MW by the end of next year," adds Acciona's Alonso.

Whilst this auction is expected to mirror its predecessors, this time will be different as CFE will no longer be the sole off-taker, bringing opportunities for private and industrial off-takers alike to make offers for power, increasing

competition. CFE will still have a bit of an advantage in its ability to enter the auction round for a couple of weeks before the other independent players.

"[CFE not being sole off-taker] is going to be a factor that changes the auction a little bit, but I think it means more opportunities for us to be able to place power in the market," says Tovar. "It complicates things a little bit, but hopefully it's another opportunity."

Market volatility

Whilst increased competition might be good from a wider economic perspective, the market has been exposed to some volatility, with a hit to the peso following Donald Trump's election as US president raising question marks over currency depreciation and the associated risks.

A lot of the projects were awarded through peso-dominated PPAs, with developers holding on to the advantages of local currency whilst hedging their bets that the peso would improve.

Pricing

Evidently Mexico's solar market has hit a sweet spot after record-low prices for solar projects have allowed for a smooth transition into construction phase for many developers. Power auctions have become more commonplace in Latin America over recent years, leading prices to continue to plummet.

The Mexican auctions supported both the largest capacity projects and the lowest prices in the region.

The average price for solar in the second round was around US\$32/MWh and GTM's Parikh says that next round's prices are not expected to go too much lower, thanks to an internal backstop in place to prevent prices going too low and affecting project viability. Therefore, sub-US\$30/MWh prices are not expected.

"Somewhere in the mid-US\$30s-US\$40/MWh is a realistic guess," he says. "I think closer to US\$35-36/MWh is probably the best bet."

Electricity prices have fluctuated historically in Mexico. Retail rates have been increasing over the last year or so. Certain tariff classes within the residential, commercial and industrial segments have consistently been on the rise, which in turn means more opportunities for distributed generation.

"Solar's pricing is so competitive that

The Americas' largest solar project

Capacity won in the first auction is already taking shape for Enel Green Power México (EGPM), a local subsidiary of Italy's Enel, with the mammoth 754MW Villanueva project near Viesca, Coahuila State, in north central Mexico, underway. Upon completion, it will be the single largest PV plant in both North and South America – generating around 1,700GWh per year and aiming to power the equivalent of 1.3 million households.

The firm was awarded 15-year supply contracts and 20-year CELs for 992MW of solar – 754MW for the Villanueva project and the remaining for the 238MW Don José PV project.

Construction on Villanueva has already begun, and Enel expects to bring the project, which is highly compartmentalised, online in the second half of 2018. Citing a sound and stable market feeling, Romanacci is confident that Mexico was the perfect location for such a project.

"We come out from a system reform that is practically privatising the sector and is boosting renewables," he says. "I don't see any other country in the world [except some Asian countries] that is of the same size with the same resources, with a clear regulation, with a stable economy and with fair conditions to construct and operate a plant like Mexico."



Credit: Enel

The site for the giant 754MW Villanueva solar project, set to be the largest in the Americas

even without subsidies there's really no shortage of opportunities to secure contracts either through an auction or as an IPP," says Parikh. "Not only have the prices been competitive, but so have the cost of the CELs – which ultimately determine what the real returns on some of these projects are."

Harnessing potential

It is evident that all the conditions are right for Mexico to be solar's next big thing: falling equipment prices, competitive bidding prices, plenty of investor interest and excellent interconnectivity.

However, analysts have been predicting the Mexican market to be the new big market for years now, with hurdles still clearly in the way of the country harnessing its full potential.

"I think a lot of that in the past was due to an uncertainty as far as where the policy was headed and where the market really was going, and that's because people just didn't even know," says Parikh.

But as the various stages of the

energy transition are being rolled out, stakeholders are finally seeing a lot of developments take place this year. 2018 is tipped as the take-off point for the market due to a lot of projects having CODs in that year, with 2017 bearing the brunt of growing pains and a mass of construction.

Beyond that, financing is always a sticky point for Latin America and developing markets in general. There is a lot of currency risk associated with these projects and investors definitely get a little hesitant to lend in a place where they don't know if it's been done before.

"We've come a long way just from a year ago. There may be some uncertainty as to whether energy targets can be met, whether projects can complete on time...but those aren't necessarily bad things, they are things we were expecting in the market. If they happen, they are not a surprise," says Parikh.

"Mexico needs to ensure that whatever of these uncertainties does take place, there's at least enough of a buffer to ensure they aren't setting themselves up for failure, and that's the key." ■