

Poland's rise to European PV heavyweight

Emerging Europe | Tom Kenning reports on Poland, a fast-rising star in the European photovoltaic market, where recent growth has been fuelled by the prosumer segment.

Poland is still the largest hard coal producer in Europe so its attempts to decarbonise through renewables are critical for the climate mitigation agenda. With just 2GW of solar installed at the end of 2019, the country has seen a meteoric rise towards becoming the third largest solar PV market in Europe in terms of installations in 2022 with 4.9GW deployed during the year, according to SolarPower Europe (SPE).

Much of the rise has been driven by a thriving rooftop market in home prosumer installations supported by a net-metering scheme and government programmes giving financial assistance to households, but a change in law is hampering the segment. Meanwhile, large-scale PV is rising at a pace to spearhead a second strong rise in Polish solar deployment.

Around 8GW of the 12GW of cumulative installs by 2022 year-end was made up of prosumers, householders and small businesses driven by government support. The most recent boom in large-scale PV, however, was initially driven by the auction system under contracts for difference (CfDs), but the main push now comes from increased public support for PV, high energy prices and Polish industry's interest in securing solar-based corporate power purchase agreements (PPAs).

"Poland is a market that needs renewables," says Eyal Podhorzer, CEO of Econergy, an international developer with headquarters in Israel and a pipeline of more than 1.5GW of large-scale PV projects in Poland: "70% of Poland's electricity is based on coal. Obviously, it is looking to decarbonise as fast as possible."

More than 4GW of large-scale PV projects were installed in Poland in 2022 alone.

"It's quite a large number for a country like Poland," says Podhorzer, adding that



Credit: Green Genius

the Eastern European country is not seen as a top tier location for PV given its more northern location with less favourable irradiation conditions. But since the government curtailed the entry of new wind projects two years ago, investors have shifted their development efforts into PV. This has been supported by a reduction in capex in equipment prices that enabled projects to reach grid parity and become sustainable investments.

Terrain

There is no standout region for solar development in Poland according to the developers that PV Tech Power spoke to. Econergy for example has PV plants all over the country.

It's a similar story for Green Genius, a renewable energy arm of Lithuanian company Modus Group, which has implemented 129 solar projects in Poland and has nearly 700 in development. Simonas Šileikis, the company's head of solar business, says there are few regional specifics other than the obvious benefit of higher efficiency in the south due to moderately better irradiation.

Aerial view of a Green Genius solar project in Naklo, south Poland

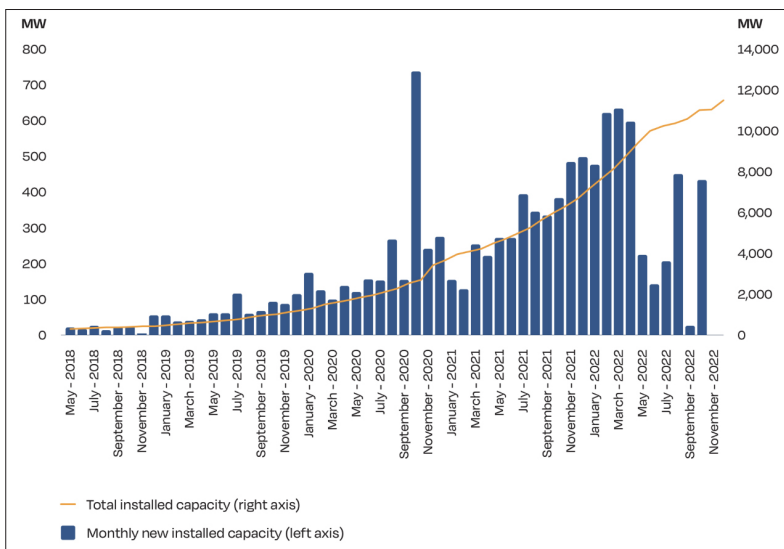
However, availability of the grid in the south is more suited to small and medium size (<100MW) power plants. Most developers are just aiming for projects wherever capacity is available across the country's five distribution grids.

Capacity should be available in the north, but this has been blocked for impending offshore wind installations, leaving PV projects stuck at the future development phase. Šileikis says that as a result Green Genius is looking for more southern locations.

Grid trouble

Interconnection issues are the only impediment to the continued substantial expansion of Polish solar PV with grid operators unsure of when new capacity will open up. Likewise, an SPE report noted that the old grid requires modernisation for the energy transformation since "most of its components are over 25-years old, and a significant part is over 40-years old".

Juxtaposing these reports, Econergy says it has not faced any connection issues in Poland and it continues to build substations and heavily invest in ancillary services



and infrastructure for projects in order to connect to the grid.

"We priced it in our business model, but I don't see an issue on a national level," says Podhorzer.

Śileikis, on the other hand, says that although larger projects have started to become successful, with Poland's market seen as "stable, secure and predictable" and closing in on 12.5GW capacity, it suddenly became almost impossible to get grid connection confirmation for new projects since September last year.

The grid axis as a resource became very limited leaving Poland with a huge number of projects under development that have secured land but are struggling to get the connection confirmation from the grid. Green Genius, which is developing projects of around 5-50MW in size, has itself faced this grid issue.

Green Genius is confident the right conversations for these issues will be had in the near future so it will continue to develop projects knowing that Poland will sooner or later have to face up to the reality that new generation capacity is necessary to phase out the heavy dependence on fossil fuels.

"I'm quite optimistic towards Poland," Śileikis adds. "It's a question of when people will be ready to change. That's very much the political question as well as for the overall environment and European Union. Poland is a very important market."

Entering the market

There are two general ways to enter Poland's PV market says Dr Dariusz Mańka, director of legal and regulatory affairs at Poland's solar association Polskie Stowarzyszenie

Fotowoltaiki. The first and fastest is to make an acquisition of one of the many projects on the market already.

However, Mańka warns that after a few years of the market booming, the projects that have not yet been purchased tend to have "more or less serious" problems relating to grid connection and construction permits, so it's quite difficult to get high quality projects to build and to operate.

The second way is to develop green-field projects. This appears to be more difficult, but there is growing industry demand for solar, so developers can work in tandem with industry partners to develop projects with a direct line to the off-taker using the corporate PPA model.

Meanwhile, local governments will also be looking for cleaner and cheaper energy this year, offering another option for partnership.

"There's going to be a mandate from provinces in Poland to get renewable capacity and those provinces will have to take it upon themselves," says Mańka. "So, it will be a decentralised push."

Rooftop driven by EU goals

Poland had 1.13 million PV micro-installations of under 50kW capacity installed by the end of summer 2022, driven by the original support systems for prosumers, according to SPE. Along with no distribution fees for using the grid, prosumers had benefitted from a net-metering scheme. Poland's solar growth started in this rooftop segment as a government strategy to avoid internal issues with the grid.

"It was easier to give money to people that install small PV than to invest in the

Only grid connection is seen as a barrier to continued rapid growth.

large-scale infrastructure, because the main obstacle for large-scale PV is the lack of infrastructure, lack of grid," adds Mańka.

The government was under pressure from EU renewable energy goals, and the prosumer market was seen as the easiest way to achieve those targets as opposed to large-scale PV. However, rooftop solar's rapid rise has been checked by recent changes in law.

Rooftop progress hampered

In April last year, the net-metering system was replaced by a net-billing system. In this case, prosumers are compensated for energy fed back into the grid but still pay for consuming electricity like normal customers, which has led to a drop in rooftop PV popularity.

Distribution system operators (DSOs) which are 90% state-owned, had seen huge numbers of rooftop solar additions and started to question whether this was destabilising the grid, says Mańka. So, they pushed the government to introduce a new system that would force the prosumers to contribute to the cost of maintaining the grid.

On the other hand, there has been a change to the Mój Prąd (My Electricity) scheme which is favourable to prosumers. From mid-December last year to the end of March this year, residential solar

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subsidies have been increased by 50% from 4,000 PLN (~US\$900) to 6,000 PLN (~US\$1,350) per system, while the rebates on battery installations were more than doubled to 16,000 PLN (~\$3,590).

'Constant growing need for large-scale PV'

While the government is supporting rooftop PV with new regulations on housing in cities, Mańka does not forecast a major change in the development of rooftop growth. On the other hand, there is a "constant growing need for large scale

installations" both for industry and state-owned industry. It was unfortunate from the large-scale PV industry's perspective that rooftop deployment had created an image that there are large capacities of PV in the grid already and the country does not need anymore.

Nonetheless, power purchase agreements (PPAs) are a promising route for large-scale projects and both the potential and demand is growing for the sector, although there is also a growing list of obstacles.

Šileikis says that Poland's early auctions were an attractive and successful support scheme for several years that brought competition and a wave of developers to the country.

"This looked like a really stable investment, which was easy to finance, easy to attract the final investment or long-term investors," says Šileikis – adding that unfortunately, there were problems with the pricing in the latest auctions in 2020 and 2021 which combined wind energy with solar projects of above 1MW in size.

Nonetheless, Šileikis believes utility-scale projects will keep catching up as there are a number of huge projects already being constructed in Poland including a 200MW hybrid wind and solar project.

"There are similar projects under construction, which definitely will change the shapes of growth of those two sectors – prosumers and the utility-scale. However, for the new developments, new installations, it's a little bit of a challenging time right now, just because of the grid connection."

Econergy has now started work on its first Polish project, the 52MW Resco plant. Podhorzer, says: "In the last 12 months, I would argue that most of the growth actually came from large-scale PV. We see the level of interest of new international investors coming in and entering the market and obviously, none of them is looking for small rooftops.

"In Poland, we have the CfD, which is very active. We have a good mature PPA market. So, it is possible to close good long-term PPA agreements and all these obviously contribute to a faster development process and growth of the large-scale PV projects."

Auctions stutter

Originally, the main incentive for large-scale solar in Poland was the auction system under the CfD scheme, which now

separates projects into two categories above and below 1MW in size, with those above 1MW also competing with wind. However, with growing energy prices, more and more companies decided to sell energy on the market rather than go into the auction system, says Mańka. Though a change on price cap regulations did allow the auction system to make a comeback, this year's auction was a disappointment

Despite the auction hiccups and the changes in rooftop subsidy, Poland is seen as a stable PV market going forward, though for large-scale solar to grow, significant investment in the various power grids will be necessary

because the reference price was too low compared to the market price even after the price cap was brought in.

Mańka is not expecting the price to change for the next auction, but nor does he believe that this necessarily spells the end of auctions, because from a bank and financing perspective, large-scale PV projects won through these auctions are seen as a stable source of revenue.

Podhorzer, for example, praises the CfD for the flexibility it offers over other kinds of subsidy and the PPA schemes, which involve commitment to rigid agreements for 10 years or more.

"On the CfD side, you can decide how much you commit. If you're not happy after three years or two years with the agreement, you can stop it, you can renew it later. You have 42 months from the moment you're granted with a CfD until you can start producing and selling to the grid."

CfD projects can also be combined with PPA or merchant solar arrangements, for example giving 30% of your capacity to the CfD scheme but going merchant for the remaining capacity or combining with a PPA. Econergy is currently looking at options for a combination of CfD, PPA and merchant for its 52MW Resco project ahead of its completion in June.

Podhorzer does expect the government to make changes for the next auction. Ideally, the minimum reference price would not be in the range of the

unsustainable current market prices and they should be at least in a level that developers and investors feel comfortable to commit to for the next 15 years.

Offering a less flattering view, Šileikis of Green Genius says that combining large projects of wind and solar in the same auction "was not a good idea", because the pricing of wind and solar have different models.

"Due to the war in Ukraine, the demand for the electricity prices has rocketed in Europe, including Poland," he adds. "Then the auctions have become absolutely unnecessary. They just don't work because they were far below the market level of the prices. So, the participation was rather very low in the last auction. We have not been even looking into this."

He also does not expect the regulator to adjust the ceiling price for the next auction and believes that investors will be looking at the longer term – adding: "It's not worth going into the auction with the low price because definitely after the [energy] crisis, the market will regulate itself."

Anywhere in Europe where government bodies try to regulate the market, they end up with investors looking elsewhere to those markets which are not regulated, says Šileikis, noting an outflow of interest from Europe towards the US at present.

"This auction system played its role very well. It absolutely launched the fast development of solar and it helped a lot, but right now, it becomes less and less relevant."

Future

The Polish market looks set to add 21.8GW of solar over the next four years under the medium scenario, and up to 29.8GW under the high scenario, according to SolarPower Europe's report 'EU Market Outlook For Solar Power 2022 – 2026'.

Despite the auction hiccups and the changes in rooftop subsidy, Poland is seen as a stable PV market going forward, though for large-scale solar to grow, significant investment in the various power grids will be necessary. The country is said to be already facing a shortage in energy production capacity giving solar PV an excellent chance to grow with its unique ability for projects to be commissioned in very short timeframes. ■