EU Monitor

FROM BOOM TO BUST: HOW UNCOORDINATED POLICIES HALTED SOLAR POWER DEPLOYMENT IN CZECHIA

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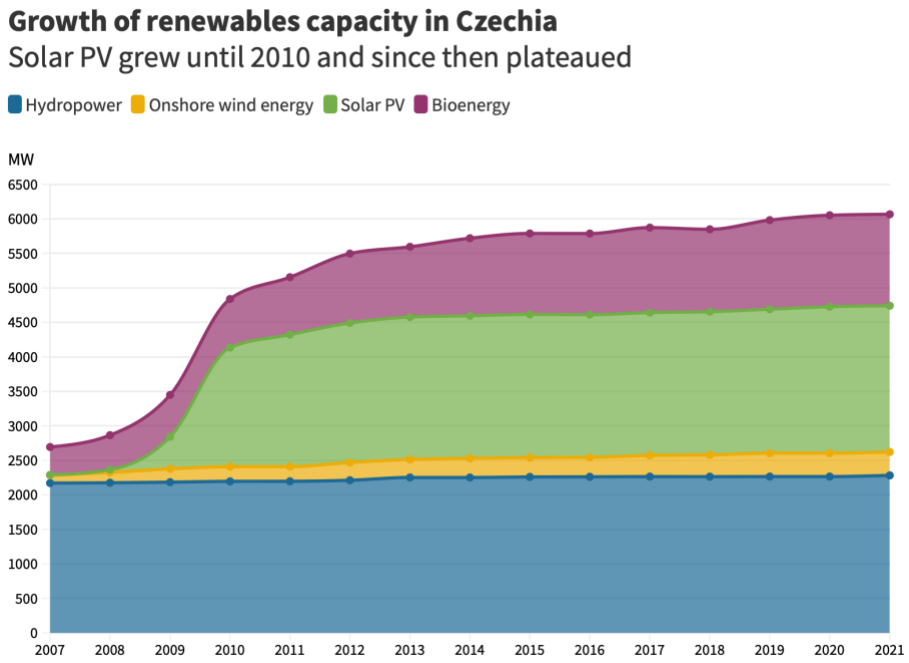
The war in Ukraine, rising inflation and trade disruptions are leading to record energy prices, fuel shortages and increasing poverty. With winter approaching, 2023 is looking faint especially for the Czech Republic and most European countries whose dependence on Russian imports is multistory. Renewables offer solutions particularly to the Czech electricity mix. According to IRENA (2022), the global weighted average levelized costs of electricity (LCOE) from solar PVs reached USD 0.417/ kWh in 2021 making them the cheapest source of energy. Solar energy also creates local jobs and leads to the cultivations of energy independence. According to the SolarPower Europe (2021), over 350 000 people were employed in the EU solar sector and this number is projected to triple by 2030. To ensure energy security and reach its decarbonisation targets, Prague is feeling the pressures to phase out coal and ramp up renewables, notably solar PVs.

In its 2019 National Energy and Climate Plans (NECP), Czechia committed to reach 22% of renewables in its final energy consumption by 2030. The share is currently around 16%, with bioenergy and hydropower accounting for majorities (Figure 2). NECP and State Energy Policy foresee 4 GW of solar PVs by 2030 and calculate that the expansion of solar PVs in buildings would require the investment of almost CZK 13 billion.

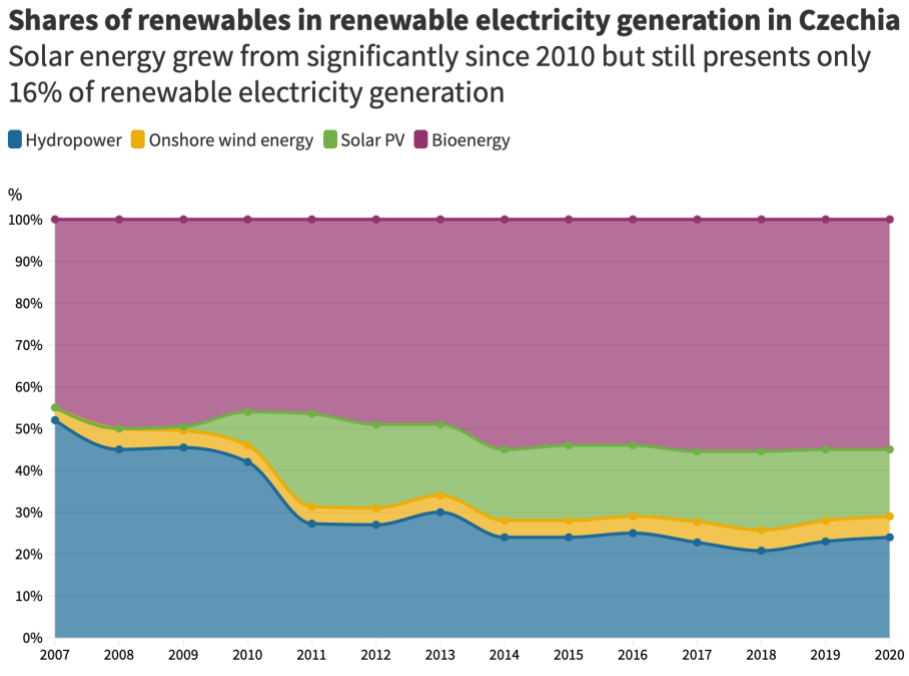
Installed capacity of on-grid solar PV has increase from 40 MW in 2008 to over 2.1 GW in 2021. The biggest increase happened between 2008 and 2010 and since then the solar PV installation plateaued (Figure 1). The electricity generation from solar PVs grew from 13 GWh in 2007 (close to 0%) to over 2.1 TWh in 2020 (16%), representing a small portion of the Czech electricity mix (Figure 2).

Figure 1



IRENASTAT,2021

Figure 2



IRENASTAT,2021

Why did the solar PV deployment stop after 2010, particularly when the potential for just rooftop solar PV is almost 12 GW – 40% on residential buildings and 60% on commercial buildings (Jakubes, Járka 2015)?

Why such a low interest in solar PVs?

Czechia has seen a plateaued interest in deployment of solar PVs since 2010. The reasons are the consequences of uncoordinated and inflexible policy design and misguided incentives that resulted in overcapacity of solar PVs and cost the country billions of CZK in support payments. The similar situation happened in several other EU countries such as Spain, Bulgaria, and Romania.

Box: Definitions of different support mechanisms for renewable technologies in Czechia before 2016

Feed-in-tariff (FIT)

- Granted to operators of renewable energy plants with installed capacity of 30 kW for rooftop/façade solar PVs, 10 MW for hydropower plants and the other plants (wind, geothermal or biomass) up to 100 kW.
- Solar PV and biogas plants only eligible if placed into operation before 31 December 2013.
- Wind, hydro, geothermal and biomass plants of no more than 100 kW eligible if placed into operation before 31 December 2015 and building permits issued before 2 October 2013.
- Payment issued by mandatory purchases as selected by the Ministry of Industry and Trade.

Green bonus

- Producers of renewable electricity can select a premium tariff option either as annual or hourly rate plus the market price of electricity.
- Also eligible are operators generating renewable electricity for their own needs.
- Solar PV and biogas plants are only eligible if operations in place before 31 December 2013.
- Wind, hydro, geothermal and biomass plants eligible only if the building permit issued before 2 October 2013.

Subsidies

- Given to small hydropower plants up to 10 MW under the 2014-2020 Operational Programme 'Entrepreneurship and Innovation for Competitiveness'.
- Solar PV systems in public buildings were eligible under the 2014-2020 Operational Programme 'Environment'.

Tax regulation mechanism

- Operators of renewable energy plants exempted from the real estate tax.

Source RES-Legal

Following accession to the EU in May 2004, Czechia started harmonizing its legal system with the EU law also on renewable energy and the non-binding national targets for the share of renewable energy in the energy mix. For Czechia, the target was at least 8% of renewables in the final energy consumption by 2010 and 13%

by 2020. Czech lawmakers then introduced in 2005 the Renewable Energy Act No. 180/2005 Coll. ("RES Act"), which provided a support mechanism for renewables and was inspired by the German model (Sedlák, 2014). The RES Act established incentives for the renewables that allowed a 15-year payback on investments for solar PVs in the form of feed-in-tariff (FIT) and green bonuses and offered priority to the grid (Bilanova, Kudrna, 2021). FIT offered long-term power purchase agreements for the sale of renewable electricity at agreed prices, green bonuses offered a fixed premium on top of the market price for electricity. In addition, the Energy Regulatory Office (ERO) set annual regulated levy to recover a portion of costs to support renewable deployment. The levies contributed to higher FIT than was required by the RES Act. The grid operators then had to purchase all renewable electricity (per MWh) from solar PV operators connected to their networks at purchase prices set by ERO. As this created extra costs to grid operators, they passed all these extra costs onto the end consumers as distribution surchargers (European Commission, 2016).

Before 2008 there was little interest to install solar PVs in Czechia particularly due to high prices of solar panels. But prices of solar panels went down, and a new support mechanism created investment opportunity, which saw a sharp rise in installment of solar PVs growing from 40 MW in 2008 to over 1.7 GW in 2010 (Figure 1). Solar PVs were mostly installed by investors, and less by households.

Table 1: Cost of the support for each technology between 2005 – 2011 (million Euro)

	Hydro	Biomass	Biogas	Wind	Solar	Sub-total RES
2005	19.9	17.4	6.1	1.2	0.0	**44.7**
2006	21.9	24.2	9.2	2.7	0.1	**58.1**
2007	24.9	32.1	12.1	5.8	0.8	**75.6**
2008	29.2	42.2	20.0	9.6	5.6	**106.6**
2009	22.1	45.6	33.6	8.7	40.2	**150.1**
2010	54.6	78.3	70.0	13.9	265.3	**482.1**
2011	59.1	94.2	101.9	25.7	959.1	**1 239.9**

Source: Energy Regulatory Office, 2013

EEA, 2014

While this was encouraging, Czechia was not prepared for such a solar energy boom. The major drawback of the support scheme was that it introduced a cap on the amount paid per MWh (purchase price), but no cap on the total volume of MWh and thus did not foresee how much it would cost the country and end consumers in total. It triggered a sharp rise of electricity prices by 20% for households and over 23% for the industry and endangered stability of power grid, which was not prepared for such a high influx of variable renewables (Staff, 2010). As solar market grew quickly, it made the support scheme extremely costly. In 2013, ERO published the costs of the support mechanism and for solar PVs between 2008 and 2011 (Table 1), which cost over EUR 1.2 billion. With grid operators passing all the costs on consumers, they bore the financial burden of such a support system. The situation eventually created political backlash, shutting down the programme completely (Wesoff, 2016).

Government reaction to the uncontrolled deployment of solar PVs

Poor and inflexible policy design was unable to react to the changing solar market. Design flaws, macro-level factors and the economic crisis caused higher electricity prices for end users ostensibly leading to the policy dismantling (Gürtler,

Postpicshill, Quitzow, 2018). In the reaction to these factors such as the Czech government overspending undermining the amount needed to distribute, increased price of energy bills for end users, and a changed government, ignited a successful lobby against the FIT by the energy intensive industries and conventional energy companies. The Czech lawmakers understood it was necessary to take measures to rectify it. The policy dismantling began in 2010 with a series of Acts and Amendments that abolished tax incentives, introduced a solar levy for 3 years on electricity generated by solar plants put into operation between 1 January 2009 and 31 December 2010, and introduced levy for these installations of 26% on FIT and 28% on green bonuses, and 10% tax on FIT and 11% on green bonuses from 2014 onwards. They also limited that only solar PVs (of 30 kW) planned on building roofs and walls are eligible for FIT. The Transmission System Operator (TSO) also tried to ban access of solar PVs to the grid, but the ban ended in 2011. After 2014, direct public support system for solar PVs ended and only indirect support was available (access to the grid and simplified red tape).

FiT Dismantling in the Czech Republic	
2005	Renewable Energy Support Act No. 180/2005 introduces FiTs.
2010	Amendment No. 402/2010 Coll. introduces levy of 26% on operators' incomes.
May 2012	Initial Law is replaced by Act No. 165/2012. Substantially slowing down RENEWABLE ENERGY development.
September 2013	Amendment No. 310/2013 Coll. de facto abolishes FiT (except small hydro).
May 2014	Amendment drafted for retrospectively adjusting investment conditions to yearly ROI of 3.5%, final status unclear.

(Gürtler, Postpicshill, Quitzow, 2018).

Damaged public investors perception and confidence to deploy solar PV in Czechia

These changes deteriorated the market conditions and consequences spilled into other areas as well. Since the implementation of the FIT, the Czech Republic not only increased their solar output, but also increased the employment in the area.

In 2010, 8 000 people were employed by the PV solar industry but by the end of 2011, roughly 1 500 jobs were stripped. Of 12 000 jobs in the renewable sectors less than 6 000 remained by 2011 due to the decrease in solar PV related jobs (EEA, 2014).

Job loss is not the only damage. Investors have also felt as if they have been stranded by the policy dismantlement. In reaction to that, several investors launched arbitration against the Czech Republic, claiming that the Czech Republic breached its obligation in relation to economic incentive arrangements. Findings of the arbitral tribunals sided in most cases with the Czech Republic and accepted that the state has a regulatory space to adjust to changing conditions. In the cases, Czechia argued that increased connection of variable renewables to the grid diminished its stability and increased deployment of solar PVs placed financial burden on consumers. Czechia also noted what investors were, in fact, complaining about a breach of a promise of profitability where Czechia never made such a promise. The Tribunals in most cases found the Czech Republic was acting in good faith and concluded that Czechia had a rational reason to protect consumers from a price spike. Furthermore, investors continued to receive support guaranteeing them 15-year payback on their investments and 7% rate of return, even after the implementation of the corrective measures they opposed to (Paguio, 2018; Charalampidou, 2018).

What comes next?

Since 2014, the Czech Republic has not provided any support to new solar power plants. This has changed with the latest amendments (2022) to the RES Act, as part of the obligation to meet EU requirements, in line with the Renewable Energy Directive Recast (RED II) set to increase shares of renewables in energy mixes of countries. The latest amendments look to impede unjust business practices for consumers and are concurrently parallel with EU goals and decarbonization

targets. The amendments also introduced new types of support, heightened regulation on energy brokers, increase of the solar levy, and further consumer protection. Solar PVs and other renewable power plants will receive support in the form of auctions and small power plants below 6 MW also in the form of an hourly green bonus. From January 2022, solar tax will be increased by 10% for solar PV power plants commissioned in 2010, and a solar tax of 10% of FIT and 11% of green bonuses for solar power plants in operation since 2009. If the rate of return for solar power plants operators falls due to tax below a certain limit (currently 6.3%), solar power plants can apply for a partial exemption from solar tax. The Czech lawmakers also introduced a control mechanism to review overcompensation by the provided support mechanism (Skoumal, Simcina 2022; Naatz, 2021).

Conclusion

Using the full potential of solar will not only help to meet the decarbonisation targets of the EU but will also foster energy security and create local jobs. The Czech Republic potential for solar is substantial, up to 12 GW. However, raising awareness in the country on how to deploy solar properly is needed to mend the damage and conquer the past outcomes of the 2010's that are impeding the Czech Republic from benefitting from the green transformation nowadays. Sharing best practices on this from other countries would be useful. The new Energy Act is a step forward and a step in a right direction, but more is needed in the uphill battle to find the right policy mechanism. What is needed is stability based on long term strategies which would limit the possibility for government to change their approach swiftly and build both investors' confidence and consumers' trust to ensure the scaling up of solar and other renewables in Czechia. While boom and bust cycles are a natural part of the economic cycles, it is important to learn how to reduce negative consequences of the bust part of the cycle.

About the author

Jonathan Lyons holds a BSc in Business Management from the Farmingdale State University of New York and is currently pursuing his MPA in European Studies in Climate and Energy at RWTH Aachen University, including his master's thesis on a roadmap for policy makers to scale up the deployment of ocean energy technologies. Jonathan is a research assistant intern at EUROPEUM climate team focusing on renewables and energy security for Central Europe.

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