D2.2–SK, August 2020

Auctions for the support of renewable energy in Slovakia

Auction design for the planned 2020 RES auction

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Contents

1 Introduction

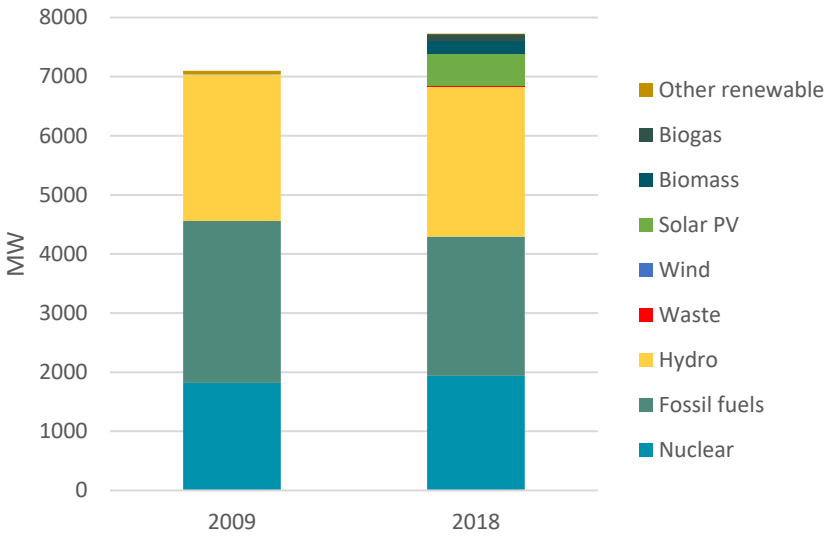
Growth in RES-E production in Slovakia has plateaued since 2014 when it reached 22.9%, falling to 21.5% in 2018 (Eurostat, 2020). The overall renewable energy share peaked at 12.8% in 2015 and fell back to 11.9% in 2018, well below Slovakia's 2020 target of 14%. Hoping to address this gap, the Slovakian government introduced legislative changes in 2018-2019 to support larger sized RES-E capacities by making them eligible for auctioned feed-in premium. However, the first auction planned for spring 2020 was cancelled due to the COVID-19 pandemic and change of the government. The new cabinet took over the governance of the country on March 21 and the auction was cancelled 10 days later instead of postponing it, which suggests that it might be redesigned before relaunching. Nevertheless, the planned and cancelled scheme has some interesting features worth examining and comparing, even if the new government introduces changes.

The case study is built up as follows. Chapter 2 provides a brief overview of the composition of Slovakian electricity generation and the development of renewable electricity production. Chapter 3 describes the evolution of the country's renewable electricity support system. The main characteristics of the renewable energy auction design are described in Chapter 4. Chapter 5 provides conclusions.

2 Overview of the Slovakian electricity sector

Slovakia's electricity generation capacity mix has not changed much in the last decade. The share of hydro capacity has been constant, with thermal power plant capacity beginning to decline. Slovakia is committed to maintain nuclear generation with two new reactors under construction, aimed at replacing two reactors that are scheduled for decommissioning in 2024-25. Next to the significant hydro capacities there is an almost negligible and constant amount of wind capacity. Slovakia started producing electricity from solar PV, solid biofuels and other technologies as of 2010.

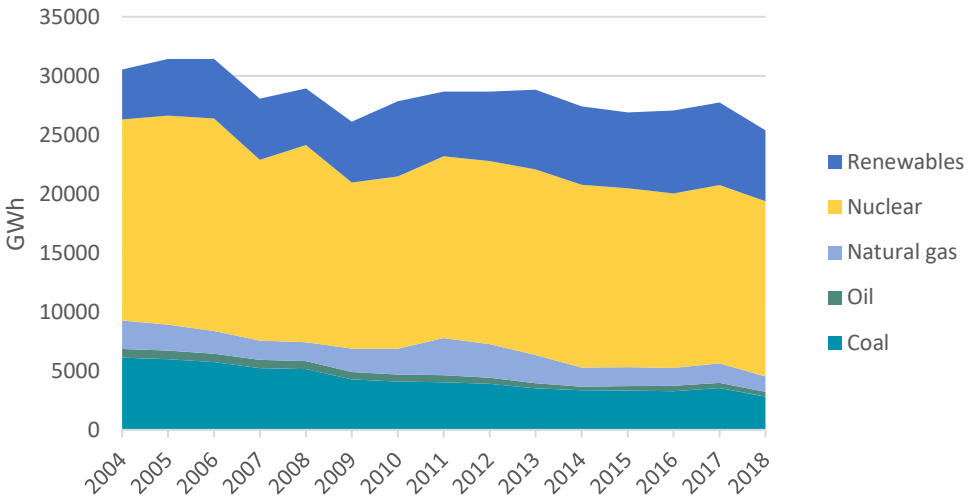
Figure 1. Installed capacities



Source: ENTSO-E (2010), ENTSOE (2019)

More than half of domestically generated electricity comes from the nuclear plants and this ratio has been stable, while fossil fuels are losing significance with the phase out of coal and the declining role of natural gas and oil.

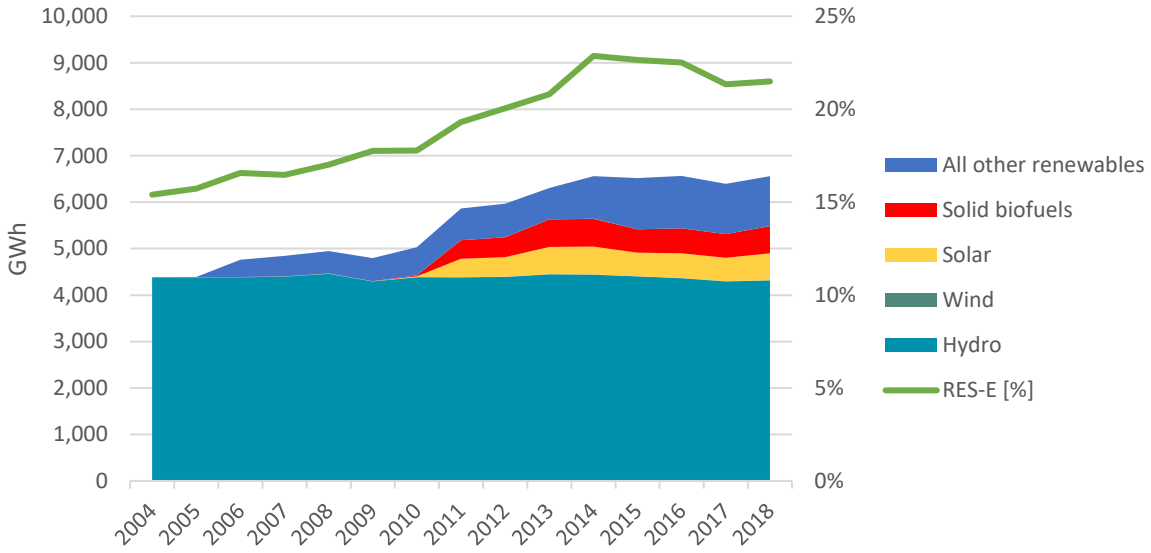
Figure 2. Electricity generation by fuel



Source: IEA (2020) own elaboration

Renewable energy composed entirely from hydroelectricity until 2005 when gaseous and liquid biofuels and renewable municipal waste (under 'All other renewables' in the chart) were first introduced. Solar and solid biofuels appeared in the Slovakian power system in 2010 and started to generate significant volumes of electricity since then.

Figure 3. Renewable based power generation



Source: SHARES (2018)

RES-E expanded from 2010-2014 before falling and stagnating, and is now slightly below the voluntarily RES-E target of 24% for 2020.

Similarly, the renewable share in final energy consumption fell from 12.88% in 2015 to 11.9% in 2018, moving further away from the 14% 2020 target. New RES-E facilities have not been installed since then while growth of energy consumption in transport and heating and cooling of buildings has not been matched with renewable fuel inputs.

Slovakia's 2019 National Energy and Climate Plan (NECP) (Slovak Ministry of Economy, 2019) readjusted the country's renewable trajectories, pushing back the RES-E 24% target to 2024 and setting a target of 27.3% for 2030. It presents a detailed picture of the anticipated contribution of different renewable based technologies to the above-mentioned RES-E expansion. Pumped storage power plant capacities are expected to be constant over the next decade, with geothermal, hydro, biogas/biomethane and solid biomass progressing moderately. According to the NECP growth will be led by solar PV (1200 MW in 2030 from the current 580 MW) and onshore wind (500 MW in 2030 from 3 MW) installations.

3 Main pillars of support policy

The first form of support for renewable technology was an exemption from excise tax established in 2007 (Act No. 609/2007) followed by a more comprehensive support scheme introduced in 2009 that has undergone major modifications since.

The Renewable Act (Act no. 309/2009 Coll.) provided a feed-in-tariff and favourable grid connection to support electricity generation from renewable sources. Eligible sources were hydro, solar, wind, geothermal, biomass, biogas, biomethane, and high efficiency cogeneration. (Futej-Sivak, 2010)

Under this support scheme, the regional DSO was obliged to buy electricity from the eligible plants (under 125 MW) at a price determined by the national regulatory authority. The feed-in tariff paid to the plants operating under the support scheme is guaranteed for 15 years and consists of 2 parts: a basic price for the electricity produced, and a supplement making up the difference between this basic price and the FIT determined for the specific plant. However, in order to promote decentralized renewable generation, the supplement only applies to renewable plants and high efficiency co-generators under 10 MW (or 15 MW for wind) and for larger installations it is granted proportionately only up to the capacity limit. (Futej-Sivak, 2010)

One of the problems with the FIT system was that it could not properly keep up with technology cost reductions in the early period of the scheme. Under the digression mechanism used to progressively decrease the administrative support level the FIT determined for new plants entering the support system had to reach at least 90% of the previously set tariff level according to the Act on Support of RES effective until February 2013. This resulted in a low tariff degression rate and high FIT levels generating strong interest among RES-E investors. Priority grid access ensured the right of connection and access to the regional distribution and transmission system without capacity constraint for eligible plants under a shallow connection cost regime.

3.1 Restrictive amendments to the support scheme

The support scheme was immensely popular for investors and speculators included. In 2009 when the TSO opened 120 MW of RES-E grid capacity, the quota was filled in just three days. The rush created administrative delays and technical problems, ultimately. The support scheme also resulted in higher end-user prices as tariffs were one to one translated into final consumer prices. The regulator responded by lowering the feed-in tariffs in 2011 so that by the beginning of 2012 they were 68% less, with an additional 25% reduction for solar PV. In addition to the tariff reduction the government introduced a building permit requirement for installations above 100 kW. (Eclareon, 2012)

After the first wave of new renewable investments from 2010-2011, solar capacities exploded from 19 MW to 496 MW and following the restrictions have hardly risen since. As solar boom halted quite early, technical grid issues did not occur as very significant burdens to RES-E deployment.

The 2013 amendment of the RES Act disincentivized RES-E further by restricting the eligibility of rooftop solar installations up to 30 kW and reducing tariffs for new installations. The capacity limit remained 15 MW for wind but fell to 5 MW for hydropower, biomass, biogas and geothermal energy. On the top of these restrictions, DSOs introduced a connection moratorium for installations above 10 kW during which only small-scale rooftop solar installations could be connected to the network. (Ecofys, 2019)

3.2 Amendment of 2018-19

The Renewable Act underwent a second major reform in 2018 that entered into force on 1 January 2019. The amendment introduced feed-in-premium scheme allocated through competitive auctions as the sole form of subsidy for all new installations with an installed capacity exceeding 500 kW. The renewable electricity generated has to be traded by the producer, also being responsible for the deviations from its production schedule. The design elements of the auctions currently in place are described in the next chapter.

The amendment also set a 500 kW capacity limit for installations eligible to FIT after 1 January 2019, including new hydropower, geothermal, biogas, landfill gas or gas from sewage treatment plants (solar and

wind are excluded) (Ecofys, 2019). The support is granted for 15 years while plants in operation from the previous scheme are not affected.

A new scheme for the so called "local energy source" was also introduced (up to 500 kW capacity limit) applying to installations which produce energy mostly for self-consumption. (RES-Legal, 2020) These installations are not entitled to FIT, but enjoy priority connection (up to a predetermined connection capacity available annually) and can avoid paying for accessing the distribution system. They are also exempt from the surcharge paid by consumers to finance the renewable support budget.

The reformed Act partially overcame the grid connection moratorium by dedicating a prescribed volume of grid connection capacity for plants operating as "local energy sources" and for the above mentioned renewable-based generators eligible for FIT. The available connection capacity reaches about 20 MW annually.[1]

The European Regional Development Fund (ERDF) also provides support for small scale renewable installations in the form of investment grants outside of Slovakia's FIT scheme, matched 15% by the Slovak government. It targets owners of family houses, associations of apartment and non-residential premises/apartment houses administrators with solar and wind installations up to 10 kW being eligible. (RES Legal, 2020)

[1] Interview with the representative of the Slovak Association for Photovoltaic Industry

4 Characteristics of RES-E auctions in the country

The first tender planned between 3rd February 2020 and 30th April 2020 was cancelled because of the COVID-19 pandemic and there is no public information about when it will be rescheduled. This chapter assesses the design elements of the cancelled tender, based on the call for tender document, issued by the Ministry of Economy of Slovakia[2].

For the first auction of its kind capacity was limited to 30 MW. The auction was planned as technology neutral. This means technologies were not separated into baskets though there were different conditions for some.

First, the capacity requirements were set differently according to technology. For solar PV, the range was 0.1 - 2 MW, and for all other technologies 0.5 - 10 MW. This means only relatively small solar PV power plants would have been eligible while other technologies could be larger. In addition, ceiling prices and realisation times were differentiated by technology. For more mature technologies like PV and wind, the ceiling price was around 85 EUR/MWh, while all others were up to 106.8 EUR/MWh. The realisation period for PV was set to 21 months, wind 39 months and all other technologies 51 months.

The tender was designed as a static, pay as bid auction for new renewable installations in the form of a one-sided feed in premium. This means for winning bids the premium covers the bid price and when the market price is higher the project promoter does not need to pay back the difference.

Table 1.: Main characteristics of auctions and framework conditions

Characteristics	Description of the auction
Characteristics of the national electricity market	The electricity generation profile of Slovakia is dominated by nuclear power with 58,5% of the country's total generation in 2018, followed by natural gas and wind power plants. The penetration of other renewable sources such as wind or PV power plants is low. The 2013 Renewable Amendment made it virtually impossible to connect larger than 10 kW installations into the distribution grid until 2019.[3] The Slovakian Power Exchange is coupled with the Czech, Hungarian and Romanian markets.
Name of auction scheme	Auction for eligible facilities (no specific name of the auction scheme)
Contractual counterparty	The organiser of the tender is the Ministry of Economy of the Slovak Republic. The Market Operator – OKTE provides the support, a subsidiary of the Slovakian transmission system operator SEPS.
Main features	Static Pay-as-bid (PAB) auction. Only new renewable power plants can participate in the auction.

[2] https://www.mhsr.sk/energetika/vyzva-na-predkladanie-ponuk-na-zariadenia-s-pravom-na-podporu

[3] http://www.keepontrack.eu/contents/keeptrackcountryfactsheet/kot_year-3_barriers-report_sk_final.pdf

Technology focus and differentiation (eligible technologies)	Technology neutral auction (all renewable technologies can participate).
Lead time before auction	The announcement of the first pilot renewable energy tender was made at the end of 2019.The call far tenders was published on 3rd of February 2020 setting the final submission date for applications to 30th April 2020. As a result of the COVID-19 pandemic however the auction process was cancelled on 31st March 2020.
Min./max. size of project	The minimum size limit on the auction is 0.1 MW for PV projects and 0.5 MW for other renewable technologies. The maximum possible size of the PV projects was set to 2 MW, while for other technologies 10 MW.
What is auctioned?	A total of 30 MW renewable power generation capacity is auctioned on the tender.
Budgetary expenditures per auction and per year	No budget constraint was defined for the 2020 and for future auctions.
Frequency of auctions	Undefined, even the exact date when the pilot auction will be held is not published yet.
Volume of the tender	30 MW, which can be exceeded by 10% if the last project fits into this extended volume. In the case the plus 10% limit is not breached the full project can be completed, if not the whole project is rejected.
Costs related to grid connection/access	The developer must cover the costs which are associated with gaining access to the power grid.
Balancing and profile costs	Producers are responsible for covering the costs of balancing. Based on the opinion of market experts the balancing fees in Slovakia for solar PV and wind account for approximately 5 EUR/MWh.

Table 2.: General auction design

Design elements	Description
Auction format	Multi-unit auction
Auction procedure	Price-only, static auction. The decision criterium of the auction is the offered price. Bidders with the lowest price offers win the right to complete the project as long as the offered capacity limit is not reached.
Pre-qualification requirements - Financial	A bid bond of 75 000 EUR/MW should be paid upon entering the auction. The financial security can be in the form of bank guarantee or direct money transfer to OKTE's account. There is only this one-stage bid bond which is returned in case of not winning in the auction, or in case of winning it is returned upon project completion.
Pre-qualification requirements - Material	- Draft contract awarded by OKTE - Participant needs to specify which regional DSO the project will connect to.

Auction volume	30 MW
Pricing rule	Pay-as-bid (PAB)
Award procedure	Static, sealed bid auction for the supported price (in EUR/MWh). Support is awarded to bidders with the lowest offers until the capacity limit is reached.
Price limits	The ceiling price for solar PV and wind power plants was set to 84.98 EUR/MWh and 106.80 EUR/MWh for other technologies.
Support period	15 years
Favourable treatment of specific actors	No favourable treatment
Realization time limit	21 months for PV, 39 months for wind and 51 months for all other technologies
Penalties	A daily fee of 1500 EUR/MW must be payed, in case of delay. Maximum possible delay is 40 days, after that the project become ineligible for support and the bid bond is not released.
Form of support auctioned	One sided sliding feed-in premium
The method of reference wholesale price calculation	Hourly reference price is used, calculated as the average of hourly baseload electricity exchange price.
Support level adjustments	n.a.
Transferability of support right	Non-transferable
Other	Only those PVs can participate which are located on a roof or cladding, or non-agricultural land. Each bidder can only submit one bidding document which can contain at most five different bids.

Based on our evaluation, promoters face high costs while participating in the Slovak auction. The 75 000 EUR/MW bid bond is very high compared to other European auctions. For example, in the 2018 Polish auction the bid bond for new installations was about 14 000 EUR/MW (Diallo et al, 2018). A very high bid bond typically results in high realisation rates as promoters are strongly incentivised to complete their projects and tends to reduce the rate of participation and thus competition in the auction. On the other hand it is particularly detrimental to project promoters in weaker financial positions like local communities that do not possess the up-front capital.

Grid access is another challenge with the design of this auction since promoters must indicate which regional DSO they want to connect to and only reach an agreement after they are awarded. This leaves open the possibility that the promoter might not manage to complete the connection at no fault of their own, which is a major risk to the project.

Finally, the project realisation times, especially for PV, were set at less than 2 years which is very low. This is coupled with quite severe penalties for delay (1500 EUR/MW per day) and a small maximum window of delay at only 40 days. These design elements also point toward low participation rate, because of the strict barriers-

Considering all of these factors we conclude that promoters face high costs as a result of the bid bond and high risk by participating in the Slovakian auction than other auctions across Europe, mainly because of the uncertainty arising from the future DSO agreement, and the short realisation time paired, with high penalties Since the auction was cancelled in March, however, we have no information about how these factors might have affected participation in reality.

5 Conclusions

Although planned for the spring of 2020, the first RES-E auction in Slovakia was cancelled due to the COVID-19 pandemic that coincided with the change of the Slovak government. With a significant gap between its 2018 RES-E level (11.8%) and 2020 target of 14%, the cancellation of the first auction not only delays achievement but sends a negative signal to prospective investors. It is worth highlighting that the auction was not postponed but fully cancelled, meaning the new Slovakian government can fully re-design the auction – which can have negative or positive effects on the investors depending on the new auction design – but the uncertainty over the timing continues to be a problem.

Upon examining the features of the cancelled auction design, we have concluded that the auction presented relatively high cost and risk to potential investors compared to other European auctions, from the high bid bond to short realisation times and high fees for delays. We think that these design elements can potentially decrease participation rate, in the Slovakian auction, although they can increase the realisation rate of the winning projects.

Finally, the grid connection process puts project promoters at a further disadvantage by making them waiting until the announcement of the winning bids to present detailed connection planning rather than acquiring a concrete pre-agreement with the relevant DSO in advance. The cancellation of the auction due to grid connection issues coupled with political considerations aiming to limit price increases of end users brings further uncertainty for developers of RES installations in Slovakia.

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AURES II is a European research project on auction designs for renewable energy support (RES) in the EU Member States.

The general objective of the project is to promote an effective use and efficient implementation of auctions for RES to improve the performance of electricity from renewable energy sources in Europe.

www.aures2project.eu

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