

# What Do the Results from the Finnish RES Auction of 2018 Reveal About Efficiency?

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## Short history

In 2011, a scheme for the provision of operating aid for stimulating RES-E investments was established in Finland. Eligible energy sources in the 2011 scheme were wind, biogas and wood-based fuels. The 2011 scheme guaranteed the electricity producer a fixed price of 83.5 EUR/MWh for a period of 12 years through a sliding premium, which is paid on top of the 3 month average area price of electricity in Finland. However, generation hours for which the market price is negative were excluded. The level of tariff was generous and the capacity limit of the tariff system for wind energy (2500 MVA) was quickly met. Recently, many countries have moved to tender mechanisms in particular because tariff systems have proven to be a relatively expensive means to support renewable energy. Also Finland adopted a tender-based premium scheme for new producers of renewable electricity at the end of 2018.

## Auction design

A key design principle for Finnish 2018 auction was to facilitate competition between different generation technologies. Eligible technologies were wind power, biogas, combined heat and power from forest biomass, solar and wave. Notably, hydro power was excluded. In contrast to other recent technology neutral auctions in Europe, such as Germany (April 2018 and November 2018) and Denmark (November 2018), the volume up for bid was defined in generation (MWh) and not in capacity (MW).

Another distinction to other RES-E auctions was the pricing. In Germany, bids were given on reference value, which is used as the basis for calculating the market premium. In Denmark bids are given on the market premium, which is paid to the producer as long as the market price is non-negative. As in Denmark, in Finland bids are given on the market premium (EUR/

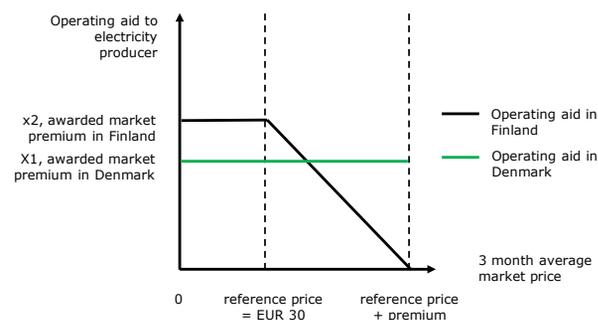


Figure 1: Level of operating aid as a function of market price in Finland and Denmark

MWh). However, in Finland the amount of aid that the producer receives is smaller than the market premium if the 3 month average area market price is above 30 EUR/MWh. Figure 1 shows how the level of operating aid is determined as function of the market price.

The Danish Government provides a fixed premium whereas the Finnish government provides a combination of a fixed and sliding premium. Hence, the Finnish Government carries a smaller share of the market price risk than the Danish Government. Other things being equal, observed premiums should be then larger in Finland than in Denmark.

## Auction outcome

The auction was oversubscribed by a factor of 3. Only bids from onshore wind were received. The volume weighted average of the accepted premiums was 2.52 EUR/MWh. For the accepted bids, the price ranged from 1.27 to 3.97 EUR/MWh. These prices were surprisingly low. Even though outcomes cannot be compared directly between different auction designs, in Denmark, for comparison, the auction

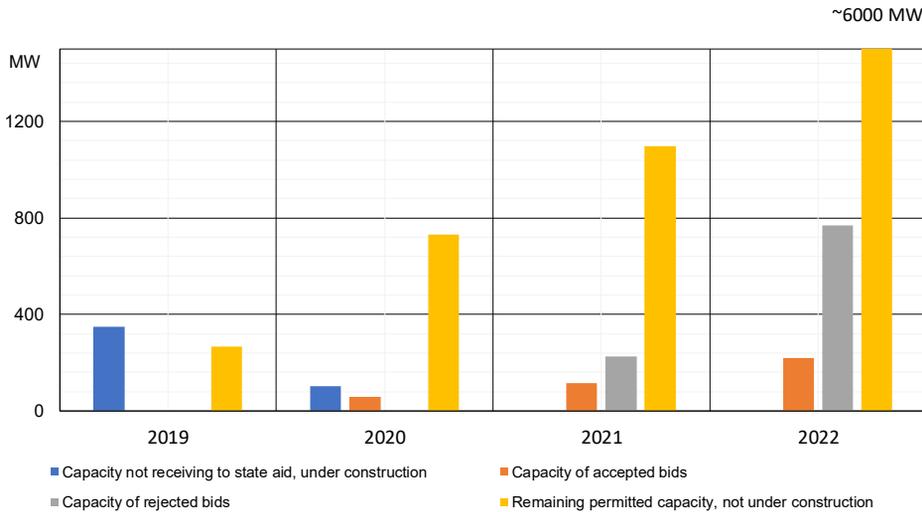
	Number of bids	Bid volume, TWh	Technologies	Bid range, EUR	Volume weighted average premium
All bids	26	4.13	Onshore wind	[1.27;23.00]	6.00
Accepted bids	7	1.37	Onshore wind	[1.27;3.97]	2.52

Table 1: Result of the 2018 auction in Finland

was oversubscribed by a factor of 2 and bids were received and accepted from both wind and PV: The volume weighted average of the accepted premiums in Denmark was 3.1 EUR/MWh.

Some explanation for low prices is provided by the very large supply of permitted wind power projects in Finland, shown in Figure 2. The high amount of permitted wind power projects is partly due to the feed-in tariff scheme implemented in 2011, which attracted lot of new onshore wind projects. Many of the prepared projects were not managed to get in to the feed-in tariff system before it was closed for wind power. In addition, based on the original government proposal, the plan was to conduct two consequential

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information from the market. The information gathered through the renewable energy auctions will help to better design support for new and cleaner technologies. What can be learned from the Finnish RES-E auction? Wind power is becoming competitive also in Finland. Can we be sure, however, that there will be enough wind power in the market in the future without any support? From the point of view of cost-effective emission reductions and, in particular, learning, it might be important that renewable energy auctions would continue in Finland.

Figure 2. Wind power generation capacity in Finland per planned start of operation. Source: own analysis based on information from Finnish Wind Power Association. Note: the timing of the remaining permitted capacity, not under construction is highly uncertain.

auctions. However, this plan changed in the preparation of the law and only a single auction, with lowered auction volume, was implemented. Hence, presumably the most competitive projects and projects whose preparation was quite complete, participated in the auction.

As a consequence of low levels of premium, the costs of the auctioned premiums will be lower than expected. Figure 3 shows the average support that the state would have paid to the winners of the auction if the premiums were paid on the basis of electricity prices over the last five years. Thus, there would have been support paid only minority of periods and even then, the support would have been relatively moderate.

In addition to cost-effectiveness, well-designed auctions and tenders are effective ways to collect

Cost to the government of Finland

The volume weighted average premium in the 2018 auction was 2.52 EUR/MWh. Figure 3 shows the 3 month area price in Finland in the period 2014 - Q1/2019. Assuming that support in accordance with 2018 auction would have been paid in this period, the cost to the government would have been 0.68 EUR/MWh, equivalent to 0.92 million EUR/a for generation of 1.36 TWh/a. For comparison, the support paid for wind power on the basis of the 2011 scheme was 47 EUR/MWh in the same period, equivalent to approximately 140 million EUR/year for generation of approximately 3 TWh/year.

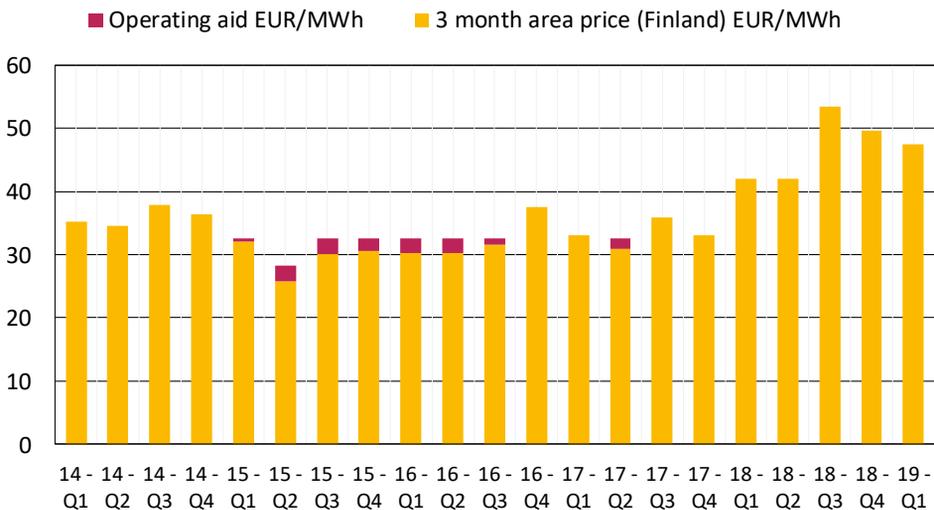


Figure 3. Level of operating aid in the period 2014 - Q1/2019 with the outcome of the 2019 auction.

