



REPORT RENEWABLE ELECTRICITY IN PORTUGAL

Monthly Edition

May of 2018



APREN Associação
de Energias
Renováveis



RENEWABLE ELECTRICITY IN MAINLAND PORTUGAL

Highlights of the Electric Sector in May of 2018

- Between January and May of 2018, renewable energy sources accounted for 64.2% of the electricity production in Mainland Portugal.
- Despite this result, fossil fuels continue to account for a large share in the energy sector (transport, electricity and heating and cooling), which leads to a high energy dependency and translates into a major financial impact. The amount of imports for the energy sector was, in 2017, equivalent to 2% of the Portuguese GDP.
- In the first five months of the year was achieved a net export balance of electricity.
- In May, the average price of the Iberian electricity spot market was 55.8 €/MWh.



Electricity Production Profile

In the period between January and May of 2018, electricity generation in Mainland Portugal was distributed by 64.2% (15,172 GWh) of renewable origin and the remaining 35.8% (7,425 GWh) of fossil (figure 1).

Hydro was the renewable source that produced more electricity and accounted for 31.4% of the Mainland's electricity mix. By its turn, wind power accounted for 26.6% of the mix, almost as much as the coal and natural gas power plants combined.

In the period under analysis, the consumption of electricity in Mainland Portugal rose by 4.8%, when compared to the same period of the previous years (3.4% with the correction of temperature and working days).

The electricity trade with Spain was characterized by a net export balance of 1,024 GWh, resulting from the export of 2,379 GWh and the import of 1,355 GWh.

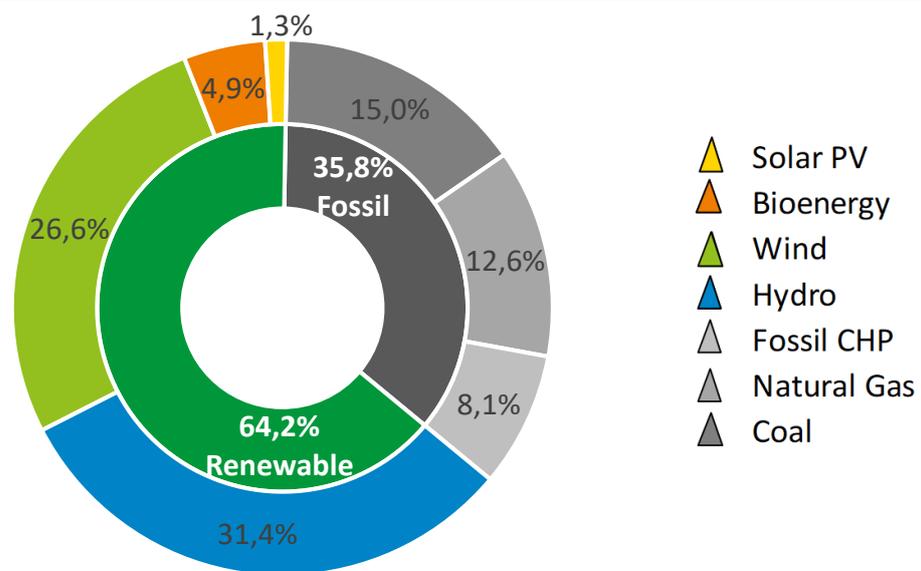


Figure 1: Electricity generation by energy sources in Mainland Portugal. (January until May of 2018)

Source: REN; APREN's analysis



Electricity Market

In May, the average price of the electricity spot market was 55.8 €/MWh. In addition, the balancing mechanisms market accounted for an average increase of 2 €/MWh to the price of electricity.

MIBEL also had higher prices than the French electricity market (the average value of electricity in May was around 34 €/MWh), that

led to an import trend of the Iberian Peninsula. However, the limited interconnection capacity only allowed similar prices between France and the Peninsula during 6% of the hours.

The Portugal-Spain's electricity interconnection had no major restrictions and the congestion periods only occurred in 4% of the month.

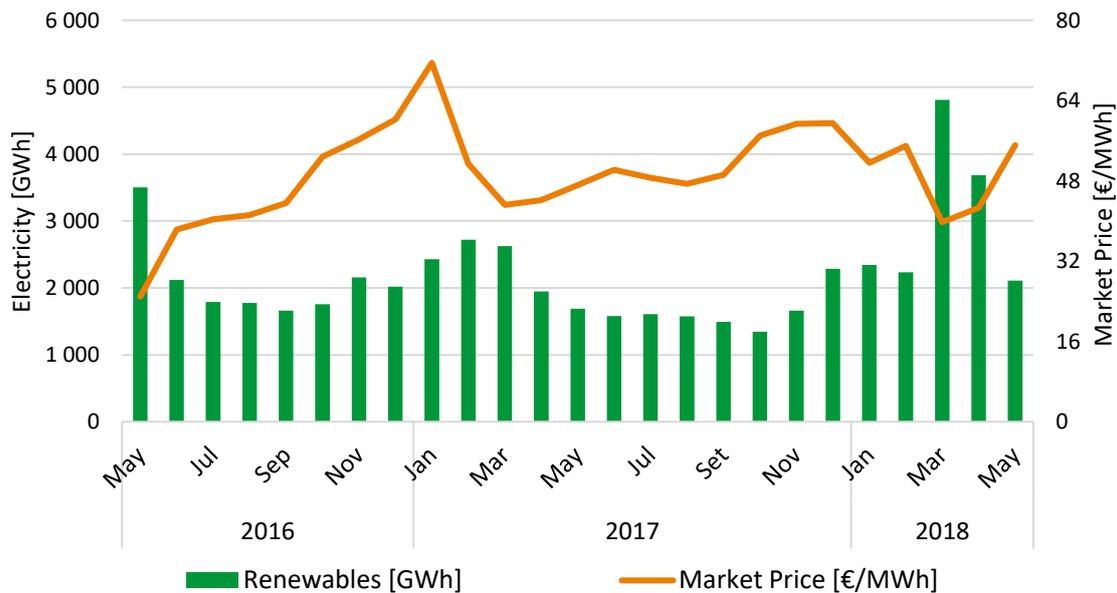


Figure 2: Evolution of the Renewable Electricity Production and of the Iberian Wholesale Electricity Price. (May of 2016 to May of 2018)

Source: OMIE, REN; APREN's analysis



Production profile in the last 2 years

The evolution of electricity production in the last two years (Figure 3) shows the increase in fossil fuels production in May, because of the reduction in the availability of wind and hydro resources.

By analyzing Figure 3, it is verified that the successive records of renewable electricity generation are mainly due to hydro and wind power plants. In turn, other renewable technologies, solar and bioenergy, have played a secondary role in the supply of the Portuguese electricity demand (on average, solar and bioenergy correspond to only 7% of the Mainland's electricity mix).

In this sense, it is essential to invest in the complementarity of the various renewable sources, to minimize the fossil fuels' imports. This investment combined with the electrification of the consumption has the potential to reduce Portugal's high energy bill.

This assertion becomes even more evident by the study of the "Portuguese Energy Bill of 2017"¹ (Fatura Energética 2017 in Portuguese) published at the end of April by DGE (Directorate General for Energy and Geology). According to the document, in the overall energy sector (transport, electricity and heating and cooling) Portugal has a very high import balance of 3,843 million euros, equivalent to 2% of its GDP.

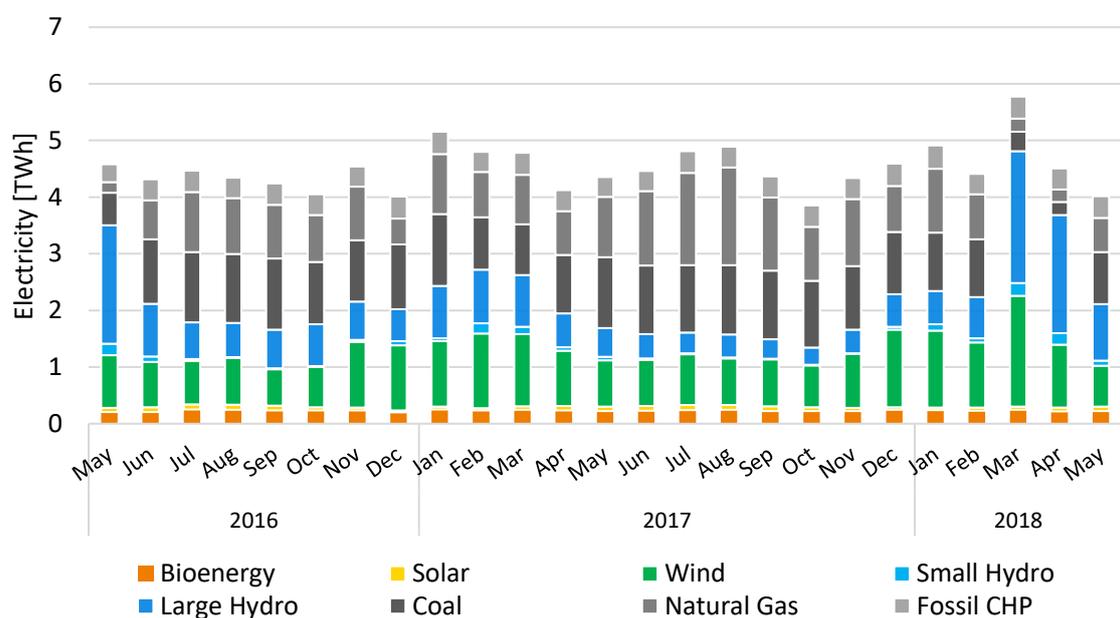


Figure 3: Distribution of the electricity generation by source in Mainland Portugal. (May of 2016 to May of 2018)

Source: REN; APREN's analysis

¹ Portuguese Energy Bill of 2017, April 2018, DGE, <http://www.apren.pt/contents/publicationsothers/fatura-energetica-2017-abril-2018-dgeg.pdf>



May's Load Diagram

By focusing the analysis on May's load diagram (Figure 4), it can be seen that renewables continued to be dominant in the supply of Portugal's electricity needs, supplying 52% (2,109 GWh) of the demand. During this period there was a slight balance between imports and exports, with the importation taking place mainly in the off-peak hours and exporting at peak hours.

In the diagram the peaks of renewable and fossil production of the Mainland Portugal's electricity system are highlighted.

The first highlight refers to day 4 at 7 a.m., when a peak of renewable production in the electrical system of 7,144 MW was reached, 129% of the Mainland's consumption. Meanwhile, the second highlight refers to day 18 at 7:00 p.m., when fossil fuel power plants generated 4,306 MW, 70% of the demand.

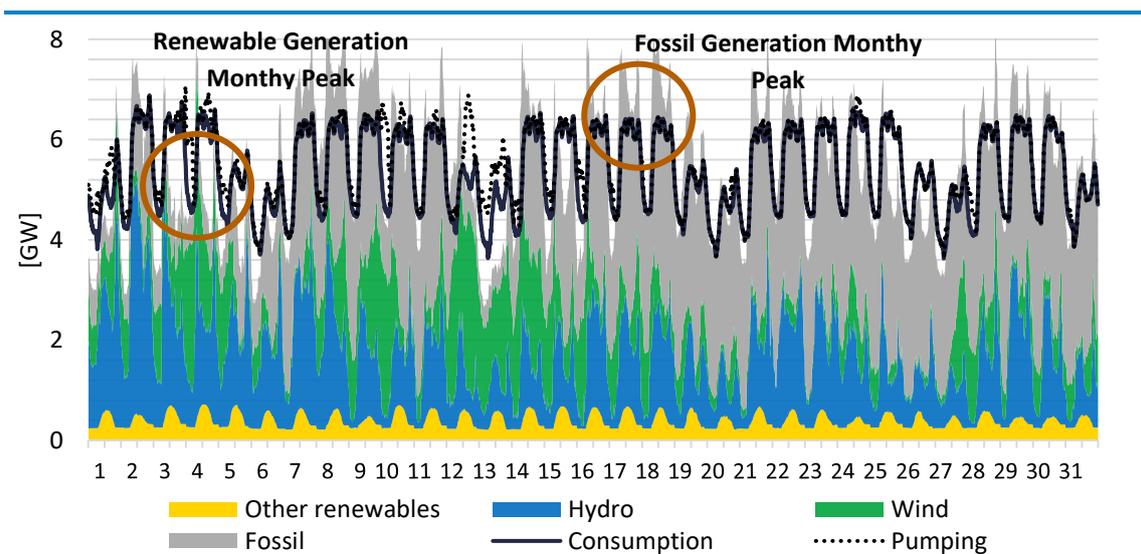


Figure 4: Load Diagram of Mainland Portugal. (May of 2018)

Source: REN; APREN's analysis

Information available in:

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