



APREN Associação
de Energias
Renováveis

PORTUGUESE RENEWABLE ELECTRICITY REPORT

JUNE 2019



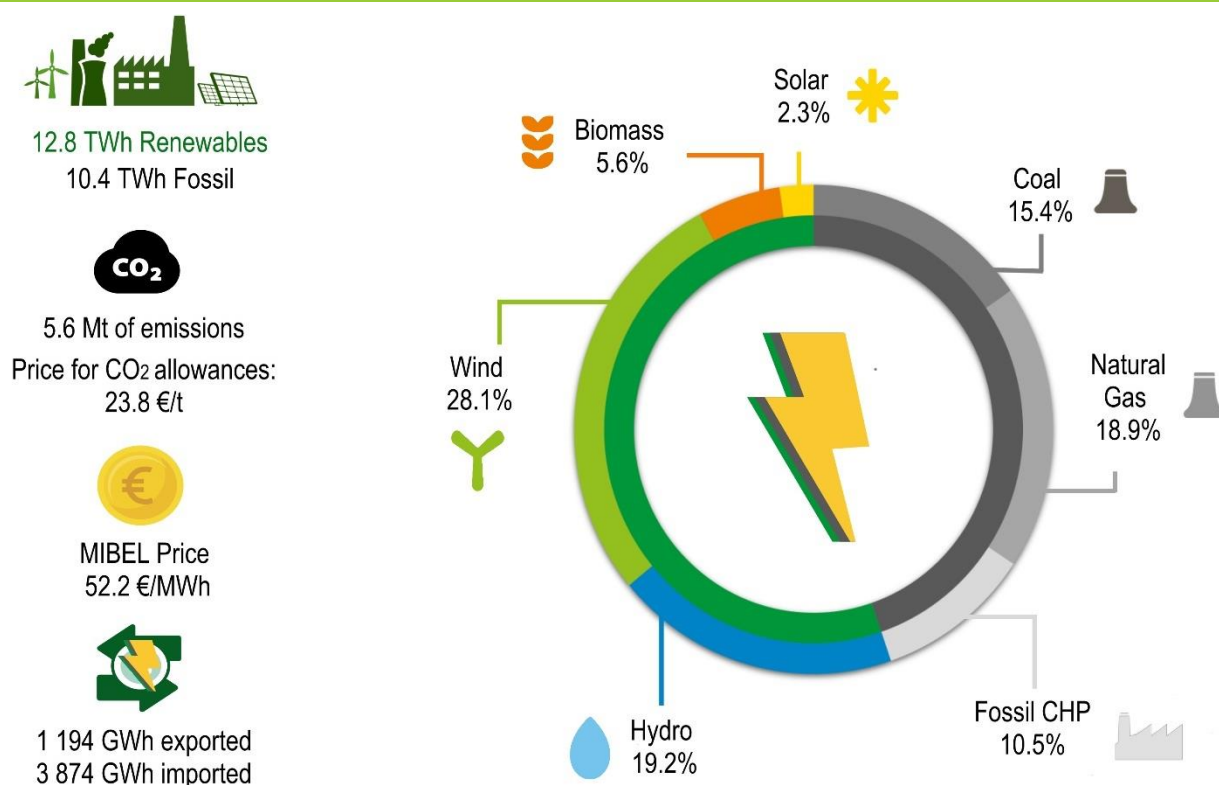
RENEWABLE ELECTRICITY IN MAINLAND PORTUGAL

JUNE 2019

EXECUTIVE SUMMARY

- During the first half of 2019, **renewable energy sources were responsible for the production of 12.8 TWh, contributing with 55.2 %** to the electricity production mix.
- During this period, electricity imports accounted for 3 874 GWh, while the exports were only 1 194 GWh, resulting in an **import balance of 2.7 TWh**.
- Within these past six months, **the average price in the MIBEL daily market was 52.2 €/MWh**, which is an increase of 3.5 % comparing to the same period of 2018.
- **The power sector emitted around 5.6 MtCO₂**, meaning that each kWh of electricity emitted 241.5 grams of CO₂.

ILLUSTRATIVE SUMMARY: ELECTRICITY PRODUCTION IN 2019



ELECTRICITY PRODUCTION IN MAINLAND PORTUGAL

During the first semester of 2019, a total of 23.2 TWh of electricity was produced in Mainland Portugal, which is about 17.7 % lower than last year. From this amount, 55.2 % were of renewable origin, corresponding to 12.8 TWh, and 44.8 % (10.4 TWh) were of fossil origin.

The biggest contributor in filling this mix was wind power, which provided for 28.1 % (6 527 GWh). During this period, hydro power plants only produced 4 464 GWh, representing 19.2 % of the mix, well below the value registered during the same period of 2018 (8 436 GWh, 29.9 %), which is especially due to the lack of rainfall during the current year of 2019. This wind power predominance reflects a producibility index of 0.98; whereas the hydro producibility index was only 0.56, making this semester the second driest from the last decade (only exceeded by 2012 - 0.33). Concerning

the remaining renewable sources, there was a 5.6 % contribution (1 298 GWh) from biomass, and 2.3 % (530 GWh) from solar PV. The latter will tend to show a strong increase in its representativeness during the coming years, given the investments and new developments that are foreseen in the National Plan for Energy and Climate for the solar PV sector, aiming a 13-fold increase in installed capacity within the next decade.

These six months recorded an electricity demand of 25.9 TWh¹, representing a 2.2 % decrease in comparison to 2018's real values (1.0 % considering the adjustments on temperature and number of working days). During this period, electricity imports accounted for 3 874 GWh, while the exports were only 1 194 GWh, resulting in a 3.7 TWh import balance.

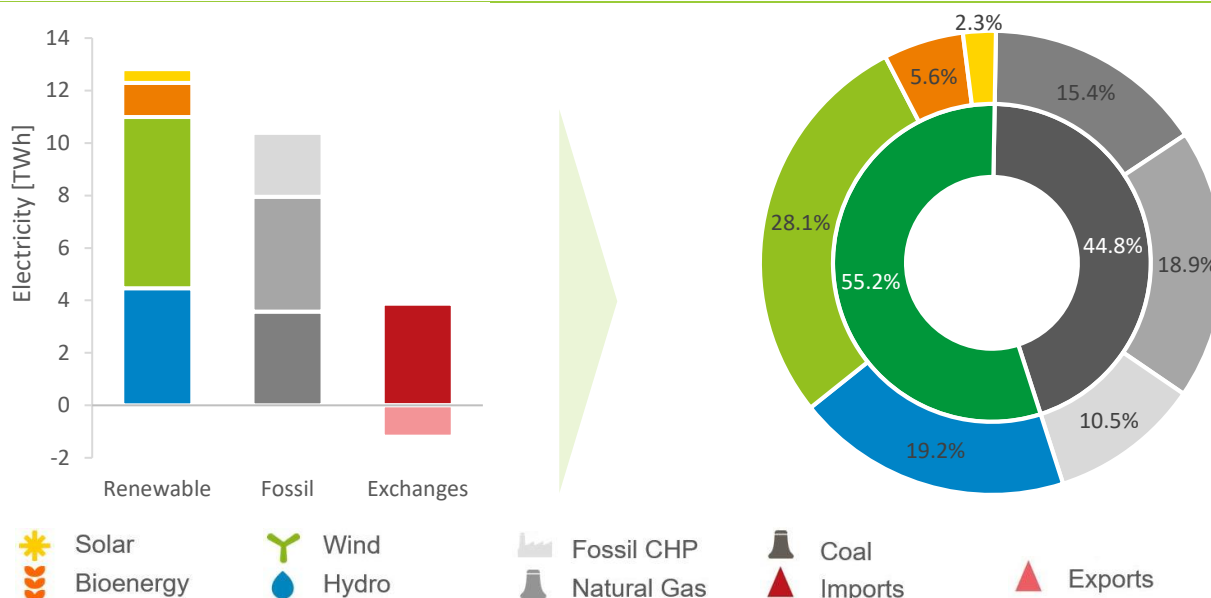


Figure 1. Electricity production by energy source in Mainland Portugal (June-2019).

Source: REN, APREN's analysis

¹ Power plants' total electricity generation for consumption, not considering the import-export balance and grid losses.



ELECTRICITY MARKET

During the past semester, the Iberian electricity market (MIBEL) registered an average hourly price of 52.2 €/MWh², and in June alone, 47.2 €/MWh. The electricity price reduction, reflected in Figure 2, has been partly due to the significant drop in the natural gas price since December 2018. This decline, together with the price increase in the European CO₂ allowances market, has driven the replacement of coal by natural gas for electricity production in the Iberian Peninsula.

Concerning the renewable electricity production, there is a clear decrease in its value in June, which is below 2017's and 2018's.

In fact, this month hasn't recorded any hour with 100% renewable electricity production, but during the semester, a total of 52 hours registered a complete electricity supply by renewable power plants. In these periods, the electricity price was 26.1 % lower than the average for the whole semester, as a result of the renewables merit order, which guarantees their participation in the wholesale market at a near-zero price.

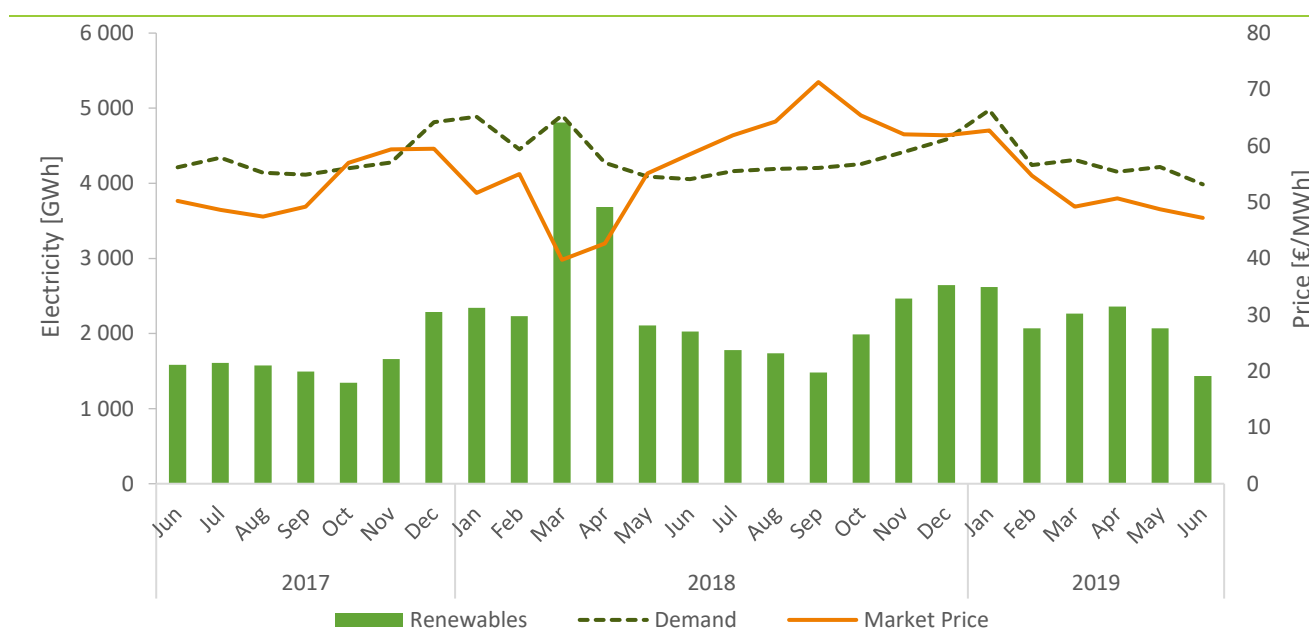


Figure 2. Renewable electricity production, Wholesale electricity market price and Electricity demand (Jun-2017 to Jun-2019).

Source: OMIE, REN, APREN's analysis

² Arithmetic average of the hourly electricity prices in June 2019. Source: OMIE



POWER SECTOR SPECIFIC EMISSIONS

During these six months, the power sector emitted a total of 5.6 MtCO₂ to the atmosphere, meaning that for every kWh produced in the Mainland, a total of 241.5 grams of CO₂ were emitted.

The increasing renewables incorporation leads to the sector's decarbonization, whose emissions would tend to zero in a 100 % renewables scenario. In fact, the 14.1 GW of renewable installed capacity avoided around 6.3 Mt of CO₂ emissions so far this

year and led to a total saving of 425 million euros in fossil fuel imports and 150 million euros in CO₂ emission allowances.

Today, the savings achieved with CO₂ allowances are incomparable to previous years, given that their price was 12.1 €/tCO₂ for the same period of 2018, which is about half the value for the current semester (23.8 €/tCO₂). In June alone, the average allowances price was 25.2 €/tCO₂.

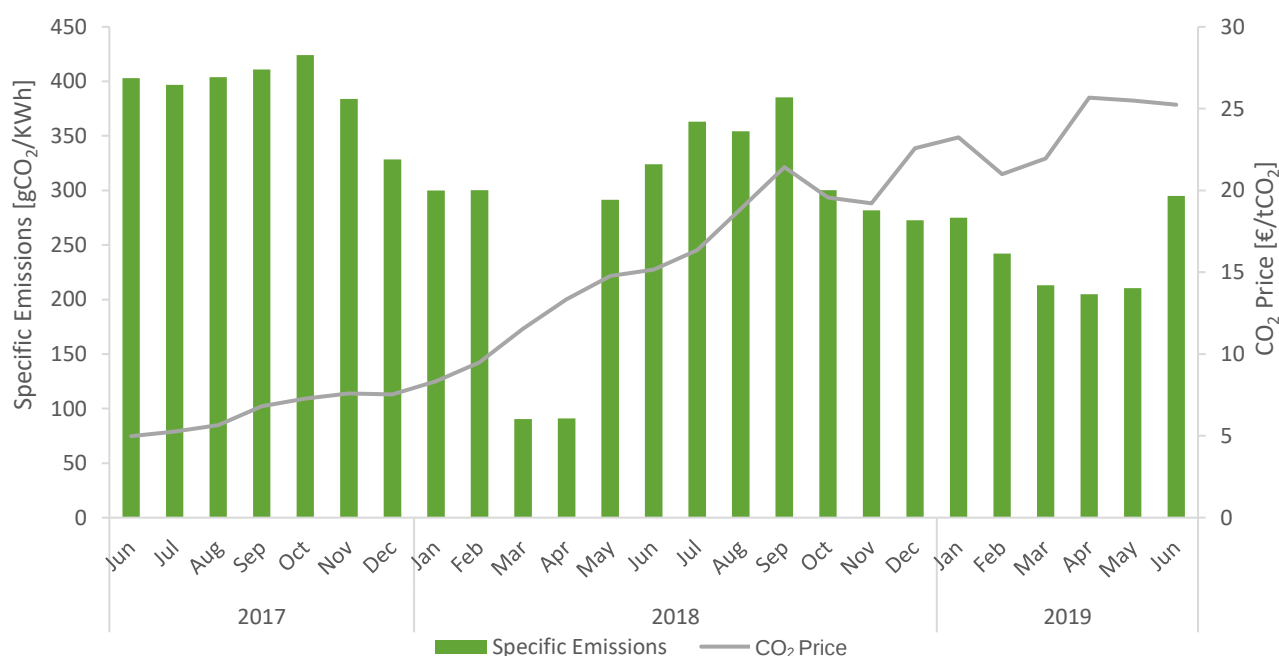


Figure 3. Specific emissions resultant from the power sector's activity in Mainland Portugal and CO₂ allowances price (Jun-2017 to Jun-2019).

Source: REN, APREN's analysis



JUNE'S LOAD DIAGRAM

June (load diagram in Figure 4), registered a renewables penetration on the electricity production of only 38.5 % (1 416 GWh), leading to a fossil fuel incorporation of 61.5 % (2 265 GWh). These results are alarming and demonstrate the current national dependency over imported fossil fuels, especially in seasons and periods of the year with low wind and hydro resources – in the summer - that can only be filled by giving use to the Mainland's available solar resource.

The monthly electricity demand (3 885 GWh) was essentially assured by combined-cycle power plants, using natural gas, that produced 1 314 GWh.

Wind power plants produced 795 GWh of electricity, with a monthly productivity of 1.03.

The electricity imports remained significant in June, with 479 GWh being imported and only 160 GWh being exported, resulting in an import balance of 319 GWh. This import trend may have reasoning on the 7 % tax rate over Spanish power plants' and the consequent claw-back rate that has been applied for the Portuguese ones aiming a level playing field on the competitive conditions for both countries within the Iberian Market. However, this has been causing the Portuguese power plants to sell higher priced electricity in comparison to its Spanish counterparts, which is a matter of concern to us.

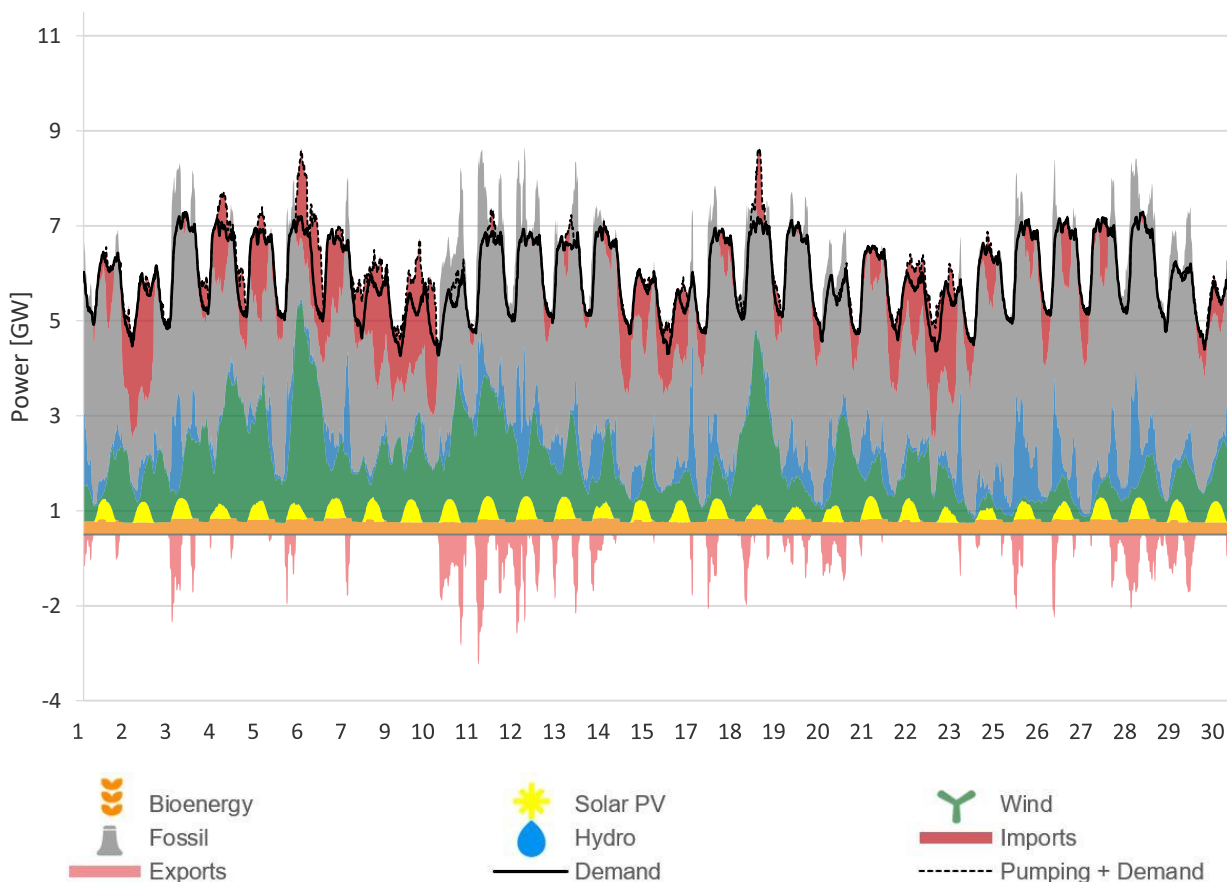


Figure 4. Load Diagram for Mainland Portugal (Jun-2019).

Source: REN, APREN's analysis



FINAL REMARKS

On 5th June, both the Directive (EU) 2019/944 and the Regulation (EU) 2019/943 of the European Parliament and of the Council, laying down the rules for the proper functioning of the internal single market for electricity, were published in the Official Journal of the European Union. These documents aim to: adapt the market to a further development of renewable technologies; to strengthen regional cooperation; and to enhance the role of the consumer as an active player in the energy transition.

Since June 17th, the prequalification phase for solar capacity auctions, due to expire on June 30th, has

been extended until July 7th, consequence of the numerous procedural doubts that have arisen from several players involved in the process. This auction has counted with the participation of 64 entities.

Already on July 1st, the Council of Ministers Resolution nº. 107/2019 approved the Roadmap for Carbon Neutrality 2050 (RNC 2050), which was voted on June 6th and published in the Official Gazette. It defines a long-term commitment and the national strategy towards the country's carbon neutrality for 2050.





Roadmap for Carbon Neutrality Approved

On July 1st, the Council of Ministers Resolution nº. 107/2019 was published in the Official Gazette, approving the Roadmap for Carbon Neutrality 2050 (RNC 2050).



Solar Capacity Auctions

The Environment and Energy Transition Ministry expressed its intention of holding a 1 400 MW auction for new PV capacity in June 2019.



Guarantees of Origin transition to REN

REN was again named as the Responsible Entity for the Issuing of GO - Guarantees of Origin (it had already been operational from 2010 to 2015, but only for high efficiency cogeneration). No GO for renewable has been issued so far.



Decree-Law nº. 76/2019

Allows the adoption of auctioning procedures

Published on June 3rd, 2019, this Decree-Law adapts the current legal regime to allow the adoption of auctioning procedures for the attribution of connection rights for new power plants.



Hybrid projects

It regulates the permitting of hybrid electricity systems, that is, production units based on different primary sources.



Market facilitator

It introduces the market facilitator agent that is responsible for the aggregation of the energy produced by the power plants under the general remuneration regime, and then selling it to the market.



Small projects receive a compensation based on the capacity auction values

This Decree-Law also regulates small production units, which are subject to a competitive procedure applied to a reference tariff, subject to an annual maximum quota.



Repowering with increased power not considered

The Decree-Law does not specifically address the possibility for the repowering of wind farms (with or without capacity increase), hence, it is important to legislate on this subject, taking into account the European Commission guidelines, which particularly impose the adoption of simplified permitting procedures not exceeding 1-year period.

Information available in:

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