APREN Associação de Energias Renováveis

# PORTUGUESE RENEWABLE ELECTRICITY REPORT

APRIL 2019

# RENEWABLE ELECTRICITY
## IN MAINLAND PORTUGAL

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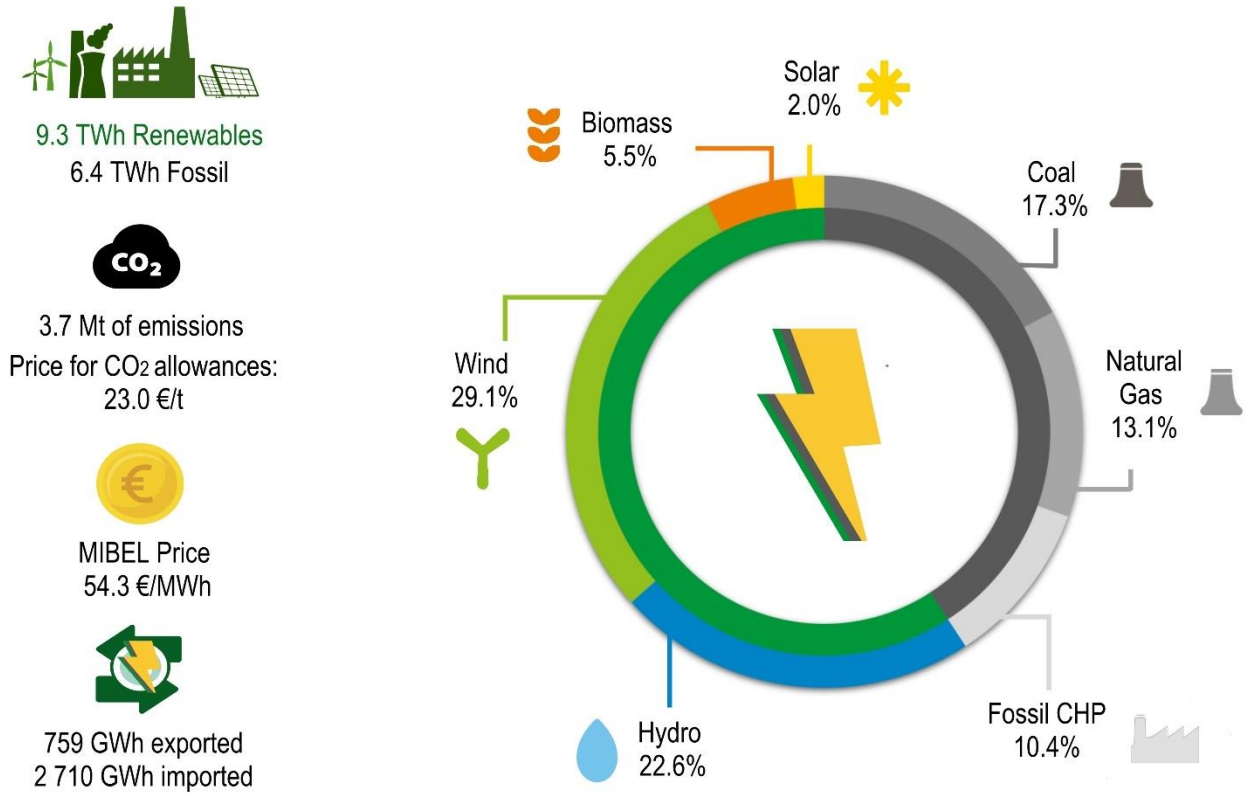
## EXECUTIVE SUMMARY

- During the first four months of 2019, **renewable energy sources accounted for 59.2 % of the electricity generation mix in Mainland Portugal**, by producing 9 313 GWh of electricity.
- **Solar PV was responsible for a production of 308 GWh** (2.0 % of the mix), the highest value ever achieved for the January to April period.
- Portugal electricity exports to Spain reached 759 GWh and the imports accounted for 2 710 GWh, thus aggravating its current **import balance, which currently stands at 1 951 GWh**.
- During this period, **MIBEL's daily average electricity market price was 54.3 €/MWh**.
- **The thermal power sector emitted 3.7 million tonnes of $CO_2$**, meaning that for every kWh of electricity produced, a total amount of 236.5 g$CO_2$ were emitted. In addition to this, 37.8 thousand tonnes of $CO_2$-eq were emitted from the release of $CH_4$ and $N_2O$ to the atmosphere.

## ILUSTRATIVE SUMMARY: ELECTRICITY PRODUCTION IN 2019



## ELECTRICITY PRODUCTION IN MAINLAND PORTUGAL

In the first four months of the year, **renewable energy sources (RES) produced 9 313 GWh of electricity**, an equivalent to **59.2 % of the mainland's electricity generation mix** (15 730 GWh). This distribution is shown in Figure 1, which also includes the fossil fuels share in the mix (40.8 %).

The mainland's electricity generation reflects a significant contribution (29.1 %) from wind power technology, which was responsible for the electricity production of 4 583 GWh, with a cumulative wind producibility index of 0.93. In turn, hydro technology produced 3 557 GWh (22.6 % of the mix), with a hydroelectric producibility index of 0.58. Large hydropower plants fulfilled 87.5 % (3 113 GWh) of the hydro production, and the remaining 444 GWh derived from small hydropower plants, with less than 10 MW of installed capacity.

It is noteworthy the achievement in the solar PV sector, which was responsible for a production of 308 GWh (2.0 % of the mix), a value that has never been achieved for such a January to April period.

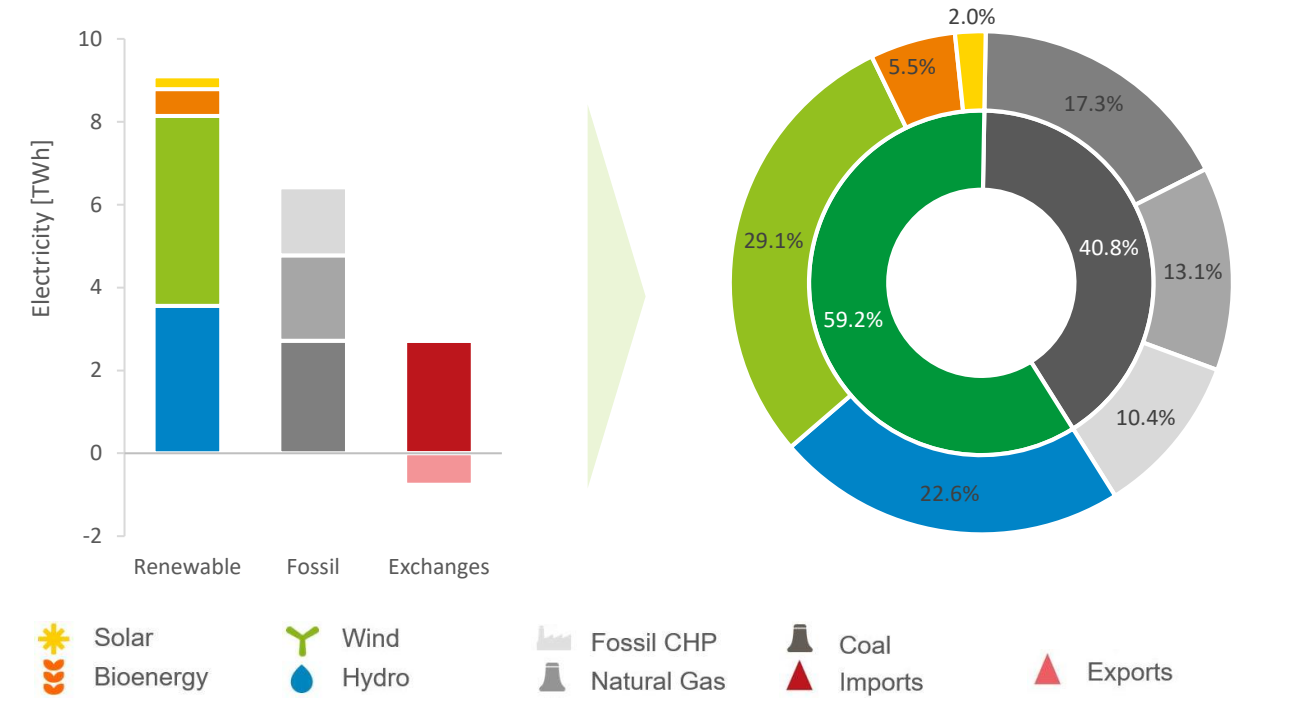



**Figure 1.** Electricity production by energy source in Mainland Portugal (Apr-2019).
Source: REN, APREN's analysis

During these four months, the mainland's power plants produced a total of 17 681 GWh for consumption[1], a 3.4 % decrease over 2018's real values. When considering the normalized figures (counting with the number of working days and temperature correction effect), this percentual reduction decreases to 1.7 %.

In this period, Portugal exported 759 GWh of electricity to Spain and imported 2 710 GWh, thus aggravating **this year's import balance, which currently stands at 1 951 GWh.** This balance represents 106 M€ in electricity imports, which contrasts with the export revenues achieved during the first four months of 2018, estimated at 52 M€.

[1] Power plants' total electricity generation for consumption, including the import-export balance and grid losses.



## ELECTRICITY MARKET

The Iberian Electricity Market (MIBEL) price has been declining since September of last year. However, the average price for April was 50.7 €/MWh[2] in Mainland Portugal, which is about 18.7 % higher than 2018's (42.7 €/ MWh).

When considering the period between January and April 2019, the average electricity price was even higher (54.3 €/MWh), due to January's value of 62.7 €/MWh. In this same period of 2018, the electricity price was 47.3 €/MWh.

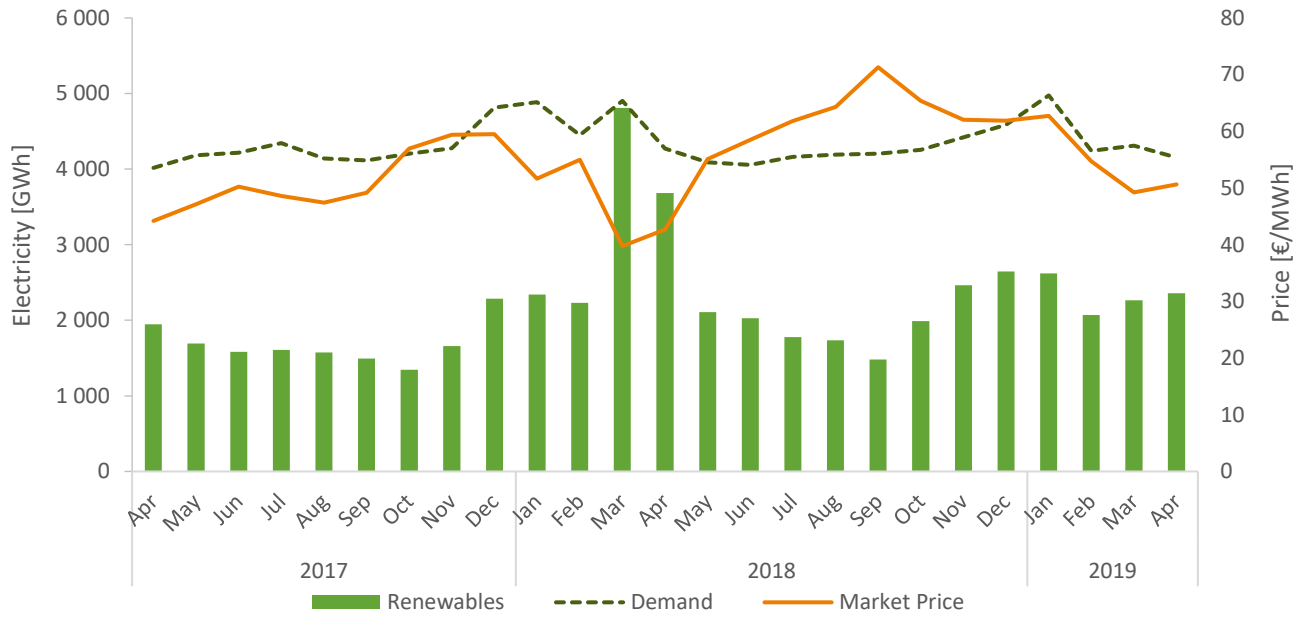



**Figure 2.** Renewable electricity production, Wholesale electricity market price and Electricity demand (Apr-2017 to Apr-2019).
Source: OMIE, REN, APREN's analysis

[2] Arithmetic average of the electricity prices in April 2019. Source: OMIE

## POWER SECTOR SPECIFIC EMISSIONS

During the first four months of the year, the **thermal power sector emitted a total of 3.7 million tonnes of $CO_2$**, meaning that for every kWh of electricity produced, a total amount of 236.5 $gCO_2$ were emitted. The emissions of $CH_4$ and $N_2O$ to the atmosphere were also recorded, these having an equivalent effect of 37.8 thousand tonnes of $CO_2$.

It is important to note that in a non-renewable scenario, the levels of $CO_2$ emitted by the power sector would be entirely different. In fact, during this period, **renewable power plants avoided the release of about 4.4 million tonnes of $CO_2$-eq** to the atmosphere.

**The $CO_2$ emission allowances price** within the European Emissions Trading Market (CELE) continues to rise, with an **average value of 23.1 €/$tCO_2$** for the first four months of the year. April, itself registered the second highest allowances price, of 25.7 €/$tCO_2$, since CELE's debut in 2008.

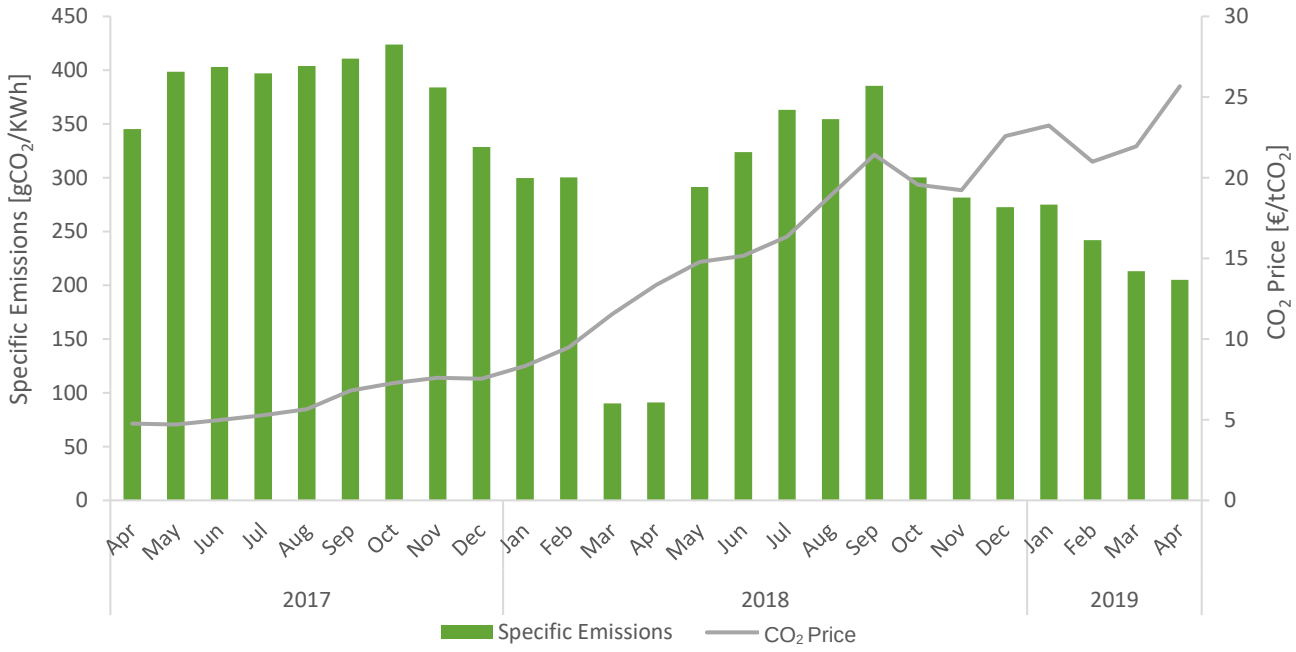



**Figure 3.** Specific emissions resultant from the power sector's activity in Mainland Portugal and $CO_2$ allowances price (Apr-2017 to Apr-2019).

Source: REN, APREN's analysis

## APRIL'S LOAD DIAGRAM

April registered a total electricity demand of 3 969 GWh, of which 59.2% were produced by renewable energy sources. The load diagram for the respective month is shown in Figure 4. Despite this strong renewable share, the high external dependency prevails due to higher competitive prices in Spain, resulting in the importations of 568 GWh of electricity, which represents about 14.3 % of the electricity demand for Mainland Portugal during this month.

April registered the highest wind power production of 2019, with a wind producibility index 1.13 and the production of 1 180 GWh of electricity (29.7 % of the electricity demand).

A total of 19.8 hours of 100% renewable production were recorded, during which renewable electricity was enough to meet mainland's total demand. In fact, on April 25th, RES production (136 GWh) was even higher than the electricity demand (125 GWh), leaving the possibility to export electricity at an average price of 33.4 €/MWh.

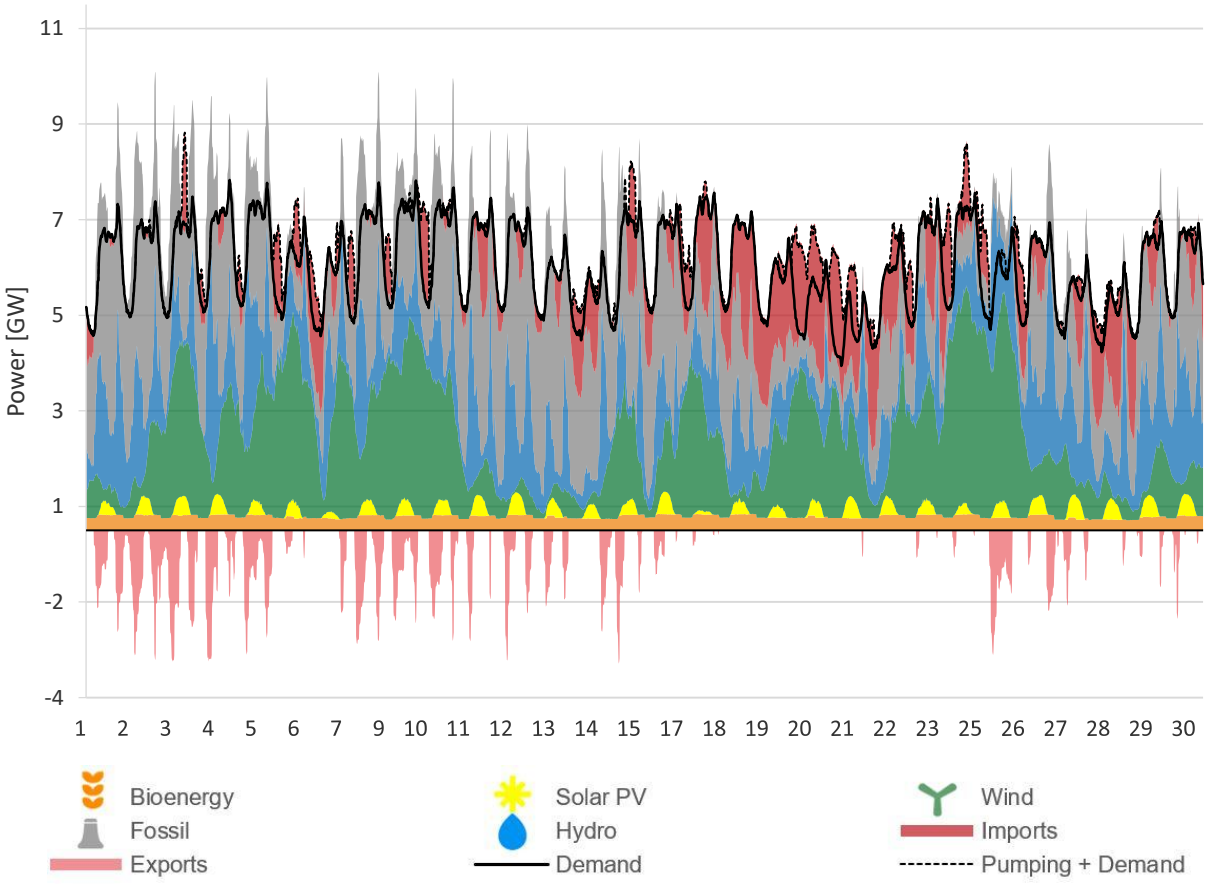



**Figure 4.** Load Diagram for Mainland Portugal (Apr-2019).
Source: REN, APREN's analysis

## FINAL REMARKS

In April 2019, through a publication in the Official Gazette of the Ordinance No. 115/2019, the reference tariff to be applied to the electricity sold to the grid by the Small Production Units (SPUs), was maintained at 95 €/MWh.

Although scheduled for April, the first power allocation session for SPUs was held only on May 3rd.



**Ordinance n. º43/2019: Over-equipment of wind farms**

Exempts ERSE's consultation for the projects on the over-equipment of wind farms, in cases where the project developer accepts a fixed tariff of 45 €/MWh, for a 15-year period, to the extra amount of energy derived from the over-equipment.

**Solar Capacity Auctions**

The Environment and Energy Transition Ministry expressed its intention of holding a 1 350 MW auction for new PV capacity in June 2019.

**First power allocation session for SPUs held on May 3rd**

On May 3rd, it was held the first power allocation session for SPUs of 2019.

**Published Ordinance No. 115/2019 setting reference tariff for SPUs**

It was published, with a 3-month delay, the Ordinance No. 115/2019 setting the reference tariff, to be applicable to SPUs for the year 2019, at 95 €/MWh.

**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.

*Information available in:*

*APREN | Communication and Technical Departments*

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