



APREN Associação
de Energias
Renováveis

PORTUGUESE RENEWABLE ELECTRICITY REPORT

AUGUST 2019

SPECIAL EDITION | 1ST SEMESTER AZORES AND MADEIRA



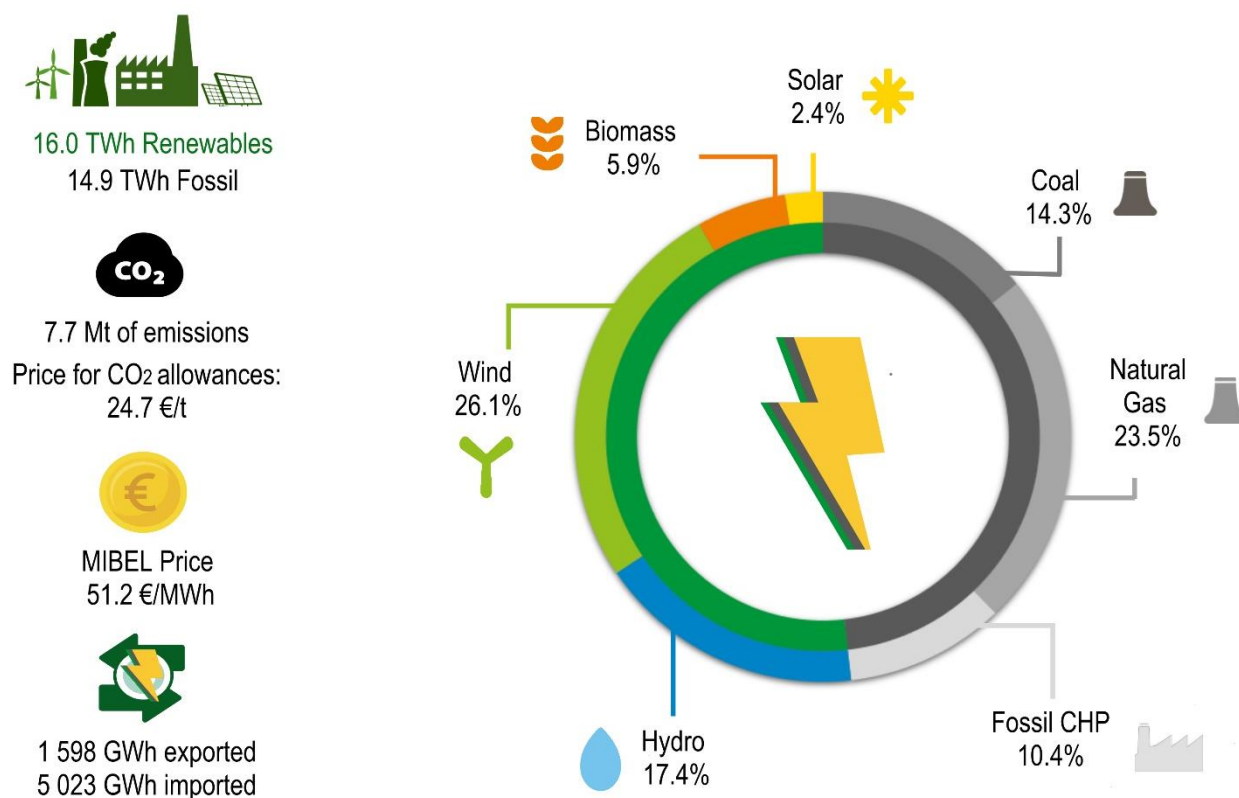
RENEWABLE ELECTRICITY IN MAINLAND PORTUGAL

AUGUST 2019

EXECUTIVE SUMMARY

- In the period between January and August 2019, renewable energy power plants produced 16.0 TWh, contributing with 51.8 % to the electricity production mix.
- Portugal maintains its importer profile, a situation that has been happening since the beginning of the year, with 5.0 TWh of imported electricity and 1.6 TWh exported, resulting in an **import balance of 3.4 TWh**.
- During this period the **MIBEL daily market price was on average 51.2 €/MWh**.
- From January until August, **the electricity sector was responsible for the emission of approximately 7.7 million tonnes of CO₂**, which is translated in approximately 280 grams of CO₂ emitted for each kWh of electricity generated.

ILLUSTRATIVE SUMMARY: ELECTRICITY PRODUCTION IN 2019



ELECTRICITY PRODUCTION IN MAINLAND PORTUGAL

Between January and August 2019, renewable energy sources (RES) were responsible for the generation of 16.0 TWh of electricity, contributing with 51.8 % of the total mix, in a global amount of 30.9 TWh of electricity generated in Mainland Portugal, with the remaining 14.9 TWh being provided by fossil fuels.

This amount of renewable contribution is significantly lower than that recorded in the same period of 2018 (55.3 %) as a result of lower renewable resource availability, mainly hydro. In fact, in this period the hydro productivity index was only 0.59 and the wind productivity index was 0.97.

Referring only to the share of RES technologies in the electricity generation mix (8.1 TWh), the one with the largest contribution was wind, with 26.1 %,

followed by hydro, with 17.4 % (5.4 TWh), the latter reflecting 48.0 % of the amount reached in 2018. Solar technology has been increasing its share in generation, which reflects the recent investment. In this period, it represented 2.4 % (0.8 TWh) of the electricity production mix, an increase of 31.3 % compared to the same period of 2018.

Regarding the electricity demand, it was registered at 34.3 TWh¹ for the period between January and August 2019, representing a real reduction of 2 % compared to 2018's values (0.8 % when considering the normalization corrections on temperature and number of working days).

During this period, Portugal imported a total of 5.0 TWh of electricity and exported only 1.6 TWh, resulting in an import balance of 3.4 TWh.

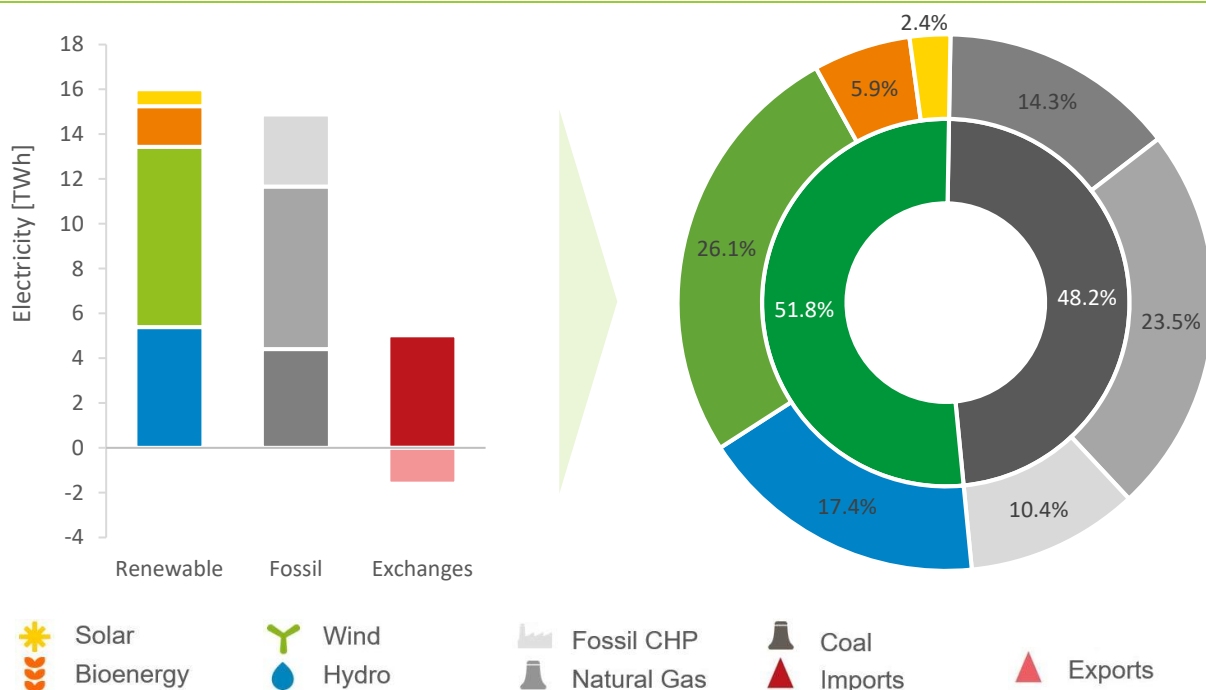


Figure 1. Electricity production by energy source in Mainland Portugal (Aug-2019).

Source: REN, APREN's analysis

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



ELECTRICITY MARKET

The Iberian electricity market (MIBEL) had an average price of 51.20 €/MWh² during the period between January and August 2019.

In August, the average price was 44.96 €/MWh, which is 30 % lower than in August 2018 (64.29 €/MWh).

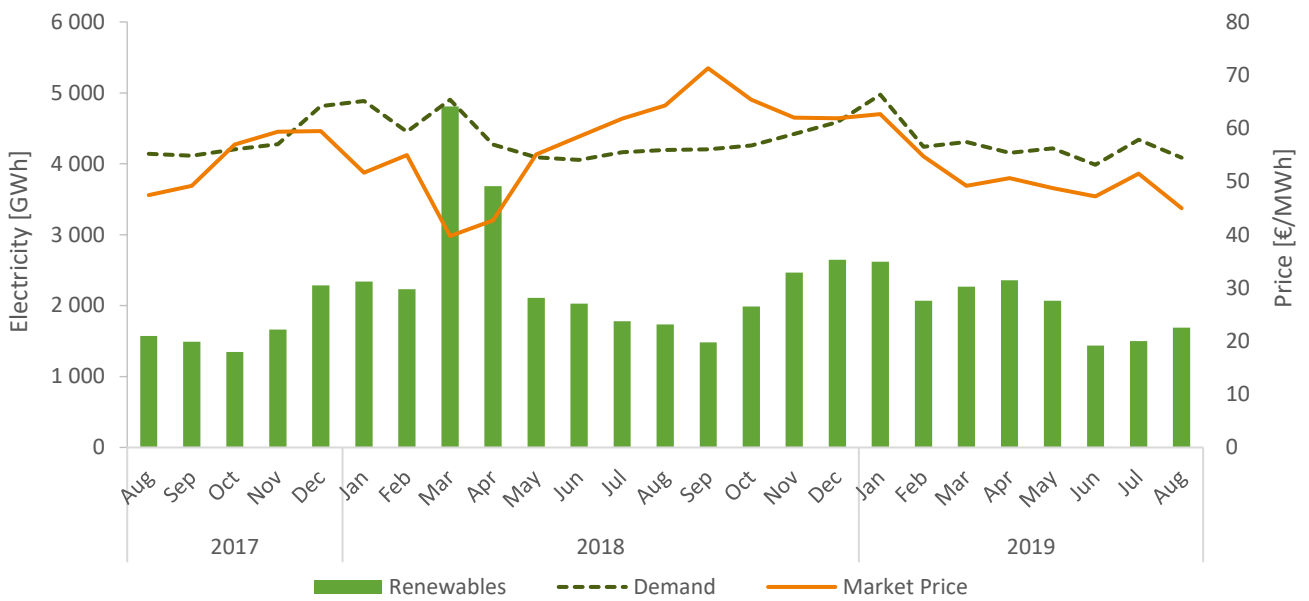


Figure 2. Renewable electricity production, Wholesale electricity market price and Electricity demand (Aug-2017 to Aug-2019).

Source: OMIE, REN, APREN's analysis

² Simple arithmetic average of the hourly electricity prices between January and August 2019. Source: OMIE



POWER SECTOR SPECIFIC EMISSIONS

In the period under review (Jan-Aug 2019), CO₂ emissions from the power sector totaled 7.7 Mt, which is translated into 280 grams of CO₂ emissions per kWh of electricity generated. However, in August there was a significant drop in the specific emissions resulting from the low utilization of coal-fired power plants, that registered a 6 % utilization rate.

As regards to the European CO₂ allowances market, during 2019 there is an upward trend in the CO₂ price, despite the small price decrease in August - 26.93 €/tCO₂. In the cumulative period between January and August, the average value was 24.68 €/tCO₂.



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

Source: REN, APREN's analysis



AUGUST'S LOAD DIAGRAM

The load diagram for August, Figure 4, shows very distinct production profiles, with an almost equitable distribution between RES (48.2 %, 1 684 GWh) and fossil energy sources (51.8 %, 1 812 GWh). From the RES technologies, wind stands out, with a contribution of 23.1 % in the mix and a monthly output of 807 GWh, in a month when the wind productivity index was 0.97.

This month, the electricity output from coal-fired power plants accounted for 78 GWh (which is 2.2 % of the monthly production), representing a 6 % utilization rate. In the same period of 2018, the contribution from coal power plants was 1 126 GWh, resulting in a 93 % production drop. This low contribution reflects the impact of the CO₂

emissions price, associated to high imports, reflecting the low competitiveness of Portugal power plants in the current marginal market conditions, considering that the imports will most likely be from coal-generated electricity from Morocco, in which the environmental costs are not incorporated in the price. Once again, it is absurd that we are importing coal-based electricity that does not comply with the same market rules as national power plants.

This month kept the same trend as the previous months, with high import levels of 712 GWh, compared to electricity exports, which totalled only 129 GWh, resulting in an import balance for August of 587 GWh.

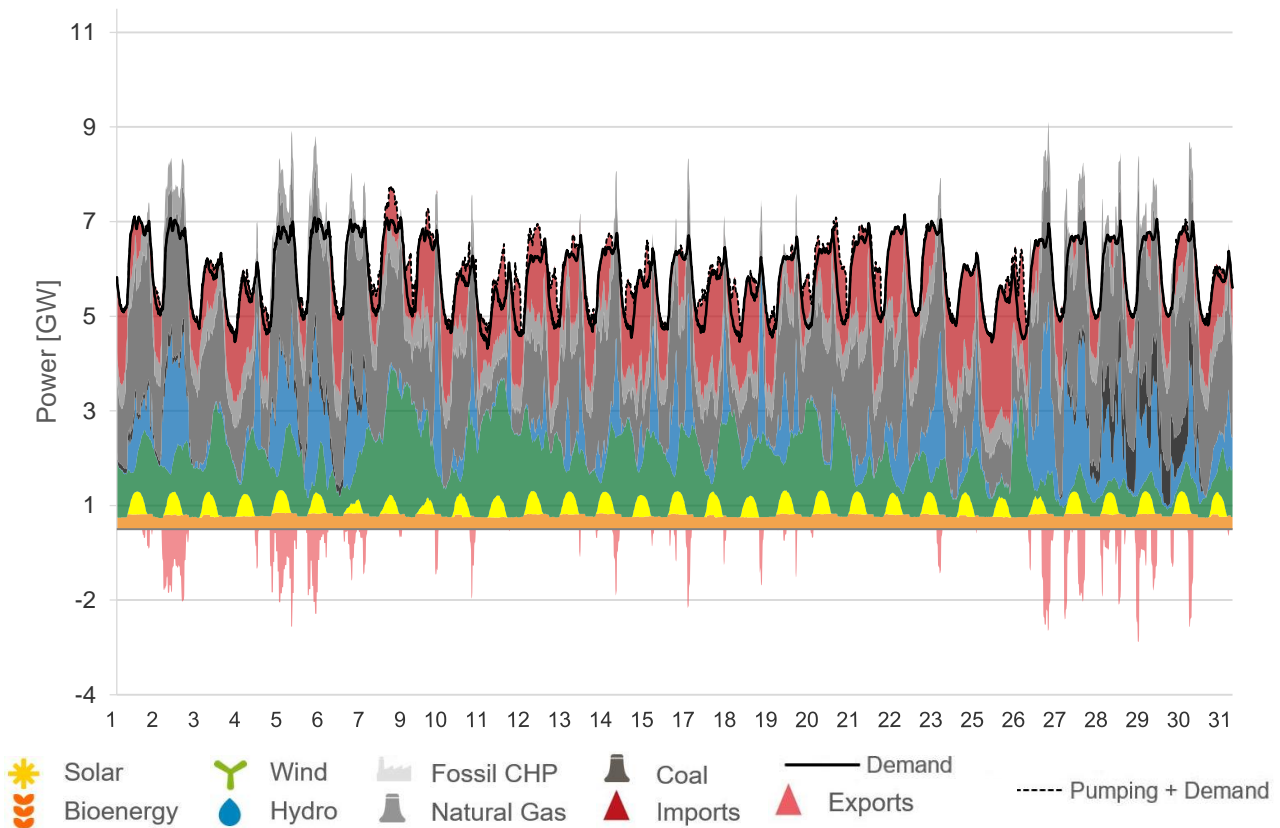


Figure 4. Load Diagram for Mainland Portugal (Aug-2019).

Source: REN, APREN's analysis



FINAL REMARKS

On August 2nd, the Council of Ministers approved the Climate Change Adaptation Action Program (P- 3AC), which aims to implement adaptation measures through physical interventions with direct impact on the territory. Priority lines of action and adaptation measures were established, mainly aimed to reduce the main impacts and vulnerabilities of the territory regarding:

- Increased frequency and intensity of rural fires, heat waves, periods of drought and water scarcity, extreme precipitation events, extreme coastal overgrowth and erosion;

- increased susceptibility to desertification;
- increase of the maximum temperature;
- sea level rise.

This program assumes relevance because it urges action to combat the vulnerabilities of territories to climate change, which are even more pronounced in the southern European countries and the Iberian Peninsula.

The Decree-Law n. ° 120/2019 was also published on August 22nd, amending the special and extraordinary regime for the installation and

operation of new biomass recovery plants. This piece of legislation aims to maximize the special regime potential, aiming to decarbonise the existing thermal consumptions and promoting energy efficiency by imposing stricter rules on the exclusive production of electricity from biomass, rather than promoting dedicated cogeneration or trigeneration power plants. Nevertheless, the publication of the ordinance that will define the new remuneration rules is still missing.

Lastly, we highlight the publication of the Decree-Law n. °104/2019, of 9th August, which amends the regulatory mechanism aimed at ensuring a balance of competition in the wholesale electricity market in the Iberian Peninsula. This regulatory mechanism is intended to compensate for the distortions caused by non-EU measures and external market events occurring within the European Union on average electricity prices in the Portuguese wholesale market. In this new wording, renewable power plants in the market with power exceeding 5 MW, are now covered by this mechanism and, consequently, retroactively affected.





Roadmap for Carbon Neutrality Approved

On July 1st, the Council of Ministers Resolution n°. 107/2019 was published in the Official Gazette, approving the Roadmap for Carbon Neutrality 2050 (RNC 2050).



Solar Capacity Auctions

The 25th, 26th and 29th of July were marked by the allocation of 1 400 MW of solar PV capacity in an auction, spread over 24 capacity lots.



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. In August, the public consultation took place regarding the “Manual of Procedures of the Guarantees of Origin Issuing Entity”, but the system is not yet operational.



Decree-Law n°. 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.~



SERUP suspension for UPP (Small Production Units) registrations

The platform for production unit registration (SERUP) has been suspended for new UPP registrations from 1 August, with no indication of a reopening date, due to the entry into force of the new system introduced by DL 76/2019.





Regulatory mechanism to balance competition in wholesale electricity market in Portugal

Renewable power plants in the market with power exceeding 5 MW are covered by these mechanisms.



PORTUGUESE RENEWABLE ELECTRICITY ON THE AUTONOMOUS REGIONS

AZORES AUTONOMOUS REGION - BIANNUAL SUMMARY

In the Autonomous Region of the Azores (RAA), during the first half of 2019, the electricity generation mix reflects a predominance of fossil energy sources (58.7 %, 225 GWh). On the other hand, RES contributed with 39.6 % (158 GWh) of the total electricity produced in the RAA (383 GWh).

The most predominant RES technology in the mix was geothermal, with 26.0 % (99 GWh), however, its share reduced in comparison to the same period of 2018 (27.1 %, 103 GWh).

For the remaining renewable energy technologies, during the first half of 2019, both hydro and wind power plants improved compared to last year. Hydroelectric power plants produced 15.4 GWh, which represents an increase of 8.4 % over the same period of 2018, and the wind farms, which accounted for 9.4 % of the mix, produced 36.1 GWh within this period, representing an increase of 9.7 % over 2018.

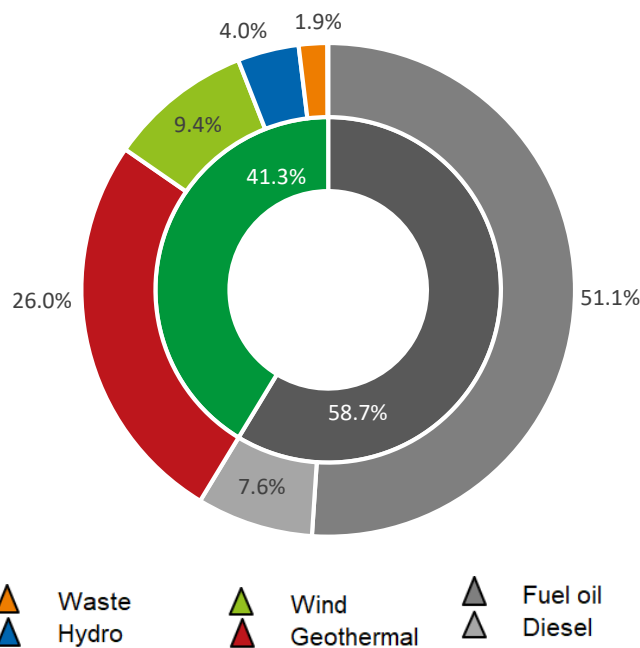


Figure 5. Electricity production mix by energy source in the Azores Autonomous Region (1st semester of 2019).

Source: EDA, APREN Analysis



In the Madeira Autonomous Region (RAM), RES represented, in the first semester of 2019, 27.2 % (111 GWh) of the electricity generation mix, and fossil sources 72.8 % (296 GWh) (Figure 6). There was a significant reduction (about 30%) in the renewable electricity production compared to the same period of 2018. This reduction was particularly motivated by a scarce hydroelectric resource, which has also affected the mainland.

In fact, in the first half of the year, hydro represented only 7.1 % of the mix, with an accumulated production of 29 GWh, which represents a

reduction of 56.3 % compared to the same period of 2018. Thus, despite its 28.2 % reduction compared to last year's, wind was the most representative renewable energy technology in the electricity production mix (10.8 %), having produced 44 GWh of electricity in the period between January and June.

In turn, the remaining renewable technologies (waste and solar) increased their representativeness by 13.2 %, representing 9.3 % of the electricity generation mix in the RAM.

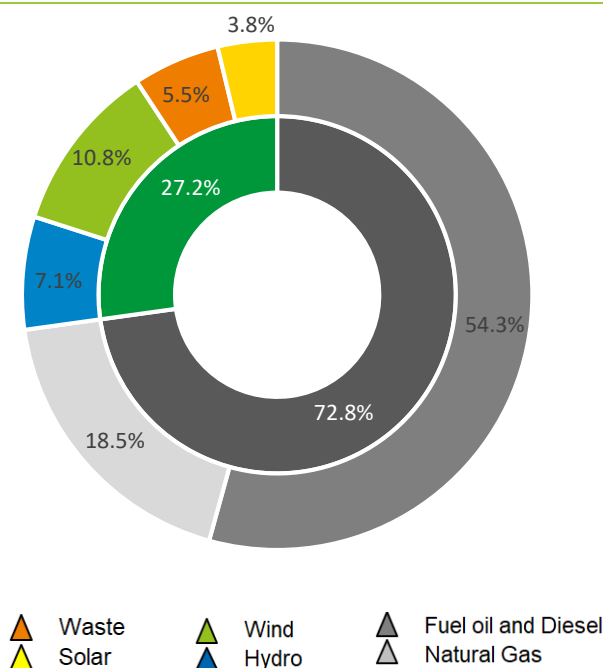


Figure 6. Electricity production mix by energy source in the Madeira Autonomous Region (1st semester of 2019).
Source: EEM, APREN Analysis

Information available in:

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