

2023 in Review:

Renewable capacity reaches 19 GW, with a target of 43.2 GW by 2030 Renewable incorporation reaches all-time high Electricity market prices stabilised in 2023

- 2023 was marked by the publication of several elements within the scope of the European REPowerEU package, such as the revision of the European Renewables Directive (RED III), the reform of the electricity market or the Net-Zero *Industry Act*;
- At the national level, the NPEC2030 revision was submitted, with new targets for renewables, significantly more ambitious, rising from a total of 27.5 GW of installed renewable capacity by 2030 to 43.2 GW;
- Throughout the year, there was a stabilisation of market prices, although with more pronounced periods of very high and very low prices;
- Solar renewable production increased by 43%, representing a 8.2% of total annual electricity production in Portugal, as a result of the significant increase in installed capacity;
- Renewable incorporation reaches an all-time high, largely due to a favorable year in terms of water regime and the increase in photovoltaic solar generation.

What most marked the year 2023 in the renewable electricity sector?

In the previous year, the price of electricity experienced a very significant increase, following the abrupt increase in the price of natural gas resulting from the energy crisis that was initially a result of the European Union's sanctions on Russia, namely the reduction of natural gas purchases. In 2023, despite the absence of a ceasefire by Russia, natural gas prices reduced to levels not recorded since 2021, which led to a reduction in hourly electricity prices.

At the national level, this price reduction in the wholesale electricity market also resulted from a greater incorporation of renewables in electricity production, making the Iberian mechanism for limiting the price of natural gas for electricity production obsolete. The so-called cap, which established a limit of €40/MWh for the price of natural gas, contributed to savings of €4.1 billion in 2022 and €680 million in 2023. However, it has already been announced by the European Commission that it will not be implemented in 2024.

At the European level, the European Commission (EC) followed up on the initiatives of the REPowerEU legislative package, which emerged with the aim of reducing dependence on fossil fuels, in particular Russian fuels, and accelerating the transition to renewable energy, towards a more resilient and secure energy system. The public consultation for the Net-Zero Industry Act (NZIA) was then launched in March, with a proposal demonstrating the EC's commitment to ensuring a leading role in the transition to zero-emission technologies and securing the objectives of REPowerEU.

Subsequently, the third version of the Renewables Directive (RED III) was published in April, which sets the target of renewable incorporation in final energy consumption for 2030 of 42.5%, with an additional indicative complement of 2.5% to reach 45%, to which all Member States must contribute. To this end, RED III incorporates several new objectives and developments to existing themes, such as:

- Integrating renewable energy into buildings;
- Assessment of the areas necessary to meet the 2030 targets;
- Definition of renewable energy deployment acceleration zones;
- Increased public participation;
- Defining zones for network and storage infrastructures;
- Simplification of permit-granting procedures;
- Adequacy of the resources of competent authorities;
- Classification of renewable energy projects as projects of overriding public interest.

In the same month, the “Delegated Act” on the principle of additionality was also published, which, together with RED III, set new targets for the production of green hydrogen and the necessary principles for the production of RFNBOs (renewable fuels of non-biological origin). Consequently, an European pilot auction was launched in November 2023, in which project applications are open until February 8, with 800 million euros for green hydrogen production projects with a minimum capacity of 5 MW. Of the auction evaluation criteria, the preference for the equipment to be produced in Europe stands out, ensuring alignment with the NZIA.

At the national level, progress was made with the simplification of environmental permitting processes, with the publication of Decree-Law No. 11/2023, which had already been announced by the Government in 2022 as a new package of SIMPLEX measures. This diploma eliminated several situations in which a case-by-case analysis would be necessary; the redefinition of thresholds that subject projects to the need for Environmental Impact Assessment (EIA); and the elimination of EIA for the production of green hydrogen.

Portugal is investing on several fronts that will ensure the energy transition, namely through the development of the offshore wind sector. The Working Group dedicated to offshore (created by the Government in 2022) continued its work during 2023, to ensure that by 2030 10 GW of connection power will be allocated and 2 GW of capacity will be installed. APREN is part of this group.

At the same time, APREN is also part of other working groups created by the Government in 2023, to ensure participatory and collaborative work in different key areas and with urgent challenges to overcome in the energy sector, such as:

- Working Group for the Implementation of Wind Farms in region of Trás-os-Montes;
- Working Group on Promoting the Competitiveness of Electro-Intensive Consumers;
- Working Group for Protection and Maintenance Measures in the areas of cork oak and holm oak;
- Working Group for the Constitution of the Technological Free Zone of Abrantes;
- Working Group dedicated to the areas of acceleration for renewable energies;
- Working Group with the objective of promoting the streamlining of the participation of municipalities in collective self-consumption and renewable energy communities.

How did renewable electricity perform in 2023?

In summary, all power plants in mainland Portugal produced, in 2023, a total of 44,128 GWh of electricity, 70.7% from renewable sources, reaching an all-time high in renewable production. This total was mainly supported by wind technology, which accounted for 29%, followed by hydro technology with 27%, solar PV with 8.2% and biomass with 6.6%.

The production of electricity from fossil fuels showed a reduction of 15% compared to the total electricity in the year 2022, due to the significant increase in water production, which registered an increase of 13% compared to 2022. There was also a significant increase in electricity production through solar photovoltaics, resulting from the start-up of new plants, adding, by the end of November, 1,053 MW to the national installed capacity¹.

Regarding electricity imports, compared to 2022, there was a slight increase in the import balance from 9,258 GWh to 10,220 GWh. Although the historical maximum of renewable incorporation was recorded, which also led to the reduction of production from fossil fuels, it is considered that the increase in the import balance resulted from the increase in consumption compared to 2022, making the import of electricity more competitive in terms of offers in the Iberian market.

The year ended with two months of high renewable productivity, above 80% of renewable incorporation in electricity production (November with 83.4% and December with 81.3%), which added up to a total of 1,015 non-consecutive hours of 100% renewable generation for 2023. This resulted from a high hydroelectric and wind power capability, thus demonstrating the high resilience of the national electricity system when facing large levels of renewable integration. Also noteworthy is a period of 6 days, between October 31 and November 6, in which electricity from renewable sources exceeded the national consumption needs, adding up to a total of 149 hours whose average price in the wholesale market was €19.17/MWh, with a few hours of zero minimum price.

What are the main indicators for 2023?

There was a reduction of around 3 million tons of carbon dioxide associated with the high incorporation of renewable energy in 2023 and the reduction in the use of production in natural gas-fired combined-cycle thermal power plants, which led to a significant reduction in emissions from the electricity sector. Despite the high increase in renewable production, the import balance remained in the same order of magnitude, even showing an increase of around 10%, which prevented the use of non-renewable electricity production with a greater impact on the value of emissions on a national scale.

In total emissions, also including the production of electricity associated with cogeneration and burning of municipal waste, a decrease from 6.96 million to 3.60 million tons of carbon dioxide is estimated, a very significant reduction of around 52%.

¹ DGEG 2024, quick statistics – n. 228 - November 2023.

These important milestones in the renewable sector have resulted in numerous benefits for society, the economy and the environment, such as:

- **9.7 Mt of CO₂ emissions avoided;**
- **Savings** on fossil fuel imports of **M€1 950²**;
- **Savings** in electricity imports of **M€626³**;
- Savings in CO₂ emission allowances of **€750 million⁴**, a reflection of the average annual allowance price of €85.3/tCO₂;
- **Savings due to the effect of the order of merit of M€7 014.**

What are the biggest challenges?

Despite the positive year of 2023 in terms of numbers, the biggest challenges in the sector saw few developments and the level of uncertainty regarding the development of new projects increased.

The favourable figures are mainly the result of a favourable hydro year and the entry of solar capacity into operation. However, these values fall short of what is necessary to achieve the necessary level of decarbonisation and competitiveness of the Portuguese economy.

The energy transition is key to ensuring a secure energy system, a competitive economy and the decarbonisation of the sector. This will also ensure the reduction of costs for the final consumer and reduce vulnerability and exposure to geopolitical tensions. To this end, it is necessary to ensure that the sector's strategies and regulations are implemented and become operational, creating visibility to the implementation of projects and thus ensuring that the attractiveness of private capital is maintained.

Despite the various legislative revisions in the sector, there are essential provisions that remain to be implemented, namely in the full permitting of projects, regarding digitalization, streamlining procedures and reducing contact points. Likewise, the need for network planning and management in line with the needs of integrating greater renewable capacity has not seen the necessary developments. Finally, the readaptation of the entities involved, regarding current and future needs, is also urgent.

The current economic scenario of high inflation and tighter monetary policy (while we have an electricity market with much more volatile price forecasts), creates additional uncertainty for future investments, especially in the renewable sector, which is characterized by being capital intensive with negligible variable costs.

Thus, it is urgent to create stability mechanisms, as pointed out by the reform of the electricity market, combined with the predictability of the project's completion in terms of time, to secure investment decisions. It is necessary to invest to create value, highlighting that the renewable electricity sector, with a stable legitimate framework and visibility for the implementation of the current strategy, has the capacity to generate more than 200 thousand direct and indirect technical and qualified jobs and have a wealth contribution to the country that can represent 5.9% of GDP by 2030.

² Value calculated through the import prices of natural gas (WorldBank) and the annual production of electricity using these fossil fuels (Data Hub REN).

³ Value calculated using Spain's electricity prices (Entsoe) and amount of electricity imported (REN).

⁴ Value calculated on the basis of CO₂ emissions avoided and the price of carbon allowances (SENDECO2).



About APREN:



The [Portuguese Renewable Energy Association \(APREN\)](#) is a non-profit association founded in October 1988. Its mission is to coordinate and represent the common interests of its members, promoting renewables energies in the electricity field.

APREN works closely with the government and other official entities, both on a national and international levels. It participates actively in the definition of energy and environmental policies, valuing natural resources for electricity production, namely hydric, wind, solar, geothermal, biomass, biogas, and urban solid waste.