

Invest in Portugal

Renewable Energy sector report

2024



AICEP
Portugal Trade & Invest



EY Parthenon

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1

Key Insights

Portugal is a leading player concerning the incorporation of Renewables in electricity production

For the purpose of this report, the scope of the Renewable Energy industry in Portugal encompasses:

Green Energy¹Green Components²

The renewable energy sector in figures | 2021

**4.396**

Companies

▲ 3,8%³ (2017-2021)**9.562**

Employees

▲ 2,5%³ (2017-2021)**€1,9B**

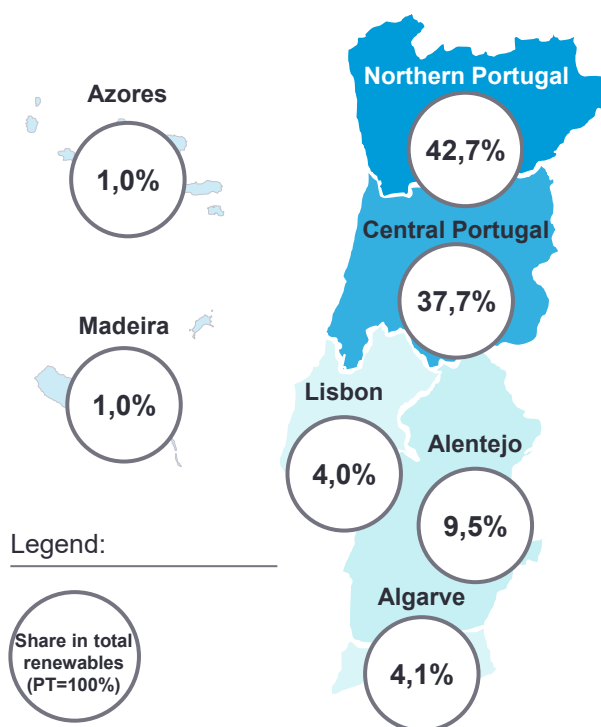
Gross Value Added

▲ 9,3%³ (2017-2021)**€3,5B**

Turnover

▲ 15,2%³ (2017-2021)

Share of Renewable Energy production by region (%) | 2022



Portugal's Renewables main achievements

32%

Share of Renewables on gross final energy consumption (DGEG), 2022

61%

Share of electricity from renewable sources in total annual production (DGEG), 2022

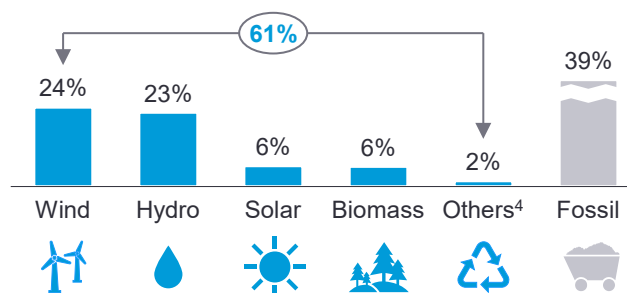
▲ 12,3%

Reduction of the Portuguese energy dependency (DGEG), 2011-21.

22nd

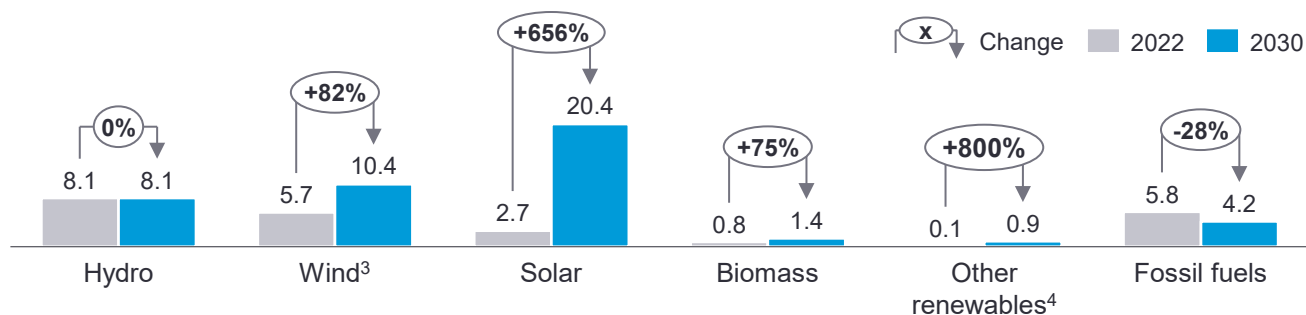
Ranking on role to Planet & Climate (out of 169 countries) (Good Country Index) | 2022

Production of electricity by energy source, in Portugal (DGEG) | 2022



Portuguese targets regarding installed capacity for electricity production, per energy source (GW)

~90% of total installed electricity capacity will concern renewables | 2022-2030 (DGEG)



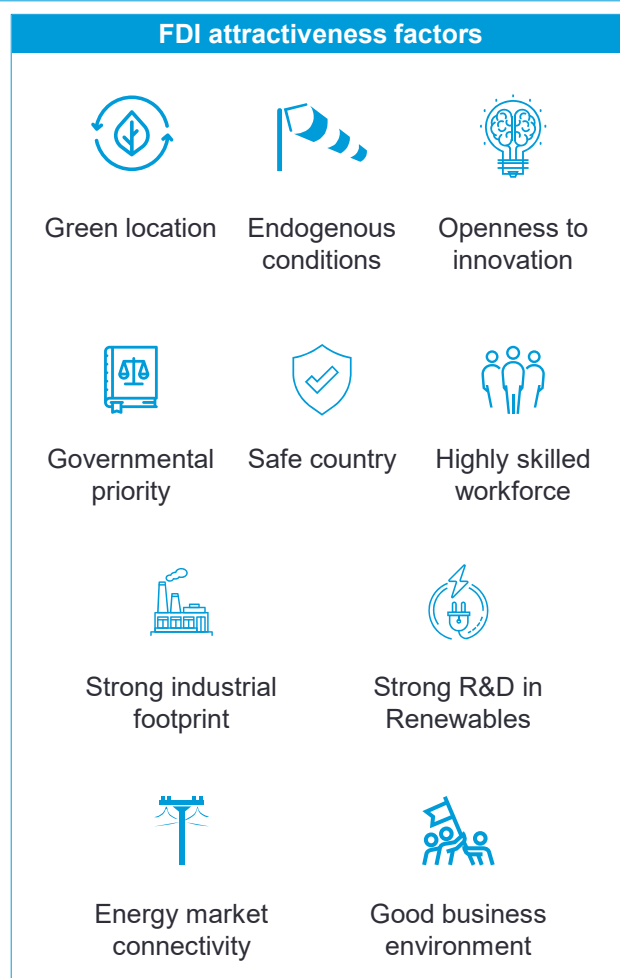
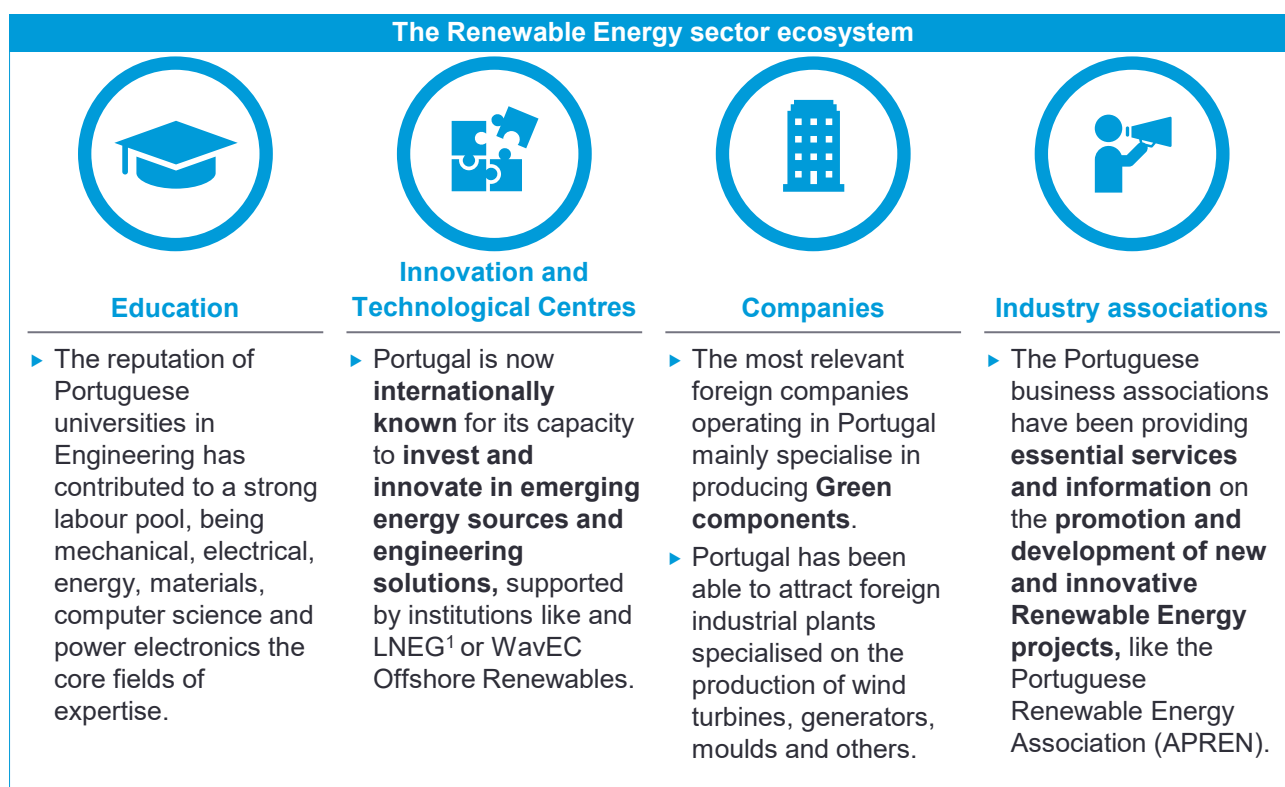
1. Considers the production of Renewable Energy (wind, hydro, geothermal, solar, biomass, etc.).

2. Considers the manufacturing of components for renewables, such as blades, towers etc.

3. Compound annual growth rate.

4. Others include waste management, geothermic and wave energy.

... that represent an innovative and recognised ecosystem boosting the establishment of foreign players



1. Laboratório Nacional de Energia e Geologia.

A large number '2' is centered in the upper half of the image. The background is a photograph of a coastal area at sunset or sunrise. The sky is filled with clouds, some of which are illuminated by the low sun, creating a warm orange and yellow glow. In the middle ground, a line of wind turbines is silhouetted against the bright sky. The sun is visible as a bright orb just behind one of the turbines. The foreground consists of a wet, sandy beach with puddles that reflect the colors of the sky and the silhouettes of the turbines.

2

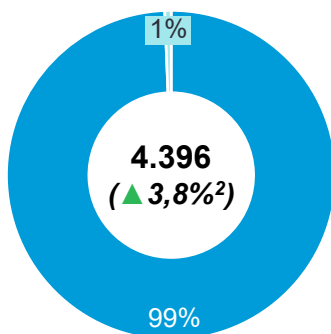
Renewable Energy sector in Portugal

The Renewable Energy sector in Portugal is internationally known for its high performance and growth

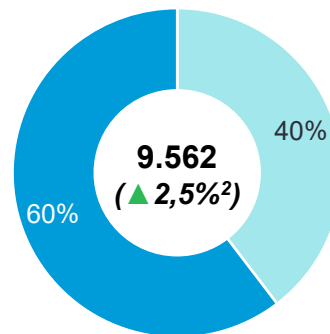
- ▶ **Portugal's geographical position is favourable to multiple forms of renewable energy**, with the country holding the following endogenous characteristics: rainfall (orography), sun hours (solar), topography (wind), seacoast (waves and offshore wind), forest (biomass). Companies based in Portugal are driving innovation in the renewable energy sphere and play an important role in greening Europe's energy mix.
- ▶ **The country has demonstrated important leadership in the transition towards clean energy, by integrating electricity from renewable sources of energy**. In 2022, the combined share of all renewable sources of energy in the electricity production mix reached 61% (while in the European Union, it was only 38%, in 2021)¹, and it is expected to continue to grow, thanks to ongoing projects.
- ▶ Portugal also plays an important role in the **production of components for renewables, having attracted relevant international players in the sector**, namely for wind energy, such as blades, towers, rotor blades, solar panels, etc.
- ▶ Furthermore, **the country has pioneered attracting and implementing technological advances and investments in emerging renewable sources**, with internationally known projects in Floating Offshore Wind, Wave, Tidal and Floating Solar.

Green energy Green components

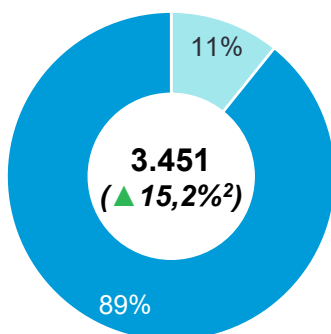
Companies | 2021



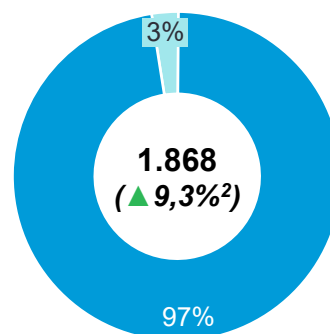
Employees | 2021



Turnover (€M) | 2021



Gross Value Added (GVA) (€M) | 2021



SIEMENS Gamesa
RENEWABLE ENERGY

“ The blade manufacturing plant of Siemens Gamesa in Vagos, North of Portugal, will soon become the largest Onshore blade plant in Europe, with more than 1.300 employees (...). It is a good example of Portugal's capacity to attract investment.”

Andreas Hening, Onshore COO

Siemens Gamesa (German Company) was established in Portugal in 2020

1. Eurostat (2021).

2. Compound annual growth rate.

Source: AICEP Portugal Global, Eurostat, Statistics Portugal, Sabi, Siemens Gamesa.

In 2021, Portugal was the fourth European country with the largest incorporation of Renewables in electricity

- ▶ Portugal is at the EU forefront in green energy sources development, as, **in 2021**, it had the **fourth largest share of Renewables in electricity production within the EU**.
- ▶ **Renewables incorporation in the national final energy consumption grew 84% between 2011 and 2021**, reducing the country's energy dependency while cutting its CO₂ emissions.
- ▶ In 2022, the Portuguese Renewable Energy Association (APREN) estimated that the **Renewable Energy sector accounted for 76.897 direct and indirect jobs**, demonstrating its importance in developing complementary industries (steel, metal etc.).
- ▶ According to the Portuguese Government, **until 2030, Portugal expects more than €60B of investment in new Renewable projects across the country** (according to the Minister of Environment and Climate Action).

Main Renewable Energy indicators

32%

Share of Renewables on gross final energy consumption (DGEG), 2022

▲ 12,3%

Reduction of the Portuguese energy dependency (DGEG), 2011-21.

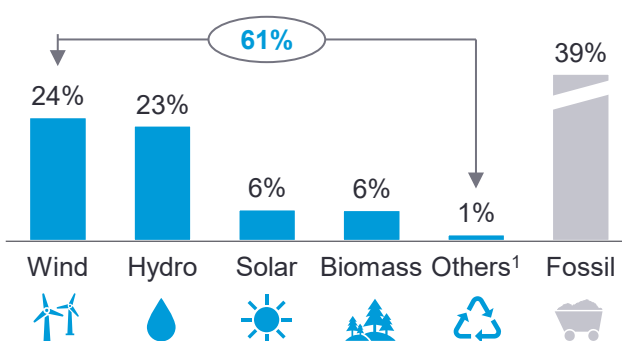
61%

Share of electricity from renewable sources in total annual production (DGEG), 2022

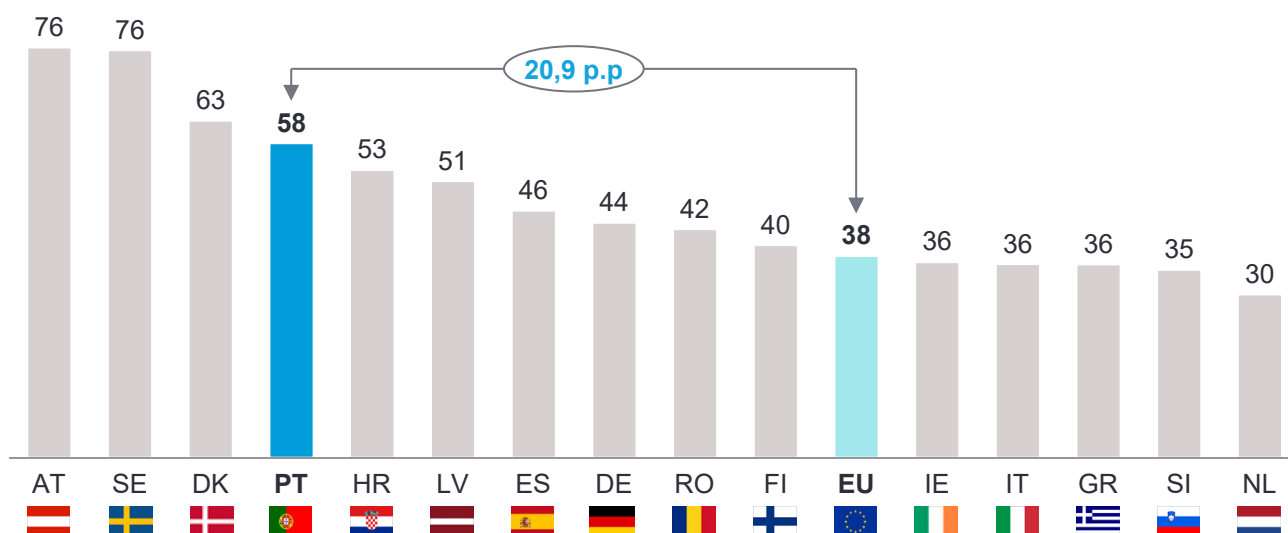
22nd

Ranking on role to Planet & Climate (out of 169 countries) (Good Country Index) | 2022

Production of electricity, by energy type, in Portugal (DGEG) (%) | 2022



Share of Energy from Renewable sources in gross electricity production (%) | 2021

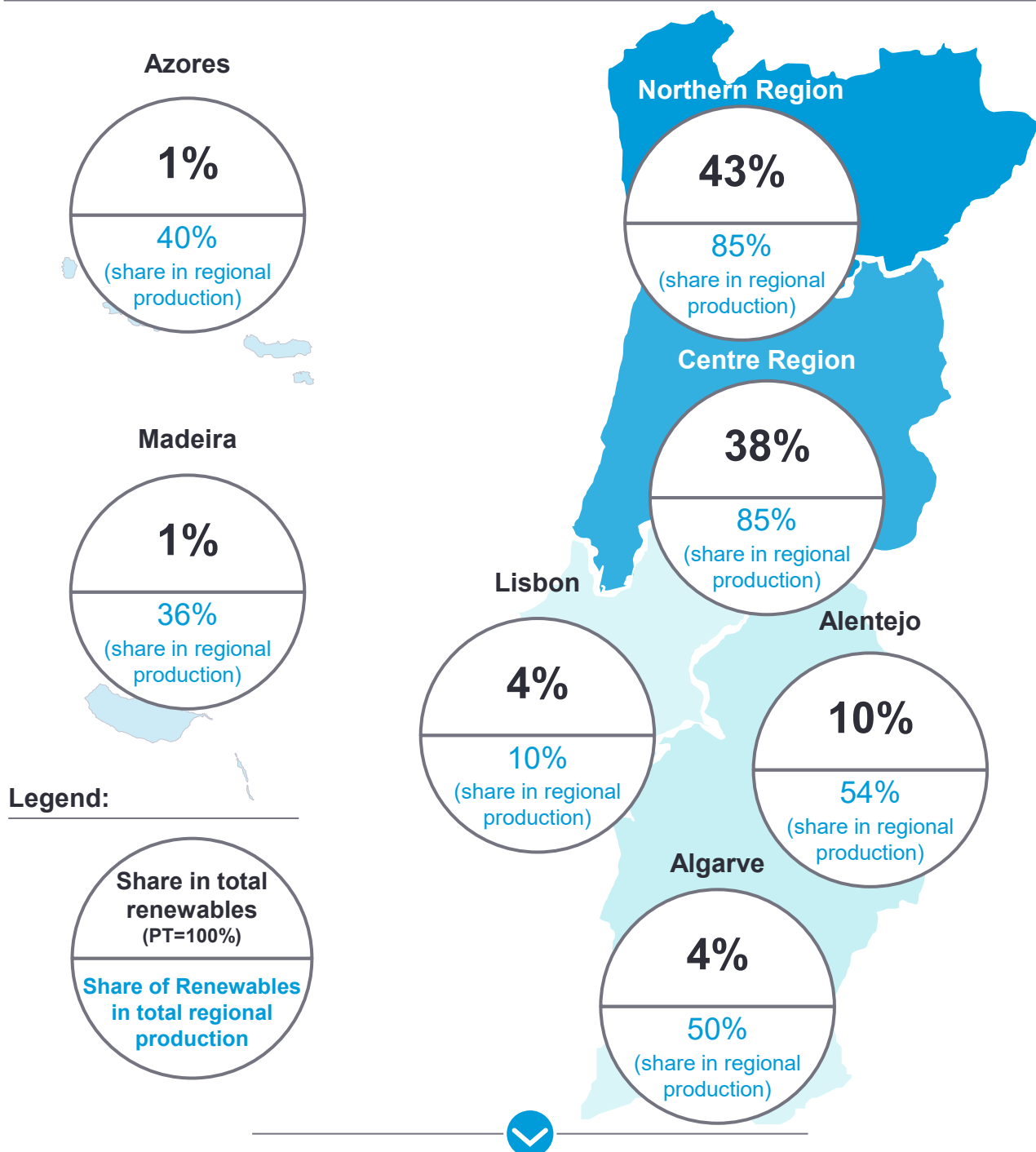


“ Portugal has found a good balance of ambitious targets and competitive support measures needed to drive a cost-effective energy transition.”

Fatih Birol, Executive Director
International Energy Agency (IEA)

In 2021, the Northern and Centre regions represented 81% (24.187 GWh) of total Renewable Energy production

Share of Renewable Energy production by region (NUTS II) (%) | 2022

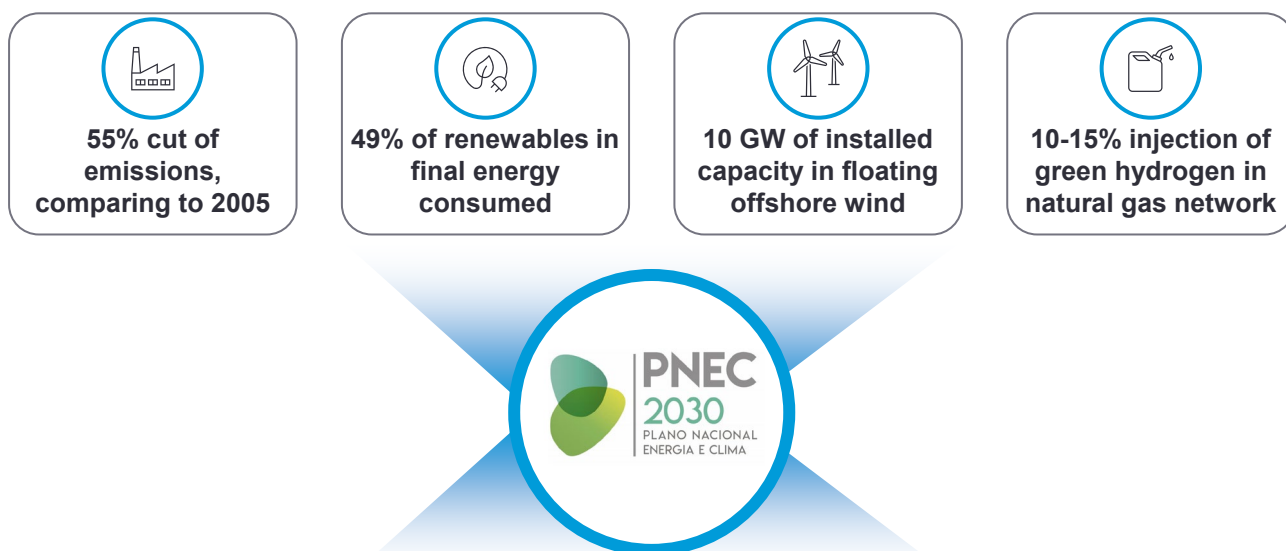


- ▶ In 2022, the Northern and Centre regions represented 81% (24.187 GWh) of total Renewable Energy production.
- ▶ In the Centre region, Renewables accounted for 85% of all electricity production, the same amount as in the Northern region.
- ▶ In 2021, the Northern region produced 12.692 GWh in Renewable Energy, with 52% coming from the Lima, Cávado and Douro hydropower plants.
- ▶ In 2022, the Centre was the region with the highest wind production (6.625 GWh), accounting for 50% of national production in this energy source.
- ▶ Alentejo region is responsible for 44% (1.528 GWh) of Solar's national production.
- ▶ Geothermal is, currently, only produced in the Azores, reaching 196 GWh, in 2022.

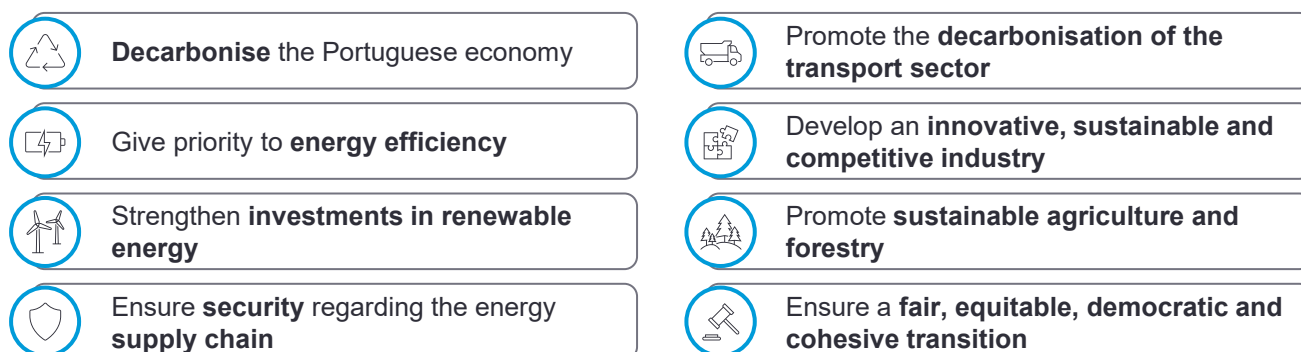
To reach Carbon Neutrality by 2050, Portugal has set ambitious energy goals

The Government defined a Roadmap for Carbon Neutrality 2050. By 2030, the largest effort will be placed, translated into the “2030 National Energy and Climate Plan”.

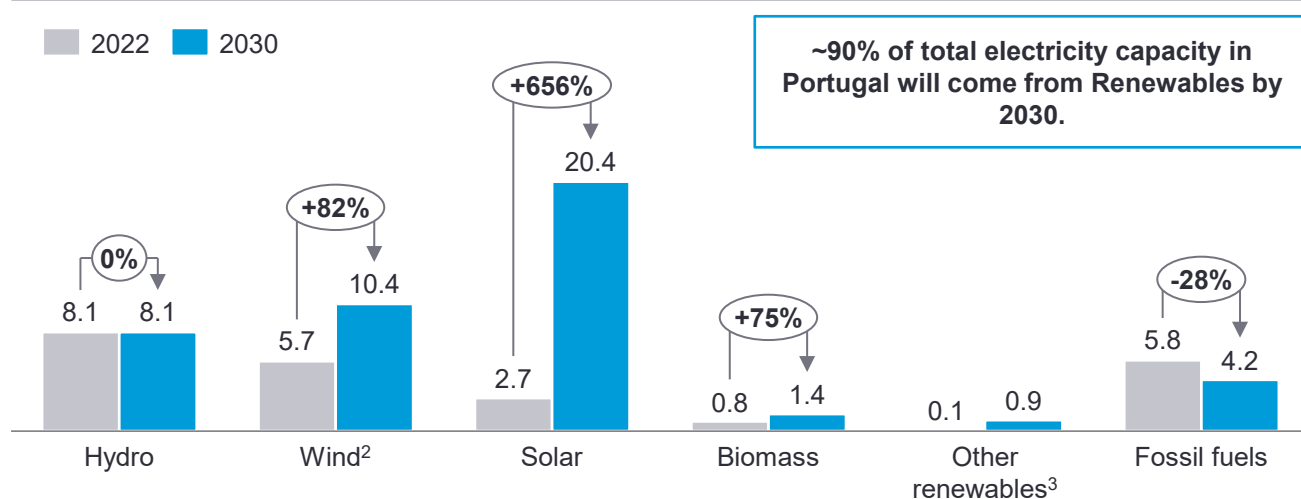
Main milestones of 2030 National Energy and Climate Plan¹



Main objectives of PNEC 2030



Objectives of installed capacity for electricity production in Portugal, per energy type (GW) | 2022-30



1. Data from the new PNEC 2030 of July 2023 with new ambitions¹, still in public discussion.

2. Not accounting for the 10 GW of installed electricity capacity for from floating offshore wind.

3. Other renewables include waste management, geothermal and wave energy.

Source: DGEG, Roadmap for Carbon Neutrality 2050, PNEC 2030 Revised, Energy Observatory.

Portugal has been selected as an investment destination by several multinational companies

Most recent investments undertaken by foreign companies in Portugal

Green energy

- ▶ In 2020, **Ocean Winds**, a joint venture between EDP Renewables and Engie, **developed Europe's first Floating Offshore Wind farm in Viana do Castelo, Portugal.**
- ▶ The project, named WindFloat Atlantic, has an installed capacity of 25 MW and has been producing energy for 25.000 homes per year since 2020.



- ▶ **Iberdrola's** Gouvães and Daivões hydroelectric power stations entered full operation in 2022, with a **total investment of €1,5B.**
- ▶ The Tâmega Electricity System, one of the largest projects in Europe, will increase Portugal's installed power by 6%, **producing 1.766 GWh annually**, equivalent to supplying energy for 440.000 homes.

Green components

- ▶ In 2021, the South Korean **CS Wind**, took control of ASM Industries, a manufacturer of wind towers based in Aveiro
- ▶ **CS Wind will invest €260M until 2026, to double its Portuguese workforce to more than 1.000 professionals and quintuple its subsidiary's turnover to €400M.**



- ▶ Siemens Gamesa is one of the world's largest **manufacturers of wind equipment.** In 2020, it acquired a blade manufacturing plant located in Aveiro, North of Portugal.
- ▶ In 2021, the company invested €35M in the installation of six new production lines for the manufacturing of wind blades, thereby **becoming one of the largest onshore blade plants in Europe, employing over 1.300 professionals.**

- ▶ In 2017, the Danish-based Vestas implemented an R&D centre in Porto. Currently, **the centre employs 600 professionals and represents 1/3 of the total innovation capability of the company worldwide.**
- ▶ The centre is specialised in electrical, civil and mechanical engineering, IT development, data analytics and virtual reality. In 2022, Vestas established its ambition to surpass 1.000 employees by 2027.



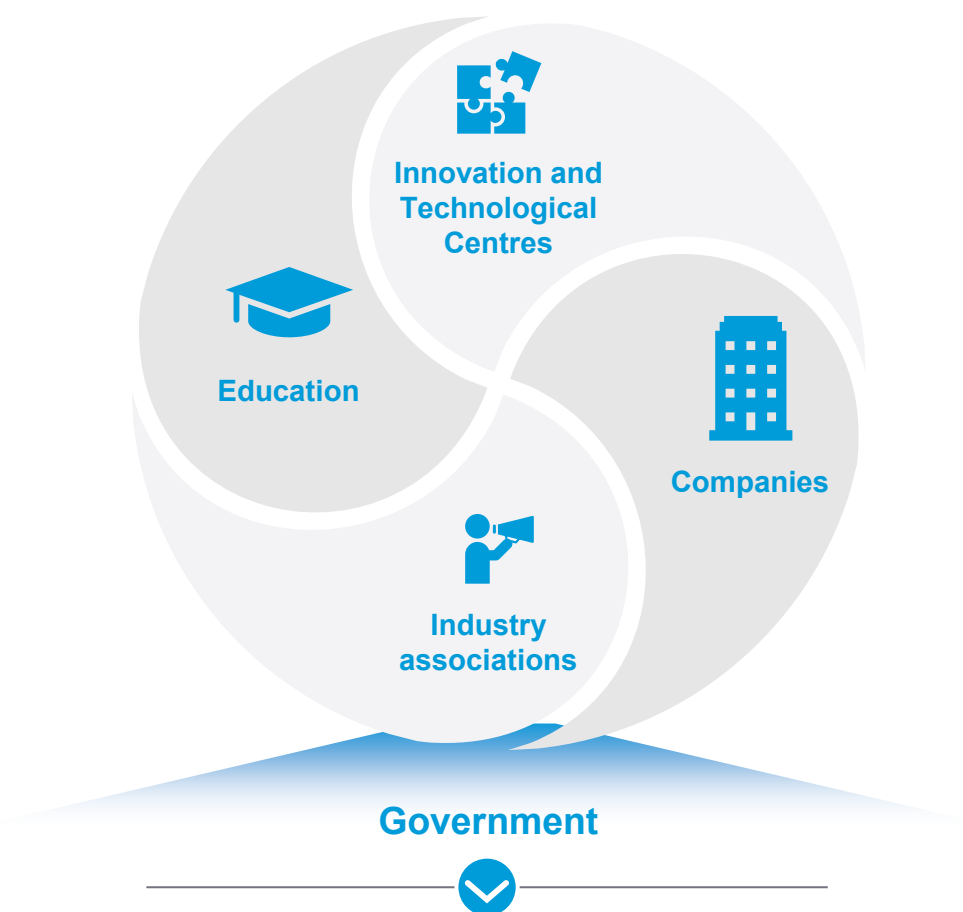
An aerial photograph showing a vast field of solar panels on the left, transitioning into a deep blue ocean with white-capped waves on the right. The solar panels are arranged in a precise grid pattern, and the ocean waves are breaking in a rhythmic pattern.

3

Renewable Energy industry ecosystem in Portugal

The connection and support between energy stakeholders have enabled the growth of the Renewable Energy sector

The Renewable Energy ecosystem in Portugal

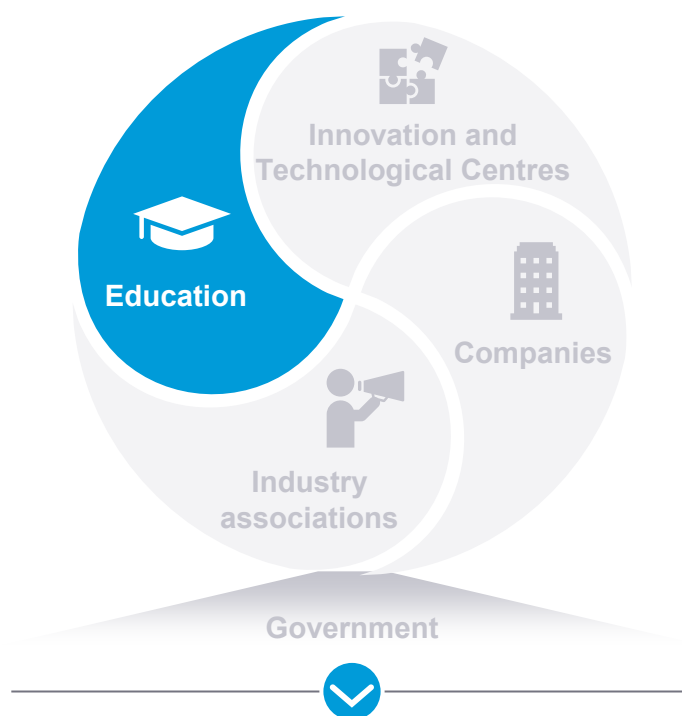


In general, the **Renewable Energy ecosystem in Portugal** comprises four **main axes**, **connected with each other and the Government**, a key stakeholder in facilitating its growth.

- ▶ The Portuguese Government considers the **Renewable Energy sector as strategic** for the competitiveness of the country's economy.
- ▶ In this sense, **the Government has set ambitious goals towards a carbon-neutral economy**, through the "2030 National Energy and Climate Plan" and the "Roadmap for Carbon Neutrality by 2050".
- ▶ The Renewables ecosystem has been growing at unprecedented rates, with **multiple investments** being made in established and emerging green energy sources.
- ▶ **The governmental bodies have been instrumental in attracting foreign investment**, both directly and indirectly, to Portugal's Renewable Energy sector.
- ▶ The **Regulatory Entity for Energy Services (ERSE)**, an independent body, has fostered trust among investors with its **commitment to protecting consumer rights and promoting fair competition in the energy sector**.
- ▶ The **General Directorate for Energy and Geology (DGEG)** has committed efforts to **contribute to the design, promotion, and evaluation of friendly policies for investments in energy resources**.
- ▶ The **Portuguese Environmental Agency (APA)** has the responsibility of overseeing environmental matters, **assuring investors of Portugal's commitment to sustainability**.

Portugal presents a highly educated and qualified workforce

The Renewable Energy ecosystem in Portugal | Education

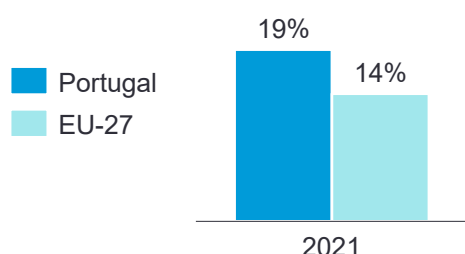


- **Portugal presents a highly educated and skilled workforce**, ensured by its well-recognized universities. In 2021, 19% of its total graduates were enrolled on “Engineering, manufacturing and construction” fields, compared better than the EU (14%)¹¹.
- **Internationally known institutions**, such as the Universities of Porto, Lisbon, and Minho **already offer dedicated courses and conduct cutting-edge research programs** in Energy, particularly

Renewable Energy technologies.

- Collaboration with industrial companies allows for practical learning opportunities and contributes to advancements in areas, such as wind, solar, and wave energy. **A good example of project collaboration is the one established between Porto’s University and Ocean Winds for the development of the WindFloat project**, with students aiding in the design and testing of the floating structures.

Share of engineering graduates¹² in total graduates | 2017-2021



Global Talent Competitiveness Index 2020 (out of 132 countries), INSEAD, the Adecco Group and Google Inc.



Global Innovation Index 2020 (out of 131 countries), by the Cornell, INSEAD, and the World Intellectual Property Organization.

Vestas

“ One of the reasons we chose Porto is the strength of its universities, which produce very good civil, mechanical, and electrotechnical engineers, highly qualified and with high commitment. Those kinds of skills still impress me every day.”

Martin Kaasgard, Director

Vestas, a Danish Company, was established in Portugal in 2017

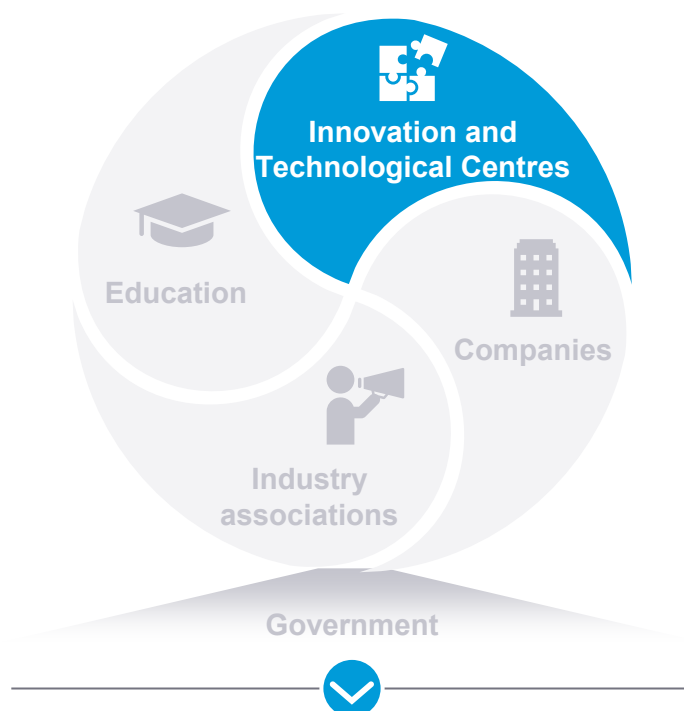
1. Eurostat.

2. Includes bachelor's, master's and doctoral's graduates (

Source: Eurostat, INSEAD, Cornell, Vestas, IDC: “Building a scalable nation” (2022), University of Porto.

Portugal is recognised by its investment in emerging Energy sources and innovative engineering solutions

The Renewable Energy ecosystem in Portugal | Innovation and Technological Centres



- ▶ Portugal has been targeted for projects and investments in emerging energy sources, supported by an **ecosystem of R&D institutes**, like WavEC Offshore Renewables, Instituto Superior Técnico and Centre for Innovation in Polymer Engineering (PIEP).
- ▶ **The ecosystem's investment in emerging green energy sources has led Portugal to be considered the third leading country in the offshore wind market, by the Global Wind Energy Council (GWEC), after UK and Norway.**
- ▶ Below, examples of innovative investments concerning emerging energy sources:



First floating offshore wind farm in Europe

The project WindFloat Atlantic, from Ocean Winds, in operation since 2020, comprises three wind turbines, located off the coast of Viana do Castelo.



Largest European floating solar project in a reservoir

In 2022, EDP installed 12.000 floating solar panels in Alqueva, supplying 1.500 families, with an annual capacity of 7,5 GW.



Innovative projects in wave/tidal

In Portugal there are currently two wave projects:

- ▶ The WaveRoller in Peniche
- ▶ The Wave Centre in Pico Island in Azores



First Iberian hybrid parks (solar + wind)

The project was developed by EDP Renewables in Sabugal (Alentejo), with 20 MWh of installed capacity, over a 13-hectare area and it is connected to the grid from 2023.



Re-using coal plants for the green hydrogen

An international consortium¹ is investing €150M to adapt the former Sines' coal-fired plant as a 100 MW hydrogen production hub.

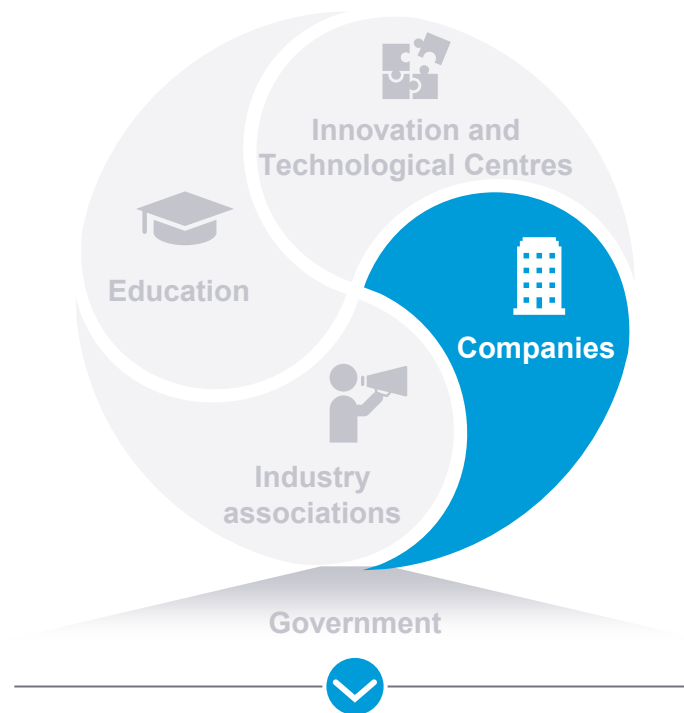
Did you know that ...

... in 2023, the Portuguese company **Online** was incorporated in the top 100 most innovative energy transition enterprises by the World Energy Council?

1. The GreenH2Atlantic is promoted by EDP, Galp, ENGIE, Bondalti, Martifer, Vestas Wind Systems A/S and counts with the participation of McPhy and Efacec, ISQ, INESC-TEC, DLR and CEA and the public-private combination of companies Axelera. Source: EDP Renewables, Online, GWEC, AICEP Portugal Global, Ocean Winds, EDP, GreenH2Atlantic.

Portugal has been able to attract relevant foreign companies in the Renewable Energy sector

The Renewable Energy ecosystem in Portugal | Companies



- ▶ Portugal's commitment to Renewable Energy targets stated on the country's strategic plans, associated with advanced infrastructures, a collaborative innovation ecosystem, strategic locations and a skilled workforce marks the country as an attractive destination for foreign investment.
- ▶ Portugal has been able to attract major foreign players that produce Renewable Energy (e.g. Movhera, Ventient Energy, Acciona, Total, Engie) and components production, namely wind turbines, generators, moulds and others (e.g. Siemens Gamesa, Enercon, CS Wind and Vestas).

Top five foreign Renewable Energy companies in Portugal, per subsector | 2021

Green energy	Green components
movhera ¹	SIEMENS Gamesa RENEWABLE ENERGY
VENTIENT ENERGY	ENERCON ENERGY FOR THE WORLD
acciona	CS WIND
TotalEnergies	Vestas
ENGIE	

Did you know that ...

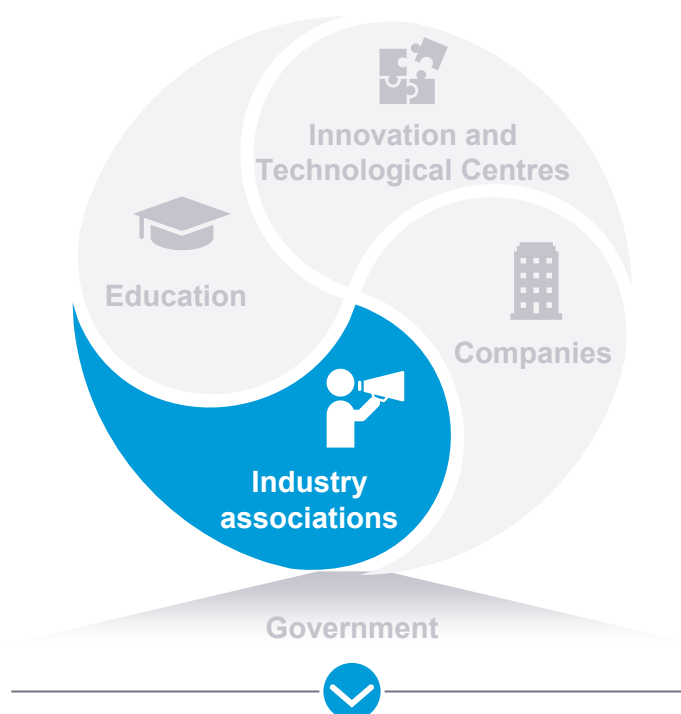
... **Enlitia** was awarded for Best AI Project for Energy by the International Data Corporation in 2020? The company is revolutionizing the way renewable power is produced, distributed and consumed, by **harnessing the power of AI, to predict and analyze production intensity.**

1. Movhera is a consortium composed by Engie, Crédit Agricole Assurance and Natixis.

Source: AICEP Portugal Global, EY Attractiveness Europe 2022, Company's websites, Iberdrola, SABI, Enlitia, .

The Renewable Energy business associations have set the foundations for the sector's increasing attractiveness

The Renewable Energy ecosystem in Portugal | Industry associations



- ▶ **Portuguese industry associations** dedicated to Renewable Energies **have been playing a pivotal role in driving R&D, fostering education and learning and promoting the country as a green energy hub.**
- ▶ The associations' ecosystem range from the ones focused on **promoting new and innovative Renewable Energy projects** (e.g. APREN, APE, APESE, AP2H2) and those focused on adjacent industries and manufacturing activities (e.g. AIMMAP, PRODUTECH).
- ▶ These entities **promote collaborative innovation projects**, facilitating ties between academia and industry to boost breakthroughs in Renewable technologies. Additionally, they take part in **enlightening the public and policymakers about the benefits of Renewable Energy.**
- ▶ Overall, **these associations highlight Portugal's advancements and investment opportunities in the renewable sector at the domestic and international levels.**



The mission of **Associação Portuguesa de Energias Renováveis (APREN)** is the promotion of Renewables by establishing connections with the Government and investors.

The association currently represents more than 90% of the total installed capacity of Renewable electricity production in Portugal.



Created in 2003, **Associação Portuguesa para a Promoção do Hidrogénio (AP2H2)** aims to promote the use of hydrogen as an energy source in Portugal.

The association fosters dialogue between stakeholders, pursues policy advocacy and conducts educational programs to advance hydrogen technologies.



Created in 2011, **Associação Portuguesa das Empresas de Serviços de Energia (APESE)** aims to encourage the development and structuring of the energy services market in Portugal.

The association also represents the interests of the energy services companies.

4

Renewable Energy industry subsectors in Portugal



Portugal couples' good endogenous characteristics to produce Renewables with a skilled workforce

Production of green energy

- ▶ In 2022, 61% of the electricity produced came from renewable sources, that use mature technologies, such as Wind and Hydro, representing 24% and 23% of total national production of electricity.
- ▶ Solar has been growing its share in total production. In 2019, Portugal produced 1.006 GWh, increasing to 3.472 GWh in 2022.
- ▶ Portugal has new green power plants under construction. Recently, the country published its intentions to increase energy production in Offshore Wind (10 GW by 2030), Green Hydrogen (that should cover 2% of the country's energy needs by 2030) and Solar (9 GW in 2030).
- ▶ The new goals, associated with current Renewables production, will help the country to achieve its commitment to carbon neutrality by 2050.

4th

EU rank of renewables in electricity generation (out of EU27 countries) | 2021

Source: Eurostat

10th

Worldwide rank for Renewables Investment Attractiveness¹ (out of 40 countries)| 2023

Source: EY RECAI 61st Edition



... Founded in 2004, **EDP² is the biggest utility company in Portugal** and a global leader in the energy transition. The company is now established in 29 markets, supplying more than 9M clients. Moreover, in 2022, 79% of EDP's total capacity comes from renewables. The company has the ambition to be 100% green by 2030 while investing in innovative projects, like floating solar in Alqueva, Portugal.

... Established in Portugal since 2021, **the Portuguese Greenvolt¹⁴** is a renewable energy producer that uses multiple technologies, such as forest residues, wind and sun in over 17 countries. Today, the Greenvolt Group counts around 500 employees from 17 countries.



... Established in Portugal since 2002, the **Spanish Iberdrola¹⁴** has been investing in wind, solar and mixed Renewable Energy projects. In 2022, it opened the dam system in Alto Tâmega (Northern Portugal) with an installed capacity of 1.158 MW. On wind, the company can produce 200 GWh per year, supplying 35.000 homes.

... **Movhera¹⁴** was established in Portugal in 2020, as a result of an **international consortium composed of Engie, Crédit Agricole Assurances and Mirova**. The company has now the second-largest hydroelectric portfolio in Portugal, operating six hydropower plans, with a generation capacity of 1,7 GW.



... Founded in 1996, **the Portuguese company Finerge¹⁴** is now the country's second-largest renewable energy producer. The company operates 77 wind farms and 17 PV solar plants across 58 municipalities in Portugal and 5 provinces in Spain, with a portfolio value of €2,4B in 2022.

1. Using the normalized ranking, which takes into consideration the GDP and market's dimension.

2. The companies presented are the ones with the highest turnover in the subsector and relevant international investors in the subsector.

Source: Companies' websites, EY RECAI, PNEC 2030 Revised, DGEG, Statistics Portugal, Eurostat.

Portugal attracted several international green component manufacturers to set up operations

Production of green components

- ▶ **Portugal** has been able to **attract major foreign players that produce equipment and components for the renewable energy sector** (wind turbines, generators, moulds and others).
- ▶ The growth of international players operating in Portugal mirrors the country's competitiveness and attractiveness in the sector, the nearshoring effect of European supply chains, the highly skilled workforce and the EU's increasing demand for green energy.
- ▶ **CS Wind, Enercon and Siemens Gamesa** are among the key international players that have **chosen Portugal to expand their industrial capacity in wind energy components**.
- ▶ Simultaneously, companies, such as the Portuguese-based Fusion Fuel, are **producing highly innovative hydrogen generators** mounted to a specially designed concentrated photovoltaic solar tracker.
- ▶ Finally, several companies established in Portugal have been investing in processes and technologies that maximize energy efficiency and storage. Energy engineering developers, such as Principle Power, combined with R&D hubs from foreign green component manufacturers, such as Vestas and Voltalia, boost the **development of an innovation ecosystem in the country**.

€4,2B

Renewables' direct and indirect contribution to Portuguese GDP (2% in relative terms)¹ | 2022

Source: APREN 2023 Yearbook

22nd

Rank on the global role to Planet & Climate domain | 2022

Source: Good Country Index



CS WIND

... Operating in Portugal since 2021, the **South Korean CS Wind²** acquired ASM Industries, a manufacturer of wind towers based in Aveiro, and took control for €46,5M, 60% of the company. Now, CS Wind will invest €260M until 2026, to double its Portuguese workforce to more than 1.000 professionals and quintuple its subsidiary's turnover to €400M.

... **Siemens Gamesa²** is one of the **world's largest manufacturers of wind equipment**. In May 2020, it acquired a blade manufacturing plant located in Aveiro, Centre of Portugal. In 2021, the company invested €35 million in the installation of six new production lines for the manufacturing of wind blades, thereby becoming one of the largest onshore blade plants in Europe, employing over 1,300 people.

SIEMENS Gamesa
RENEWABLE ENERGY



... Established in Portugal for more than 10 years, the **German wind turbine manufacturer Enercon²** already has 1.500 employees at its facilities in the Praia do Norte and Lanheses Business Park, Viana do Castelo region.

... In 2017, the **Danish-based Vestas²** implemented an R&D centre in Porto, North of Portugal. Currently, the centre employs 600 professionals and represents one-third of the total innovation capability of the company worldwide. The centre is specialized in electrical, civil and mechanical engineering, IT development, data analytics and virtual reality.

Vestas

1. Contribution to GDP results from investment and production of the Renewable sector and its dependencies on other industries (Renewables' direct and indirect contribution to Portuguese GDP).

2. The companies presented are the ones with the highest turnover in the subsector and/or relevant international investment.

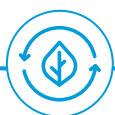
Source: Company's websites, APREN 2023 Yearbook, Good country index, Statistics Portugal, Eurostat.

A person wearing a red safety suit with reflective stripes stands on a platform, looking out over a vast ocean. In the distance, several wind turbines are visible on the horizon. The sky is filled with large, dark clouds, and the sun is setting, creating a warm, golden glow. The overall scene conveys a sense of scale and the potential of renewable energy.

5

FDI attractiveness
factors for the
Renewable
Energy industry

Portugal holds several favourable factors that enhance the country's attractiveness for foreign investment ...



Green location

Portugal leads the way in embracing renewable energy: in 2022, 61% of the electricity produced comes from green sources. The country remains committed to further expanding its production, with new green power plants under construction.



Endogenous conditions

Portugal is known for having favourable environmental conditions for all types of Renewable sources: rainfall (hydro), sun hours (solar), topography (wind), seacoast (waves), and forest (biomass).



Openness to innovation

Portugal is very receptive to technological advances and investments in innovative and emerging renewable sources, with pioneering projects on Floating Offshore Wind, Wave, Tidal and Floating Solar.



Governmental priority

The Portuguese Government has been actively promoting investments in Renewables, predicting a 29% increase in total installed capacity for electricity production by 2030¹⁷.



Highly skilled workforce

In 2021, Portugal had the 3rd highest share of graduates in the EU in "Engineering, manufacturing and construction", according to Eurostat (2022).



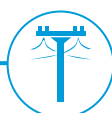
Strong Industrial footprint

Portugal has a relevant industrial footprint. Advanced Manufacturing¹⁸ is now the strongest exporting sector in the Portuguese economy (more than €19B in 2022).



Strong R&D in Renewables

Portugal's Renewable Energy enterprises are amongst the most innovative worldwide. In 2021, these invested €129M in R&D. An example is EDP's floating solar panels in Alqueva, which won the European Sustainability Energy Award 2023.



Energy market connectivity

Since 2007, the Iberian Electricity Market (MARBEL) was established, with prospects for green pipelines to Central Europe. The combination will allow the country to export Renewable Energy.



Good business environment

Portugal has a stable political and economic situation and a well-developed infrastructure network. Thus, it offers a competitive and predictable environment for investment on the Renewable Energy sector.



External challenges to which the Energy Sector in Portugal is responding



Increasing Energy prices' volatility on international markets, influenced by geopolitical events.

Increasing sustainability awareness, as the RePowerEU aims to foster Green Energy production.

Emerging energy sources such as offshore wind, wave or tidal are arising, as well as large investments in green hydrogen.

Nearshoring effect on manufacturing supply chains by European companies.

17. Based on PNEC 2030.

18. Includes the Metal, Mechanical and Electronics sectors.

Source: Portuguese Government, Eurostat, AICEP Portugal Global, EY Attractiveness 2022, APREN, IDC: "Portugal the best place to start-up" (2021), IDC: "Portugal a scaleup nation" (2022), University of Navarra, IPCTN.

An aerial photograph of a modern residential development at dusk. The image shows a cluster of multi-story brick buildings with flat roofs, each equipped with several solar panels. The buildings are illuminated from within, and some have small awnings over the entrances. A paved road curves around the bottom right of the development, and a few cars are visible. The overall scene is a mix of warm interior lights and the cool tones of the twilight sky.

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Appendix

Economic activity codes

NACE	Description	Subsector
35111	Production of electricity from hydropower	Green energy
35113	Electricity generation from wind, geothermal, solar and other sources n.e.c.	
28110	Manufacture of engines and turbines, except aircraft, automobile and motorcycle engines	Green components

AICEP is a one-stop shop entity responsible for attracting top foreign companies to invest in Portugal. It offers comprehensive support services, including guidance and coordination with Portuguese entities involved in the investment process.

AICEP works as a flexible government business entity with streamlined free-of-charge services, offering a dynamic approach focused on the client/investor and allowing direct negotiation with companies through a tailored approach to their requirements.

AICEP is a single point of contact for foreign investors in all phases of the decision process:

- **Enquiry-handling phase:** provides comprehensive, accurate information, data, and benchmark reports.
- **Site Location:** provides different site proposals according to project specifications. Help partnerships with local entities.
- **Fact-finding visits:** organizes site visits to meet local authorities, recruitment firms, office space providers, and universities, among others.
- **Aftercare:** a key account manager will assist regularly.

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