

Portugal as a Prime Investment Destination: Infrastructure & Innovation at the Core



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Executive Summary

Portugal is recognized as a premier European investment destination, whose remarkable economic performance from 2022 to 2025 is not an anomaly but the result of deep-seated structural strengths. The country has successfully transformed itself into a resilient, high-potential economy characterized by robust public and private sector surpluses, declining debt, growing human capital, and strengthening sovereign credit ratings. This success is further extended by two fundamental pillars of competitiveness: world-class infrastructure and a dynamic innovation ecosystem capable of attracting global talent, which together create a unique and attractive environment for strategic investments and accelerated economic growth.

The Foundations of a Resilient Economy

Portugal's economic resurgence is built on a foundation of fiscal responsibility and strategic advantages. The country has achieved budget surpluses since 2022, a rarity in Europe, leading to a significant reduction in public debt. This fiscal health, combined with a current account surplus, has reinforced investor confidence and lowered sovereign yields below major European economies. Beyond the numbers, Portugal offers high quality of life, ranking as one of Europe's safest countries, with moderate corruption levels and a digitally advanced public administration. Its geopolitical position as a stable European nation with strong historical ties to Africa, the Americas, and Asia provides a unique gateway for global trade and cultural exchange in an increasingly uncertain geo-political context.

Critically, the main drivers of the Portuguese GDP growth are the increase in the labor force due to immigration, as well as knowledge dividends related to education and R&D. The country is experiencing a profound demographic shift, attracting a large pool of well-integrated immigrants that has reversed population decline and fueled record employment figures. This is complemented by an "education dividend," with the active population holding Higher Education increasing by over 250% in the last 25 years. Thus, net positive migration of talented professionals and education are fueling innovation and economic growth. This highly qualified, growing workforce is a primary engine of Portugal's economic momentum.

The Value of Superior Infrastructure

In addition to the improvement in human capital, Portugal's infrastructure provides a tangible, competitive edge for businesses operating within its borders. Portugal is a global leader in renewable energy, generating over 70% of its electricity from renewable sources in 2023. Its strategic investments in hydropower, solar, and wind energy are supported by a modernized grid and ambitious energy projects. This commitment ensures businesses have access to abundant, clean, and affordable energy, with industrial electricity prices well below the European average. The country's last coal power station was decommissioned in 2022, de-risking businesses from fossil fuel volatility and aligning with EU decarbonization goals.

The country efficiently leverages its natural resources for sustainable economic development. Projects like the Alqueva Dam - creating Europe's largest artificial lake - have transformed the Alentejo region, enabling high-value agriculture and boosting tourism. The country is a world leader in cork production and has an advanced sustainable forestry and pulp industries. Furthermore, its vast Exclusive Economic Zone offers significant opportunities in fisheries, aquaculture, and the burgeoning field of marine biotechnology.

Portugal also boasts one of Europe's highest fiber optic penetration rates and extensive 5G coverage, providing the digital backbone for a modern economy. Its financial infrastructure is equally advanced, with widespread adoption of innovative payment solutions like MB Way. Physically, strategic deep-water ports like Sines are being transformed into industrial and energy hubs, while ongoing investments in roads, rail and airports enhance its role as a critical logistics gateway connecting Europe to global markets.

Thus, superior infrastructural conditions in natural resources, energy production, transportation, and digital networks, provide the physical backbone for a modern economy.

A Thriving Innovation Ecosystem

Portugal has also cultivated a vibrant, multipolar innovation ecosystem that translates knowledge into economic value. The country has been attracting top talent and global wealth. It ranks as the 7th most attractive destination for millionaires and the 13th best for graduates globally. This influx, combined with a strong higher education system, has created a highly skilled workforce where 34% of the active population holds a higher education degree.

Cities like Lisbon, Porto, and Braga have become vibrant innovation hubs, attracting competence and innovation centers, research laboratories, and startups, through initiatives like the Unicorn Factory in Lisbon and the hosting of the Web Summit, the largest tech conference in the world.

A network of renowned research institutions, collaborative laboratories (CoLABs), and technology centers (CTIs) drives cutting-edge research in fields from nanotechnology and biomedicine to aerospace and digital technologies. This ecosystem is highly efficient: Every Euro million invested in R&D in Portugal generates, on average, eight jobs – four directly plus four indirectly by inducing higher demand on suppliers (upstream row effects) and business initiatives or start-ups (downstream row effects). This strong return on investment attracts significant corporate R&D hubs from companies like Siemens, BMW, and BNP Paribas.

This ecosystem fuels excellence in key sectors. In healthcare and biotech, world-class institutions like the Gulbenkian Institute for Molecular Medicine (GIMM) drive groundbreaking research. In engineering, centers like CEiiA lead in developing products for mobility, aeronautics, and space, exemplifying the synergy between research and industry. Several large multinationals, such as BMW and Bosch, have based large and advanced development centers in Portugal.

Strategic Opportunities in a New European Context

The current global geopolitical shift, emphasizing strategic autonomy and supply chain resilience within Europe, further amplifies Portugal's attractiveness. The priorities outlined in the Draghi report: closing the innovation gap, ensuring affordable energy supply, and strengthening defense capabilities – align extremely well with Portugal's inherent strengths.

Emerging investment opportunities include further developing R&D Centers for multinationals, as well as large Data Centers, leveraging Portugal's renewable energy production, connectivity, and talent to become a European hub for data and innovation. It also includes advanced manufacturing and defense initiatives, capitalizing on its traditional metalomechanics expertise and recent leadership in aeronautics, drones, and data-driven defense technologies to contribute to a more resilient European defense industry.

Portugal thus offers a compelling combination of macroeconomic stability, superior infrastructure, strengthening human capital and an innovative, talent-rich ecosystem. Portugal is not merely recovering from past challenges but is strategically positioned to thrive in the new global economy, offering a valuable business and innovation platform enabling long-term sustainable investment.

1 | Introduction

1.1 Purpose of the Analysis

The goal of this report is to analyze the development of the Portuguese infrastructure and innovation ecosystem, key factors positioning Portugal as a high-growth economy and an attractive location for talent and investment across various sectors. The report identifies areas where Portugal has a comparative advantage and where there may be significant investment opportunities, thus providing a detailed and updated vision that can guide strategic investment decisions.

This report follows a previous study conducted by the Center for Applied Studies (CEA) of Universidade Católica Portuguesa, on the *Structural Trends Shaping Portugal's Economy and Growth*, which provided a comprehensive overview of the progress of the Portuguese economy, highlighting investment opportunities in multiple sectors, including Tourism, Health, Energy, Infrastructure, and Agriculture. This current study focuses on the critical infrastructural and innovation factors supporting the competitiveness of the Portuguese economy in the current fast-changing global geo-political context.

The Portuguese Economy has experienced a period of excellent performance in the last three and a half years (2022-2025), across multiple dimensions. We document this performance in chapter 2 and make the argument that this performance was not an anomaly. There are human capital drivers that will ensure the continuation of the excellent performance of the Portuguese economy in the medium term.

We also look further into the future in chapter 3 and 4, dedicated to infrastructure and innovation. The strength and growth potential of an economy is based on infrastructural factors on which an innovative ecosystem can be nurtured. Portugal is in the unique position of having developed both in the last decade. Infrastructure provides the necessary tangible foundation for economic activities. Portugal boasts a modern and efficient infrastructure network, including energy, telecommunications, transportation, banking and retail, which are essential for the smooth operation of businesses. The country's natural resources and its strategic location, with access to both European and global markets, further enhances its attractiveness as an investment destination. The report highlights these infrastructural strengths in chapter 3, underscoring Portugal's readiness to support large-scale investments and complex business operations.

Innovation is a key driver of economic progress, fostering new products and services, enhancing productivity, and creating high-value jobs. Portugal has made substantial strides in fostering a culture of entrepreneurship and innovation, supported by effective governmental policies, generating a vibrant startup ecosystem in several of its cities. The report describes in chapter 4 how growing private and public investments in research and development leverage Portugal's capacity to support cutting-edge industries, world-class institutes and technological advancements.

Finally, we also argue that the global geo-political transformations, despite the higher uncertainty that they bring, are likely to benefit Portugal's economic development. In chapter 5 a set of investment opportunities that leverage Portugal's strengths in the current global context needs are identified and discussed.

Ultimately, the objective is to present a compelling case for why Portugal should be considered as a strategic destination for investments, leveraging the country's human capital, infrastructural strengths, and innovation capabilities to achieve sustainable growth and prosperity.

1.2 Methodology and Scope of Analysis

The study involves the analysis of existing data from reputable sources such as government reports, institutional sources (e.g., Bank of Portugal, National Statistics Institute, Eurostat, IMF, World Bank), industry publications, academic research, and market studies. These sources provide a broad base of quantitative information and historical context, which is essential for trend analysis and benchmarking. In addition, the research team from CATÓLICA-LISBON supplied its own analysis, based on externally available and internal economic models. The scope of this analysis encompasses a detailed examination of key factors such as energy, natural resources, IT and telecommunications, banking, insurance and payments, transportation, logistics and retail.

Furthermore, specialists were also engaged to provide deeper knowledge of specific sectors, drivers or industries. This collaborative approach not only enriched the quality of the data but also provided a holistic view of how innovation and infrastructure intersect with and drive economic growth in key industries. The report thus provides a comprehensive overview of Portugal's innovation and infrastructure landscape, highlighting its competitive advantages and strategic opportunities. To offer a broader perspective, the analysis also included comparisons with other countries and regions, where relevant. This comparative approach helped to contextualize Portugal's position in the global market and underscored its unique strengths.



2 | The Strength of the Portuguese Economy

Portugal in 2025 is a small and vibrant country with an open economy that has been growing above the EU average for three years, generates surpluses in the public and private sectors and is attracting people and investment. It is becoming a haven for business investment due to several factors.

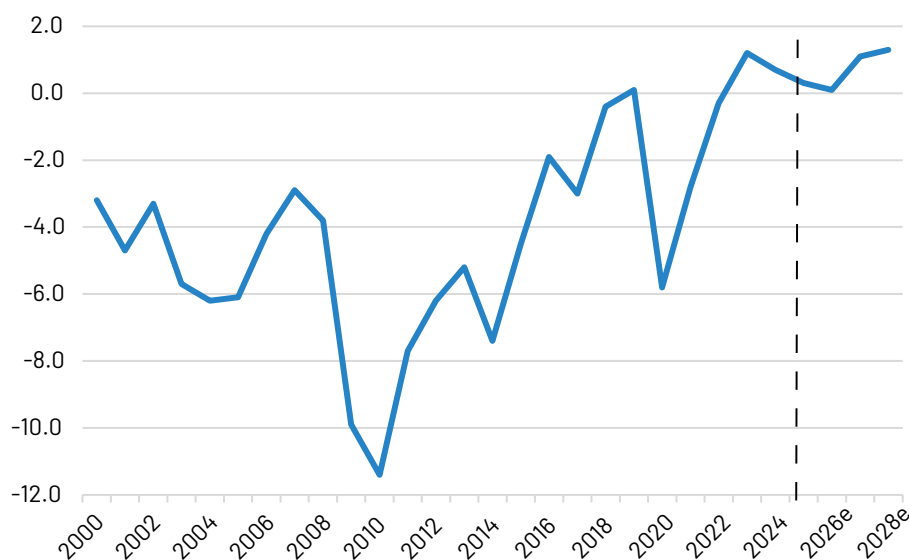
Firstly, Portugal has a geopolitical advantage in the new world context, being in a safe corner of Europe with strong Atlantic, African, and Asian ties. In fact, Portugal is historically, culturally, and economically connected with countries like Brazil, India, and China, as well as African countries such as Cape Verde, Angola and Mozambique. This creates a strong advantage for the attraction and integration of Portuguese-speaking immigrants. In addition, the Iberia Peninsula (Portugal and Spain) has become one of the growth engines of the euro area, with a strong influx of people and investments.

Secondly, and unlike Spain, the Portuguese political and democratic system is mature and structurally stable, with strong national identity and a political map in which

mainstream center parties hold close to 60% of voter support. Deeply integrated into the European Union and the euro financial system, with strong democratic traditions and a largely favorable view of European integration, Portugal offers predictability in an otherwise uncertain external context.

Thirdly, and unlike Spain and most of the euro area, Portugal exhibits a positive balance of public accounts, rare nowadays in Europe and the world. After the Economic Adjustment Programme of 2011-2014, Portugal changed to achieve a budget surplus, attained first in 2019 and then again after COVID in 2023-2024 and expected again in 2025. Specifically, the government budget balance evolved from a deficit of 0.3% of GDP in 2022 to a surplus of 1.2% in 2023. And 0.7% in 2024. In contrast, the euro area average has been -3% deficit in the last three years. According to the National Medium-Term Fiscal-Structural Plan 2025-2028, surpluses are foresighted to hold in the next three years, accommodating additional defense investments while allowing the Portuguese Government leeway for supporting selected public investments.

Figure 1. General government balance (% GDP), 2000-2028

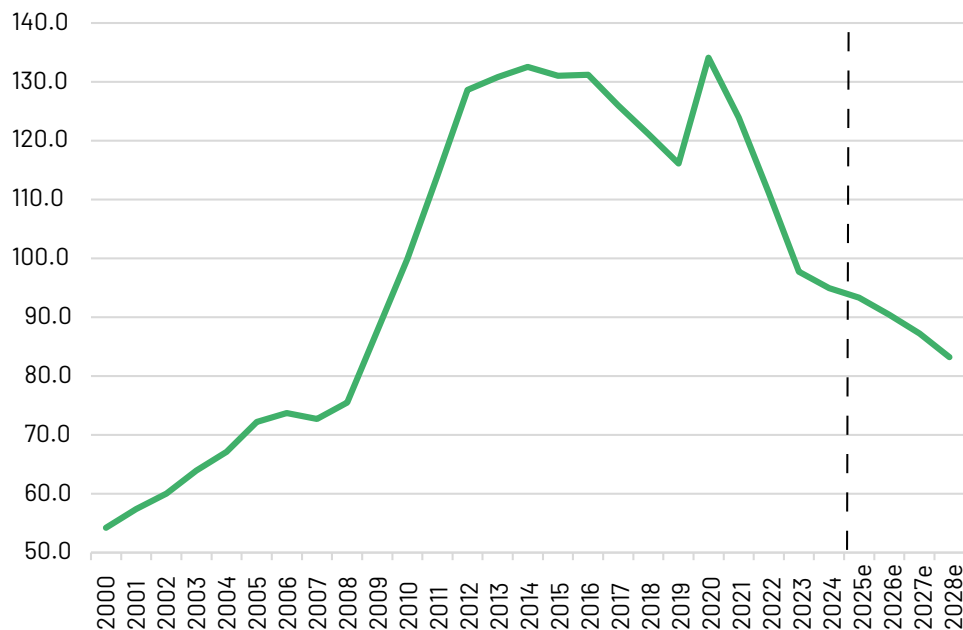


Source: INE and Ministry of Finance

The occurrence of (primary) positive balances explains the decrease of the public debt ratio from 111.2% of GDP in 2022 to 94.9% in 2024. Similarly, the private (corporations and households) debt reduced from 186.6% to 159.9% in the same period. A goal of about 80% is assumed by the Government for the public debt ratio

towards 2028, which would make the Portuguese debt burden lower than the EU average. Notably, if we consider the period of 2017-2024, Portugal is the champion of debt reduction in Europe with -31.1 percentage points of GDP in seven years.

Figure 2. Public debt (% GDP), 2000-2028

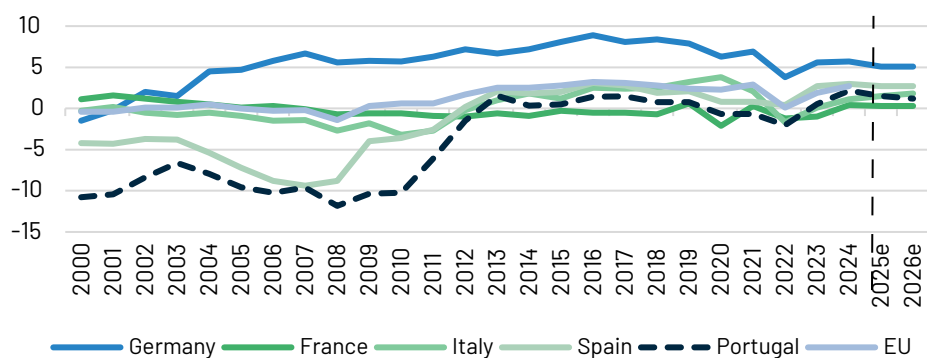


Source: INE and Ministry of Finance

In addition to the surplus in the public accounts, the current account of goods and services, which were chronically in deficit since 2000, also became positive after the Economic Adjustment Programme, except during the pandemic years (2020-2022). Nowadays, the external current surplus is about 2% of GDP, and

it is foresighted to stay close to 1% until 2026. This is due to the export prowess of Portuguese companies across multiple sectors in the last decade, enabling a reduction of the trade deficit, and to an increasingly positive service sector surplus, due to a booming tourist sector and growing exports of high added-value services.

Figure 3. Current account (% GDP), 2000-2026

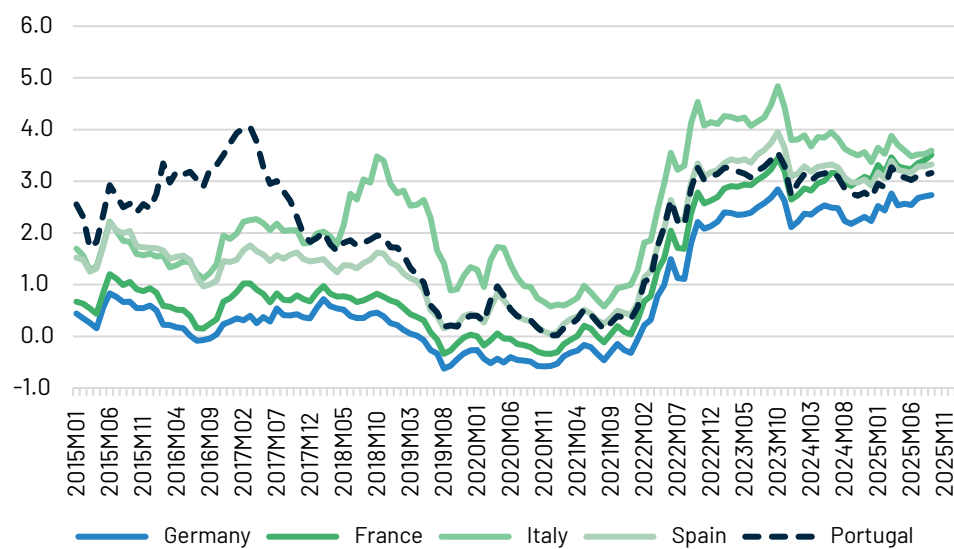


Source: European Commission – AMECO database

The occurrence of budgetary and external surpluses, and the positive evolution of the public debt directly affected the **strong credit ratings** of Portugal (S&P A+, DBRS A high, and Moody's A3) and the positive evolution

of the **sovereign yields**. Portugal has a 10-year yield close to Germany's and better than Spain, Italy, and France's figures, a situation different from the one in 2015-2017.

Figure 4. 10-year sovereign yields (%), 2015-2024

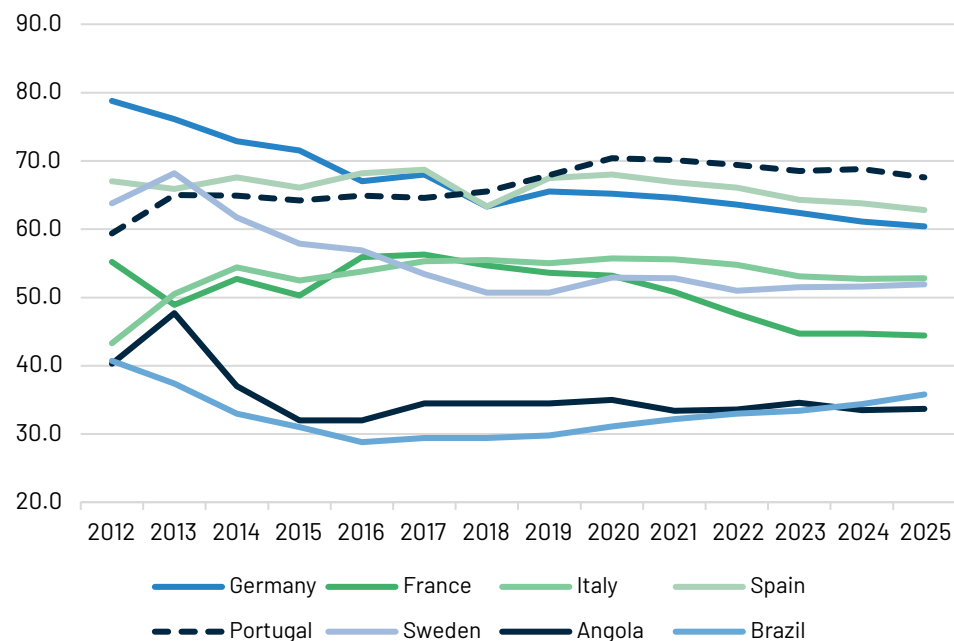


Source: IGCP

In addition to the economic progress of Portugal, the country also has high-quality of life indicators. Portugal is now one of the **safest countries in Europe**, with a safety index better than Spain, France, Italy, Germany or Sweden. This low violence level favors the **hospitality**

sector and the achievement of international tourism awards, namely, the 31 prizes won in the European Gala of the World Travel Awards 2024. Safety also attracts **talent** and contributes to a positive **net migration** in recent years, as described in section 4.1.

Figure 5. Safety Index (20 = Very low, 90 = Very high), 2012-2025

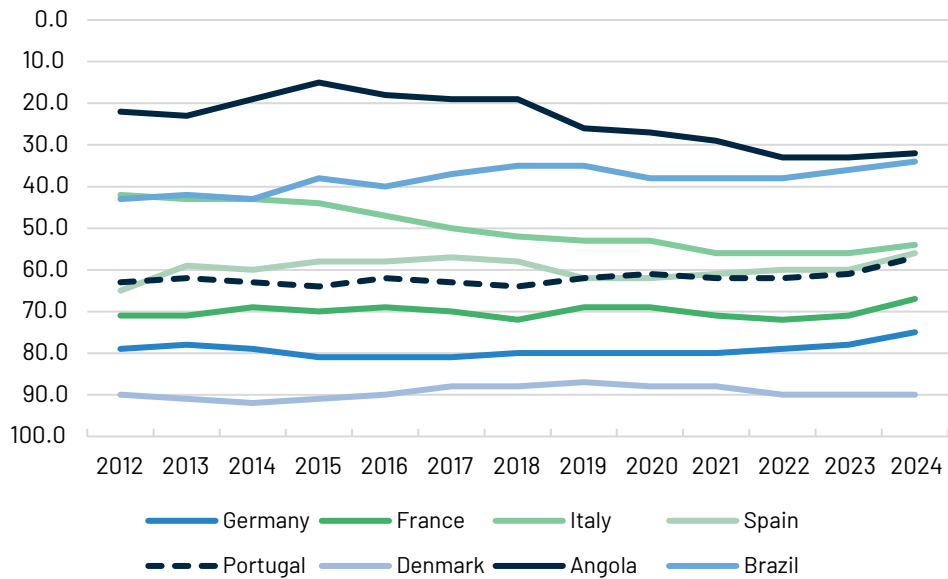


Source: Numbeo

Moreover, Portugal has moderate levels of **corruption** perceptions, close to Spain's and below Italy's. This perception level is a result of the active fight against corruption. **Justice** is slow but has adopted agile mechanisms to prosecute economic crime leading

to a system in which transparency is the norm (for example, there are publicly available databases of all public contracts) and corruption suspicions are quickly investigated.

Figure 6. Corruption Perceptions Index (100 = Very clean, 0 = Highly corrupt), 2012-2024

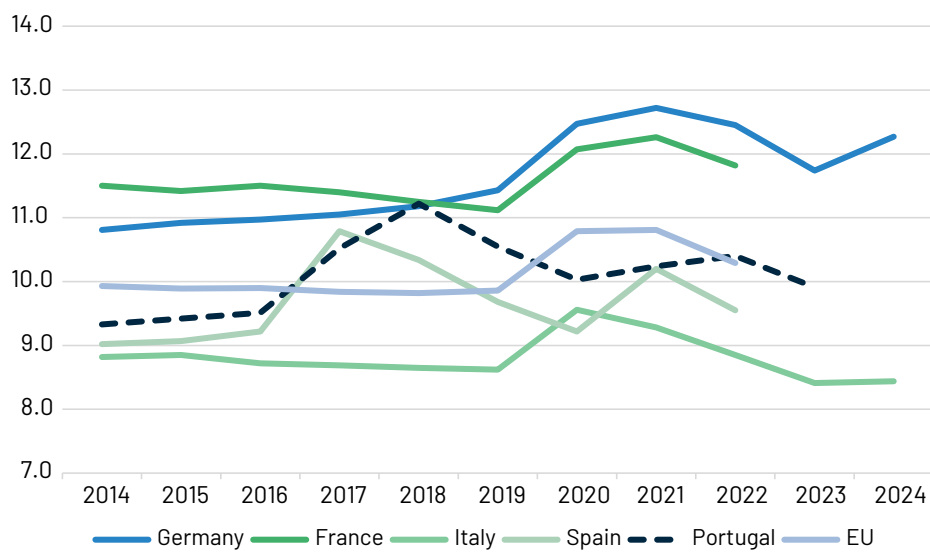


Source: Transparency International

Despite the need for improvement in the speed of licencing procedures, **public administration is digitally advanced** in several areas (e.g. citizen services and fiscal authorities). Public **expenditures** in areas like

health are aligned with the European Union's average, and Portugal excels in some health areas, such as vaccination coverage and low infant mortality.

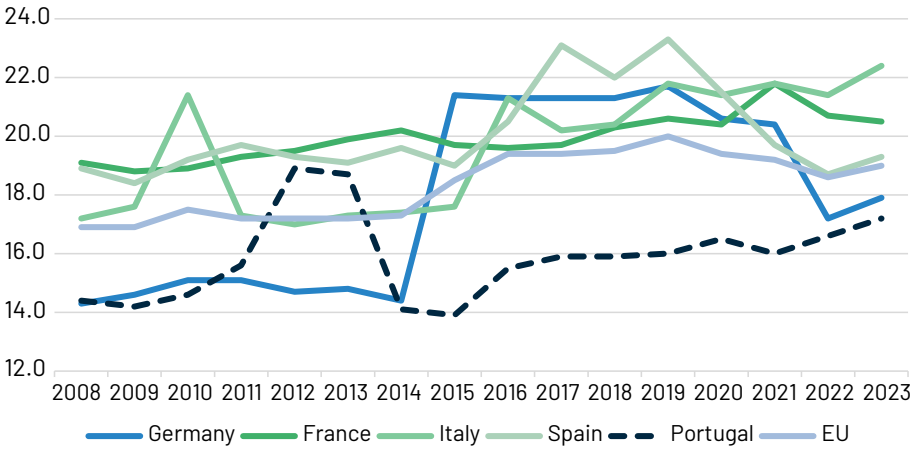
Figure 7. Health care expenditure (% GDP), 2014-2024



Source: Eurostat

The evolution in terms of healthy life years at 50 was also remarkable since 2008, with Portugal quickly converging to the European average.

Figure 8. Healthy life years in absolute values at 50, 2008-2023

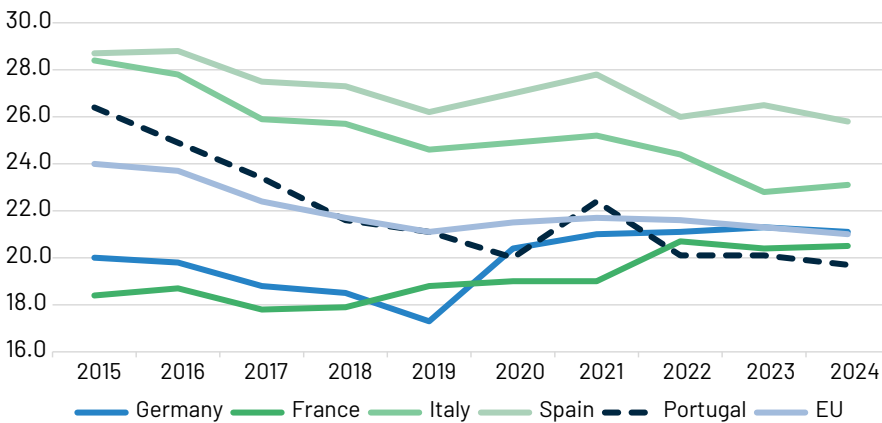


Source: Eurostat

Portugal is also evolving positively in areas like the reduction of poverty, currently boasting a share of the population at the risk of poverty that is lower than the EU average and countries like France. This is due to the

capillarity and effectiveness of its third sector – the Social Economy sector, and the regular State investments in social support and income transfers to members of the population who are economically disadvantaged.

Figure 9. Persons at risk of poverty or social exclusion (%), 2015-2024

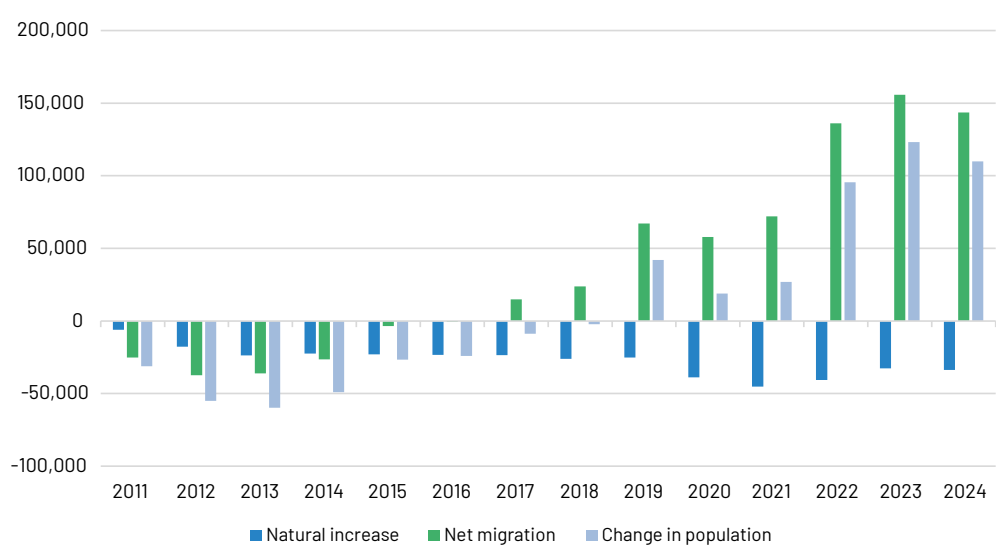


Source: Eurostat

As far as the **labour market** is concerned, Portugal exhibits positive unemployment figures with unemployment rate at almost natural level for the Portuguese Economy (around 6.0%), participation in the workforce at record highs and employment figures at record levels as well with 5.15 million people employed. In fact, Portugal is attracting into its economy a large pool of immigrant workers which explains the recent population and

employment growth. In four years, Portugal added about 500 thousand people (5% of the population), despite the aging of the population, and this trend is likely to continue in the coming years. Mainly from Portuguese-speaking countries, these immigrants are generally well integrated, contributing to the remarkable performance of the labour market and the economy growth.

Figure 10. Change in resident population by driver (natural increase and net migration), 2011-2024



Source: INE and AIMA

Finally, recent **economic growth** surpasses the euro area average with the expectation of a continued trend until 2030. In the period 2022-2024, Portugal had a cumulative GDP growth of 12.2%, whereas the euro area grew 6.4%. In fact, GDP annual change was above

the euro area average in 2022 (7.0% vs. 4.5%), 2023 (3.1% vs. 1.1%) and 2024 (2.1% vs. 0.8%). Consequently, Portuguese **GDP per capita** in purchasing power parity (PPP) converged 3.3 percentage points to the European average in 2023, and 0.9 percentage points in 2024.

Figure 11. Selected economic indicators for Portugal and Euro Area, 2022-2024

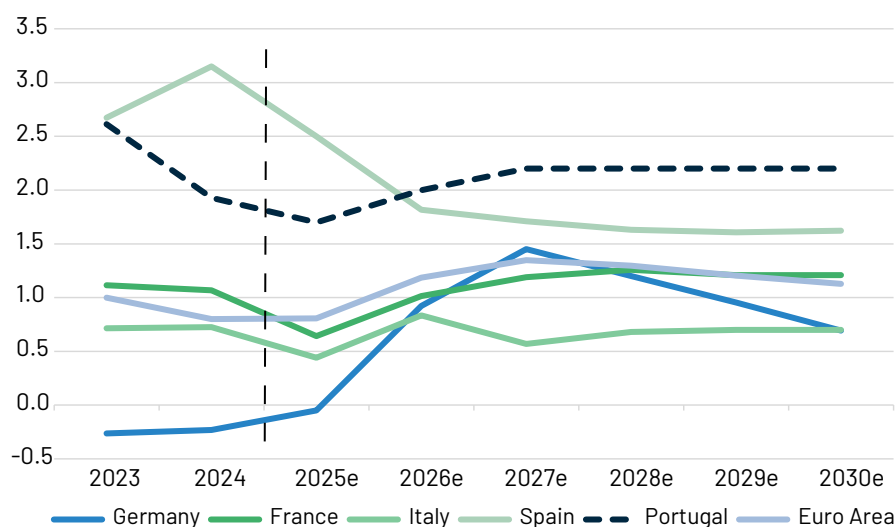
Indicator	Portugal			Euro Area		
	2022	2023	2024	2022	2023	2024
GDP (% change)	7.0	3.1	2.1	4.5	1.1	0.8
GDP per capita in PPP (EU = 100)	77.0	80.3	81.2	104.6	104.5	104.2
General gov balance (% GDP)	-0.3	1.3	0.5	-3.5	-3.5	-3.1
Public debt (% GDP)	111.2	96.9	93.6	91.2	88.9	88.9
Private debt (% GDP)	186.6	167.9	159.8	-	-	-
Household saving rate (%)	7.3	8.9	12.5	13.6	14.3	15.3
Current account balance (% GDP)	-2.0	0.6	2.1	1.0	2.6	3.3
Net lending (+) or borrowing (-) (% GDP)	-1.1	2.1	3.1	1.9	2.6	3.1

Source: INE, Banco de Portugal, Eurostat, and European Commission - AMECO database. Revised September 2025

In addition, **household saving rate** increased from 7.3% to 12.2% from 2022 to 2024. These figures are still below the euro area average of about 15%, but the evolution is very positive and reflects the increase in real wages of workers and increases the potential for the Portuguese economy growth, which in the past has been limited by scarcity of capital.

Remarkably, the International Monetary Fund (IMF) expects that Portugal will grow not only much more than the euro area average, but also above Spain in 2028-2030. Recent forecasts from NECEP/UCP points out to a greater performance of Portugal till the end of the decade.

Figure 12. GDP growth (%), 2023-2030



Source: IMF and NECEP/UCP

In summary, in the decade following the Economic Adjustment Program that ended in 2014, Portugal exhibits a remarkable economic and social progress, building an economic model that generates public and private surpluses. As said, **balances with the rest of the World** became positive in line with the European figures since 2023.

The positive evolution of the Portuguese debt's ratings is, in part, related with the current account surplus (2.2% of GDP in 2024) and the net lending position (2.9%) of Portugal, while developing a country capable of attracting people and investment. This internal context gives Portugal significant economic **opportunity in a context of a more complex and fragmented world**.

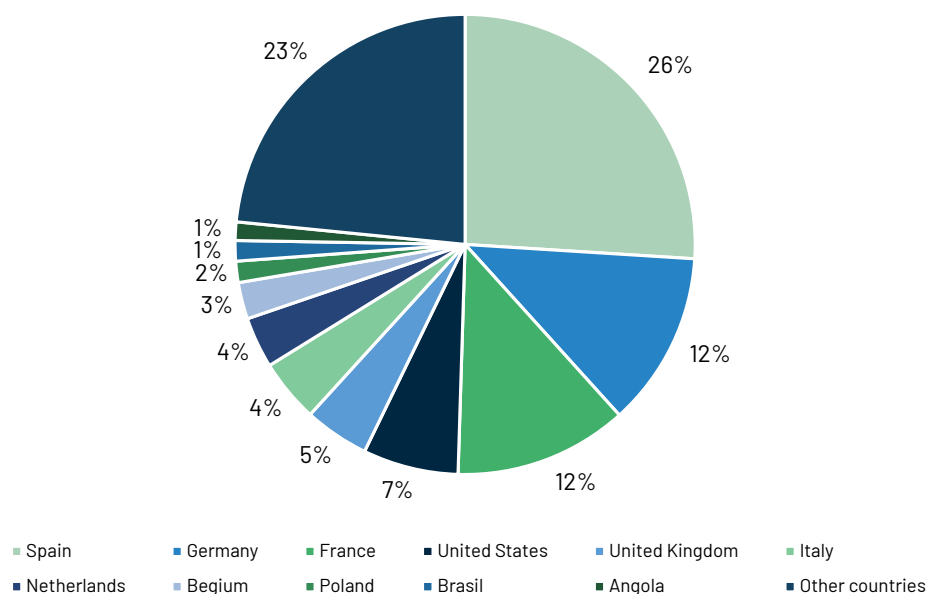
In particular, the reconfiguration of global value chains of European multinationals gives Portugal a strong opportunity for development and growth, in a context adverse for Eastern Europe, Asia and US in terms of attraction of European investment. For example,

AutoEuropa in the South of Lisbon, part of the VW Group, was the largest industrial investment in Portugal of the last 20 years. Despite the crisis in the European automobile sector, the Portuguese factory has already confirmed the production of a new electric vehicle, ensuring its continuity beyond 2030.

The competing locations would traditionally be the countries of former Eastern Europe, which now face considerable geo-political risk, benefiting southern European countries like Portugal. We are likely to see other similar corporate decisions in 2025-2027.

In this context, the imposition of additional **import tariffs** by United States is a new challenge. In fact, Portugal is somewhat exposed to the announced tariff of 20% upon goods from the EU (recently renegotiated to 15%), with a minimum rate of 10%, because US is the fourth destination of the Portuguese goods, with a share of 7% of total exports in 2024.

Figure 13. Exports of goods by country of destiny (%), 2024

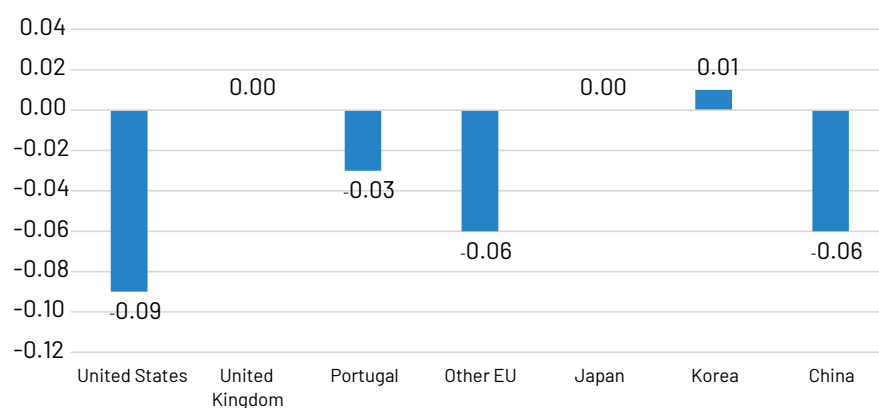


Source: INE

Nevertheless, the **expected impact of those tariffs** on GDP growth is only about -0.03 percentage points in the case of Portugal, which is below the EU figure (-0.06 percentage points). These results were obtained through simulation in a computable general equilibrium model for the World economy (GTAP) given the tariffs

foresighted in July 2025. This model suggests that the greatest impact of tariffs will be on United States (-0.09 percentage points) and China (-0.06 percentage points), in line with European Union. Surprisingly, South Korea may get a positive impact of 0.01 percentage points on its GDP growth, with neutral effects in UK and Japan.

Figure 14. Expected impact of US tariffs on GDP growth (percentage points)



Source: NECEP/UCP with GTAP model

Despite the location advantages of Portugal for tourism activities and for new industrial projects in the current geo-political context, this report argues that the greatest potential for the development of Portugal's economy is in the **digital areas and high added value service sectors**, given its structural advantages in new economic activities as well as its innovation ecosystem. This report also argues that this opportunity is already being realized since 2022, a period during which the performance of the country has been extraordinary in multiple dimensions, as described above.



3 | Portuguese Infrastructure as a Competitive Factor

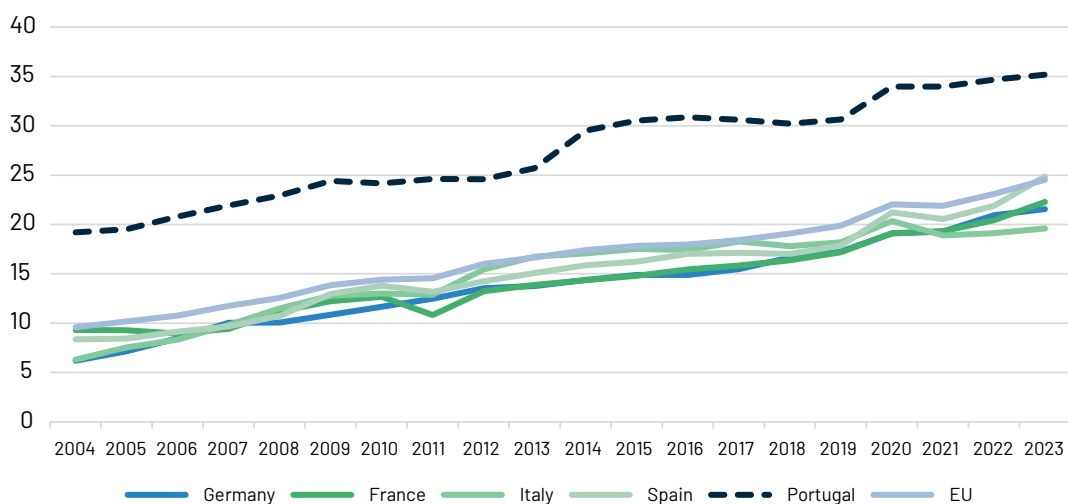
The argument of this report is that the remarkable performance of the Portuguese Economy in 2022-2024 is not an anomaly but is supported by structural factors that will deepen over time leading to an advantage that Portugal has been building since the year 2000 both in “hard” factors as well as “soft” factors. In the following chapters the report analyses these factors, namely the infrastructure advantages of Portugal and its thriving innovation ecosystem. Portugal’s infrastructure is a cornerstone of its economic competitiveness, playing a pivotal role in shaping the country’s ability to attract investments, foster innovation, and integrate into global markets.

3.1. Plentiful and Stable Access to Energy

With strategic investments in renewable energy, energy infrastructure, and sustainability, Portugal has positioned itself as a leader in Europe’s transition toward a green economy. The advancements in this scope not only serve Portugal’s domestic needs but also underline its importance as a critical link in Europe’s interconnected energy ecosystem. A key pillar of Portugal’s infrastructure strength lies in its renewable energy capabilities.

Portugal stands as a global leader in renewable energy, with a record 70.7% of its electricity generated from renewable sources in 2023, and an overall share of energy from renewable sources of 35%. This remarkable achievement reflects the country’s strategic investments in hydropower, solar energy, and wind energy, which together form the backbone of its green energy portfolio.

Figure 15. Share of energy from renewable sources (%), 2004-2023



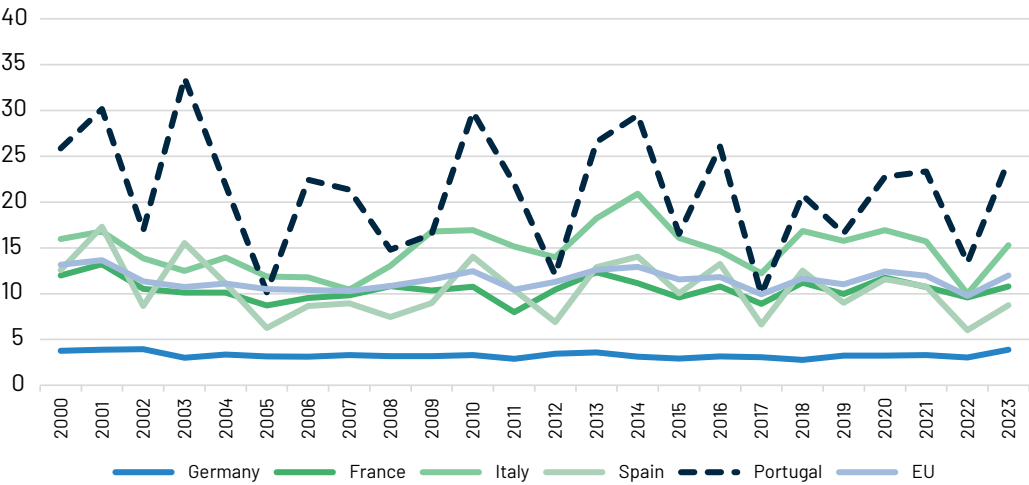
Source: Eurostat

Hydropower Expertise

Portugal has long capitalized on its hydrological resources, investing in large-scale hydroelectric plants that ensure consistent and stable energy production. Beyond generating electricity, hydropower facilities provide critical support for balancing the energy grid, particularly by compensating for the intermittent nature of solar and wind power. This ability to stabilize renewable energy

output is a key strength that enhances Portugal's energy resilience and reliability. The announcement that Alqueva and Baixo Sabor hydropower plants will be black start facilities in the near future, complementing Castelo de Bode and Tapada do Outeiro hydroplants, improves greatly the resilience of the Portuguese electric grid, following the Iberian blackout of April 28th, 2025.

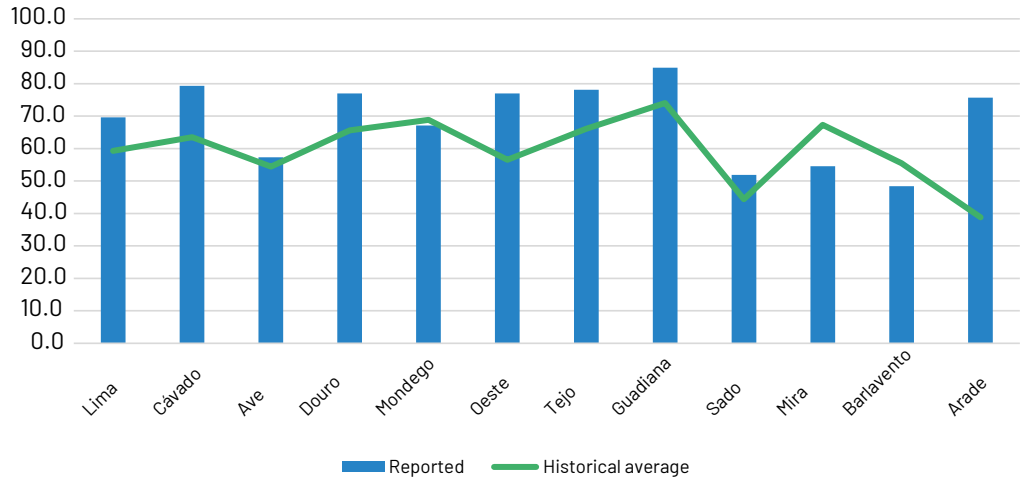
Figure 16. Percentage of electricity production with hydropower, 2000-2023



Source: Eurostat

The current Portuguese water reservoirs are at almost full capacity following an extremely rainy winter of 2024/2025, ensuring a supply of at least three years of water for the whole country and boosting its potential for strong hydropower generation from the current power stations.

Figure 17. Water reservoirs situation by watershed (% of full capacity), August 2025



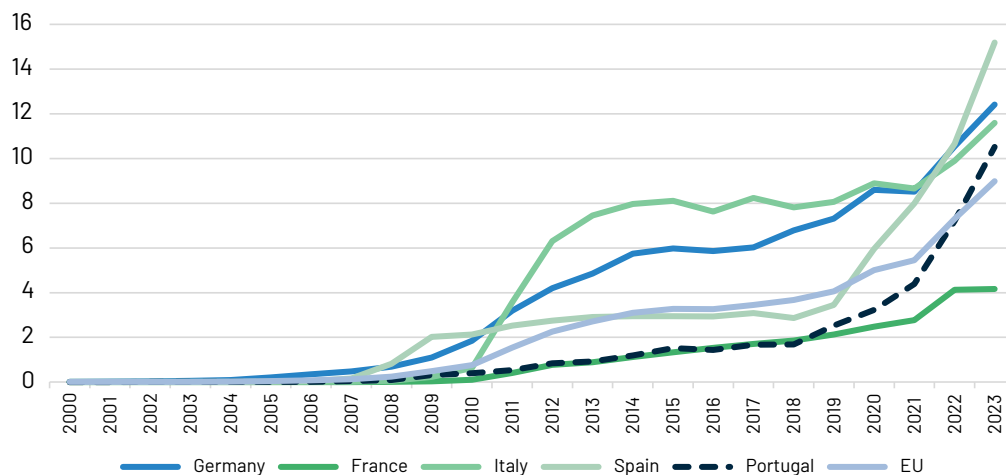
Source: Eurostat

Solar Energy Potential

Leveraging its abundant sunlight, Portugal has rapidly expanded its solar power capacity, emerging as one of Europe's most promising regions for solar energy investment. The deployment of innovative technologies, such as floating solar farms on reservoirs, minimizes either

land use or environmental impacts, while significantly boosting the country's solar output. These advancements underline Portugal's commitment to scaling renewable energy through cutting-edge solutions, following the early leadership of countries like Germany, Spain and Italy.

Figure 18. Percentage of electricity production with solar photovoltaic, 2000-2023

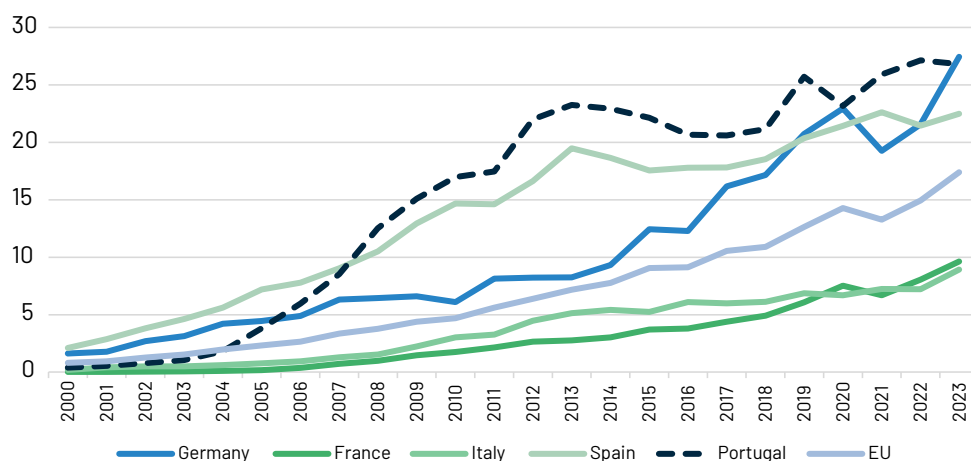


Source: Eurostat

Wind Energy Leadership

Wind power plays a pivotal role in Portugal's renewable energy mix, benefiting from the strong winds of its large Atlantic coast. Strong investments in wind energy in the last 20 years have made Portugal a significant player in wind energy with a growing generation capacity.

Figure 19. Percentage of electricity production with wind, 2000-2023



Source: Eurostat

These achievements have solidified Portugal's position as a frontrunner in the global energy transition and attracts significant green investments, bolstering its role as a hub for sustainable energy solutions.

Portugal is also at the forefront of offshore renewable energy development, leveraging its coastal resources to harness wind, wave, and tidal energy. The country has made significant investments in offshore wind farms, such as the WindFloat Atlantic project, which is the world's first semi-submersible floating wind farm.

The Portuguese government has also been proactive in promoting offshore renewable energy. In 2017, the

government approved the Industrial Strategy and Action Plan for Ocean Renewable Energy (EI-ERO), aiming to supply 25% of the country's electricity from offshore sources and create a substantial export hub. More recently, the government announced plans to develop a 10GW offshore wind cluster by 2030, with the first offshore license auction scheduled for 2025.

These projects not only contribute to Portugal's renewable energy targets but also create jobs and stimulate technological innovation. Companies like EDP Renováveis and Greenvolt are key players in the renewable energy sector, driving the transition to a sustainable energy future.

Infrastructure Development in the Energy Sector

Portugal's robust energy infrastructure development reflects its commitment to addressing future energy demands and its strategic integration within the EU's energy network. By prioritizing grid modernization, interconnectivity projects, and green energy infrastructure, Portugal positions itself as a key player in advancing the EU's energy transition goals.

Electric grid Modernization

Portugal has significantly invested in upgrading and modernizing its national energy grid to support the increasing integration of renewable energy. These investments include:

- **Smart Grids and Digitalization:** Smart grid initiatives ensure efficient energy distribution, reduce transmission losses, and enhance the flexibility of the energy system. Digital technologies enable real-time energy monitoring and optimization, accommodating fluctuations in renewable energy supply.
- **Renewable Integration:** With the growing reliance on renewable energy sources like wind and solar, grid modernization ensures a seamless transition from traditional energy systems to cleaner and more sustainable alternatives. This includes advancements in storage systems to stabilize the grid during periods of high renewable generation, as well as the safeguard of blackstart capacity.





REN: The Backbone of Portugal's Energy Transition and European Interconnection

REN (Redes Energéticas Nacionais) is more than Portugal's national energy grid operator; it is an enabler of the country's ambitious decarbonization goals and a key player in the European energy landscape. Through its management of both electricity and natural gas networks, REN ensures security of supply while pioneering the integration of renewable sources, modernizing infrastructure, and positioning Portugal as a future exporter of green energy to Europe.

The company's core strength lies in its sophisticated management of Portugal's diverse renewable energy portfolio. REN possesses expertise in optimizing the country's hydropower capacity, a cornerstone of the national energy system. This includes utilizing hydro reservoirs as massive "green batteries," where water is pumped uphill during periods of excess renewable generation and released to produce electricity during peak demand, providing crucial grid stability and storage.

With Portugal boasting some of the highest solar irradiation levels in Europe, REN stands at the forefront of connecting massive new utility-scale solar farms to the national grid. The company is making substantial investments in grid reinforcement to accommodate the predicted multi-gigawatt surge in solar capacity, ensuring this abundant natural potential is fully harnessed. Furthermore, Portugal has established itself as a global leader in wind power penetration, an achievement made possible through REN's grid management capabilities. The company integrates power from both onshore and future offshore wind farms, balancing their variable output with other energy sources like hydro and natural gas to guarantee a stable and reliable electricity supply.

REN is simultaneously undertaking a modernization of its electrical infrastructure to build the digital, smart, and resilient grid of the future. This transformation involves implementing thousands of sensors and advanced Grid Digital Twin technology to monitor assets in real-time, predict maintenance needs, and automatically optimize energy flows.

In its **2023-2025 Strategic Plan**, REN announced a total investment of **€600 million** for this period. A significant portion of this is dedicated to the digitalization and modernization of the grid, which aligns directly with the "digital, smart, and resilient grid" initiative.

The development of intelligent networks capable of managing bidirectional energy flows proves crucial for integrating millions of rooftop solar panels, electric vehicles, and home batteries, effectively enabling consumers to become proactive "prosumers." These modernization efforts also focus on hardening the grid against extreme weather events and cyber threats to ensure national energy security.

A fundamental part of REN's strategy involves deepening Portugal's integration into the European energy market

through enhanced interconnectivity. The company is strengthening high-capacity electrical interconnections with Spain through projects like CELINK, which allows for greater export of Portuguese renewable surpluses and imports when needed, thereby enhancing energy security for both countries. Beyond existing projects, REN is studying and promoting new interconnection opportunities, including a potential submarine cable link to Morocco and other European partners. These efforts aim to transform the Iberian Peninsula from a semi-isolated energy "island" into a major renewable energy export hub for Europe.

REN's role of the strategic architect and operator of the system that allows Portugal to leverage its natural advantages in sun, wind, and water. This work ensures that Portugal's renewable effort translates into energy independence, enhanced economic competitiveness, and a significant contribution to European decarbonization goals.

Interconnectivity Projects and Green Energy Infrastructure

As part of the Iberian Peninsula, Portugal has prioritized enhancing its **energy interconnections** with Spain and Central Europe to bolster energy security and market integration. The Iberian electricity market is already integrated and now it is needed to ensure the integration with the European energy markets, which depends on European energy policy and essentially overcoming France resistance to energy market integration. When integration happens, Portugal (and Spain) will be a significant exporter of green electricity to Europe. Until integration happens, Portugal will benefit from an electricity market in surplus, with lower consumer and industrial prices than the average EU country. This will be a source of competitive advantage, especially for industrial projects that are intense in electricity, for example, datacenter capacity.

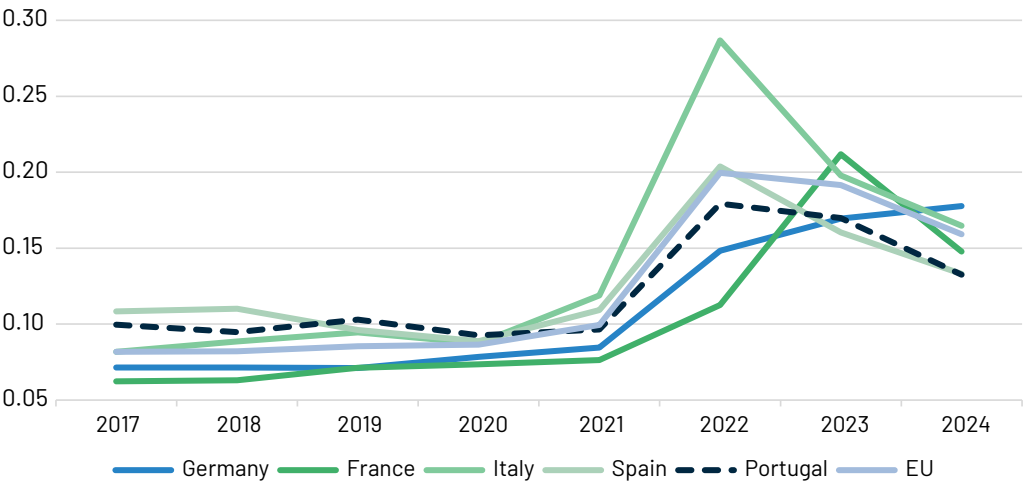
Moreover, Portugal's strategic location and modern **port facilities** solidify its role as an energy hub, facilitating the import and export of key energy resources. In this context, the deepwater port of Sines is becoming an energy gateway and a strong green economy industrial hub for Portugal. Equipped with state-of-the-art LNG terminals, supporting the import of liquefied natural gas and the potential export of green hydrogen, the Port of Sines is nowadays a main energy gateway, enhancing Portugal's role in securing energy supplies for Europe and diversifying energy sources. In general, Portuguese ports provide critical infrastructure for international energy logistics, enabling Portugal to serve as a bridge between Europe, Africa, and the Americas for energy trade.

In summary, Portugal's focus on energy infrastructure development supports its ambition to lead in renewable energy and energy security. These advancements align with EU integration goals and enhance Portugal's standing as a pivotal energy player in the region. Importantly, Portugal's achievements in renewable energy generation provide a competitive edge for businesses operating within the country, creating a favorable environment for sustainable growth and global investment. The strategic emphasis on renewables enables businesses to benefit from reduced costs and operational stability, enhancing market competitiveness.

Portugal's commitment to renewable energy has resulted in a significant reduction in energy production costs, positioning it as one of Europe's most competitive countries for energy-intensive industries, with the notable element of providing almost entirely green energy, since the country has decommissioned its last coal power

stations in 2022. By prioritizing green energy, businesses can achieve lower **energy costs** while simultaneously addressing environmental concerns, making Portugal a preferred location for companies seeking to balance profitability with sustainability.

Figure 20. Electricity prices for non-household consumers from 500 MWh to 1999 MWh (purchasing power parities, PPP, in euro per kWh), 2017-2024

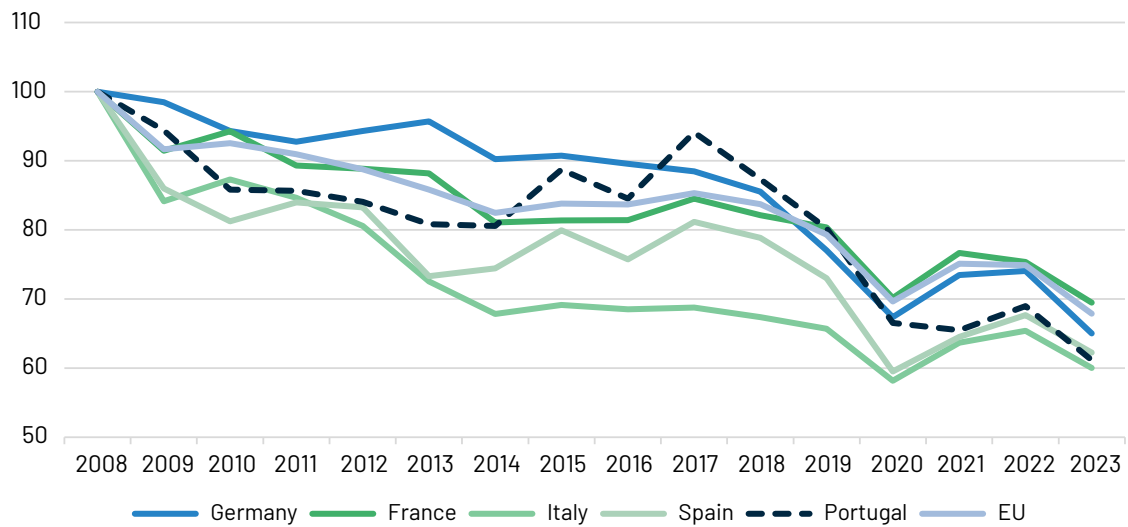


Source: Eurostat

Furthermore, the country's reliance on a diversified renewable energy portfolio, free from coal since 2022, reduces vulnerability to volatile global fossil fuel markets. A robust grid and modern energy infrastructure ensures consistent energy availability, providing businesses with a predictable and stable operational environment. This energy stability fosters long-term strategic planning

for industries, particularly those reliant on continuous energy supply, such as logistics, heavy manufacturing, and data centers. Thus, energy-intensive companies operating in Portugal benefit from being able to market themselves as carbon-neutral, a key differentiator in markets where consumers and partners prioritize environmental responsibility.

Figure 21. Carbon dioxide emissions (2019= 100), 2019-2023



Source: Eurostat

Furthermore, Portugal has implemented favorable policies to attract green businesses, including tax credits, subsidies for renewable energy adoption, and grants for R&D in clean technologies. Initiatives such as reduced tariffs for businesses using renewable energy and funding for projects involving energy efficiency upgrades further enhance the appeal of Portugal as a hub for green industries. The country's focus on decarbonization strengthens companies' sustainability credentials, boosting their global competitiveness as demand for eco-friendly products and services increases.

Portugal's emphasis on renewable energy and advanced energy infrastructure supports its vision of becoming a leader in sustainable industrial growth. By offering clean, affordable, and stable energy alongside incentives for green innovation, Portugal provides an unparalleled environment for businesses aiming to thrive in an increasingly sustainability-focused global market.



3.2. Abundant Natural Resources for a Sustainable Economy

Portugal's natural resources play a crucial role as a transversal competitive factor. Portugal is rich in natural resources such as water, minerals, forests, and marine resources. The availability of water in Portugal is of paramount importance in industries like agriculture, which is a significant sector in the Portuguese economy, supporting the production of key crops such as olives, vineyard, fruit, vegetables and cork. Water resources are also key for the country's energy sector, particularly for hydroelectric power generation, which contributes to Portugal's renewable energy mix and are vital for maintaining biodiversity and supporting ecosystems, which are integral to environmental sustainability.

The Alqueva project was initiated more than 30 years ago to address the chronic water shortages in the Alentejo region, which had long hindered agricultural productivity and economic development. The main dam, completed in 2002, created a reservoir with a capacity of 4.15 billion cubic meters, Europe's largest, providing a reliable water supply for irrigation, hydroelectric power, and domestic use. This vast water resource has enabled the expansion of irrigated agriculture, which has been a game-changer for the region.

The amount of available minerals, including lithium, copper, zinc, and tungsten, positions Portugal as a strategic player in global resource value chains, especially in the context of the energy transition and the growing demand for green technologies.

Additionally, Portugal's vast forests provide essential raw materials for the pulp and paper industry, which Portugal transformed into one of the most advanced and sustainable industries in the world, with world-leading pulp and paper companies such as Navigator, Portugal's 3rd biggest exporter and #1 company in economic value added. Also, marine resources offer unique opportunities for fishing, aquaculture, and the exploration of renewable energies.

Efficient and sustainable management of these natural resources not only strengthens the country's economic infrastructure but also attract investments, promoting economic growth and job creation. For example, acknowledging the importance of Water, the Portuguese Government has approved in 2025 a National Strategy for Water Management, planning significant public and private investment in the next 15 years. Portugal's natural resources are seen as fundamental pillars of its competitiveness and sustainable development.

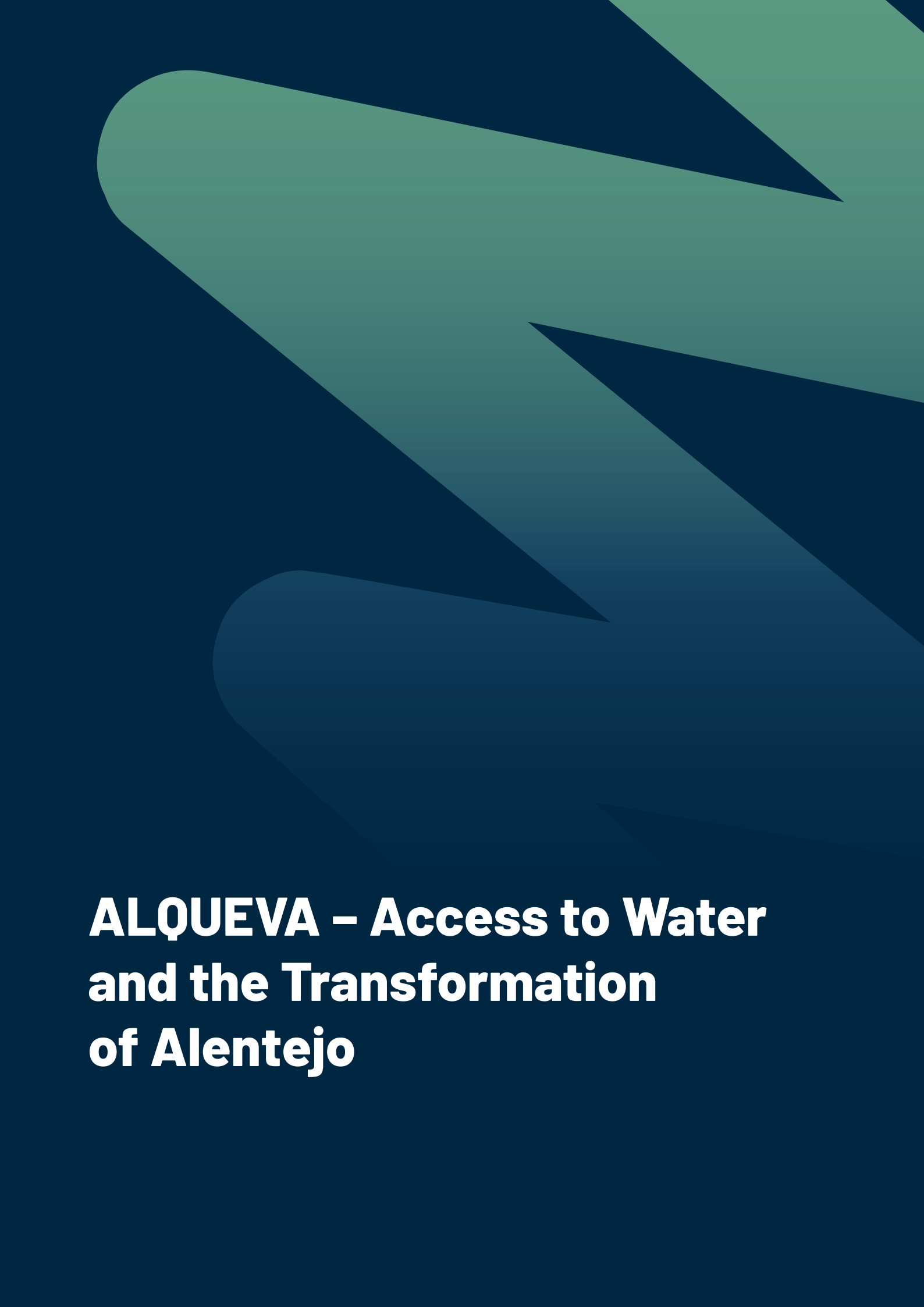
Growing Productivity of Land resources (agricultural Land, Forestry)

Portugal has seen significant growth in the productivity of its land resources, particularly in agriculture and forestry. This increase in productivity has been driven by strategic investments, technological advancements, and sustainable practices, which have collectively enhanced the value of agricultural land and forests, contributing to the national economy.



Agricultural land

The productivity of agricultural land in Portugal has been on the rise, thanks to the implementation of modern farming techniques and efficient irrigation systems. The previously mentioned Alqueva project, for instance, has transformed the Alentejo region by providing a reliable water supply for irrigation.



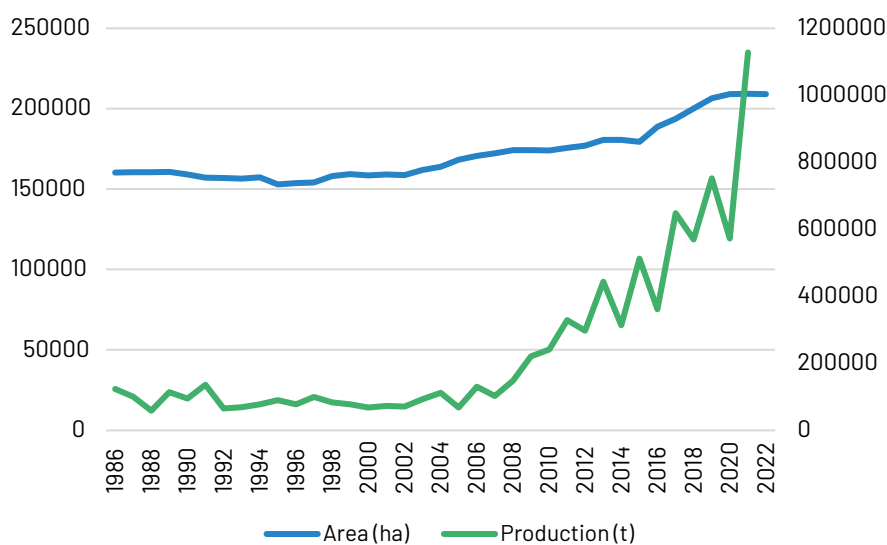
ALQUEVA – Access to Water and the Transformation of Alentejo

The Alqueva project, inaugurated in 2002 to address the chronic water shortages in the Alentejo region, which had long hindered agricultural productivity and economic development, is one of the largest public investments in the last 50 years. It stands as a remarkable achievement in Portugal's efforts to harness its natural resources, particularly water, to drive economic growth. The Alqueva Dam and its reservoir with a capacity of **4.15 billion cubic meters, the largest artificial lake in Europe**, have transformed the landscape and economy of this traditionally arid area. The Alqueva Global Irrigation

System is made up of a set of **72 dams and reservoirs, 2 078 km of canals and pipes, 48 pumping stations, 5 mini-hydro plants and one photovoltaic plant**.

This system provides a reliable water supply for irrigation, power generation, and domestic use. It has enabled the expansion of irrigated agriculture, a game-changer for the region. Before the dam's construction, only about 20 000 hectares of land were irrigated. Today, that number has increased to over **120 000 hectares which led to a dramatic increase in land productivity**.

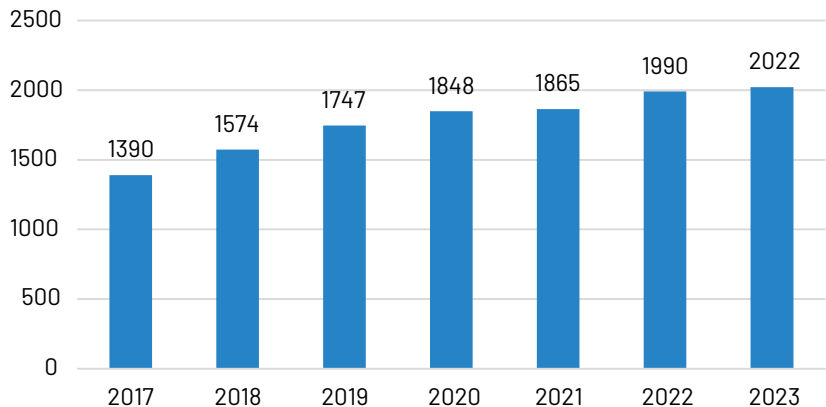
Figure 22. Area Occupied by Olive Grove and Olive Production in Alentejo



Source: Statistics Portugal

This expansion has allowed for the cultivation of high-value crops such as olives, almonds, and vineyards, which were previously not viable in the region. The introduction of modern irrigation techniques has also improved water use efficiency, **reducing waste and increasing crop yields**.

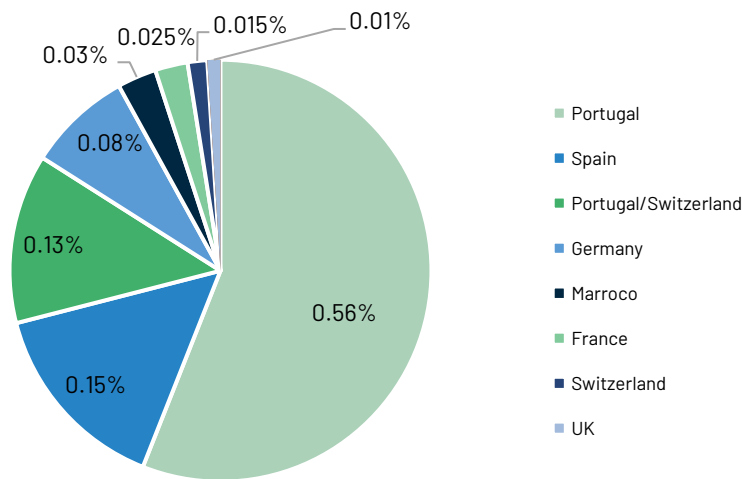
Figure 23. Evolution of Areas Occupied by Fruit Trees in EFMA (Alqueva)



Source: EDIA, Alqueva Agricultural Yearbook, 2023

This growth has attracted investment from both domestic and international agribusinesses, further boosting the local economy.

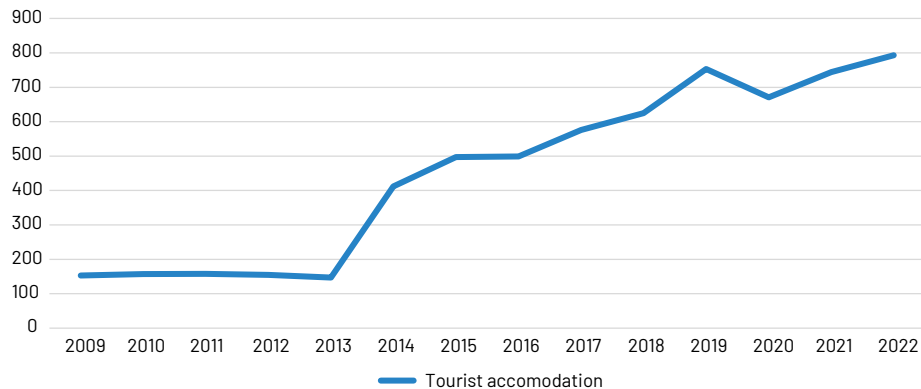
Figure 24. % of Fruit Area by Origin of Investment in EFMA (Alqueva) in 2023



Source: EDIA, Alqueva Agricultural Yearbook, 2023

In addition to agriculture, the Alqueva project has also had a positive impact on tourism and recreation. The reservoir has become a popular destination for water sports, fishing, stargazing, and eco-tourism, attracting visitors from across Portugal and beyond. This influx of tourists has spurred the development of hospitality and service industries, **creating jobs and generating income for local communities.**

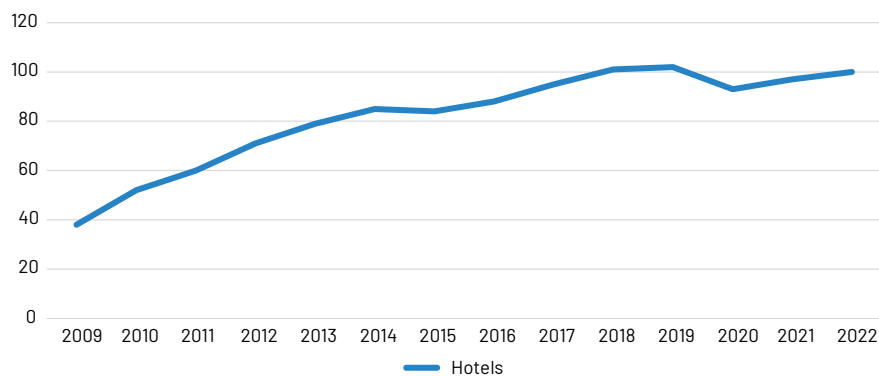
Figure 25. Alentejo Tourist Accommodation Evolution



Source: Statistics Portugal

This growth has also been enabled by a doubling of the hotel rooms capacity in the region.

Figure 26. Alentejo Hotel Evolution



Source: Statistics Portugal

The hydroelectric power generated by the Alqueva Dam is another success story. The dam's power station has an installed capacity of 520 megawatts, contributing to Portugal's renewable energy goals and reducing the country's reliance on fossil fuels. The clean energy produced by the dam supports sustainable development and helps mitigate the impacts of climate change.

Corporate success stories abound in the Alqueva region. Companies like **Sovena**, one of the world's largest olive oil producers, have established operations in the area, leveraging the reliable water supply and fertile land to expand their production. Similarly, the wine industry has flourished, with numerous wineries like **Esporão**, **Adega Mayor** or **Ervideia** setting up vineyards and producing award-winning wines that are exported globally. Nuts and almonds also had notable growth due to access to water from Alqueva.

The Alqueva project exemplifies the transformative power of strategic investments in natural resources. By providing a reliable water supply, the project has revitalized the Alentejo region, driving agricultural growth, boosting tourism, and supporting renewable energy production.

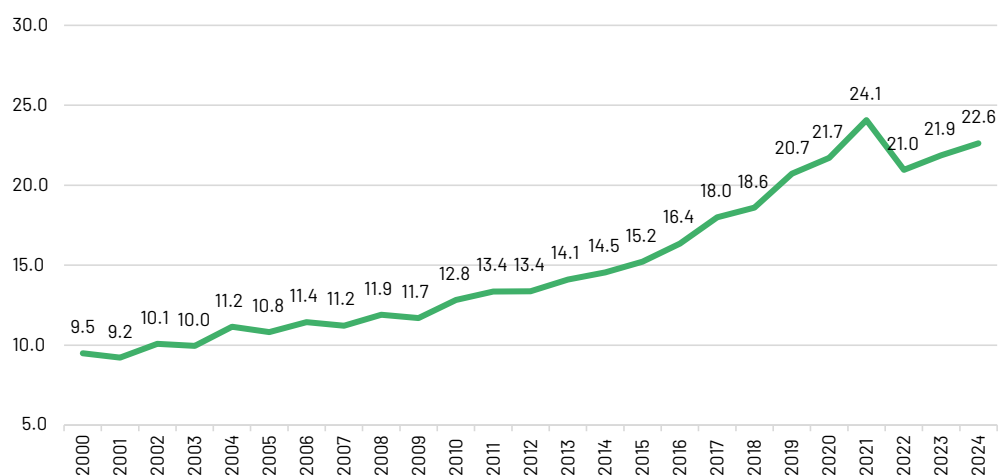
The success of the Alqueva project underscores the importance of sustainable water management in fostering economic development and improving the quality of life for local communities.

The adoption of precision agriculture technologies has also played a crucial role in enhancing land productivity. These technologies (precision agriculture, biotechnology, augmented reality, artificial intelligence and other digital technologies) and the integration with knowledge

centers allow farmers to optimize resources such as water, fertilizers, and pesticides, leading to higher yields and reduced environmental impact. The use of drones, satellite imagery, and soil sensors has enabled more precise monitoring and management of crops, further boosting productivity.



Figure 27. Productivity of agriculture, forestry and fishing (thousand euros of gross value added per full-time equivalent), 2000-2024

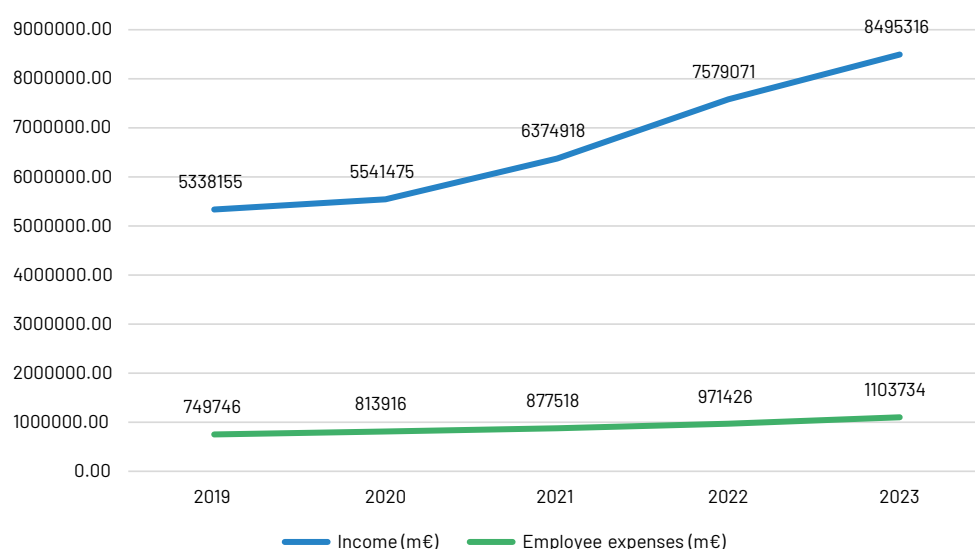


Source: INE

Companies like Summerberry highlight this innovative corporate network, leading to a surge in production of berries, a high value added crop. It has been a training field for harvesting robotics (Saga robotics and Fieldwork robotics), water efficiency (drip irrigation, wastage management, relative humidity sensors, shadow solutions) and green energy solutions. Corporations

like Campotec and Vera Cruz also illustrate examples of having robust innovation and sustainable practices. Startups like Trigger Systems and Agroinsider are implementing solutions for smart usage of water. This has led to a remarkable increase in productivity in the crop and animal sectors in Portugal since 2020.

Figure 28. Economic activity in Crop and animal production



Source: Bank of Portugal

Forestry

Forestry is another critical sector where Portugal has leveraged its natural resources to drive economic growth. Forests cover approximately 35% of the country's land area, with a significant portion dedicated to commercial forestry. The forestry sector is a major contributor to Portugal's GDP and employment, supported by national raw materials and a strong export orientation.





The Navigator Company: A Portuguese Powerhouse in Sustainable Forestry & Paper

The Navigator Company is not just Portugal's leading **pulp and paper producer**—it is a **strategic player in the national economy**, a benchmark in sustainable forestry, and a key contributor to Portugal's green transition. With a vertically integrated model—from forestry to high-value paper products—Navigator combines industrial excellence, innovation, and sustainability, making it one of Portugal's most important companies:

- €2.09 billion in annual revenue (2024), representing close to 1% of Portugal's GDP.
- Top 3 Portuguese exporter (€1.8B+ in exports), supplying 130+ countries. #1 in Value-Added.
- 4.500+ direct employees and 20.000+ indirect jobs in rural areas, supporting local economies.

Navigator operates one of Europe's most advanced pulp mills (in Setúbal), producing 1,6M tons/year of Eucalyptus globulus pulp. It is a top global player in premium printing & writing paper with brands like Discovery, Pioneer, Inacopia.

Sustainability at the Core: A Model for Responsible Forestry

Navigator's success is built on sustainable forest management, proving that industrial growth and environmental protection can go hand in hand with:



- Certified and Responsible Forest Management
 - **100% of forests certified** by FSC® (Forest Stewardship Council) and PEFC™ (Programme for the Endorsement of Forest Certification).
 - **50.000+ hectares of managed forests**, primarily Eucalyptus globulus—a fast-growing, renewable species ideal for pulp.
 - **Biodiversity protection:** Maintains ecological corridors, native species zones, and wildlife habitats.
- Carbon Sequestration and Climate Leadership
 - Portuguese forests under Navigator's management **capture ~4.5M tons of CO₂/year**.
 - 70%+ of energy used is renewable (biomass from forest residues).
 - Pioneering green hydrogen projects to decarbonize industrial processes.
- Circular Economy and Waste Reduction
 - Zero waste policy: **90%+ of production residues are reused or recycled** (e.g., lignin for biofuels, ash for fertilizers).
 - **Water efficiency:** Closed-loop systems reduce consumption by 50%+ vs. industry averages.

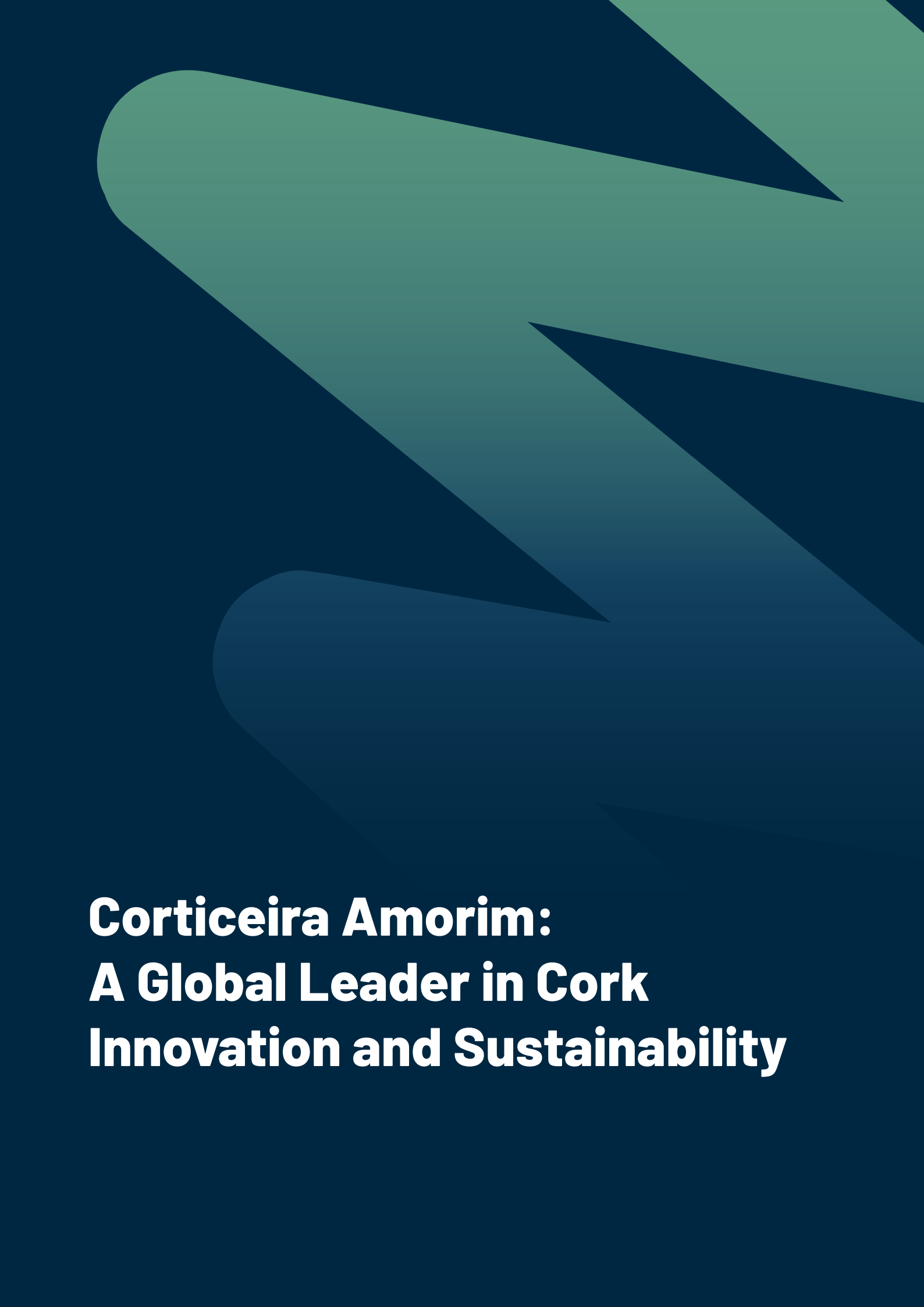
Innovation and Future Growth: Beyond Paper

Navigator is evolving into a bioeconomy leader, exploring new high-value applications for forest resources through strong investments in biotechnology & biorefining, extracting value from forest biomass beyond paper.

- **Biorefining** – Extracting nanocellulose, lignin, and biochemicals for pharma, packaging, and textiles.
- **Sustainable packaging** – Developing 100% recyclable and compostable alternatives to plastic.
- **Green energy** – Expanding biomass-to-energy projects and partnerships in green hydrogen.

Navigator is becoming a strategic asset for Portugal's economy and ecological future. As global demand for sustainable materials and carbon-neutral production grows, Navigator is well positioned to thrive, demonstrating that Portugal can be a leader in green industry.

The forestry sector's economic impact is significant, with exports of wood, paper, and cork products contributing substantially to the national economy. Portugal is the world's largest producer of cork (about 50% of world production) in about 730.000 hectares of cork oak forest, which represents 22% of the forest land. The cork oak forests provide raw materials for various products, from wine stoppers to insulation materials. The cork industry alone supports thousands of jobs and generates considerable export revenues. One of the leading corporations in Portugal and cork producers, Corticeira Amorim, plays a vital role by generating substantial revenue and employment.



Corticeira Amorim: A Global Leader in Cork Innovation and Sustainability

Corticeira Amorim is the world's largest cork producer, a Portuguese success story that combines tradition, innovation, and sustainability on a global scale. Founded in 1870, the company has transformed cork from a simple bottle stopper into a high-tech, eco-friendly material used in industries ranging from wine and construction to aerospace and renewable energy. According to Corticeira Amorim annual report, it generated in 2023 711,2 million euros in economic value.

Economic Impact

- **#1 producer of cork stoppers**, supplying ~25% of the world's wine closures.
- Operations in over **100 countries**, with key markets in **Europe, the Americas, and Asia**.
- **4.300+ employees worldwide**, fostering skilled jobs in Portugal's rural areas.
- €355M in **salaries**.
- €175M in **taxes** – Contributing to public infrastructure and services.
- €225M in **supplier payments** – Strengthening local economies.
- **Community investments** – Funding education, research, and cork oak forest conservation.

Sustainability and Innovation: Redefining Cork's Potential

Corticeira Amorim is a global benchmark for circular economy practices, ensuring that every part of the cork oak is used efficiently through a Zero-Waste Production approach:

– 100% of cork byproducts are reused:

- Granulated cork – Insulation, flooring, and composites.
- Cork dust – Biofuel and eco-friendly materials.
- Bark residues – Cosmetics and fashion accessories.

In addition, cork production is a carbon-negative activity since no trees are ever cut down – Cork is harvested every 9 years, allowing trees to live 200+ years. Thus, cork oak forests capture up to 14M tons of CO₂ annually in Portugal and each cork stopper retains 112g of CO₂, making it the most sustainable wine closure. Finally, Corticeira Amorim adopts Responsible Forest Management being FSC and PEFC certified – Ensuring biodiversity and fair labor practices.

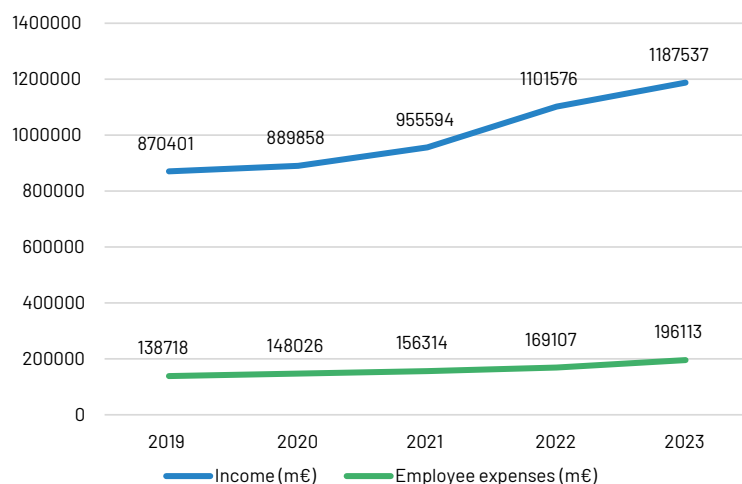
Corticeira Amorim is further expanding cork application into cutting-edge industries:

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Aerospace and Automotive <ul style="list-style-type: none"> ▪ NASA and ESA-approved cork composites for thermal protection in spacecraft. ▪ Lightweight, fire-resistant materials for electric vehicles. ▪ Sustainable Construction <ul style="list-style-type: none"> ▪ Cork-based insulation (Amorim Isolamentos) – Energy-efficient buildings. ▪ Acoustic solutions for stadiums and concert halls. | <ul style="list-style-type: none"> ▪ Renewable Energy and Fashion <ul style="list-style-type: none"> ▪ Cork in wind turbine blades – Reducing vibration and wear. ▪ Vegan leather alternatives – Used by brands like Chanel, Prada, and Nike. |
|---|--|

Corticeira Amorim demonstrates that tradition and innovation can coexist, creating economic value while protecting the planet. The company not only preserves Portugal's cork oak forests ("montados") but also positions the country as a global hub for sustainable materials.

The growing productivity of forestry resources in Portugal has not only boosted economic growth but also provided environmental benefits. Sustainable agricultural and forestry practices help preserve soil health, enhance biodiversity, and mitigate climate change. The efficient use of water resources, particularly in agriculture, has reduced the pressure on natural water bodies and improved water management.

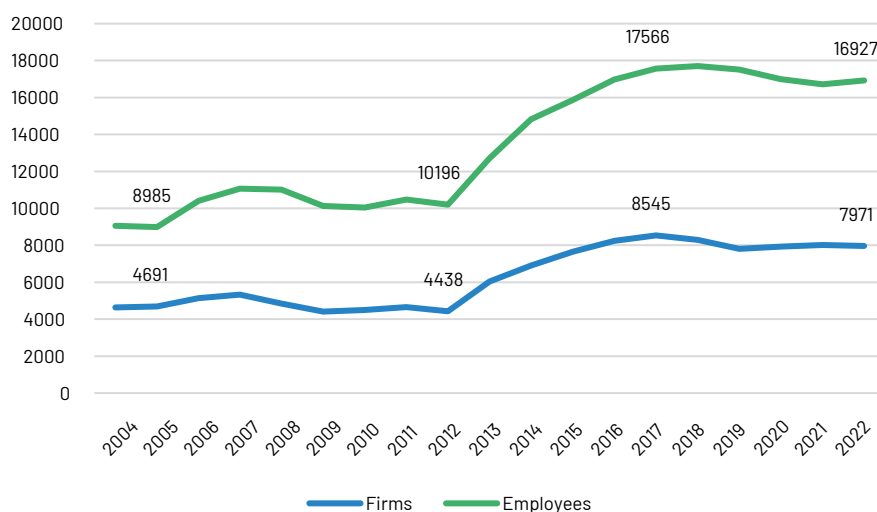
Figure 29. Forestry and Logging income and employee expenses



Source: Bank of Portugal

These developments have led in the last decade to a remarkable growth in the number of firms and employment of the forestry sector.

Figure 30. Firms and Employees in Forestry Sector



Source: Statistics Portugal

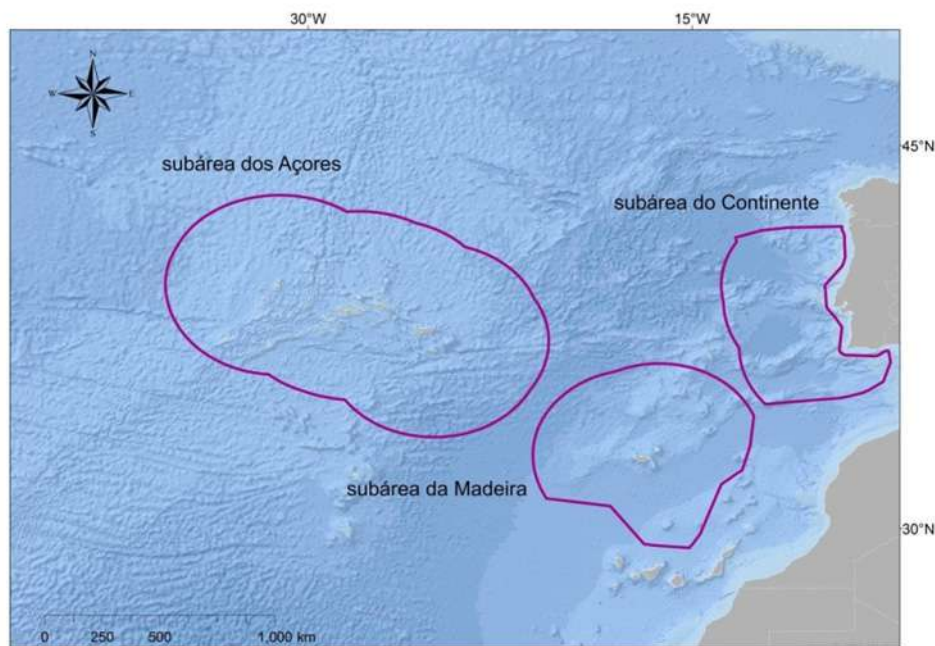
Overall, the increasing productivity of agricultural land and forests in Portugal underscores the importance of strategic investments, technological advancements, and sustainable practices. These efforts have enhanced the value of land resources, and driven productivity, employment and economic growth.

The Growth and Opportunity in Sea Resources

Portugal's extensive 1,793 km of coastline and strategic location along the Atlantic Ocean have long made the sea a cornerstone of its national economy. The country's maritime resources offer significant opportunities for economic growth, innovation, and sustainable development, positioning Portugal as a leader in the Blue Economy.

The Portuguese Economic Exclusive Zone (EEZ) comprises 3 subareas: subarea of the continent (287,521 km²), subarea of Azores (930,687 Km²) and subarea of Madeira (442,248 Km²).

Figure 31. Portuguese Exclusive Economic Zone



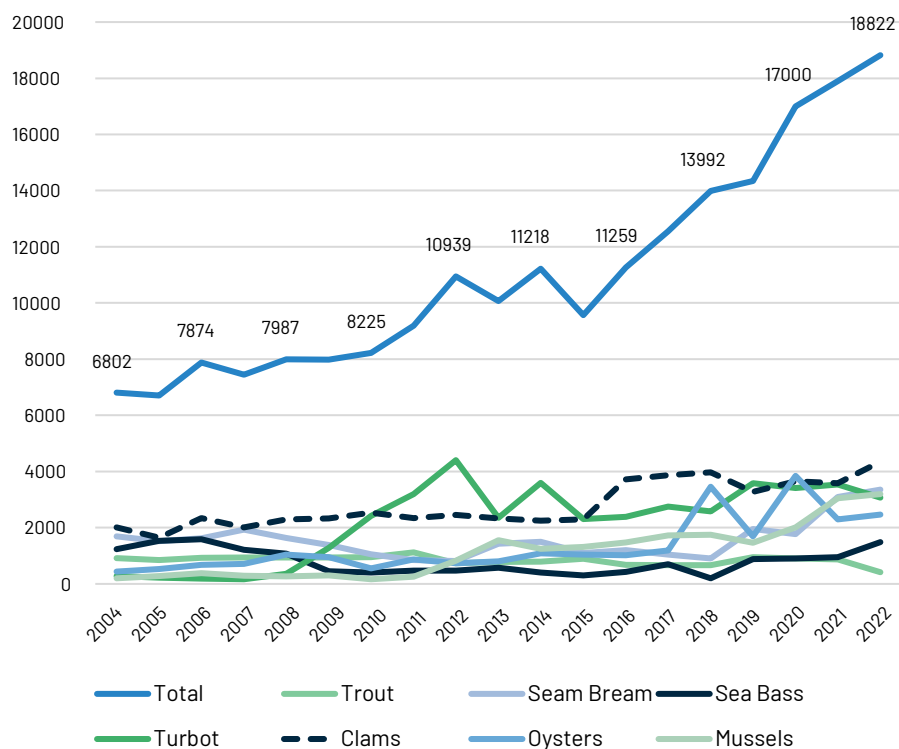
Source: DGRM

The ocean economy, or Blue Economy, encompasses a wide range of activities, including fisheries, maritime transport, tourism, offshore renewable energy, and marine biotechnology. This vast maritime territory provides a wealth of resources and opportunities for economic exploitation and sustainable development.

Fisheries and Aquaculture

Fisheries is a traditional pillar of Portugal's maritime economy. The fishing industry, including aquaculture, employs thousands of people and contributes significantly to the national GDP. In 2020, the sector generated over €1 billion in revenue.

Figure 32. Fish produced in aquaculture: total and by main species (tons)



Source: PORDATA, DGRM

Technological advancements and investment in fisheries, namely the development of aquaculture, have significantly increased fish production despite a decline in registered fishermen to about 15,000 in 2023 from 20,000 in the year 2000. While traditional fishing has diminished, innovations in aquaculture techniques, automation, and sustainable farming have boosted productivity, ensuring higher yields, reflecting a shift toward efficiency-driven seafood production.

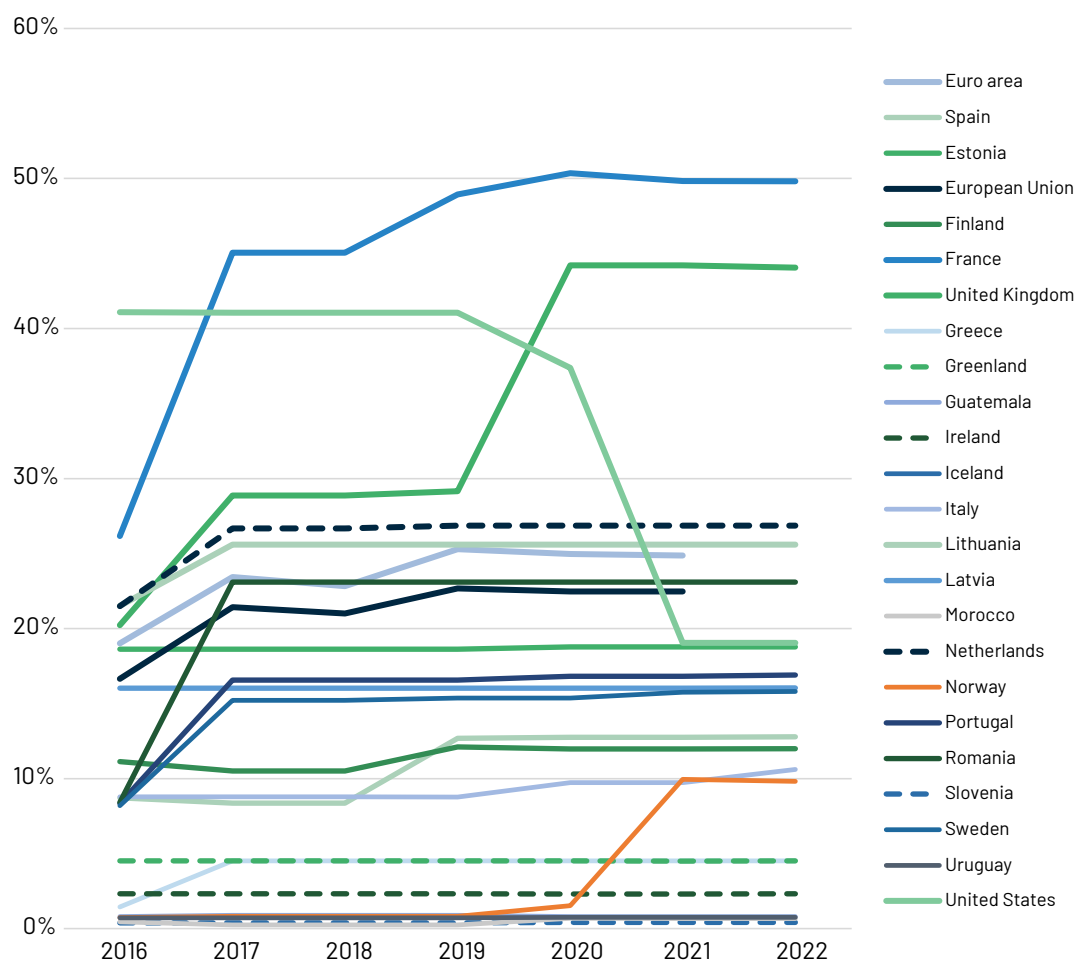
Sustainable fishing practices and advancements in technology have enhanced the productivity and environmental sustainability of these industries. Companies like Pescanova, Jerónimo Martins and Sonae are leading the way in sustainable seafood production, ensuring the long-term viability of marine resources.

Marine Biotechnology

Marine biotechnology represents a significant opportunity for Portugal to enhance its position as a prime investment destination. Leveraging its extensive maritime resources, Portugal is well-positioned to lead in this innovative sector, which encompasses the use of marine bioresources for the development of new products and processes in industries such as pharmaceuticals, cosmetics, food, and environmental management. Portugal's vast

Exclusive Economic Zone (EEZ) provides a rich source of marine biodiversity. This biodiversity is an asset for marine biotechnology, offering untapped potential for the discovery of novel compounds and bioactive substances. Portugal's strategic location and rich marine resources position it to capture a significant share of this growing market.

Figure 33. Percentage of Marine Protected Areas



Source: World Bank

Portugal, despite having one of the largest Exclusive Economic Zones in Europe, has 17% of its marine area protected, surpassing Spain, Finland, Italy, Norway and Greece. This highlights Portugal's commitment to marine conservation, balancing economic activities with environmental sustainability. While leading nations exceed 40%, Portugal remains ahead of many Mediterranean and Nordic countries.

The Portuguese government has recognized the strategic importance of marine biotechnology and has implemented policies to support its development. The National Strategy for the Sea (ENM) and the Research & Innovation Smart Specialization Strategy (ENEI) identify the Blue Economy as a priority area for investment and innovation.

These strategies aim to promote sustainable exploitation of marine resources, enhance research and development, and attract investment in marine biotechnology.

Portugal is home to several innovation centers and research institutions that are driving advancements in marine biotechnology. The Centre of Marine Sciences (CCMAR) at the University of Algarve and CIIMAR at Porto University are leading research institutions focused on marine biology and biotechnology. CCMAR collaborates with national and international partners to conduct cutting-edge research and develop innovative solutions for the sustainable use of marine resources. Marine biotechnology, in its many dimensions, such as aquaculture, marine natural products chemistry, bioremediation, biofilms, bioadhesive cell culture or biosensors are exploratory areas by Portuguese corporations and startups.

The Blue Bio Value accelerator is a key initiative supporting marine biotechnology startups in Portugal. This accelerator provides mentorship, funding, and access to a network of industry experts and research facilities. By fostering innovation and entrepreneurship, Blue Bio Value is helping to create a vibrant ecosystem for marine biotechnology in Portugal.

Several Portuguese companies are successfully leveraging marine biotechnology to develop innovative products and drive economic growth. Bluepharma, a pharmaceutical

company, is exploring marine bioresources to develop new drugs and therapies. Their research focuses on identifying bioactive compounds from marine organisms that have potential applications in treating diseases such as cancer and infectious diseases.

Allmicroalgae, another Portuguese company, specializes in the production of microalgae-based products for the food, feed, and cosmetics industries. Their sustainable production methods and innovative products have positioned them as a leader in the marine biotechnology sector.

Marine biotechnology also offers significant environmental and social benefits. Sustainable exploitation of marine resources helps address global challenges such as food security, climate change, and environmental degradation. For example, the development of bio-based products from marine resources can reduce reliance on fossil fuels and decrease carbon emissions.

In 2021, according to EPI (European Patent Institute), patent applications in biotechnology grew 82.4%, making this area second place in patent applications, after computer technology.

Overall, while the marine technologies and blue economy areas are still in the early days of development, they hold great potential and represent a significant opportunity for investment.

The Potential Development of Mineral Resources

As stated, Portugal is home to some of the largest lithium reserves in Europe, a critical mineral to produce lithium-ion batteries used in electric vehicles (EVs) and energy storage systems. The country's lithium deposits, concentrated in the northern regions of Barroso and Guarda, have attracted significant interest from global players. As illustration, Savannah Resources, a UK-based company, is developing the Barroso Lithium Project, which is expected to become one of Europe's largest lithium mines. This project aligns with the European Union's goal of reducing reliance on imported critical minerals and strengthening the region's battery supply chain.

In addition, as Portugal's government has launched the National Strategy for Lithium, which promotes sustainable mining practices and encourages partnerships between

local and international stakeholders. Thus, the Portuguese Government has implemented forward-thinking policies to ensure that mineral extraction aligns with environmental and social sustainability standards. That initiative has already spurred collaborations, such as the partnership between Lusorecursos, a Portuguese mining company, and Galp Energia, a leading energy corporation, to explore lithium extraction and processing opportunities. According to the Portuguese Directorate-General for Energy and Geology (DGEG), Portugal's lithium reserves are estimated at 60.000 metric tons, with significant potential for expansion.

Figure 34. Lithium World Mine Reserves

	Metric tons
USA	1.100.000
Argentina	3.600.000
Australia	6.200.000
Brazil	390.000
Canada	930.000
Chile	9.300.000
China	3.000.000
Portugal	60.000
Zimbabwe	310.000
Other countries	2.800.000

Source: Source: USGS World

Portugal is also a significant producer of tungsten and tin, two metals essential for electronics, aerospace, and renewable energy technologies. The Panasqueira Mine, operated by Almonty Industries, is one of the longest-running tungsten mines in the world and a key supplier to global markets, making the country's tungsten production, account for approximately 3% of global supply. Similarly, the Neves-Corvo Mine, owned by Lundin Mining, is a major source of copper and zinc, with plans to expand its tin production. These figures underscore Portugal's capacity to meet growing global demand for critical minerals, supporting high-tech industries and attracting investments in mineral processing and value-added manufacturing.

Portugal's strategic location, with access to Atlantic ports and proximity to European markets, makes it an attractive destination for international investors for exploration and development of these mineral resources. The government has implemented policies to attract foreign investment, such as tax incentives, streamlined permitting processes, and support for research and development. These measures have already led to successful partnerships, including the collaboration

between Portuguese Lithium Company and Chinese investors to develop lithium processing facilities.

Portugal can also tap into a reliable supply chain for green technologies while contributing to the global energy transition. Portugal's mineral wealth, combined with its commitment to sustainability, makes it an ideal destination for forward-looking investments in the green economy.

Portugal's natural resources extend beyond minerals to include vast renewable energy potential. The country's clean energy infrastructure not only supports sustainable mining operations but also creates opportunities for businesses in energy storage and green hydrogen production. For example, EDP (Energias de Portugal), one of Europe's largest renewable energy companies, is investing in green hydrogen projects that leverage Portugal's solar and wind resources to produce clean fuel for industrial use.

Overall, Portugal's rich and diverse natural resources present a wealth of opportunities, particularly in the context of the global transition to a green economy.

With its abundant reserves of critical minerals, water, forests, marine resources, and renewable energy generation, as well as a commitment to sustainability, Portugal is emerging as a strategic hub for innovation and investment in natural resource development.

3.3. Modern Telecommunications and Payments Networks

Telecommunications

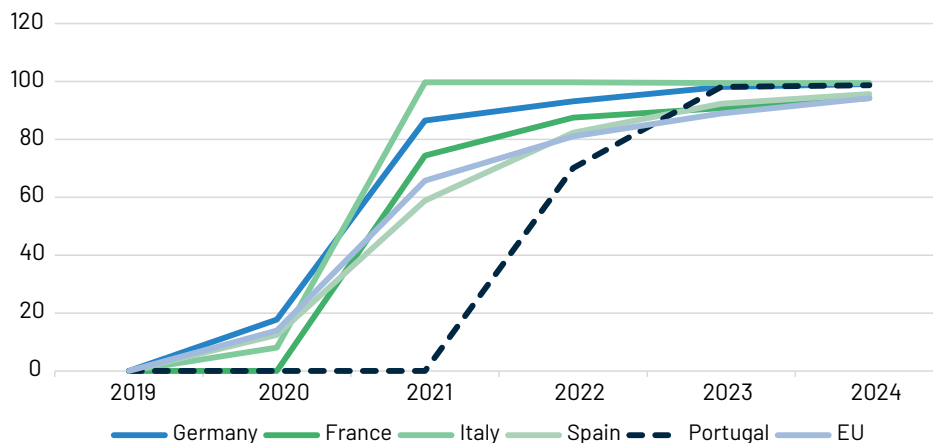
Portugal's telecommunications infrastructure is a pillar of digital competitiveness. It is a vital component of its digital economy, positioning the country as a key player in Europe's ongoing digital transformation. Investments in advanced technologies, robust networks, and supportive policies have created an ecosystem that fosters connectivity, innovation, and economic growth. Portugal's strong focus on 5G deployment, fiber optic leadership, global connectivity, and regulatory innovation underscores its commitment to digital inclusivity and competitiveness on the international stage.

Advanced 5G Deployment

Portugal has been at the forefront of the 5G revolution, ensuring nationwide access to faster and more reliable connectivity. By prioritizing 5G rollouts since 2021, the country has equipped urban hubs with cutting-edge network speeds while also addressing the digital divide by enhancing connectivity in rural and remote areas. This advanced mobile infrastructure supports a wide range of applications, from smart city technologies and autonomous vehicles to telemedicine and remote education. Businesses and individuals alike benefit from the increased bandwidth and reduced latency that 5G offers, enabling seamless communication and data-intensive operations. This full coverage of the country by 5G networks also bolsters Portugal's appeal to industries reliant on emerging technologies such as artificial intelligence (AI), Internet of Things (IoT), and augmented reality (AR), further integrating the country into Europe's digital economy.



Figure 35. Broadband internet coverage by 5G technology (% households), 2019-2024



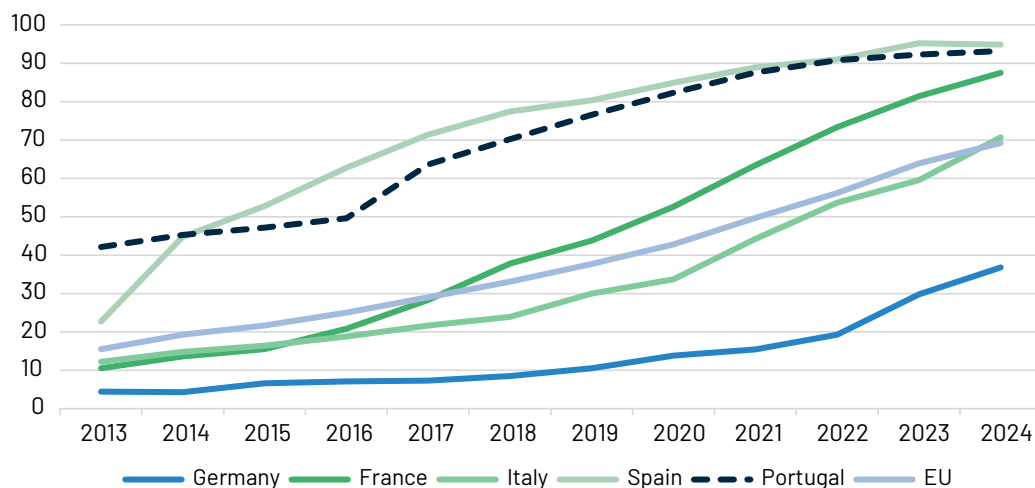
Source: Eurostat

Fiber Optic Network Leadership

While 5G is concerned with mobile (wireless) telecommunications, fiber optic is a wired technology. Portugal boasts one of the highest penetration rates of fiber optic internet in Europe, a testament to its long-standing investment in reliable and high-speed digital infrastructure. With extensive coverage across urban and suburban regions, as well as significant expansion into rural areas, the fiber optic network ensures that businesses and households have access to consistent, high-speed internet. This connectivity is a cornerstone

of Portugal's digital economy, supporting critical services like cloud computing, video conferencing, and data streaming. For businesses, the widespread availability of fiber optic connectivity translates to enhanced operational efficiency, productivity, and competitiveness. Additionally, the network's ability to handle bandwidth-intensive applications positions Portugal as an attractive destination for data-heavy industries, such as financial services, tech startups, and media production.

Figure 36. Broadband internet coverage by fiber optic (FTTP) technology (% households), 2020-2024



Source: Eurostat

Global Connectivity

Portugal's geographic location and investments in strategic undersea cables reinforce its role as a global data hub. The EllaLink cable, which directly connects Europe to South America, is a prime example of Portugal's leadership in global connectivity. This high-capacity link enhances the flow of data between continents, reducing latency and enabling faster, uninterrupted communications for

international businesses. The infrastructure supports industries that rely on transcontinental data transfer, such as financial trading, cloud services, and multinational corporations. Additionally, Portugal's role in global data networks strengthens its position as a gateway between Europe, Africa, and the Americas, further integrating into the global digital economy.



NOS:
**Engineering Portugal's Digital
Future Through Network
Leadership and Innovation**

NOS is a leading telecommunications operator in Portugal; it is a fundamental architect of Portugal's digital infrastructure and an enabler of the country's technological ambitions. Through strategic investment in cutting-edge networks, a vision for seamless connectivity, and digital policies, NOS has positioned itself at the forefront of Portugal's digital transformation.

Pioneering 5G Development and Deployment: NOS has been the leader in the rollout and advancement of 5G technology in Portugal, understanding its potential beyond faster smartphones.

- **Nationwide Coverage:** NOS was the first operator to launch 5G services in Portugal and has consistently maintained the most extensive and advanced 5G network in the country, covering hundreds of towns and cities.
- **Beyond Enhanced Mobile Broadband (eMBB):** While providing mobile internet, NOS is focused on developing the core 5G capabilities that will fuel future innovation:
 - **Ultra-Reliable Low-Latency Communication (URLLC):** For applications like remote surgery, autonomous vehicles, and industrial automation.
 - **Machine-Type Communication (mMTC):** To support the ecosystem of the Internet of Things (IoT), connecting millions of sensors and devices.
- **Strategic Partnerships:** NOS collaborates with industries and universities to develop 5G use cases in areas such as smart cities, telemedicine, and immersive media (AR/VR).

Building a Fiber-Optic Backbone for a Gigabit Society: Recognizing that 5G towers need a fixed backbone, NOS has invested in its fiber optic network (FTTH - Fiber to the Home): Extensive Reach (the NOS fiber network is one of the largest and fastest in Portugal, reaching millions of homes and businesses with symmetrical gigabit-speed connections); Foundation for Innovation (this extensive fiber infrastructure is the essential foundation that supports the 5G network, ensures robust cloud connectivity, and enables the digitalization of businesses and public services across the nation. It is the bedrock upon which Portugal's digital economy is being built).

Orchestrating Seamless Global Connectivity: In a globalized world, NOS provides its customers—both individual and corporate—with seamless connectivity beyond national borders with:

- **Strategic International Partnerships:** through alliances with global operators and membership in international associations, NOS ensures high-quality roaming services and reliable connectivity

for Portuguese travelers and businesses abroad.

- **Solutions for Multinational Corporations:** NOS offers integrated global connectivity solutions, managed services, and cloud access, supporting the international ambitions of Portuguese companies and attracting foreign investment.

Championing Supportive Digital Policies and Ecosystems: NOS operates with a deep understanding that its role extends beyond infrastructure to being a catalyst for the broader digital ecosystem.

- **Advocacy for Digital Inclusion:** NOS participates in public discourse and partners with the government to develop policies that promote digital literacy, bridge the digital divide, and make technology accessible to all citizens.
- **Fostering Innovation:** Through initiatives like NOS 5G Challenge and startup support programs, NOS provides a testing ground for Portuguese tech talent and entrepreneurs, helping to bring new ideas to market and stimulating the national innovation economy.
- **Investment in Content and Services:** By developing and aggregating an array of content (TV, streaming, music) and digital services, NOS ensures its network delivers compelling value, driving adoption and enriching the digital lives of its customers.

The Central Nervous System of Portugal's Digital Ambition: Combining 5G and fiber infrastructure with a commitment to ecosystem development and supportive policies, NOS has effectively become the key player of Portugal's digital present and future. The company's investments ensure that Portugal remains competitive on the global stage, providing the necessary tools for businesses to innovate, for the public sector to modernize, and for citizens to fully participate in the digital world.

Moreover, Portugal's regulatory framework for the telecommunications sector is designed to foster competition, innovation, and accessibility. Policies that promote fair competition among providers ensure affordable pricing and high-quality services for consumers and businesses. Public-private partnerships play a crucial role in advancing telecom infrastructure, driving investment into cutting-edge technologies, and expanding network coverage. Additionally, government incentives and programs aimed at supporting digital transformation empower startups and tech companies to thrive in Portugal's innovation-friendly ecosystem. The combination of favorable regulations and proactive partnerships ensures that the country's telecom infrastructure remains adaptable to emerging challenges and opportunities in the digital landscape. Nevertheless, broadband internet prices are still higher in Portugal than in the euro area's biggest economies although they have decreased since 2021.

In summary, Portugal's robust telecommunications infrastructure serves as the backbone for its thriving tech and digital services sectors. The combination of

advanced 5G networks, extensive fiber optic coverage, seamless global connectivity, and supportive policies creates an environment conducive to innovation and economic growth. Tech companies, startups, and digital service providers benefit from the reliability and scalability of the telecom infrastructure, which enables them to develop and deliver cutting-edge products and services to global markets. Additionally, Portugal's connectivity infrastructure supports digital inclusion, ensuring that individuals and businesses in remote areas can participate fully in the digital economy.

By continually investing in its telecommunications infrastructure and fostering a supportive policy environment, Portugal positions itself as a leader in Europe's digital transformation. Its strong digital foundation not only underpins the growth of its domestic economy but also enhances its global competitiveness, making Portugal a prime destination for businesses and investors in the digital and technology sectors.

Banking, Insurance and Payments

Portugal's robust financial infrastructure, strong regulatory framework, and commitment to innovation make it an attractive destination for international investment. The country's banking, insurance, and payment systems are not only well-developed but also at the forefront of technological advancements, offering a secure and dynamic environment for businesses and investors.

Portugal boasts a modern and efficient financial infrastructure that supports seamless transactions and fosters economic growth. The country's payment systems are highly advanced, with widespread adoption of digital payment solutions. According to the Bank of Portugal, over 80% of Portuguese citizens use digital banking services, reflecting a strong push toward cashless transactions.

The Multibanco network, operated by SIBS (Sociedade Interbancária de Serviços), is a prime example of Portugal's innovative payment ecosystem. Multibanco is a pioneer in digital banking and one of the most comprehensive ATM and payment networks in Europe, offering services such as bill payments, ticket purchases, and mobile top-ups. SIBS has also pioneered MB Way, a mobile payment app that allows users to make instant transfers and payments using their smartphones. With over 5 million active users, this home-grown success story is far more than a peer-to-peer payment app. MB Way has evolved into a platform integrated with retail, e-commerce, and services, becoming part of daily life and a cornerstone of Portugal's digital economy.

Notably, Portugal's financial sector is underpinned by a strong regulatory framework that ensures stability, transparency, and investor protection. The Bank of Portugal and the Portuguese Insurance and Pension Funds Supervisory Authority (ASF) play key roles in maintaining a secure financial environment. These institutions have implemented stringent regulations aligned with EU directives, such as the Payment Services Directive (PSD2), which promotes competition and innovation in the payments industry.

The regulatory environment has also facilitated the growth of fintech companies, with Portugal emerging as a hub for financial innovation. The Lisbon-based fintech ecosystem has attracted startups and established players alike, supported by initiatives such as the Portugal Fintech association, which fosters collaboration between traditional financial institutions and tech innovators.

Innovation in Banking and Insurance

Portugal's banking and insurance sectors are leaders in adopting cutting-edge technologies to enhance customer experience and operational efficiency. Caixa Geral de Depósitos (CGD), Portugal's largest state-owned bank, has invested heavily in digital transformation, offering services such as AI-driven financial advice and blockchain-based solutions for secure transactions. Similarly, Novo Banco has embraced open banking, enabling third-party developers to create innovative financial products and services.

According to the European Central Bank, Portugal's payment systems processed over 1.2 billion transactions in 2022, reflecting the efficiency and reliability of its

financial infrastructure. The country's fintech sector has grown by 20% annually, with over 200 startups operating in areas such as digital payments, blockchain, and Insurtech. This growth is supported by a favorable regulatory environment and a highly skilled workforce.

In the insurance sector, companies like Fidelidade and Tranquilidade are leveraging technology to streamline processes and offer personalized products. Fidelidade, for instance, has introduced telematics-based car insurance, which uses IoT devices to monitor driving behavior and adjust premiums accordingly. This innovation not only improves risk assessment but also promotes safer driving practices.



**Fidelidade:
Pioneering Personalized
Insurance Through IoT and
Data-Driven Innovation**

Fidelidade, one of Portugal's largest insurance companies, is leading a digital transformation within the sector. By moving beyond traditional models, the company is leveraging technology, particularly on the Internet of Things (IoT), to redefine risk assessment, create hyper-personalized products, and change the relationship with its customers.

From Generic Premiums to Personalized Policies

The traditional model of car insurance relies on broad statistical categories (e.g., age, vehicle type, location) to calculate premiums. This one-size-fits-all approach often fails to accurately reflect individual driver risk. Fidelidade identified this inefficiency and pioneered the adoption of **Usage-Based Insurance (UBI)** in the Portuguese market. Its innovation in this space is telematics-based car insurance. This program utilizes a small IoT device—a “black box” installed in the vehicle—or a smartphone application to continuously collect and transmit data on driving behavior.

The IoT technology enables a shift from assessing potential risk to measuring actual risk. The system monitors a range of metrics in real-time, including driving habits (acceleration, braking, and cornering smoothness), driving patterns (time of day, total distance traveled, and average speed, road type (usage of highways versus city streets)). This granular data is processed by algorithms to create a dynamic driver risk profile.

Benefits: A Win-Win for Customers and the Company

This data-driven approach intends to create significant value for both parties:

- **For the Customer**

- **Personalized Premiums:** Safe drivers are directly rewarded with lower insurance costs based on their actual behavior, not demographic assumptions.
- **Promotion of Safety:** Drivers receive feedback on their habits, encouraging safer practices on the road. This transforms the insurance policy from a static contract into an interactive safety tool.
- **Enhanced Services:** The technology can enable additional features like emergency crash detection and assistance, adding a layer of security.

- **For Fidelidade**

- **Risk Assessment:** The company gains an accurate view of individual risk, allowing for more precise underwriting and pricing.
- **Reduced Claims Frequency:** By incentivizing safer

driving, the program actively works to reduce the number of accidents and, consequently, claims.

- **Stronger Customer Relationships:** The model fosters a transparent and continuous partnership with clients, moving beyond the traditional annual renewal interaction to build long-term loyalty.

A Strategic Shift Towards a Tech-Driven Future

Fidelidade's investment in telematics is not an isolated product launch but a cornerstone of a broader strategy to embrace Big Data, AI, and digitalization. It positions the company as a relevant player in a traditionally conservative industry.

Fidelidade's telematics program is an interesting case study in how established incumbents can harness innovation to stay competitive. It moves the company's value proposition from merely “protecting against loss” to “actively promoting safety and rewarding it financially”. By successfully implementing this IoT-driven model, Fidelidade is setting a new standard for the insurance sector.

Collaborations between traditional financial institutions and fintech startups are driving innovation in Portugal. For example, Santander Portugal has partnered with Feedzai, a Portuguese AI-powered fraud detection platform, to enhance its cybersecurity capabilities.



Feedzai: From Portuguese Startup to Global AI Unicorn

Founded in Coimbra in 2009 by data scientists Nuno Sebastião, Paulo Marques and Pedro Bizarro, Feedzai was built on a vision to use machine learning to make financial systems safer. Rapidly expanding its headquarters to Lisbon with key offices in San Francisco, London, and Amsterdam, Feedzai has grown into a global powerhouse:

- **Unicorn Status:** Achieved a valuation exceeding \$1 billion after a \$200 million Series D funding round in 2021.
- **Global Reach:** Protects over 800 million consumers across 190 countries.
- **Industry Recognition:** Consistently named to CB Insights AI 100 and Forbes Fintech 50 lists.

The Technology: AI-Powered RiskOps

At its core, Feedzai's platform is a Real-Time Risk Operations (RiskOps) engine. It analyzes streams of transactional data to identify and stop fraudulent activity instantly. Its technological edge comes from:

- **Advanced Machine Learning:** self-learning models continuously adapt to new and evolving fraud patterns, surpassing traditional, rules-based systems.
- **Explainable AI (XAI):** unlike "black box" solutions, Feedzai provides clear reasons for blocking a transaction, which is relevant for regulatory compliance and customer trust.
- **Seamless Integration:** the platform is designed to integrate into existing banking infrastructure without disrupting the customer experience, reducing false positives and declined legitimate transactions).

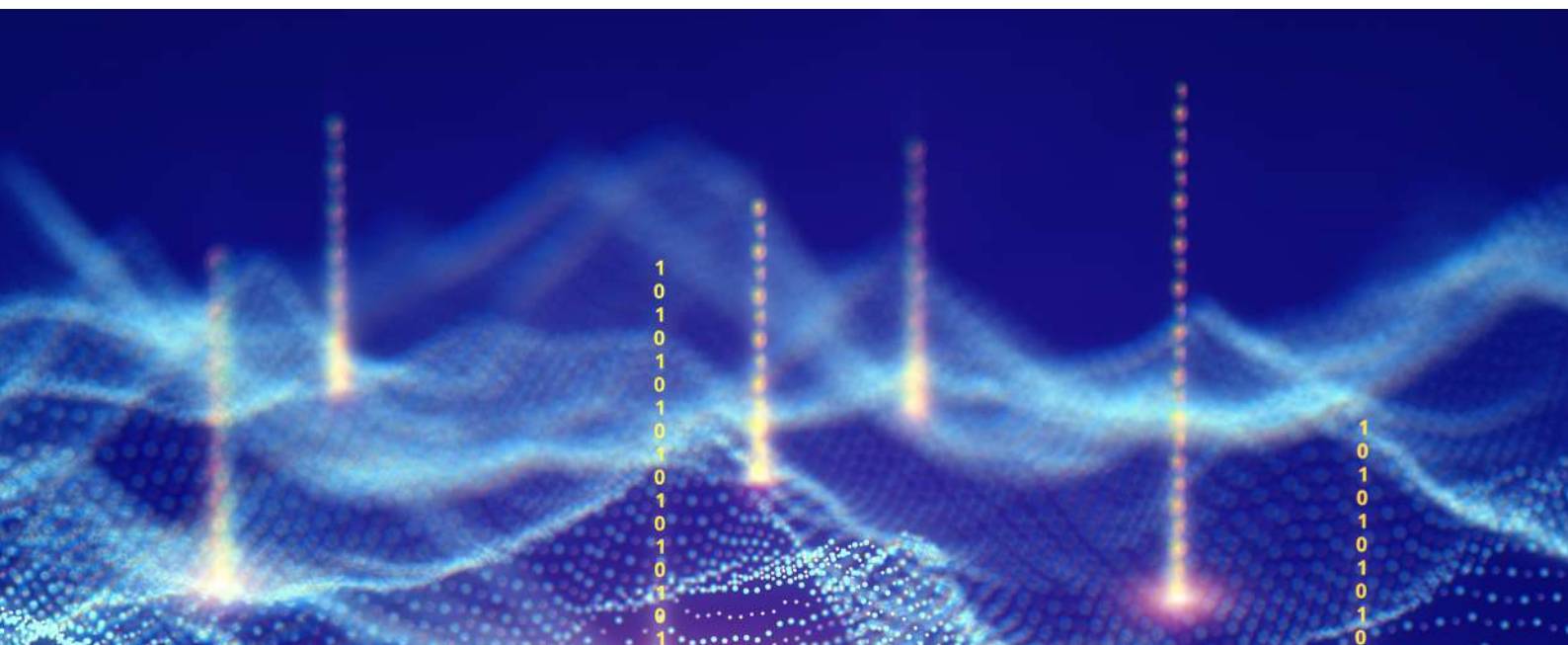
The Santander Portugal Partnership: A Case Study in Application

Santander Portugal's decision to partner with Feedzai was a strategic move to adopt real-time fraud detection. For Feedzai, this partnership serves as a reference case within the global Banco Santander group and the wider banking industry. Through this collaboration, Santander Portugal leverages Feedzai's technology to analyze transactions in real-time, preventing fraud before it occurs; reduce friction for legitimate customers, enhancing their digital banking experience; stay ahead of sophisticated cybercriminals with adaptive machine learning.

A Testament to Portugal's Thriving Tech Ecosystem

Feedzai's success story is linked to Portugal's emergence as a hub for tech talent and innovation. The company is a flagship example of the country's capacity to produce world-class engineering talent, often sourced from top Portuguese engineering and science schools in the cities of Coimbra, Lisboa, Porto, Aveiro and Braga. Its growth has had a significant ripple effect, helping to put Portuguese AI on the global map, attracting international investment into the local fintech ecosystem, and creating a blueprint for other Portuguese deep-tech startups aiming for global scale.

This case highlights Portugal's dual strength—world-class financial institutions embracing homegrown AI solutions—creating a blueprint for the future of secure, intelligent banking. Portugal's fintech ecosystem has also attracted international attention, with global fintech players entering the market. These partnerships and investments underscore Portugal's position as a leader in financial innovation.



**Millennium bcp:
Reinventing Banking Through a
Culture of Perpetual Innovation**

Millennium bcp stands as a reference of Portugal's financial sector, not merely for its size and history, but for its tradition in innovation. As the country's largest privately-owned bank, it has consistently demonstrated a forward-thinking mindset into its core operations to enhance IT, customer experience, streamline services, and pioneer new digital frontiers. Millennium bcp's reputation as an innovation leader is built on a history of strategic firsts: it was a digital pioneer, the first Portuguese major bank to launch a full-featured online banking platform and a mobile app, recognizing the shift to digital channels early on, with millions of active users on its digital platforms. It proactively embraced the PSD2 directive, developing robust APIs that allow for secure third-party integrations and fostering a new ecosystem of financial services.

Today, Millennium bcp's innovation strategy is focused on three interconnected pillars:

1. Hyper-Personalization through AI and Data

The bank is leveraging Artificial Intelligence and advanced data analytics to move beyond one-size-fits-all banking. The goal is to deliver a hyper-personalized experience where AI-driven algorithms analyze transaction patterns to offer customized financial advice and product recommendations; Customers receive alerts and insights to help them better manage their finances; Predictive analytics are used to anticipate customer needs, offering solutions.

2. Digital-Only Ecosystems and Seamless Banking

Understanding that customers demand, Millennium bcp is focused on creating seamless, ecosystem-based banking: Fully Digital Onboarding (the bank has streamlined account opening and product subscription through digital processes, reducing friction and acquiring customers); Integrated Ecosystems (efforts are underway to embed banking services directly into the customer's journey, whether through partnerships with retailers, real estate platforms, or automotive companies), as well as seamless MB Way integration;

3. Sustainable Finance and Green Innovation

Aligning with global trends and customer values, innovation is also directed toward sustainability (developing green loans and sustainable investment products for both individual and corporate clients; Implementing ESG (Environmental, Social, and Governance) criteria into its lending and investment decisions; leveraging technology to reduce its own carbon footprint through paperless processes and optimized operations.

Millennium bcp recognizes that breakthrough innovation often happens in collaboration and the bank actively partners with Fintechs. Through its corporate venture arm and startup programs, it identifies and integrates

fintech solutions, from cybersecurity to wealth tech. It also partners with academic institutions to tap into research and a pipeline of tech talent; and Big Tech, working with global technology leaders to leverage cloud computing, AI infrastructure, and cybersecurity tools.



3.4. Strong Transportation and Logistical Networks

Portugal's transportation and logistical infrastructure is a cornerstone of its economic competitiveness. By leveraging its strategic geographic location and investing in advanced infrastructure, Portugal has established itself as a crucial player in global supply chains. The country's well-maintained road networks, strategic ports, efficient rail, air connectivity, and focus on logistics innovation, as well as innovative retail, have enhanced its role as a logistics hub linking Europe to Africa, Americas and Asia.

Modern Road Infrastructure

Portugal boasts one of the most extensive and well-maintained highway networks in Europe, a vital asset for the efficient movement of goods and people. Spanning approximately 3,000 kilometers, the country's road infrastructure connects major cities, industrial zones, and key ports, ensuring seamless logistics operations. Highways such as the A1, linking Lisbon to Porto, and the A2, connecting Lisbon to the Algarve, serve as critical arteries for domestic and international trips.

The quality and efficiency of Portugal's road infrastructure have been consistently recognized, placing the country among the top-ranked nations for road quality in Europe. These highways enable businesses to optimize supply chains by reducing transportation times and costs. Additionally, the government's ongoing investments in road maintenance and expansion ensure that the network remains resilient to growing demand and evolving logistical challenges.

Strategic Port Infrastructure

Portugal's ports play a pivotal role in global trade, serving as gateways between Europe and key markets worldwide. The Port of Sines, the country's largest deep-water port, is particularly notable for its capacity to handle large container ships and its proximity to major shipping routes.

As one of Europe's most important energy and cargo hubs, Sines is the leading Portuguese port and facilitates the import and export of liquefied natural gas (LNG), crude oil, and other bulk commodities.

Figure 37. Cargo handled per port in 2023

Port	Cargo handled (10 ³ t)	%	Var.
Sines	17.716	50,1%	-6,9%
Leixões	6.151	17,4%	-1,5%
Lisboa	5.008	14,2%	17,5%
Setúbal	2.742	7,7%	6,0%
Aveiro	2.711	7,7%	12,6%
Figueira da Foz	874	2,5%	1,6%
Viana do Castelo	150	0,4%	-2,3%
Faro	40	0,1%	54,9%
Total	35.391	100,0%	

Source: AMT



Sines as a new Industrial and Innovation Hub

In the 1970s, Sines was envisioned as Portugal's major industrial and port hub, but it never fully realized its potential. With its deep-water port, abundant renewable energy, and strategic infrastructure, Sines is undergoing a dramatic transformation into a European leader in green industry, data centers, and advanced manufacturing.

Sines Competitive Advantages

- **Deep-Water Port** (One of Europe's Best) - Capable of handling ultra-large container ships (ULCVs), positioning Sines as a key Atlantic trade gateway;
- Abundant and Cheap **Renewable Energy** - Portugal's leading wind and solar capacity feeds Sines' industrial demand with low-cost, green power;
- **LNG (Liquefied Natural Gas) Terminal** - Critical for energy security and bridge fuel for industry;
- **Container Terminal** - critical to bridge Iberian and European logistics demands;
- **Proximity to Europe, Africa and America** - Ideal for export-oriented manufacturing and data centers;
- Government and EU Backing - Supported by Portugal's **Recovery and Resilience Plan (PRR)** and EU Green Deal funding.

Current Investments: A New Industrial Revolution

- Hyperscale Data Centers - The "Digital Port" of Europe Sines is becoming a **key European data hub**, thanks to:
 - Start Campus (SINES 4.0) - a €3,5B project with Amazon Web Services (AWS) as an anchor client, set to be one of Europe's largest 100% green-powered data centers;
 - Ocean Submarine Cable - enhancing connectivity between Europe, Africa, and the Americas.
- **Battery and Electric Vehicle (EV) Manufacturing** Portugal is securing its place in the EU battery value chain, with:
 - FREYR Battery (Norwegian company) - investing €1,7B in a gigafactory for sustainable lithium-ion batteries;
 - LiPLANET (European battery alliance) - research initiatives in solid-state batteries.
- Green Hydrogen and Renewable Energy Hub
 - GreenH2Atlantic - a €70M EU-backed project led by EDP, Galp, and Shell to produce green hydrogen for industry and transport;

- Floating Offshore Wind Potential - Sines' deep waters are ideal for floating wind farms, with pilot projects underway.

▪ **Petrochemical and Industrial Decarbonization**

- Galp Energia's Sines refinery is transitioning to biofuels and green hydrogen;
- Dow Chemical is investing in circular plastics and carbon-neutral production.

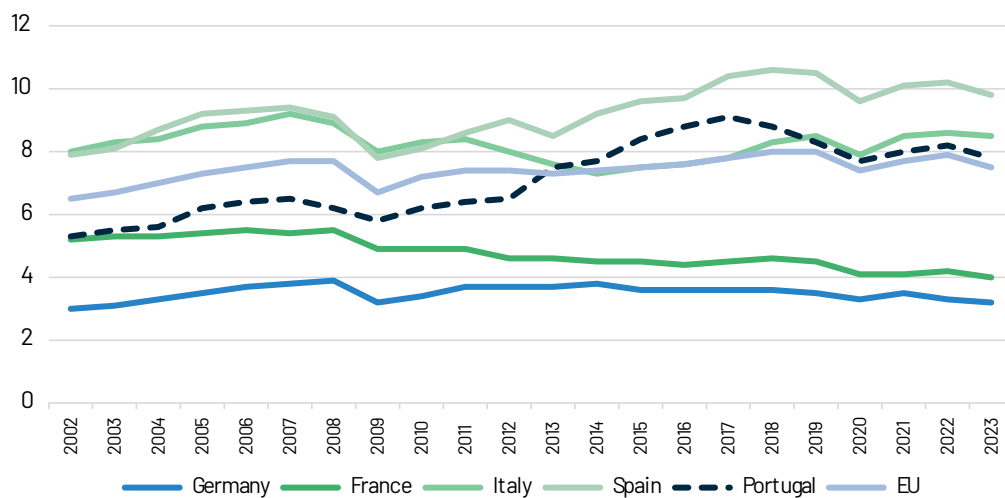
The Future Potential: Europe's Next Industrial and Energy Hub

With the expansion of the **Sines port**, Portugal could rival Rotterdam and Antwerp as a trans-shipment hub for Europe-Africa-Americas trade. In addition, by combining cheap renewables, hydrogen, and battery production, Sines could attract more EV and **clean-tech manufacturers** and also position as a magnet for advanced manufacturing

The Sines Industrial Innovation Hub links the industrial past of Sines with an innovative future. It shows that with the right infrastructure, energy, and vision, Portugal can compete on Europe's industrial stage. The foundations are now in place and the next decade will determine if Sines is able to become the Iberian Peninsula's most dynamic industrial hub.

Other key ports, such as Lisbon, Setúbal and Leixões, complement Sines by handling a diverse range of cargo, including containers, automobiles, and agricultural products. These ports are equipped with advanced facilities, including automated cranes and intermodal terminals, that streamline loading, unloading, and cargo transfer processes.

Figure 38. Gross weight of goods handled in all ports (tonnes per capita), 2002–2023



Source: Eurostat

Investments in port infrastructure and logistics, such as the recent expansion of container's terminal (PSA) in Sines, have enhanced Portugal's competitiveness in global trade, attracting multinational corporations and boosting economic growth.

In addition to cargo, Portugal has dedicated cruise terminals catering to international tourism. These ports, such as the Lisbon Cruise Terminal, Porto (Leixões) Cruise Terminal; Portimão Cruise Terminal, Funchal (Madeira) Cruise Port and Ponta Delgada (Azores), welcome large cruise ships and are important to the expansion of the country's tourism industry.

Portugal's extensive coastline and islands support marinas and recreational harbors, catering to yachts, sailing, and leisure boating. Some key marinas include Cascais Marine (Lisbon), Vilamoura Marine (Algarve), Lagos Marine (Algarve), Funchal Marine (Madeira) – a key stop for yachts in the Atlantic and Horta Marine (Azores) – a famous transatlantic sailing hub.

Efficient Rail and Air Connectivity

Portugal's expanding rail and air infrastructure complements its road and port systems, offering integrated transportation solutions for businesses and travelers. The country's rail network, while historically underdeveloped compared to its road infrastructure, is undergoing modernization. High-speed rail projects, such as the planned Lisbon-Madrid connection, aim to enhance cross-border connectivity and reduce travel times between major economic hubs.

The enhancement of cargo rail services, particularly

linking ports like Sines and Leixões to industrial zones and neighboring countries, strengthens Portugal's position as a logistics hub. These rail projects support the EU's sustainability goals by promoting greener transportation options and reducing reliance on road freight.

Portugal's air connectivity also plays a vital role in its logistical capabilities. Airports in Lisbon, Porto, and Faro serve as major international gateways, with Lisbon Airport undergoing expansions to address growing passenger and cargo volumes. The development of a new airport in Alcochete further reflects the government's commitment to bolstering aviation infrastructure in the long-term. These improvements facilitate the efficient movement of high-value and time-sensitive goods, enhancing the country's appeal as a destination for trade and investment.

Logistics Innovation

Portugal is embracing digital technologies to optimize its logistics operations, aligning with global trends toward smart logistics. Advanced tools such as artificial intelligence (AI), the Internet of Things (IoT), and blockchain are being integrated into supply chains to enhance efficiency, transparency, and cost-effectiveness. For instance, IoT-enabled sensors are used to monitor cargo conditions in real time, ensuring the quality of perishable goods during transit.

Blockchain technology is streamlining documentation processes, reducing administrative bottlenecks, and enhancing security in international trade. These innovations enable businesses operating in Portugal to improve inventory management, reduce waste, and

respond swiftly to market changes. Additionally, logistics hubs across the country are incorporating automated systems to facilitate faster and more accurate sorting and distribution of goods.

The government's focus on fostering innovation in logistics is evident through initiatives supporting the adoption of smart technologies. Public-private partnerships (PPPs) and incentives for digitization projects have encouraged the logistics sector to stay competitive in an increasingly data-driven economy. By leveraging these advancements, Portugal ensures its infrastructure remains resilient and adaptable to future demands.

Leading Retail Sector

Portugal's retail sector is a modern, innovative ecosystem that drives domestic consumption and strengthens the economy by setting high standards in quality, sustainability, and technology. Leading shopping centers like Colombo and NorteShopping blend retail with leisure, creating vibrant consumer hubs. Retail giants such as Jerónimo Martins and Sonae are innovation leaders, expanding globally in food retail and shopping centers operation, while supporting local suppliers and integrating Portuguese products into global markets.





Jeronimo Martins: Reinventing Retail Through Supply Chain Innovation

Jerónimo Martins is a Portuguese multinational distribution group and a dominant force in the retail sector, renowned for its continuous focus on efficiency, low prices, and deep understanding of its customers. While best known for its market-leading brands – **Pingo Doce** and **Recheio** in Portugal, **Biedronka** in Poland and **Ara** in Colombia – the company's competitive advantage lies in its mastery of logistics and supply chain innovation, which it continuously enhances with cutting-edge technology and data analytics. Jerónimo Martins Group reported in 2024 sales of **€33.5 billion** and employed 140,000 people. Being number 1 retailer in Portugal and in Poland, places it firmly among the Top 15 food retailers in Europe.

Logistics Excellence: The Engine of a Retail Empire

At its core, Jerónimo Martins is a logistics company that operates stores. Its ability to move vast quantities of goods from producers to shelves with unmatched speed and efficiency is the foundation of its success:

- **Centralized Distribution Model:** The company operates a network of highly automated, strategic distribution centers. This hub-and-spoke model allows for consolidated purchasing, reduced transport costs, and stringent quality control. Products are delivered to stores in a continuous replenishment cycle, minimizing stockouts and waste.
- **Data-Driven Supply Chain:** Advanced forecasting algorithms analyze sales data, weather patterns, and promotional calendars to predict demand with high accuracy. This ensures optimal stock levels, reduces food waste (a critical KPI), and maximizes freshness – a key factor for perishable goods.
- **Private Label & Vertical Integration:** A significant portion of the products on its shelves are from its own extensive portfolio of private labels. This allows for greater control over production, pricing, and logistics, streamlining the entire chain from factory to shelf.

Innovation in the Retail Experience: Blending Physical and Digital

Jerónimo Martins understands that modern retail must seamlessly integrate the physical and digital worlds to meet evolving consumer expectations.

- **E-commerce and Last-Mile Delivery:** Pingo Doce has aggressively expanded its online shopping and home delivery services, competing directly with pure-play e-commerce giants. The company innovates in last-mile logistics, using its store network as micro-fulfillment centers to ensure fast and efficient delivery.

- **Scan & Go and Mobile Apps:** The company's mobile apps empower customers with features like digital flyers, personalized offers, and, crucially, "Scan & Go" technology. This allows shoppers to scan items with their phone as they shop, paying instantly through the app and bypassing traditional checkout lines, dramatically improving the in-store experience.
- **In-Store Innovation:** From self-checkout kiosks to new store formats designed for convenience, Jerónimo Martins constantly tests and implements new technologies to reduce friction and enhance the customer journey.

Sustainability as an Innovation Driver

Innovation is also directed towards operational efficiency and sustainability, which are increasingly intertwined.

- **Energy Efficiency:** Investments in LED lighting, CO2 refrigeration systems, and solar panels on store and warehouse roofs reduce the carbon footprint and operational costs.
- **Reverse Logistics and Waste Reduction:** The group has implemented sophisticated "reverse logistics" processes to manage waste, ensuring recycling and repurposing. Its commitment to reducing food waste includes partnerships with food banks and dynamic pricing solutions for products nearing expiration.
- **Sustainable Logistics:** The company is modernizing its fleet with more efficient and alternatively fueled trucks to reduce emissions from its extensive transportation network.

A Traditional Retailer Transformed by a Tech-Driven Backbone

Jerónimo Martins exemplifies how a traditional brick-and-mortar retailer can not only survive but thrive in the digital age. Its success is the result of a decades-long strategic focus on building a lean, intelligent, and technologically advanced supply chain. Its digital and logistics excellence is a platform for new business and vertical integration. Jerónimo Martins is now one of the largest producers of food in the country (meat, milk and fish). By launching food stalls in its shops, it became in a few years the largest restaurant chain in the country.

By treating logistics as a core competitive advantage and continuously investing in digital innovation, Jerónimo Martins has built a resilient and agile retail empire. It demonstrates that, in modern retail, innovations often happen not on the shelf, but in the sophisticated, unseen networks that ensure the right product arrives at the right place, at the right time, and at the right price.

The sector embraces digital transformation, using AI, omnichannel strategies, and VR to enhance customer experiences. Sustainability is a key focus, with retailers adopting eco-friendly packaging, waste reduction, and green logistics. These efforts align with Portugal's climate goals and attract conscious consumers.

Integrated value chains enhance competitiveness across industries like agriculture, textiles, and manufacturing. Seamless coordination from production to retail ensures efficiency and adaptability, helping Portuguese products excel globally. Strategic logistics infrastructure, including key ports, facilitates international trade, while collaboration between sectors fosters innovation.

Customization and data-driven strategies allow industries like footwear and cork to meet niche demands sustainably. Retailers act as bridges for SMEs to enter global markets, reinforcing Portugal's economic dynamism and international distribution channels.

**Sonae MC:
Revolutionizing Retail Through
Supply Chain Innovation and
SME Empowerment**

Sonae MC, the food retail arm of the Portuguese conglomerate Sonae, operates as far more than the country's largest retail chain (under banner brands like **Continente, Meu Super, Go Natural, Bagga, Note!**). It functions as a powerhouse of innovation that has fundamentally transformed its operations through a data-driven and agile supply chain. Beyond pursuing its own operational efficiency, Sonae MC has pioneered unique and impactful models to support and integrate Portuguese small and medium enterprises (SMEs), thereby strengthening the national economy while securing a distinctive and competitive product offering.

Digital Innovation as a Strategic Weapon: The Engine of Supply-Chain Efficiency

Sonae MC's market leadership is built upon a world-class, technologically advanced supply chain that serves as the core of its competitive advantage. The company employs artificial intelligence and machine learning algorithms to predict consumer demand with remarkable accuracy. These systems analyze vast datasets that include historical sales, weather forecasts, promotional calendars, and even local events to optimize inventory levels across its hundreds of **Continente** and **Meu Super** stores. This high level of forecasting precision minimizes stockouts and reduces food waste, representing a critical objective for both profitability and sustainability.

The company's logistics operations are anchored by highly automated distribution centers. These hubs utilize robotics and smart sorting systems to manage the flow of thousands of products efficiently. This centralized model enables consolidated purchasing, efficient cross-docking, and daily deliveries to stores, ensuring maximum freshness especially for perishable goods while maintaining lean inventory levels. The entire supply chain operates on a continuous replenishment model where real-time sales data from store checkouts automatically triggers orders and shipments from distribution centers. This creates a responsive, pull-based system that aligns with actual consumer purchasing behavior.

Clube de Produtores: An Innovative Model for SME Integration

While its logistics operations are impressive, one of Sonae MC's most impactful innovations remains the Clube de Produtores (Producers' Club). This initiative transcends the traditional buyer-supplier relationship by creating a partnership ecosystem with local Portuguese producers. The program provides hundreds of small-scale, often local producers with guaranteed shelf space in Continente stores, allowing them to bypass complex distribution channels and gain direct access to a mass market.

Sonae MC offers these SMEs more than just a sales outlet. The company provides expert support in critical areas such as quality control and certification, helping producers meet stringent safety and quality standards. The program also includes logistical support, integrating their products into Sonae MC's own distribution network, thus solving a major hurdle for small producers. Additionally, the company engages in co-development activities, working directly with producers to develop new products, improve packaging, and tailor offerings to evolving consumer trends.

This model represents a business model innovation that creates mutual benefits. For Sonae MC, it secures a unique, high-quality, and local fresh product assortment that differentiates it from competitors and attracts discerning customers. For the SMEs, it provides essential growth opportunities, commercial stability, and the expert guidance needed to scale their businesses sustainably. The program simultaneously strengthens the local economy and reduces the carbon footprint associated with long-distance food transport.

Digital Transformation and Sustainability

Sonae MC's innovation extends to customer experience and operational sustainability through comprehensive digital transformation. The company has developed an online grocery platform that leverages its store network to enable efficient click-and-collect and home delivery services, effectively treating physical stores as local fulfillment centers. In its ongoing commitment to sustainability, the company is investing in a greener supply chain that includes a fleet of natural gas and electric vehicles, energy-efficient stores, and a strong commitment to circular economy principles through waste reduction and recycling programs.

Portugal's retail sector and value chain are examples of innovation and sustainability, driving economic growth and global competitiveness for the retailers and local producers.

Overall, Portugal's transportation network and logistical capabilities are central to its economic strategy, driving growth and strengthening its position as a competitive global trade hub. The integration of modern road infrastructure, strategic ports, efficient rail and air connectivity, and innovative logistics technologies highlights the country's commitment to providing seamless and sustainable transportation solutions and has led to world-leading retail companies.

As global trade dynamics evolve, Portugal's investments in infrastructure and innovation position it to capitalize on emerging opportunities. By continuing to enhance connectivity, embrace digital transformation, and foster international collaboration, Portugal is poised to remain a critical link in the global supply chain, supporting economic resilience and sustainable development.

In this chapter we reviewed the main infrastructural assets and transformations of the Portuguese economy that help explain the profound transformation and rapid growth that the country has witnessed since 2022 as well as the potential for future growth. To realize this potential the country needs deep human capital and a vibrant innovation ecosystem. We now turn to an assessment of Portugal in these areas.

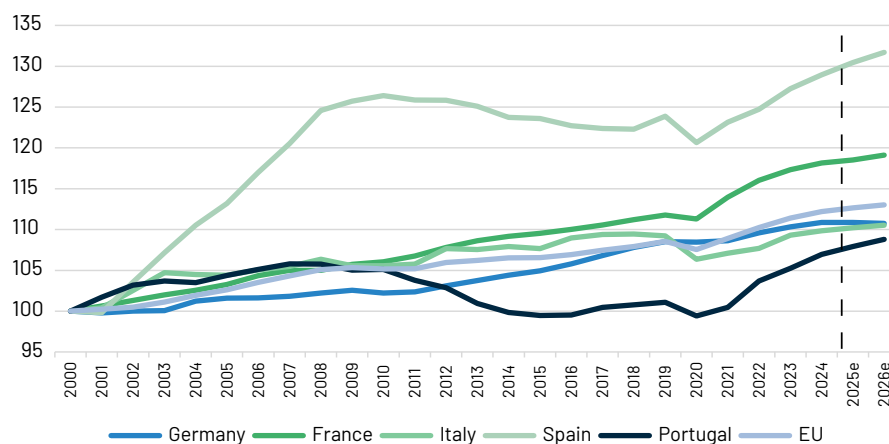


4 | Portugal – A Dynamic Innovation Ecosystem

4.1. Human Capital Development and Attraction

There were 5.5 million active (employed or jobless) workers in Portugal in 2024, an increase of more than 6% since 2021 and a stark reversal of the trend since 2008. The European Commission predicts that this growth will continue and the number will rise to 5.7 million by 2026. In July 2025 there was a record of 5.3 million employed people in Portugal. Net migration flows, which supports the post-pandemic workforce recovery, is the cause of this positive trend and is strong enough to more than reverse the natural reduction of the workforce due to population aging.

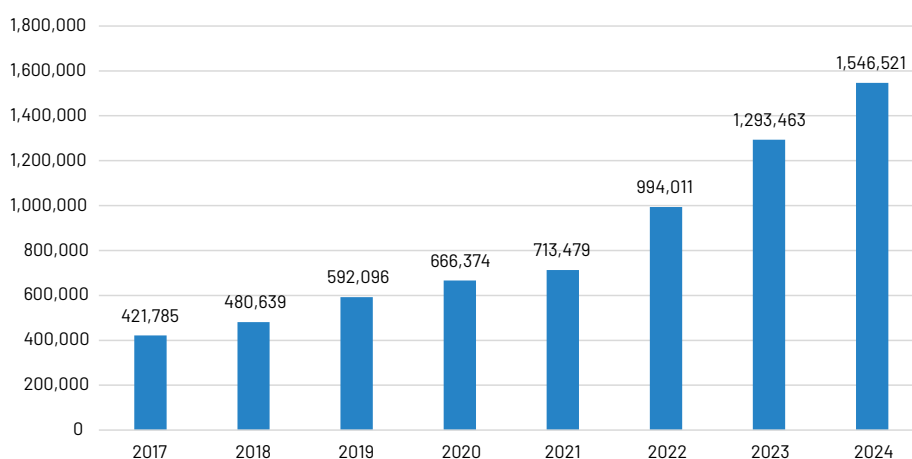
Figure 39. Labour force trends (2019 = 100), 2019-2026



Source: European Commission – AMECO database

In fact, population growth in Portugal has mainly been fueled by net migration, especially in the last three years (2022, 2023 and 2024). The number of foreign-born citizens living in Portugal is up to 1.5 million nowadays, a figure that is about four times higher than in 2017.

Figure 40. Number of foreign-born citizens living in Portugal, 2017-2024

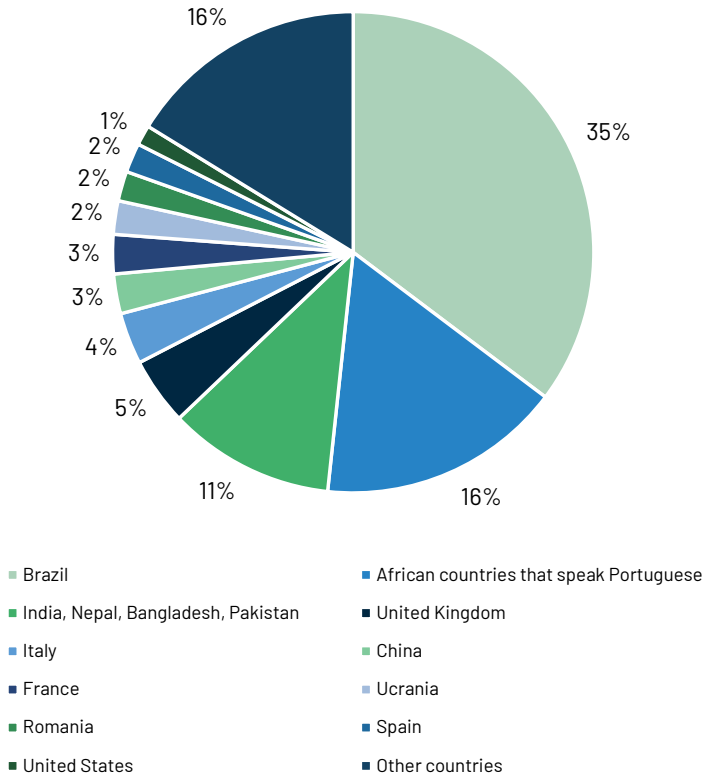


Source: AIMA

Half of those foreign citizens came from Portuguese speaking countries like Brazil, Angola or Cape Verde, which explains the high degree of integration of those communities, which have similar language, religion and culture characteristics. More than 20% of foreigners are European and 1% is from the US, a number likely to rise in future years. This means that about 75% of immigrants to Portugal are easy to integrate into society

and the workforce, which is a significant advantage of Portugal compared to other European countries. A recent trend is the entrance of labor force coming from India and surrounding countries like Nepal, Bangladesh or Pakistan, which are about 11% of total foreign-born citizens living in Portugal, a low number but that tends to be geographically clustered.

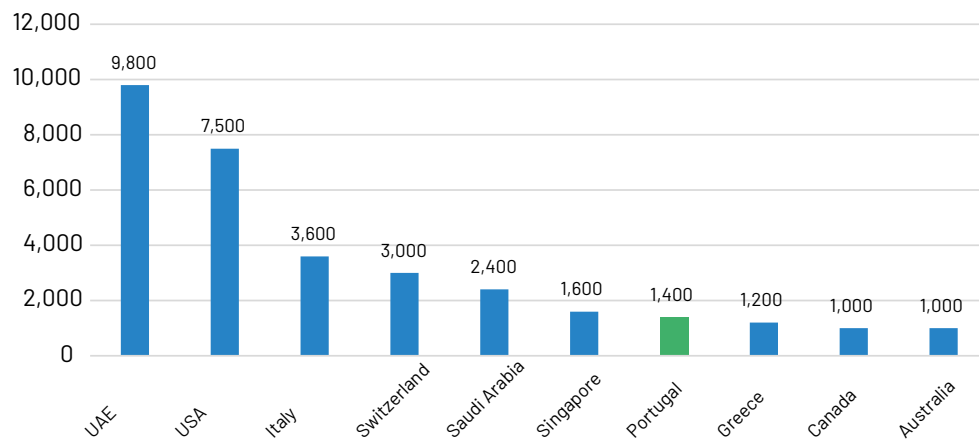
Figure 41. Origin of foreign-born citizens living in Portugal (%), 2023



Source: AIMA

Millionaires are a special case in this migration trend. In fact, Portugal is the seventh most attractive country in the World for millionaires, with an estimated net inflow of about 1 400 in 2025, according to Henley & Partners. Millionaires are attracted by schemes like **Golden Visa** for which about 50% of applications (in the last two years) are from the US.

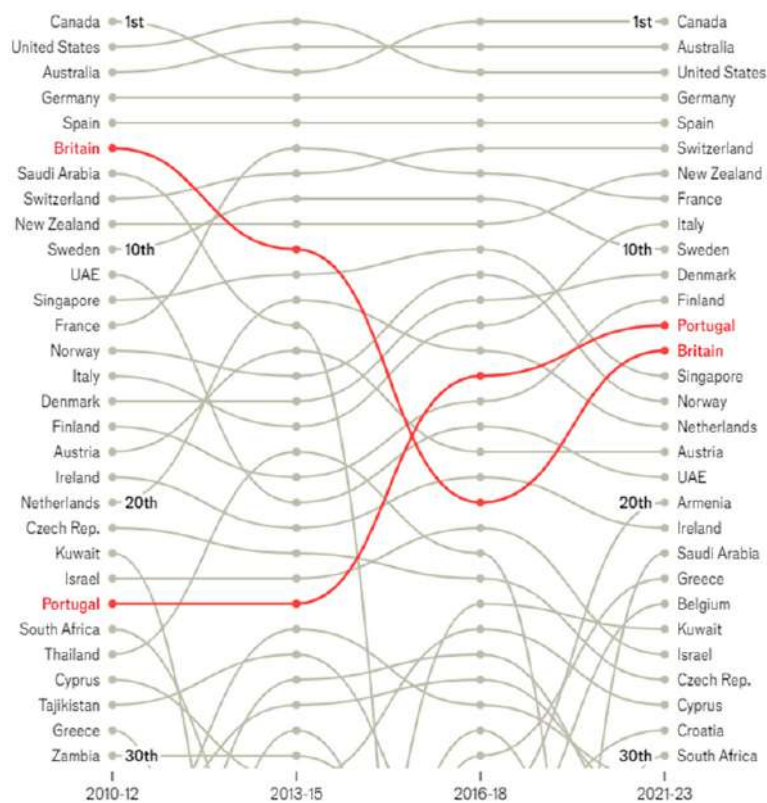
Figure 42. Net inflow of millionaires (2025 estimate)



Source: Henley & Partners - The Henley Private Wealth Migration Report 2025

In addition, Portugal is the 13th most **attractive country** in the World **for graduates**, according to The Economist's footloose index, beating countries like Britain, Netherlands, Austria, or Ireland. In Europe, only Germany, Spain, Switzerland, France, Italy, Sweden, Denmark, and Finland are more attractive. From 2013-2015 to 2021-2023, Portugal jumped 11 positions, and its share of the world's graduates tripled - the largest increase of any country in the footloose index.

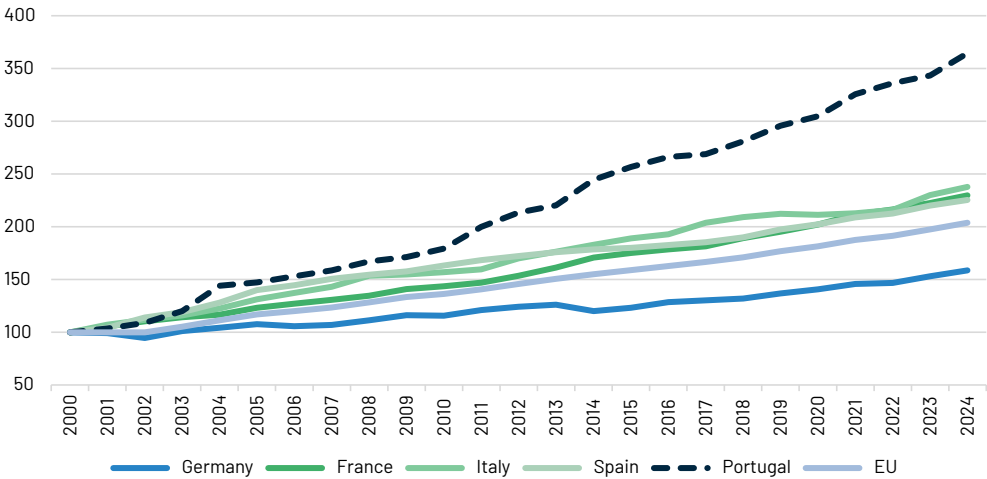
Figure 43. Footloose index: most attractive countries for graduates, ranked by potential net migration, 2010-2023



Source: Henley & Partners - The Henley Private Wealth Migration Report 2025

This net migration of talent, combined with the output of the Portuguese tertiary education system, produces a remarkable trend in terms of **qualified workforce**. The active population with college degree increased more than 250% since 2000, far more than any other European country. In Germany, the labor force with tertiary education increased 59% in the same period (2000-2024).

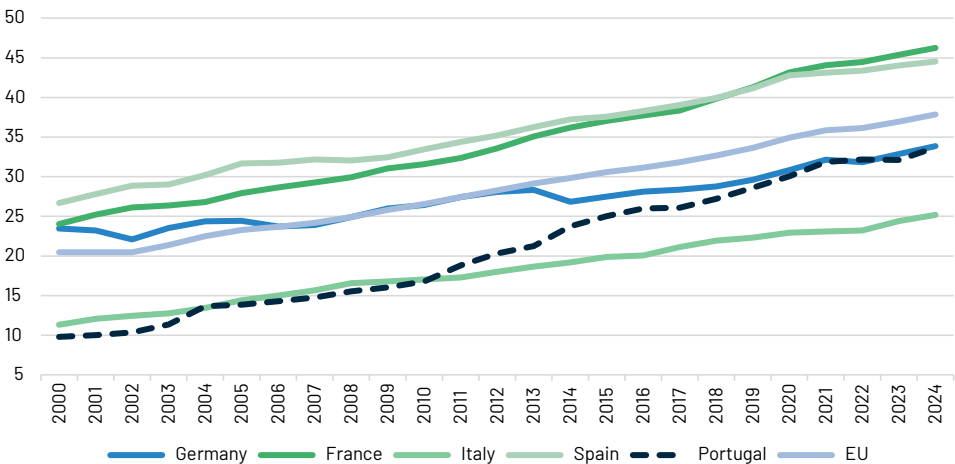
Figure 44. Active population with tertiary education long-term trends (2000 = 100), 2000-2024



Source: Eurostat

Consequently, the percentage of labor force with tertiary education in Portugal grew from 10% in 2000 to 34% in 2024, a figure in line with Germany and clearly above the 25% from Italy. This is an extraordinary successful catch-up process of Portugal to the European average in terms of educational qualifications of the population under 45 years old.

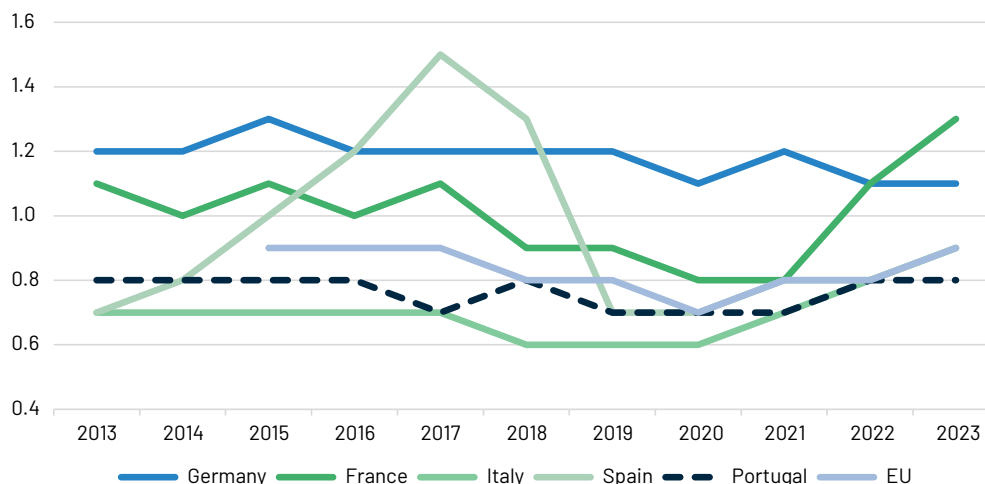
Figure 45. Percentage of active population with tertiary education, 2000-2024



Source: Eurostat

In terms of advanced education, the proportion of graduates at doctoral (PhD) level in **Science, Technology, Engineering, and Mathematics (STEM)** is about 0.8 per one thousand inhabitants with ages between 25 and 34, in line with the EU, Spain, and Italy averages, but lower than Germany's and France's figure of 1.1‰ and 1.3‰, respectively.

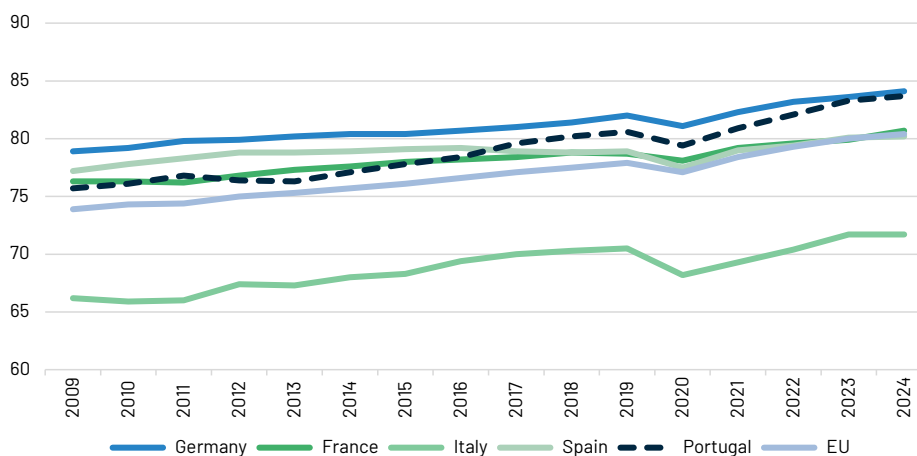
Figure 46. Graduates at doctoral level, in science, mathematics, computing, engineering, manufacturing and construction per 1000 of population aged 25-34, 2013-2023



Source: Eurostat

In Portugal, the potential of human capital is maximized by a **high activity rate** of 84% of persons between the ages of 20 and 64 that are employed or searching for a job. This percentage is nearly equal to Germany's (84%) and higher than the EU average (80%).

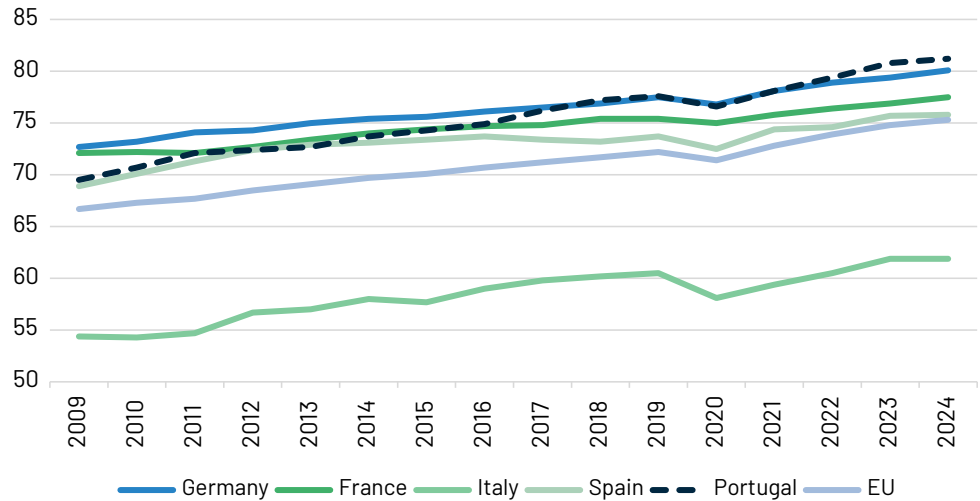
Figure 47. Activity rate (% of population aged 20-64), 2009-2024



Source: Eurostat

In particular, the activity rate is very high among the **female population** (81%), especially when compared to the EU average of 75%.

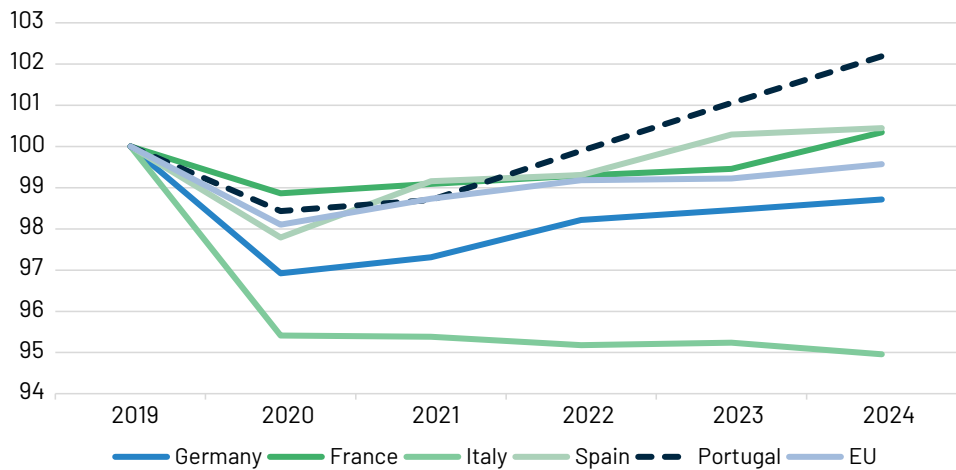
Figure 48. Activity rate of female (% of population aged 20-64), 2009-2024



Source: Eurostat

Overall, net migration flows have been the key driver of the workforce growth in Portugal, given the natural decrease of population. In practice, the attraction of talented professionals and other workers led to the increase in the activity rate of the **population between the ages of 25 and 54**, from 2021 onwards.

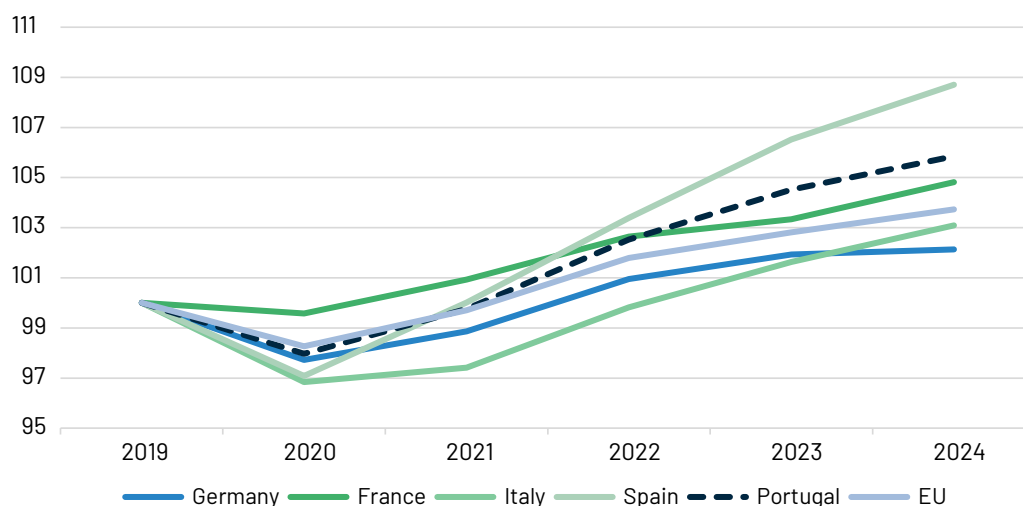
Figure 49. Active population aged 25-54 trends (2019 = 100), 2019-2024



Source: Eurostat

In particular, the activity rate is very high among the **female population** (81%), especially when compared to the EU average of 75%.

Figure 50. Population employed from 20 to 64 years (2019 = 100), 2019-2024



Source: Eurostat

In July 2025, the **population employed** was close to 5.3 million with a balanced ratio between male (51%) and female (49%). This workforce is very **qualified** with a share of 41% of managers, professionals, and technicians. The share of elementary occupations with low qualifications is only 8%. Self-employed own-account workers, like physicians, architects and attorneys, and employers, including **entrepreneurs**, represent 15% of the total employment.

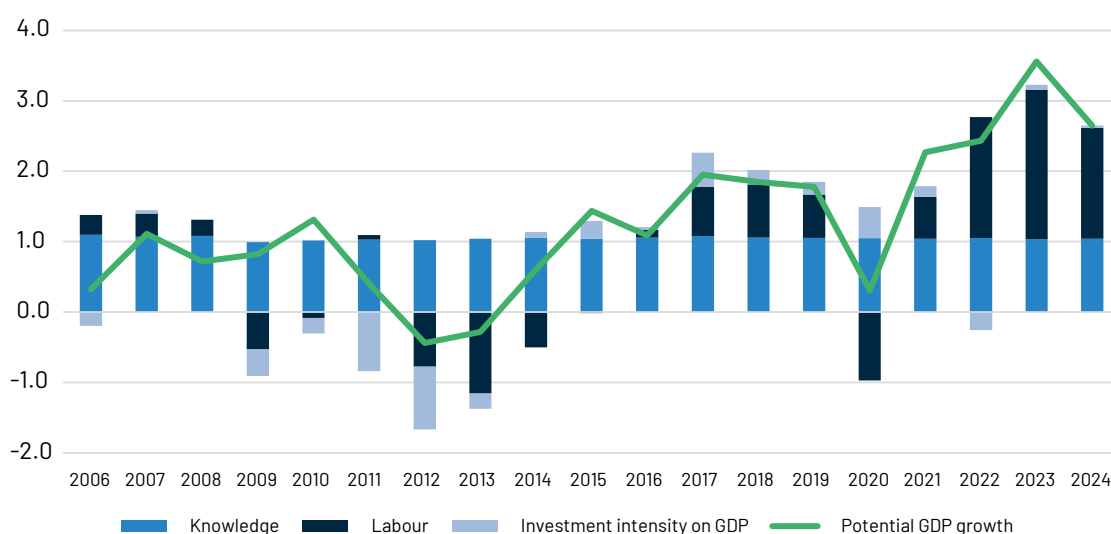
Using an empirical implementation of the Solow's growth model¹, we found that the **main drivers of the**

Portuguese GDP growth are the labor force, as well as the knowledge investment related with R&D. Thus, on one hand, net migration of talented professionals is fueling economic growth. On the other hand, a greater fixed investment intensity (% GDP) could boost GDP growth to up to 3% per year (which was achieved in the recently revised GDP estimates for 2023). Given the government budget surplus and the remarkable funding from the recovery and resilience plan (PRR) in 2025-2026, an acceleration of fixed capital formation is expected in the coming years.

Thus, a scenario of GDP growth close to 3% in Portugal in the medium-term would be possible, despite the uncertainty motivated by the imposition of additional import tariffs by US and subsequent "trade wars".

¹ Adapted version of the Mankiw, Romer and Weil (1992) model described in Romer, D. (1996), *Advanced Macroeconomics*, New York: McGraw-Hill, pp. 32-33.

Figure 51. Drivers of the potential GDP growth (contributions in percentage points), 2006-2024



Source: NECEP/UCP

In summary, Portugal is exhibiting a positive demographic momentum, with a strong inflow of immigrants, both low and highly qualified, which integrate into the labor market, enabling record employment figures. At the same time Portugal is experiencing an education dividend, after 20 years of strong investment in education, which is finally addressing the historical underqualification of the Portuguese workforce. In fact, for people aged below 45 years old, the level of qualification is at the European average. This is a strong foundation for the development of an innovative and high-valued added economy, with stronger investment by the public and private sectors, a process we argue is already unfolding in Portugal enabled by a strengthening innovation ecosystem.



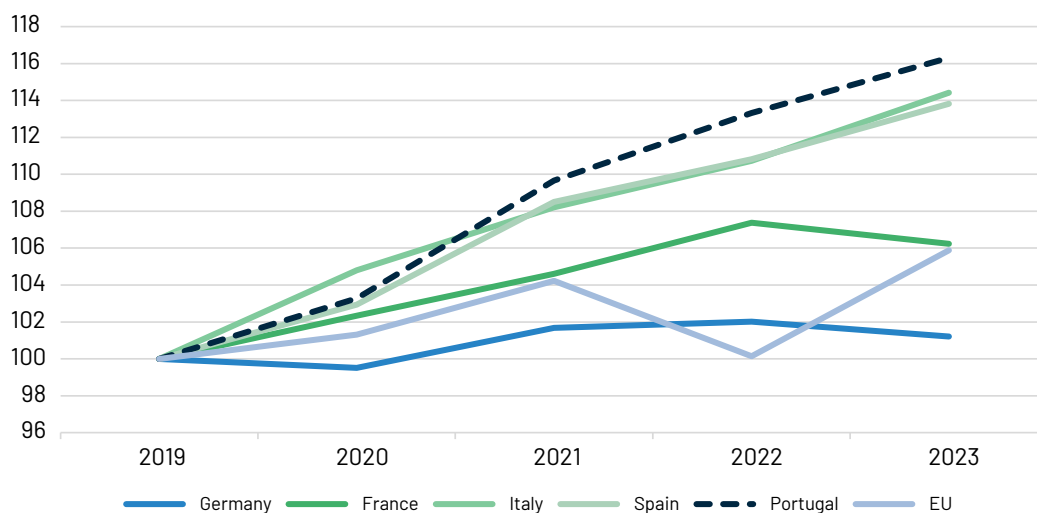
4.2. World-class Higher Education and Research Capabilities

The Portuguese **innovation system** is supported at a public level by a national agency (ANI) and a science funding agency (FCT), both of which are planned to merged in 2026 to boost science and innovation. The ecosystem is composed of a multiplicity of companies, non-profit institutions, collaborative laboratories (CoLAB), technology and innovation centers (CTI), and higher education institutions, with their associated research centers and institutes.

The Portuguese **higher education** network has 288 institutions/establishments, mostly public (66%). Universities are in the main cities, namely, Lisbon, Porto, Coimbra, Braga, Vila Real, Aveiro, Covilhã, Évora and Faro. Medium-size cities and towns like Viana do Castelo, Vila Nova de Gaia, Maia, Barcelos, Bragança, Viseu, Guarda, Leiria, Castelo Branco, Portalegre, Santarém, Tomar, Setúbal, and Beja are equipped with Polytechnic Institutes. Thus, the higher education network is well-spread along the continental territory and the Madeira and Azores archipelagos, developing educational, research and societal impact activities.

After a decrease in 2013-2015, the number of students enrolled in higher education is increasing at a high pace, especially since 2020, although the growth of has stalled in 2025 for national students. This positive trend is reinforced by the inflow of **foreign students**, attracted by the quality of the Portuguese higher education institutions. In fact, Portugal has **top-ranked and world class** institutions in Science (e.g. Faculty of Sciences of the University of Lisbon), Engineering (e.g. IST in Lisbon) and Business (CATÓLICA-LISBON, Nova SBE, ISEG, and ISCTE) and is increasingly attracted international students especially for Masters level degrees. For example in top tier business schools such as CATÓLICA-LISBON and Nova SBE the percentage of international Masters students surpasses 75% of the entry cohort and close to 50% of the total students are international, mostly from other European countries, such as Germany, Italy and Austria, as well as Nordic countries. This has led to a significant growth of enrolled students in Portugal since 2019, higher than most European countries.

Figure 52. Students enrolled in tertiary education (2019 = 100), 2019-2023



Source: Eurostat

Nowadays, the number of students enrolled in tertiary education is about 450 000, reflecting, not only an increasing demand, but also the high investment of the Government and private institutions in the sector. The supply, measured by a total of 75 000 **vacancies** in 2023/2024, is mainly focused on STEM areas (28% of total vacancies), business and administration (16%), human health (14%), social sciences (9%), and arts (8%).

Typically, Portuguese higher education institutions have **interface centers or institutes** well-integrated in international research networks, covering key scientific and technological areas and housing hundreds of researchers. Some are developed in partnership between several Universities. Good examples are:

- Institute of Systems and Computing Engineering (INESC), with units in Lisbon and Oeiras (INESC-ID, INOV and INESC Microsystems e Nanotechnologies), Porto (INESC-TEC), and Coimbra (INESC Coimbra).
- Instituto de Telecomunicações (IT), a partnership of several higher education institutions (U. Aveiro, U. Coimbra, Técnico Lisboa, U. Porto, UBI Covilhã, Leiria Polytechnic, ISCTE – Lisbon, and Nova School of Science and Technology – Almada), with research and development in the field of telecommunications (Wireless Technologies, Optics and Photonics, Information and Data Science, Networks and Services, Basic Sciences and Enabling Technologies).
- Institute of Systems and Robotics (ISR), based in the University of Coimbra.
- Aveiro Institute of Materials (CICECO), that covers the areas of Digitization, Energy, Sustainability, and Health.
- Centro de Física das Universidades do Minho e do Porto (CF-UM-UP), a joined research effort of the universities of Minho (Braga) and Porto in the broad area of Pure and Applied Physics, including Nanotechnologies.
- Institute for Research and Innovation in Health (i3S), based in the University of Porto, that covers the areas of Aging, Infectious Diseases, Cancer, Regenerative Medicine, and neurodegenerative diseases.
- Center for Neuroscience and Cell Biology (CNC), based in the University of Coimbra, covers the areas of Neuroscience and Disease, Metabolism, Aging and Disease, and Innovative Therapies.

In some cases, these institutions have become world-class in quality and critical mass. For example, the Gulbenkian Institute for Molecular Medicine (GIMM) was born in 2023 from the merger of two leading research institutes: Instituto de Medicina Molecular (iMM) and Instituto Gulbenkian de Ciência (IGC). This strategic merger combines both institutes' strengths, expertise and resources, enhancing research capabilities and fostering synergies to address complex scientific challenges. Based in Lisbon, GIMM has an ambitious vision for fundamental scientific exploration and its profound impact on global health and well-being.

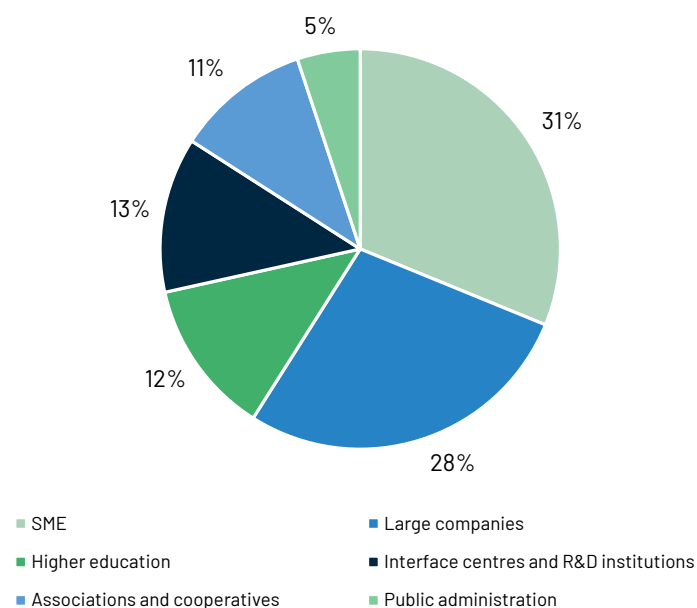
Besides these initiatives, higher education institutions are involved in a network of 35 collaborative laboratories (CoLAB) with a total of 295 associates, mostly private companies. CoLABs have already contributed to the direct creation of about 650 highly qualified jobs, 32% of which have a PhD, generating commercial revenues from innovation of 8 million euros between 2019 and 2022 from their 647 customers. CoLABs published 680 scientific articles between 2021 and 2022.

Agri-food CoLABs registered the highest number of customers in the period 2021-2022 (160) and published the most in the same period (118 scientific articles). Climate, Space, and Ocean CoLABs organized more dissemination actions between 2021 and 2022 (1 204). These research institutes and CoLABs are starting to change the landscape of science and innovation in Portugal where traditionally the excellent science did not see direct commercial impacts.

Till 2022, Materials, Circular Economy, and Urban Sustainability CoLABs hired the most qualified human resources (162 researchers) and had also the higher sales volume between 2019 and 2022 (1.7 million euros).



Figure 53. CoLAB's associates by type (%), 2022



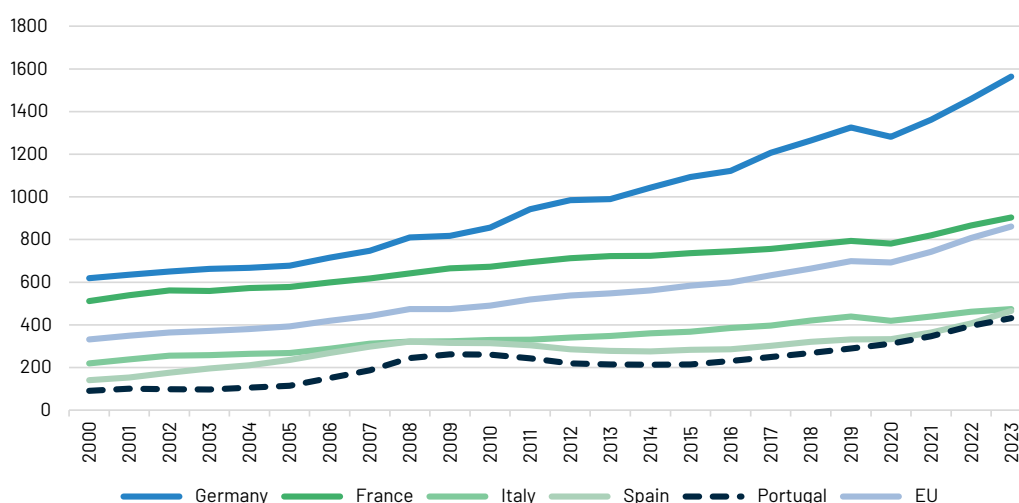
Source: ANI

More focused on the application of science and technology to industrial and organizational processes, **Technology and Innovation Centers (CTI)** cover the interface between vocational training institutions, including higher education schools, business associations and even companies. For example, the Technology Centre of Évora (CTE) is a partnership between Universidade de Évora and Capgemini, a private consultancy company.

Currently, there are 31 CTIs in operation in different areas of knowledge at regional or national level. They employ more than 3 300 people, of which 38% have a PhD. CTI's associates number more than three thousand, mostly private companies (90%). In 2022, Advanced Manufacturing and Sustainable Production CTIs had the largest number of employees (1 631, 49%) and had also the higher sales volume (61.9 million euros from a total of 107.4 million euros, 58%) and number of customers (11 808 from a total of 16 355, 72%). Digital and Communication Systems CTIs registered the higher number of granted patents (148 from 274, 54%) and organized more dissemination actions (4 238 from 8 299, 51%).

In Portugal, **gross expenditure on R&D** is about 400 euro per inhabitant, in line with Italy and Spain figures. The European average is about 800 euro per inhabitant. Thus, the national innovation system is in the early phases of a convergence process that started a decade ago when R&D expenditures were half of what they are now in 2024. There is thus momentum for R&D expenditures growth, with Portugal being seen as an R&D **investment opportunity**. In fact, companies like Siemens, Bosch or BMW have large **R&D hubs** located in Portugal, some in joint venture with Portuguese companies, like Critical Software in the case of BMW.

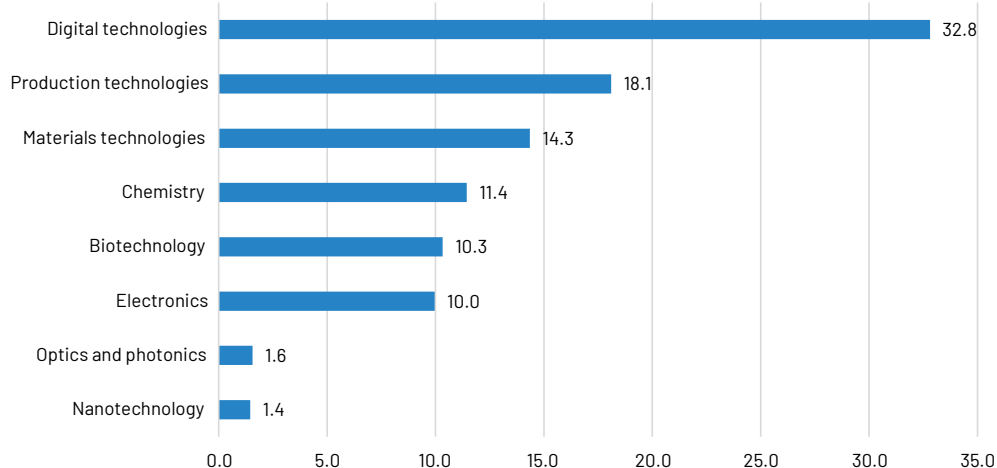
Figure 54. Gross expenditure on R&D: total (Euro per inhabitant), 2000-2023



Source: Eurostat

In Portugal, **public funding for R&D** includes specific systems of incentives (SII & DT) co-financed by the European Structural and Investment Funds (ESIF), tax exemptions (SIFIDE) and the program Horizon Europe. Between 2014 and 2023, the technological domains most supported are digital technologies (32.8% of the total number of financed R&D projects), production technologies (18.1%) and materials technologies (14.3%). Domains like optics and photonics, or nanotechnology are residual in terms of supported projects.

Figure 55. Publicly supported R&D projects by technological domain (%), 2014-2023

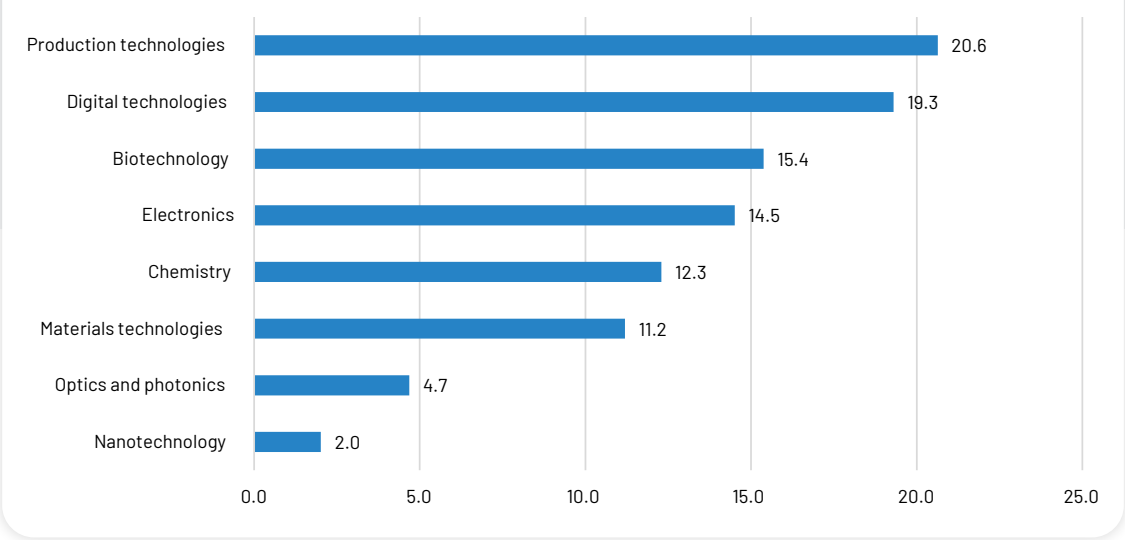


Source: ANI/ISCTE

Areas of expertise can be found by crossing technological domains with scopes or sectors of application. Thus, Portuguese R&D projects are somewhat focused in the application of digital technologies to IT services and software development, to human health, to transportation, logistics and mobility, and to energy activities, very much in line with the infrastructural advantages documented earlier in this report. Another important area of expertise is biotechnology applied to human health or agriculture, food, and beverages. Production technologies applied to tools, machinery and equipment is also a key R&D area in Portugal.

The distribution of **patents** by technological domain is somewhat different. Here, production technologies take the first place (20.6% of total patents between 2014 and 2024), followed by digital technologies (19.3%) and biotech (15.4%). Areas of expertise include biotech applied to human health (12.3%), chemistry applied to chemicals, rubber, and plastics (3.8%), digital tech applied to either human health (3.7%) or IT services and software (3.6%), and electronics applied to human health (2.7%). Thus, patents can cover areas of expertise different than R&D projects, with for example chemistry and electronics applied to human health applications.

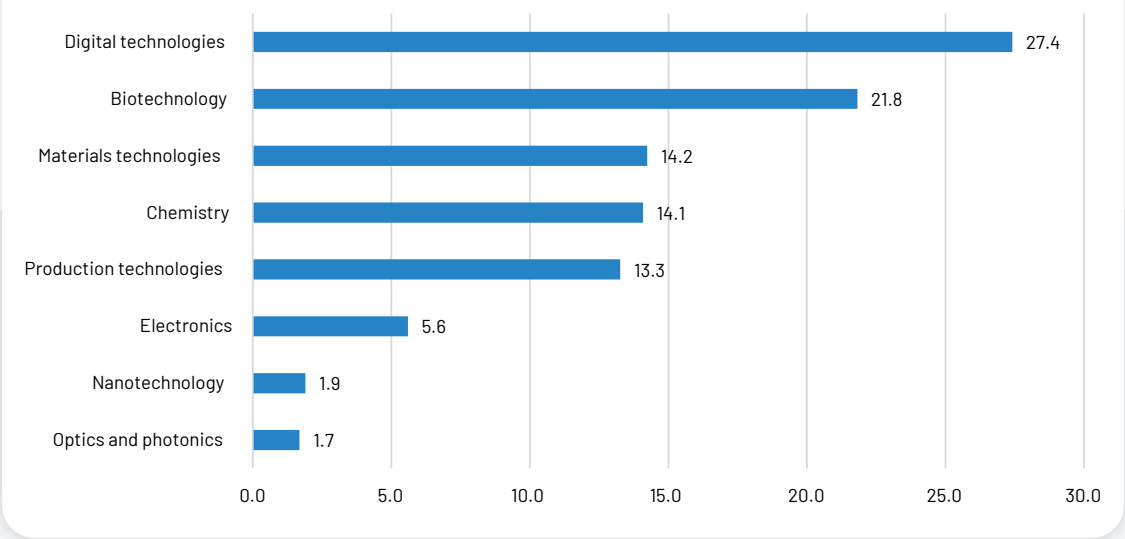
Figure 56. Patents by technological domain (%), 2014-2024



Source: OMPI and ANI/ISCTE

Scientific articles published from 2020 and 2023 are mainly focused on digital tech (27.4%), following the pattern of R&D projects. Nevertheless, biotech is also important (21.8% of total articles), in line with patents. Materials tech (14.2%), chemistry (14.1%) and production tech (13.3%) are also relevant. Biotech and digital tech applied to human health are the main areas of expertise, covering 16% of articles.

Figure 57. Scientific articles by technological domain (%), 2020-2023



Source: OpenAlex and ANI/ISCTE

Finally, we found that **one million of euros invested in R&D in Portugal generates, on average, eight jobs**, four directly plus four indirectly by inducing higher demand on suppliers (upstream row effects) and business initiatives or start-ups (downstream row effects). This important result was obtained by the research team from the application of an **input-output model** for the Portuguese economy. The source was the national accounts' input-output tables provided by INE (2020). We use the inverse Leontief matrix combined with the inverse of productivity to find the direct and indirect expected effects of R&D on employment.

The scientific data reported points to an unexpectedly strong scientific expertise of Portugal in the areas of biotechnology and healthcare, which is deepened in the next section.

4.3. Advanced Healthcare and Biotech

Portugal's healthcare sector is bolstered by a robust infrastructure that underpins the growth of its medical services and biotech industries. Strategic investments in modern facilities, workforce development, collaborative partnerships, and cutting-edge technology have positioned Portugal as a leader in healthcare innovation with strong spillovers for the health and pharmaceutical industries. These advancements not only meet domestic healthcare demands but also attract global interest, solidifying Portugal's role in the European healthcare and biotech landscape.

Modern Hospitals and Research Facilities

Portugal has made significant investments in state-of-the-art hospitals, research laboratories, and specialized clinics to ensure top-tier healthcare services and foster medical research. Institutions like the Lisbon Academic Medical Centre stand out as hubs of innovation, bridging the gap between clinical practice and advanced research. These facilities are equipped with cutting-edge technology that supports precise diagnostics, minimally invasive surgeries, and personalized treatments.

The country's focus on upgrading healthcare infrastructure includes the construction of new hospitals and the modernization of existing ones. Public and private sectors have collaborated to ensure these facilities meet international standards, enhancing their capacity to serve patients efficiently. Moreover, Portugal's research labs, particularly in cities like Lisbon and Porto, contribute to groundbreaking work in genomics, regenerative medicine, and clinical trials. Such advancements not

only elevate healthcare outcomes but also position Portugal as a hub for medical innovation.

Portugal's healthcare sector thrives on the strength of its well-trained and highly skilled workforce. Healthcare professionals, including doctors, nurses, and biomedical researchers, undergo rigorous education and training to maintain the country's high standards of medical care. The presence of renowned medical schools and continuous professional development programs ensures that the workforce remains equipped to handle emerging challenges and adopt innovative practices. The country's focus on workforce excellence extends to fostering an interdisciplinary approach to healthcare. Collaborative efforts between medical professionals and world class researchers drive advancements in treatment protocols and healthcare delivery, with the Champalimaud Foundation and Hospitals as one strong example. Another is the GIMM a large world-class research institute resulting from the recent merger of two excellent research institutes – IGC and IMM.





**GIMM – Gulbenkian Institute
for Molecular Medicine:
A Portuguese Powerhouse
in Biomedical Research,
an innovation alliance**

The GIMM represents a landmark merger between two of Portugal's leading biomedical research institutions – the **Instituto de Medicina Molecular João Lobo Antunes (iMM)** and the **Instituto Gulbenkian de Ciência (IGC)**. This strategic alliance, formalized in 2023, creates one of the largest and most dynamic life sciences research hubs in Southern Europe, accelerating discoveries in immunology, cancer, neuroscience, infectious diseases, and more.

GIMM brings together **over 800 researchers**, including **50+ principal investigators** leading internationally competitive research groups. The alliance operates across two main campuses – Lisbon (iMM) and Oeiras (IGC) – combining state-of-the-art facilities, cutting-edge technologies, and multidisciplinary expertise. Key numbers highlight GIMM's scale and impact:

- **800+ scientists and staff** working across fundamental and translational research.
- **60+ research groups** tackling major biomedical challenges.
- **300+ ongoing projects**, from basic science to clinical applications.
- **€50M+ in annual competitive funding**, including grants from the European Research Council (ERC), Horizon Europe, and private foundations.
- **15+ spin-offs and startups** emerging from its research, driving biotech innovation.

GIMM's research spans **immunology, cancer biology, neuroscience, infectious diseases, and developmental biology**, with a strong emphasis on translational medicine – bridging lab discoveries into real-world therapies. Some key areas of innovation include:

- **Cancer Immunotherapy** – Developing next-gen treatments leveraging the immune system

- **Neurodegenerative Diseases** – Unraveling mechanisms behind Alzheimer's and Parkinson's
- **Infectious Disease Resistance** – Studying pathogen evolution and antimicrobial resistance.
- **AI and Computational Biology** – Using machine learning to decode complex biological data.

The alliance also fosters industry partnerships, collaborating with pharmaceutical corporations (GSK, AstraZeneca), biotech startups, and global research networks.

- **Spin-offs and Tech Transfer: From Lab to Market**
GIMM has a strong track record of spin-offs, with startups like:

- **TargTex** (cancer therapy).
- **Immunethep** (infectious disease treatments).
- **StemCell2MAX** (regenerative medicine).

These ventures illustrate how GIMM's research translates into economic impact, attracting investment and creating jobs in Portugal's growing biotech sector. GIMM strengthens Portugal's position as a global player in biomedical research, alongside institutions like **Champalimaud Research** and **i3S (Porto)**. Its open science policy, international collaborations, and university and academic programs ensure a pipeline of top-tier talent.

GIMM represents a bold step forward in consolidating Portugal's scientific strengths. By merging two renowned institutes (iMM's translational expertise with IGC's fundamental research excellence), the alliance accelerates discoveries that could redefine medicine, positioning Portugal at the forefront of **global life sciences innovation**.



Portugal's healthcare sector also benefits from strong partnerships between public healthcare systems and private entities. These collaborations facilitate resource sharing, innovation, and scalability of healthcare solutions to meet increasing demand. Public-private partnerships (PPPs) have been instrumental in expanding healthcare access, modernizing infrastructure, and integrating new technologies into clinical practice. Although most were discontinued by the prior government they are being re-considered.

Private investments complement the public healthcare system by funding advanced equipment, specialized services, and innovative treatments. These partnerships also extend to research and development initiatives, where public institutions collaborate with biotech firms to accelerate the translation of scientific discoveries into clinical applications. The synergy between public and private sectors ensures that Portugal's healthcare system remains resilient and adaptive to evolving needs.

Health Tourism Infrastructure

Portugal has emerged as a sought-after destination for health and wellness tourism. The country offers high-quality medical services at competitive costs, attracting patients from across Europe and beyond. This growth is supported by Portugal's world-class healthcare facilities, skilled professionals, and favorable regulatory environment.

Health tourism in Portugal encompasses a range of services, including elective surgeries, rehabilitation, and wellness programs. The country's mild climate, cultural richness, and modern healthcare infrastructure make it particularly appealing for recovery and long-term treatments. Additionally, Portugal's reputation for patient-centric care and transparent pricing has further bolstered its attractiveness as a destination for medical tourism. Although these are still early days for the medical tourism industry, the potential growth is very high, particularly given the attraction of Portugal as a place to visit and live for wealthy populations.

Pharmaceutical and Biotech Manufacturing

Virtue of its biotechnology capabilities and human capital, Portugal hosts advanced manufacturing facilities that produce pharmaceuticals, biologics, and medical devices, contributing to the resilience of its healthcare supply chain. The country's pharmaceutical industry is a key player in both domestic healthcare and international markets, exporting high-quality products worldwide. Pharmaceutical firms that develop new medications such as BIAL, and firms that provide efficient and

advanced manufacturing of medications, such as Hovione and Tecnimede, have made of Portugal an emerging pharmaceutical hub in Europe with close to Euros 5B of exports.

The biotech sector, supported by research hubs like iBET (Institute for Biotechnology and Bioengineering), has witnessed remarkable growth. These institutions specialize in areas such as cell therapy, bioprocessing, and biosimilar production. Collaborative projects between universities and biotech companies drive innovation, ensuring that Portugal remains at the forefront of biopharmaceutical advancements. The integration of sustainable manufacturing practices further enhances the sector's global competitiveness.

Digital and Logistics Integration

Digital transformation is reshaping Portugal's healthcare sector, improving the efficiency and accessibility of medical services. Telehealth platforms have gained traction, enabling remote consultations and continuous patient monitoring. This digital shift has been particularly valuable in addressing healthcare access in rural areas and during crises like the COVID-19 pandemic.

Advanced logistics systems ensure the timely distribution of vaccines, medicines, and medical devices across the country. Technologies such as blockchain and IoT are being integrated into supply chains to enhance transparency and traceability. These innovations not only streamline operations but also strengthen patient trust in the healthcare system. For example, Portugal has one of the most modern and efficient pharmacy networks in Europe, combining deeply integrated logistics and trained professional for local patient care.

Furthermore, data analytics and artificial intelligence (AI) are increasingly being utilized to optimize hospital management, predict patient needs, and support clinical decision-making. These tools enable healthcare providers to deliver personalized care and improve overall outcomes, reinforcing Portugal's commitment to a data-driven approach to healthcare.

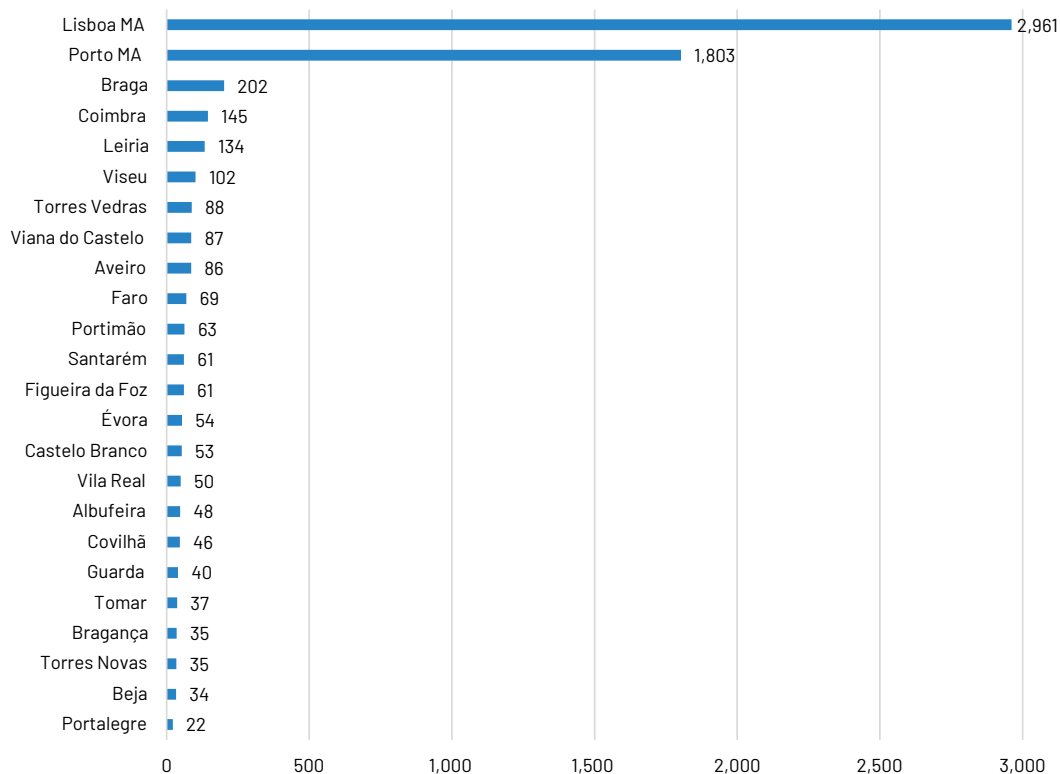
Overall, Portugal's investments in healthcare infrastructure and innovation position it as a future leader in the European healthcare, pharmaceutical and biotech landscape, which will be high growth industries globally. The combination of modern facilities, a skilled workforce, public-private collaboration, and digital integration ensures that the country remains at the forefront of medical advancements. By fostering a supportive environment for research, development, and patient care, Portugal continues to attract global partnerships and drive progress in medical science, pharmaceuticals manufacturing and biotechnology.

4.4. Portuguese Cities as Innovation Hubs

About 47% of the Portuguese population **lives in cities**. This percentage is above the European average (39%) and close to Spain's figure (54%). Besides the rural exodus from the 1960's and 1970's, the concentration of the population in urban spaces is explained by the amenities and livability of Portuguese cities and towns in general. The recent net migration phenomenon is also explained by the attractiveness of Portuguese urban areas, combining tradition with modernity.

The country is structured around two main metropolitan areas (Lisbon and Porto) of European size (#12 and #23 respectively), together with several small city hubs that provide very attractive quality of life.

Figure 58. Metropolitan areas and cities (thousand inhabitants), 2023



Source: INE

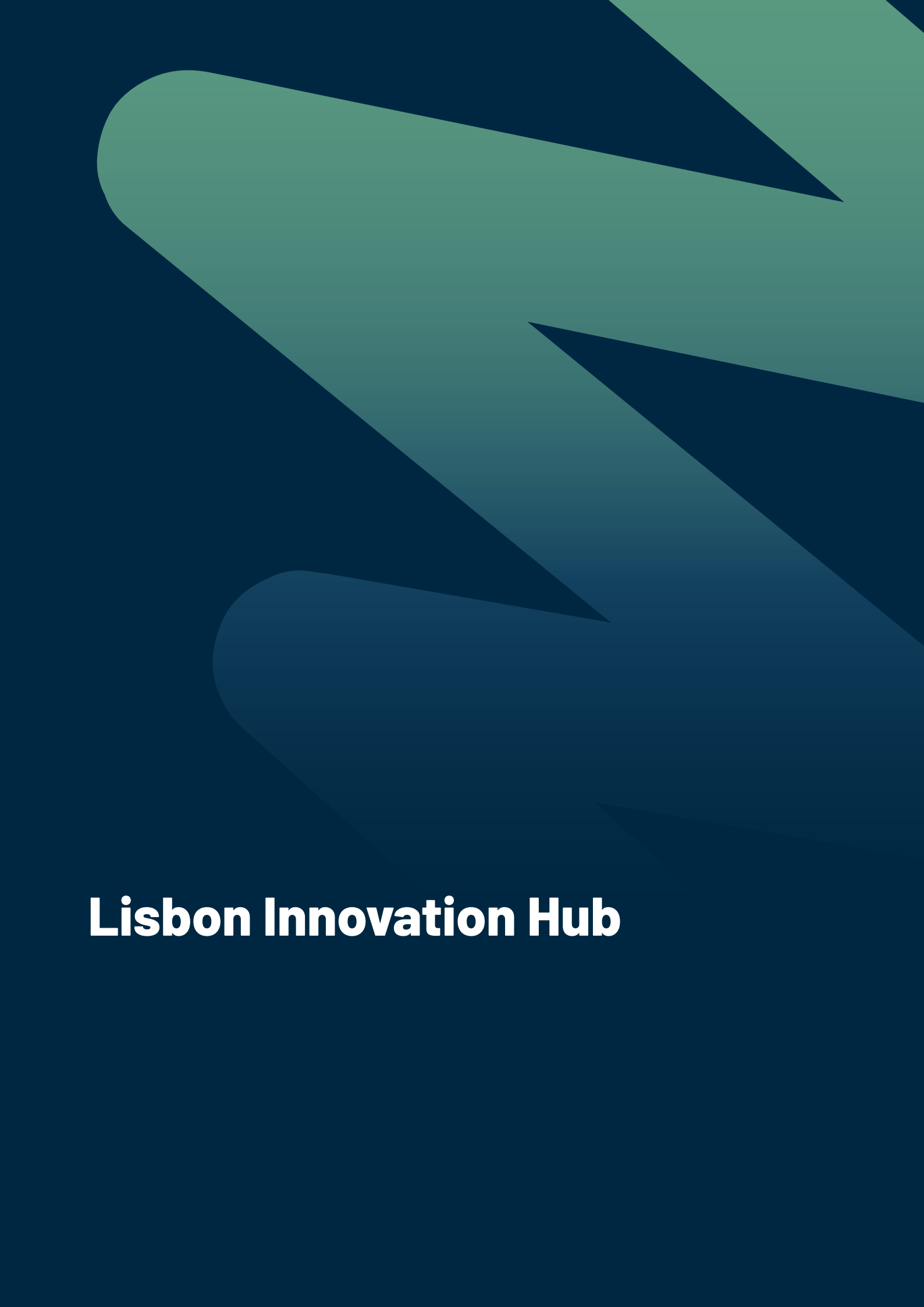
Lisbon Metropolitan Area

The greatest urban agglomeration is the Lisbon Metropolitan Area (MA) with about three million inhabitants (28% of the country's population). It is divided into two distinct spaces: the North bank of the Tagus River (Great Lisbon), with 2.1 million people, where is located the city of Lisbon, and the South bank of the Tagus River (Setúbal's Peninsula), with about 900 thousand inhabitants.

The **Great Lisbon** area is subdivided into two kinds of spaces. Firstly, there are the "morphological city" that includes not only the city of Lisbon, but also satellite cities like Agualva-Cacém, Queluz, Amadora, Odivelas,

and Loures. Secondly, we have "garden suburbia" around the towns of Cascais, Oeiras, Sintra, and Mafra, which provide a high quality living spaces due to more careful urban planning, historical tradition, and proximity to the sea.

The Great Lisbon area attracts talent, business headquarters and start-ups. Innovation initiatives such as the Lisbon Innovation Hub, Web Summit and Unicorn Factory Lisboa also contribute positively to that attraction.

The background features a dark navy blue field with several large, overlapping, abstract shapes in various shades of teal and light green. These shapes have sharp, angular edges and some rounded ends, creating a dynamic, layered effect.

Lisbon Innovation Hub

The “Lisbon Innovation Hub” combines several initiatives tied to Lisbon’s growing reputation as a center for innovation and entrepreneurship. The term connects to efforts by the Lisboa City Council and related organizations to position Lisbon as a global hub for tech, startups, and sustainable development.

One key player is **Lisboa Innovation**, a platform launched by the Lisboa City Council. It aims to support and foster the city’s innovation ecosystem by ensuring the free participation of Lisbon’s startups in international programs and events, such as the **Web Summit** since 2016, propelling the city’s startups onto the global stage.

That platform also ties into projects like the **Unicorn Factory Lisboa**. This large-scale incubator offers a comprehensive, tailored support for startup growth and development. Unlike traditional incubators, its programs are customized to address the unique needs of each startup phase. With a founder-driven mindset, Unicorn Factory supports a selective group of industry-disrupting startups, almost 300 nowadays, with more than one thousand million euros already fundraised. Unicorn Factory Lisboa is on the top 10 of Europe’s leading start-up hubs by Financial Times.

Another initiative is the **HUB-IN project**, coordinated by Lisboa E-Nova and funded by the EU’s Horizon 2020 program. This focuses on regenerating historic urban areas through innovation and entrepreneurship while preserving their unique cultural and social identity and the environment. It is less about a physical “hub” and more about a network of innovation clusters across eight European cities, with Lisbon as a pilot for Utrecht, Angoulême, Genova, Belfast, Brasov, Slovenska Bistrica, and Nicosia. The project has spurred local efforts like the Colina do Castelo hub, blending heritage with modern entrepreneurial solutions.

Lisbon’s broader innovation scene also includes physical spaces like the **Lisbon Critical Hub**, a collaborative workspace by Critical Software and partners, emphasizing sustainable tech and community synergy. Meanwhile, the city was awarded the **European Capital of Innovation in 2023**, reflecting its blend of skilled talent, affordable business costs, and a thriving startup culture – home of **unicorns** such as OutSystems, Talkdesk and Tekever, while hosting several others.

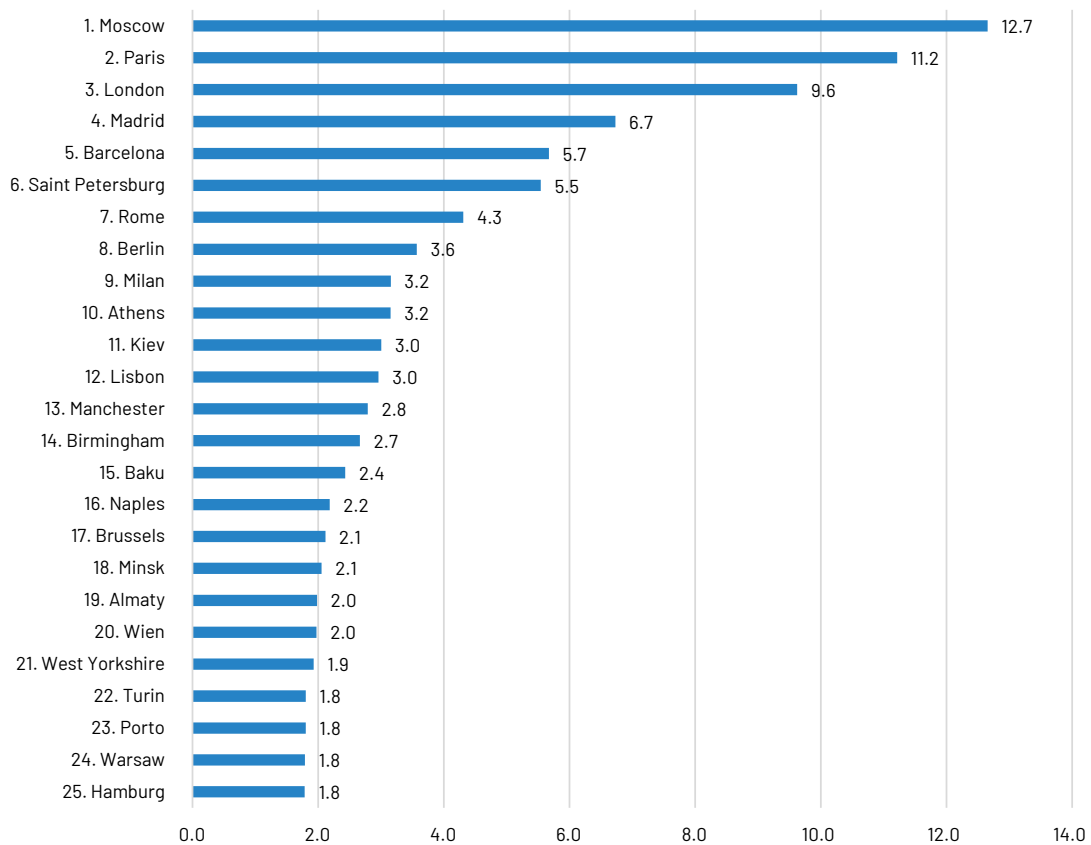
Overall, the “Lisbon Innovation Hub” is a dynamic ecosystem where policy, infrastructure, and community converge to make Lisbon a standout in global innovation.



Connected by two bridges with Great Lisbon, Setúbal's Peninsula has a different dynamic, more connected with its industrial fabric. In particular, it is home to AutoEuropa, the large Volkswagen's plant in Portugal, which turned the region into an industrial hub. This is also tied to its historical heritage as the headquarters of CUF, the most important industrial company in Portugal in the 1970s. Nevertheless, the southern bank of Tagus River has its proper urban life, with important cities like Almada or Setúbal. It also has several kilometers of outstanding beaches.

Lisbon is attractive because it offers better and easier living than huge metropolitan areas like London, Paris, Madrid, Barcelona, or Rome. In fact, Lisbon MA is only the twelfth urban agglomeration in Europe, with a population close to Milan, Athens, Manchester, or Birmingham. Nevertheless, Lisbon's region has a scale greater than Brussels, Wien, or Turin, which provides agglomeration economies through the attraction of talent and investment.

Figure 59. European 25 largest metropolitan areas and cities (million inhabitants), 2024



Source: World Atlas and INE

Porto Metropolitan Area

Porto Metropolitan Area is different from Lisbon's one. With about 1.8 million inhabitants, it is structured by the connected cities of Porto and Gaia. Its settlement is more rural, despite the occurrence of satellite cities like Maia, Matosinhos, Trofa, Gondomar, Espinho, or Oliveira de Azeméis. The North region is the industrial heart of Portugal with strong competencies in textiles, footwear, and metalomechanics amongst other industries. These are now thriving growth sectors that are exhibiting a resurgence since 2015, based on innovation, branding and high-value add, after decades of painful adaptation to globalization which hurt is traditional low-cost manufacturing model. For example, the footwear industry has now the 2nd highest average price shoes in the world (2nd only to Italy), and the textile sector is known for its high quality production and manufacturing agility.

The deep connection of Porto with the manufacturing fabric of the North of Portugal, as well as its referential Universities, favors the development of an important ecosystem of spin-offs and start-ups. A good example of world-class business incubator is the Science and Technology Park of University of Porto (UPTEC).

Medium-size cities

This kind of synergy between the university, established (industrial) companies and entrepreneurs can be found also in medium-size cities like Braga (202 thousand inhabitants), Coimbra (145 thousand inhabitants), Aveiro (86 thousand inhabitants), Évora (54 thousand inhabitants), or Faro (54 thousand inhabitants). These cities have **vibrant and livable communities** deeply connected with their universities and businesses, which favors entrepreneurship being the founding place of important tech companies. Coimbra for example is the home of Critical Software and Feedzai.

Braga is well-known for its ventures in digital tech and nanotech. In particular, the INL – International Iberian Nanotechnology Laboratory was founded by the governments of Portugal and Spain under an international legal framework to perform interdisciplinary research and deploy and articulate nanotechnology for the benefit of society, aiming to become the worldwide hub for nanotechnology. Other examples are the Blaupunkt R&D center and the Bosch Automotive Electronics division; both located in Braga.

Aveiro is specialized in materials tech, following the tradition of its region in ceramics and composite materials.

Coimbra is more focused in robotics, neuroscience, and biotech, besides informatics, social and human sciences.

Évora is well-known for its aeronautical cluster, and **Faro** for its specialization in marine sciences and fisheries.

Overall, Portugal is a **multipolar innovation country** with several cities acting as innovation hubs, attracting founders, talent, and R&D investment and leading to the creation and attraction of world class companies. Portugal and its cities can become a hub for global digital innovation.

A Hub for Global Digital Innovation

Portugal's robust telecommunications infrastructure and progressive digital policies, when combined with the described multipolar urban innovation network, provide the foundation for the country to excel in the **data-driven global economy**. By fostering a thriving ecosystem for tech startups, smart cities, data centers, and cybersecurity initiatives, Portugal is not only enhancing its domestic competitiveness but also contributing to Europe's digital transformation through its innovative urban network.

Portugal's tech startup scene has seen exponential growth in recent years, particularly in Lisbon and Porto, which have become vibrant hubs of innovation. These cities are home to a dynamic ecosystem that nurtures enterprises working in artificial intelligence (AI), machine learning, big data analytics, and fintech. The ecosystem benefits significantly from government programs and incentives aimed at fostering innovation. Initiatives like Startup Portugal and the country's Golden Visa scheme attract global talent and venture capital investment, further fueling the growth of data-driven enterprises.

Additionally, the presence of world-class tech events such as Web Summit in Lisbon highlights Portugal's global prominence in the digital economy. These platforms provide opportunities for startups to connect with investors, collaborate with industry leaders, and showcase their innovative solutions. The combination of a skilled workforce, a thriving entrepreneurial environment, and strategic government support makes Portugal an attractive destination for data-driven businesses seeking to scale in Europe and beyond.

Portuguese cities are also leading the way in integrating Internet of Things (IoT) solutions into urban planning and development. Smart city initiatives across the country focus on optimizing resource use, reducing emissions, and improving the quality of life for residents. For example, cities like Lisbon and Cascais have implemented advanced IoT technologies for real-time traffic management, smart lighting systems, and waste management, significantly enhancing efficiency and sustainability.

These initiatives serve as a model for urban management across Europe, showcasing how data-driven approaches can address complex urban challenges. By leveraging data from IoT devices, Portuguese cities can make informed decisions that promote energy efficiency, streamline public services, and reduce environmental impact. These efforts not only improve local infrastructure but also demonstrate Portugal's ability to contribute to global urban sustainability goals.

Overall, the strategic investments and forward-thinking innovation initiatives position Portugal as a hub for digital innovation, data processing, and advanced analytics, aligned with European priorities, as developed in the final chapter.



5 | Perspectives for growth and development of Portugal

In the previous report *Structural Trends Shaping Portugal's Economy and Growth* (2024), several investment opportunities concerned with healthcare, energy, infrastructure, tourism, agriculture and forest were identified and developed. In this report, a set of important infrastructural enablers was identified, explaining the excellent performance of the Portuguese economy in 2022-225 and serving as a powerful foundation for future growth and the exploration of new investment opportunities. These opportunities, however, need to be contextualized in the new geo-political landscape and aligned with the European priorities in this new context, as reflected in the Draghi report.

5.1. A New Industrial Strategy for Europe

The **Draghi report** stresses that Europe has the foundations in place to be a highly competitive economy. In fact, the European model combines an open economy, a high degree of market competition, and a strong legal framework, together with active policies to fight poverty and redistribute wealth.

Nevertheless, Europe has been worrying about slowing growth since 2000, with a widening GDP gap compared to the USA, driven mainly by a slowdown in European productivity growth. At the same time, **three positive external conditions** – trade, energy and defense – that supported growth in Europe after the end of the Cold War are eroding. Firstly, the multilateral liberal trading order is now in deep crisis, with the imposition of high tariffs by the USA and the threat of subsequent “trade wars”. Secondly, the source of relatively cheap energy from Russia has disappeared at huge cost to Europe. Thirdly, the era of geopolitical stability under USA hegemony has gone, requiring a greater articulation in Europe between economic policy and security considerations.

Thus, Europe now faces **three major transformations**. First, Europe must **accelerate innovation** both to maintain its manufacturing leadership and to develop new breakthrough technologies, finding new growth engines in a context of weaker foreign demand, specially from USA and China. Second, Europe must **bring down high energy prices** while continuing to decarbonize and shift to a circular economy, an area which, as we have reported, Portugal and Spain have unique advantages. Third, Europe must react to a world of unstable geopolitics, where dependencies are becoming vulnerabilities, and it can no longer rely on others for its security. To achieve genuine strategic autonomy and increase its global geopolitical influence, EU must respond to a radically changed security environment at its borders and **strengthen defense investment**.

To manage these transformations, the Draghi report proposes a **new industrial strategy for Europe** that rests on a series of building blocks, the first of which is the full implementation of the Single Market. The next building blocks are industrial, competition and trade policies, which interact closely and must be aligned as part of an overall strategy. The third block is financing the main areas of action, which requires massive investment needs, unseen for half a century in Europe, with an addition of at least 5 percentage points per year in terms of investment-to-GDP ratio. Finally, the EU's governance must be reformed, increasing the depth of coordination and reducing the regulatory burden.

Preserving **social inclusion** is also a key goal of the new industrial strategy. While the EU should aim to move closer to the US in terms of productivity growth and innovation, it should do so without the drawbacks of the US social model. The EU will also have to ensure that its cohesion policy remains consistent with a push towards increasing innovation and completing the Single Market. In addition, Europe should learn from the mistakes that were made in the phase of “hyper-globalization” and prepare for a fast-changing future.

The first area of action of the Draghi's report is **closing the innovation gap** with USA and China. In this scope, integrating artificial intelligence (AI) “vertically” into European industry will be a critical factor in unlocking higher productivity. Thus, Europe must improve the conditions for breakthrough innovation by addressing the weaknesses in its common programmes for Research and Innovation (R&I), namely, by promoting better coordination on public R&D across Member States. It is also essential to establish and consolidate European academic institutions at the forefront of global research. Europe needs to make it easier for “inventors to become investors” and facilitate scaling up of successful ventures.

A better financing environment for disruptive innovation, start-ups and scale-ups is needed, as barriers to growth within the European markets are removed.

In particular, the EU has a unique opportunity to lower the cost of AI deployment by increasing computational capacity and making available its network of high-performance computers. In addition, the EU should promote cross-industry coordination and data sharing to accelerate the integration of AI into European industry. Facilitating consolidation in the telecommunications sector is also needed to deliver high rates of investment in connectivity.

Europe is suffering from skills gaps across the economy, reinforced by a declining labor force. Skills shortages are acting as a barrier to innovation and technology adoption and could potentially hinder decarbonization as well. Thus, the EU and Member States should overhaul its approach to skills, making it more strategic, future-oriented and focused on emerging shortages, namely, in STEM subjects.

Concerned with the second area of action, **high energy costs** in Europe are an obstacle to growth, while lack of generation and grid capacity could impede the spread of digital tech and transport electrification. The EU's **decarbonization** goals are more ambitious than its competitors', creating additional short-term costs for European industry, but decarbonization offers an opportunity to lower energy prices and take the lead in clean technologies, while also becoming more energy secure. Thus, the first goal for the energy sector is to lower the cost of energy for end users by transferring the benefits of decarbonization. Interestingly, Draghi's report stressed that natural gas, a fossil fuel, will remain part of the energy mix in Europe over the medium term, complemented by renewables, nuclear, hydrogen, bioenergy and carbon capture, utilization and storage. To capitalize on the decarbonization push, Europe should refocus its support for clean tech manufacturing, focusing on technologies where either has a lead or where is a strategic case for developing domestic capacity. In particular, the EU should develop an industrial action plan for the automotive sector.

The third area of action is defense. According to Draghi's report, deteriorating geopolitical relations create **new needs for spending on defense** and defense industrial capacity. Europe now faces conventional warfare on its Eastern border and hybrid warfare everywhere, including attacks on energy infrastructure and telecoms. At the same time, USA strategic doctrine is shifting away from Europe towards the Pacific rim driven by the perceived threat of China. As a result, a growing demand for defense capability is being met by a shrinking supply – a gap which Europe itself must fill. Consequently, the EU needs to develop a "foreign economic policy" based on securing critical resources, including critical raw materials (CRMs) and critical technologies for the

digitalization of Europe's economy. Mostly important, EU should strengthen its industrial capacity for defense and space with a better coordination of public spending and investment, aggregating demand and integrating industrial defense assets.

Overall, these goals shaping a new industrial strategy for Europe, which have largely been adopted by the European Commission in the last six months, will form new clusters of investment opportunities for Europe and Portugal. And it is notable how strongly the current positioning of Portugal is an advantage in this new context. From the renewable energy capacity leading to low energy prices, to the vibrant innovation ecosystem in its cities promoting digital innovation, to the growth of the highly educated workforce, to the government budget surplus allowing strategic investments, and the growing capabilities in biomedical sciences, Portugal is uniquely positioned to thrive economically and help the European Union address its challenging context of achieving strategic autonomy in the economic, digital, and security dimensions.

5.2. Investment Opportunities

The **healthcare and biotechnology sectors** in Portugal present significant investment potential, particularly due to its high-quality but fragmented private market, which offers consolidation opportunities, as well as the strong scientific and manufacturing capabilities that allow for capacity expansion to serve a growing global market. Key areas include biotechnology startups, advanced drug development and manufacturing, elderly care facilities, and medical tourism, alongside the modernization of hospital infrastructure through Public-Private Partnerships (PPPs). The sector's reliance on equity financing opens doors for capital market participation. Additionally, veterinary care and health-related retail markets, such as optics and orthopedics, are emerging as promising niches for expansion and consolidation.

Energy is one of the three areas of action of Draghi's report. Here, investment opportunities cover additional renewable energy generation, including solar, wind and hydro power, as well as the electric grid modernization and interconnectivity projects. The implementation of (green) hydrogen facilities/corridors is also an opportunity for Portugal in the scope of the efforts to decarbonize the European economy. True electric mobility requires the development of the public charging infrastructure, and the investment in solid-state cells, hydrogen fuel cells and other innovative technologies – areas where Portugal developed state-of-art research and development.

Portugal has still a wide range of opportunities in terms of the **infrastructure development**. Key opportunities include railways, ports and airports. There are important

investment needs in rail network modernization, including high-speed rail and cargo transport enhancements to bolster logistics. The recent decision to develop a new international airport in Alcochete, alongside upgrades to Lisbon's existing airport, underscores the urgency of improving air transport capacity, currently operating at close to full capacity.

Housing and real estate is also a very important field of investment due to the general attractiveness of the country to foreigners and the supply shortages in terms of accessible housing. Real estate prices in Portugal suffered a surge in the last 3-4 years due to the strong foreign demand and housing investments in different segments (social housing, university residences, middle class housing) are a top government priority as revealed in recent announcements. In particular, a new line of investment of 1,340 million euros for affordable housing was approved by the Government in partnership with the European Investment Bank (EIB). The strategic collaboration between municipalities and private promoters will be critical for its success. Real estate is also connected with the tourism industry, where the opportunities are vast, covering tourism segments of golf, wine, health, ecologic, sports, luxury, and elderly tourism, all of which have experienced strong demand in the last few years.

Other opportunities concerned with **natural resources** include further development of agriculture and forestry, namely, specific fruits, vegetables and flowers, vineyards and wine, olive oil, livestock, and timber, given the continued increase in irrigation areas, particularly in the south of Portugal. In addition, the sea offers the opportunity to develop new activities concerned with fisheries and aquaculture, maritime transportation, and marine biotechnology. Portugal has also important mineral resources relevant to decarbonization and high-tech applications that are receiving strong investments.

In addition to these investment opportunities, most of which were also identified a year ago and remain attractive for international investors, the current geopolitical context leads to new investment opportunities for Portugal that will accelerate and deepen in the coming years.

5.3. Emerging Investment Opportunities

Positioning to Develop World Competence Centers and Digital Innovation

Concerned with the first area of action in Draghi's report of closing the innovation gap with the USA and China, Portugal is in a great position to continue developing world-class digital **service and competences centers for European multinationals**, following examples like BPN Paribas, Bosch, Blaupunkt and many others. The need to develop capabilities and digital assets in the European borders and the perception of Southern Europe as the safest European location, as well as its quality of life attractiveness, will strengthen Portugal's competitive advantage in this sector.

Besides the pleasant climate, Portugal is well connected in terms of **IT and telecom infrastructure**, and it is equipped with world-class universities and research centers, as described. In addition, its cities are appealing and have vibrant and livable communities. In fact, Portugal, as we described, is a **multipolar innovation country** with cities like Lisbon, Porto or Braga acting as innovation hubs by attracting founders, talent, and R&D investment, namely, into services and competences centers.





BNP Paribas in Portugal: A Competence Center Driving Innovation and Talent Excellence

BNP Paribas, one of Europe's largest banking and financial services groups, has strategically positioned Portugal as a key competence center, leveraging the country's highly skilled workforce, competitive talent pool, and thriving tech ecosystem. With a strong focus on **IT, cybersecurity, finance, and customer operations**, BNP Paribas Portugal has become a critical hub for the group's global operations.

Portugal as a High-Skill Competence Center: Key Numbers

- **3.000+ employees** in Portugal (as of 2024), making it one of BNP Paribas' largest multifunctional hubs in Europe.
- **90%+ highly educated workforce**, with a majority holding advanced degrees in engineering, finance, IT, and business
- **600+ IT and cybersecurity specialists**, supporting global digital transformation.
- **40+ nationalities** represented, fostering a diverse and international work environment.
- **Top 5 employer in Portugal** in the financial sector, recognized for talent development.

BNP Paribas chose Portugal due to its **highly skilled talent pool**: strong engineering and finance graduates from Top ranked Engineering and Management Universities; **cost-competitive operations** (compared to other EU hubs like Paris or Frankfurt); thriving fintech and IT ecosystem (proximity to startups, tech parks like LISPOLIS, and R&D centers; Government incentives such **Portugal's tech visa program** and tax benefits for foreign investment).

Key Competence Areas in Portugal

- **IT and Cybersecurity Hub**
 - Develops AI-driven fraud detection, cloud banking solutions, and blockchain applications.
 - Houses one of BNP Paribas' largest cybersecurity teams outside France.
- **Finance and Shared Services**
 - Manages risk analysis, accounting, and compliance for global operations.
 - Implements automation and robotic process automation (RPA) to optimize banking processes.

▪ **Customer Experience and Digital Innovation**

- Runs multilingual customer support.
- Collaborates with Portuguese fintech to enhance digital banking.

BNP Paribas is investing in Portuguese talent and innovation, namely BNP Paribas Portugal Academy (for upskilling programs in AI, data science, and fintech); partnerships with universities—including Instituto Superior Técnico, Católica Lisbon School of Business and Economics and Porto Business School; and startup collaborations (working with Portuguese unicorns like Remote and Anchorage Digital).

The development of competence centers is consistent with Draghi's report goal of promoting the European **cloud industry**. In fact, for reasons of European sovereignty, the EU should ensure that it has a competitive domestic industry than can meet the demand for "sovereign cloud" solutions, besides the development of the European innovation ecosystem. In addition, EU and Portugal has a unique opportunity **to lower the cost of AI deployment** by increasing the computational capacity, namely, at services and competences centers.

Portugal is thus rapidly emerging as a regional hub for data centers, capitalizing on its strategic geographic location, reliable energy infrastructure, and abundant renewable energy resources. The country's growing capacity for hosting data centers is fueled by increasing demand for cloud services, edge computing, and data processing across Europe and beyond. Portugal is also a great place to install **data centers**, given the cable connections to America and Africa, including undersea cables like EllaLink, enhancing its appeal as a data transit and processing hub to access and distribute data globally with minimal disruptions. Equinix Portugal (Prior Velho), AtlasEdge (Carnaxide), Merlin (Vila Franca de Xira) and Start Campus (Sines) are good examples of data centers' investment in Portugal. Sines Data Center will be one of the largest in the world, with a capacity of 1.2 GW fueled by renewable energy.

The construction of these hyperscale data centers is further transforming Portugal into a destination for tech giants and multinational corporations seeking low-latency and energy-efficient data storage solutions. Furthermore, Portugal's strong connectivity infrastructure and major investments in renewable energy make Portuguese data centers not only reliable but also environmentally sustainable, aligning with global corporate commitments to carbon neutrality. The reliable access to cheap and green energy in Portugal, aligned with the 2nd key area of Draghi's action plan for Europe, makes Portugal an extremely attractive location to develop energy intensive industries.

As the digital and data economy grows, so does the need for robust cybersecurity measures. The country's focus on cybersecurity innovation is evident in initiatives such as the establishment of cybersecurity research centers and partnerships to develop cutting-edge solutions. Portugal's commitment to enhancing cybersecurity extends to its inclusion in European cybersecurity frameworks and projects. By participating in initiatives like the European Cybersecurity Competence Centre, Portugal contributes to strengthening the EU's collective defense against cyber threats. This proactive approach not only protects domestic businesses but also enhances Portugal's reputation as a secure destination for global enterprises operating in the digital space.

Portugal has also made significant strides in advancing AI and big data analytics, with government strategies and academic programs dedicated to driving innovation in these fields. AI-powered solutions are increasingly being deployed across industries, enabling businesses to extract actionable insights from large datasets. For instance, sectors like healthcare, finance, and manufacturing are leveraging advanced analytics to optimize operations, improve customer experiences, and enhance decision-making processes. The country's emphasis on research and development in AI has led to collaborations between universities, tech companies, and startups, creating an ecosystem that fosters innovation. By integrating AI into national strategies, Portugal ensures that its industries remain competitive in a data-driven global economy, aligning with broader European goals for digital leadership.

Strengthening Industrial Competitiveness and Defense Capabilities

The third area of action in Draghi's report on strengthening defense and security offers a new opportunity for Portugal to develop several defense-related industrial activities. In fact, Portugal has a long-standing tradition in defense industries and expertise in metalomechanics, which is currently a significant export sector. The country should be able to position itself again as a key player in both industrial manufacturing and the defense sector. As Europe seeks to enhance its strategic autonomy and industrial resilience, Portugal's industrial capabilities in defense align with the Draghi Report's call for increased competitiveness, technological innovation, and strengthened supply chain integration across the European Union.

The country's metalomechanics base is supported by modern production facilities that leverage advanced manufacturing techniques in areas such as automobile, electronics, aeronautics and renewable energy equipment. These capabilities allow Portuguese firms to produce highly specialized components with exceptional accuracy, reinforcing the nation's path to becoming a reference in advanced metalworking in Europe.

Additionally, Portugal's industrial clusters facilitate collaboration between small and medium-sized enterprises (SMEs) and large manufacturers, often intermediated by innovation centers such as CEiiA, fostering a networked approach to industrial production. This interconnected ecosystem strengthens innovation and scalability, ensuring that Portuguese firms can respond efficiently to market demands while maintaining high-quality standards.



**CEiiA – Engineering
the Future: A Portuguese
Hub for Innovation
& Product Development**

CEiiA (Centre of Engineering and Product Development) is an engineering and product development centre that **designs, develops and productizes** new technologies, products and services towards **a more sustainable society**. Based in Matosinhos, near Porto, CEiiA bridges together cities, industries and universities around product development programs in high-tech sectors such as **Mobility, Aeronautics** and **Space**.

Founded in 1998, CEiiA has grown into a key player in Europe's engineering, innovation and technology landscape, collaborating with global corporations, academia and research institutions. Its model evolves from developing technology for third-party products to creating proprietary products that integrate both in-house and strategic partners technologies.

Key Numbers

- 500+ engineers, researchers, and specialists.
- 100+ international partners, including Pinifarina, Stellantis, McLaren, Toyota, Leonardo Helicopters, Embraer, Dassault, ESA (European Space Agency), RFA.
- 50+ patents filed, covering aerospace, mobility, and IoT technologies.
- €50M+ in annual R&D investment, supported by EU funds (Horizon Europe), national grants, and private partnerships.
- 10+ spin-offs and startups launched.

CEiiA's work spans multiple high-tech domains:

- **Automotive, Mobility & Cities**
 - Developed MOBI.ME, a Mobility as a Service platform that integrates EV charging, public transport, and sharing services.
 - Created AYR, a platform that uses blockchain to track and reward low-carbon transportation choices.
 - Provides engineering services, including vehicle module and system development, for manufacturers such as Toyota, Stellantis, and Volkswagen.

▪ Aeronautics

- Has contributed to all Leonardo helicopter models since 2009.
- Served as a key engineering partner for the Embraer KC-390 military transport aircraft, responsible for developing two-thirds of its aerostructure.

▪ Space

- Develops technologies for the space sector.
- Engineered and launched the first Portuguese satellite in over 30 years, the MH-1.
- Is developing structures for micro-launchers in partnership with RFA.

▪ Ocean Technologies & Blue Economy

- Works on projects including autonomous underwater drones for deep-sea exploration, wave energy converters, and sustainable maritime mobility solutions. Partners include the Portuguese Navy and EMEPC.

CEiiA thrives on collaboration, working with corporations (like Toyota, Stellantis, VW, Embraer, Leonardo, Dassault, RFA, OHB, TMG, Simoldes, NOS, Caetano, Rangel, Siemens, EDP, GALP), research institutions (MIT, University of Minho, Instituto Superior Técnico, Faculdade de Engenharia (University of Porto)); public sector (European Commission, European Space Agency, Portuguese Space Agency, ANI (National Innovation Agency), FCT, São João Hospital); and startups & Spin-offs (CEiiA's ecosystem of spin-offs and subsidiaries includes entities such as GEOSAT, N30, ELIOT, EVIO, BEN4us, AYRNeutral, Bioliving, among others).

CEiiA is an engineering center that connects research with industrial application and venture creation. Through its scale, partnerships, and project portfolio, it contributes to Portugal's position in high-tech sectors such as mobility and aerospace.

Portugal's strategic integration into European and global supply chains ensures that its metalomechanics sector remains competitive in terms of both quality and cost-effectiveness. This interconnectedness allows Portuguese companies to supply key components for high-value industries, including renewable energy, aviation, and heavy machinery. The country's participation in European industrial networks ensures that Portuguese firms already adhere to the highest standards of quality control, regulatory compliance, and efficiency.

Furthermore, Portugal's strong logistical infrastructure, including well-developed ports and road connections, enhances its ability to transport goods efficiently within Europe and to international markets. The country's defense manufacturers can thus contribute to the production of essential components for naval vessels, armored vehicles, and advanced weapons systems, ensuring the resilience of Europe's security infrastructure. By strengthening its role as a supplier of critical components, Portugal supports Europe's broader effort to reduce vulnerabilities in key industrial sectors.

In particular, Portugal is rapidly emerging as a significant player in the aeronautics and unmanned systems sectors, capitalizing on its strong industrial base, research capabilities, and strategic partnerships. In addition to the strong aeronautics hub in Évora, a striking example of these aeronautics research capabilities is the rise of Tekever, founded in Lisbon in 2001, as the most recent Portuguese unicorn company and a recognized global leader in the UAV space.

As the global aerospace and defense industries continue to evolve, Portugal's role in producing high-value components and developing advanced drone technologies, is an integral part of Europe's defense and technological landscape. Portuguese companies are already deeply integrated into the global aerospace supply chain, contributing essential components, systems, and materials to major manufacturers such as Airbus and

Embraer. These contributions highlight Portugal's ability to support complex, high-value aerospace projects that require precision engineering and advanced manufacturing techniques. The nation's aeronautics industry benefits from a highly skilled workforce, a well-established infrastructure, advanced innovation centers, and a commitment to maintaining the highest standards of production quality.

In particular, Portugal can be at the forefront of drone technology, developing solutions for both civilian and military applications. The country's drone industry spans multiple sectors, including surveillance, logistics, environmental monitoring, and precision agriculture. Startups and established companies are creating innovative UAV (Unmanned Aerial Vehicle) solutions that enhance efficiency, reduce operational costs, and open new possibilities for businesses and governments alike. Portugal's leadership in drone innovation can be further strengthened by its commitment to regulatory compliance and safety standards, ensuring that its UAV technologies meet global requirements.

The increasing reliance on digital transformation in defense has created new opportunities for Portugal to strengthen its role in the security landscape. As modern warfare and defense operations become more reliant on real-time data, automation, and cybersecurity, Portugal is actively contributing to cutting-edge developments in these areas. NATO's Communication and Information Agency hosts its Academy in Oeiras, Lisbon Metropolitan Area, also engaging the local ecosystem in qualification and education for cybersecurity. Portugal has also made significant strides in developing simulation and virtual reality (VR) training programs for defense applications. Advanced training systems, including AI-powered war simulations and immersive combat training, enhance the preparedness of military personnel. These innovations ensure efficient and effective training while reducing the risks associated with live exercises.

In summary, Portugal actively participates in European defense projects focused on technology integration and data-driven security frameworks. Through initiatives such as the European Defense Fund (EDF) and joint military technology development programs, Portugal contributes to the EU's collective security strategy by providing expertise in metalomechanics, aeronautics, drones, and data-driven defense technologies, demonstrating its ability to support both traditional and modern defense needs. These competencies not only enhance the country's industrial base but also position Portugal as a strategic partner in European and global defense networks. With Europe facing growing geopolitical uncertainties, the Draghi's Report emphasizes the need for Europe to reduce dependencies on external defense suppliers and build a more self-sufficient industrial base. By enhancing its defense capabilities, Portugal is not only securing its own national interests but also supporting broader European security goals.



Conclusion

This report shares a story of Portugal. No, it is not the story of the oldest country in Europe, a global powerhouse at the time of the Discoveries, one of the leading countries in the world in the tourism sector, with a vibrant diaspora around the world, the country of Fado, Cristiano and Pastéis de Belém. That is the old Portugal. This report provides evidence for the new Portugal and the Future Portugal.

The new Portugal is the story of the macroeconomic transformation of the country since 2022, which made Portugal one of the fastest growing European economies, financially solid and very attractive for people and capital. A country where public and private budgets are in surplus, GDP is growing fast, human capital is increasing, sustainability is advancing, and the stock market increased 50% in three years. That's a powerful story to tell.

But that story is only the beginning. The most important enabler of the story are the solid foundations of the Portuguese economy in physical infrastructure,

renewable energy access, digital infrastructure, natural resources, human capital and innovation ecosystem. The future Portugal is the story of how those recent achievements are only the starting point of a promising trajectory where Portugal is well positioned to grow faster than the European average for the foreseeable future, while strengthening its competitive advantage in growth areas critical for Europe's strategic autonomy and future well-being, such as healthcare, high-value added services, digital economy and defence capabilities. That's a story that leads to sustainable growth and plentiful business and investment opportunities for Portugal.





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