Structural Trends Shaping Portugal's Economy and Growth

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Investment Opportunities in Portugal – Competitiveness and Business Environment

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Competitiveness and Business Environment

- Portugal's economy exhibits steady growth, with a notable increase in foreign direct investment (FDI), demonstrating investor confidence.
- Portugal's public debt was reduced to below 100% of GDP in 2023 for the first time since 2009. The country has achieved budget surpluses in recent years, with continued fiscal discipline expected to decrease public debt further.
- Fiscal responsibility has led to the country improved international credit ratings, to "A" levels, and lower borrowing costs.
- Portugal ranks high in the OECD Foreign Direct Investment Regulatory Restrictiveness Index, particularly in the primary and tertiary sectors.
- Government incentives such as tax benefits, residency programs, and streamlined business registration processes foster a supportive investment environment.
- Portugal ranks 2nd in the OECD for low restrictiveness on foreign direct investment, with no restrictions in the secondary sector.
- The stable political climate ensures a secure landscape for foreign investments. The country ranks consistently in the top 10 of the Global Peace Index, reflecting social stability and security.
- Portugal's strategic location offers unparalleled access to Europe, Africa, and the Americas through its world-class ports and logistics infrastructure.
- The country's investment in transportation and logistics supports its vision of becoming a pivotal global supply chain hub. Major ports, such as the Port of Lisbon and the Port of Sines, enhance trade capabilities.
- Portugal offers a high standard of living, with top-tier healthcare and education systems. The cultural heritage and favorable climate make Portugal an attractive destination for global talent.
- With an unemployment rate below 7%, and scarcity of labor in several sectors, the country's positive approach to inward migration addresses demographic challenges and enriches social diversity.
- Portugal's commitment to sustainability includes substantial investments in renewable energy, aiming for carbon neutrality by 2050.
- I&D expenditure has grown significantly, with notable contributions from the private sector, state entities, and universities.

Healthcare Industry

The Health Care industry has significant weight in the Portuguese Economy, is delivering continuous growth and, due to demographic trends, is poised to further deliver more diversified and IT based services; current fragmentation of the market suggest consolidation opportunities.

- **The private sector of the Health Care (HC) industry in Portugal is highly relevant.** The health expenditure share of GDP was 11% in 2022, above the OECD average. Private financing was 34% of total expenditures in 2022. Most of the HC in Portugal, 59%, is delivered by the private sector.
- **The private health care market structure is very fragmented.** Between 2006 and 2022 the number of firms, turnover, and the number of employees in HC firms have grown. In 2022 the average firm was still quite small, with less than 4 employees and an annual average turnover of 338 thousand euros per firm. Large firms, with a headcount above 250 or a turnover above € 50 million were 0.2% of the firms, but 34% of the turnover and 25% of employment.
- **The public sector and the case for Public Private Partnerships (PPP).** PPP have been used for construction and equipment of hospitals and as providers of care for the National Health Service (NHS). Since 2010 four hospital PPP were active as HC providers but there is only one PPP active as of 2024. However, construction and equipment PPP are still active, and more are planned for new hospitals. These are large investments and the firms winning the public tenders may use the capital markets for funding.

- **Investment Opportunities:** The fragmented market offers gains from consolidation, including standardization of procedures, centralized procurement, and IT infrastructure sharing. Investment areas include biotechnology startups, elderly care, medical tourism, medical goods, and veterinary care.

- **Other Investment Opportunities in Health-Related Areas.** The private HC industry in Portugal is very fragmented. There are potentially large gains from consolidation as it makes it possible to benefit from economies of scale and scope across currently isolated HC units. There is low hanging fruit in achieving efficiency gains stemming from standardization of procedures, centralization of procurement and logistics, and sharing IT infrastructures. Consolidation should also improve returns by easing the creation and development of brand equity.

- **Specific areas for investment.** These areas are very heterogeneous. They include biotechnology startups, units specializing in care for the elderly, medical tourism, and other HC related markets including medical goods retailers and veterinary care.

- **Financing Structure:** Healthcare firms rely more on equity (47%) than the overall economy (39%). Large firms depend more on financial debt (51%) compared to smaller firms (21%).

- **Stock and Bond Market Activity:** Luz Saúde, initially listed on Euronext Lisbon in 2014 and delisted in 2018, is planned for relisting by Fidelidade, potentially selling a 30%-45% stake. Healthcare companies have also tapped the bond market in recent years; CUF, a hospital management player has tapped the bond market several times, also Hovione or Bial, on the biotech and pharmaceutical activity.

Energy Industry

The energy industry is a sector in transition, with significant opportunities and challenges ahead. In spite of the progress in renewable energy production in Portugal, large amounts of investment will still be needed in the coming years. The clear and stable policy context is supportive. Portugal benefits from a good mix of large incumbent companies with a wide range of new players, offering consolidation opportunities. Larger energy companies are extensively using the capital markets for financing.

- **Market structure evolves into a diversified set of players.** Portugal's energy market has evolved by unbundling vertically integrated operators and promoting liberalization and privatization to encourage competition.

  The sector now operates in a competitive market without state-owned companies, regulated by a Government agency and service, to ensure fair competition and sustainability.

  The market structure includes a few major players, such as EDP Group in power and Galp in oil and gas, with a numerous and growing number of private companies engaging in electricity generation, distribution, and industrial production, with service providers mainly consisting of small and micro companies.

- **Energy consumption moving to renewable:** In 2022, Portugal's primary energy consumption was 21,315 ktoe, with 64% from fossil fuels and 33% from renewables.

  The country ranks in the top 10 worldwide for renewables incorporation for power generation. In 2023 Portugal achieved a national record for incorporating renewable sources into power generation, reaching 70,7 %. The national energy mix has been free from coal for power generation since 2022.

- **Final energy consumption and energy independence:** In 2022, final energy consumption was 16,521 ktoe, showing a reduction due to industrial efficiency and changes in sectoral energy use. External primary energy dependence dropped to 71% in 2022 from 79% in 2001.

- **Energy Transition Plan (PNEC) 2030:** According to the PNEC 2030 (currently undergoing public consultation for an updated 2024 version) the target for incorporating renewable sources into power generation by 2030 is 85%. This substantial increase will be primarily driven by wind and solar (photovoltaic) energy, with biomass/biogas and waste playing smaller roles in the transition.

- **Investment Opportunities:** it is expected a significant growth of renewable energy generation, including offshore wind auctions. This will also imply revamping/repowering wind and solar parks. Development of electric vehicles public charging infrastructure will need to intensify.

  The improve in efficiency of the energy market require reinforcement of the interconnections between Portugal and Spain (estimated investment at €55mln), and between the Iberian countries towards the Central Europe markets.

Natural gas interconnectivity expansion, as part of a hydrogen European corridor (Celza project), has an estimated investment of €320 mln.

Desalination, particularly in coastal areas, can be a viable solution to address water scarcity. While desalination can be energy-intensive, technological advancements and renewable energy integration are making it more sustainable.

Consolidation may be a way to explore, as there are a number of small wind/solar park developers. In addition, more than 50% of sectorial services providers (installation/maintenance/inspection) are micro or small companies.

- **Stock Market Activity:** several energy producers and distributers are listed companies, including incumbents GALP (Oil and Gas) and EDP (Energy) and EDP Renewables and REN (managing the electric grid). Greenvolt listed more recently, in 2021. The energy companies listed have raised €3,5 bln of equity over the last 3 years.

- **Bond Market Activity:** ESG bonds are increasingly adopted by various players as well and, since 2018, there has been a notable increase in the issuance of green bonds to finance investments in clean technologies related to energy transition: EDP Group, Greenvolt, Altri/BioElectrica do Mondego, or REN, being examples of successful implementation. The energy companies listed have raised €7 bln of bonds over the last 5 years.

Infrastructure Industry

Infrastructure industry offers diverse opportunities, with a special focus on the rail network, new Airport in Lisbon, creative housing solutions and urban rehabilitation and governmental infrastructures.

- **Roads:** Portugal has one of the best highway systems globally, with opportunities in renewals and new mobility solutions as concessioned road contracts mature in the coming years before 2030.

  While Portugal ranks in the top 10 of road infrastructure by the World Economic Forum, but it is over a 30th position in the rail coverage and quality.

- **Rail Network:** The rail system is underdeveloped, with significant opportunities for modernization and expansion, including high-speed rail, cargo transport, and expanded suburban and urban train services.

  The enhancement of cargo rail connections is a priority, particularly from major Portuguese ports such as Sines, Lisbon, Setúbal, Aveiro, and Leixões. This development is expected to bolster Portugal's position as a logistical hub in Europe, improving the movement of goods across the continent while supporting more sustainable transport modalities.

- **Airport Modernization:** Addressing traffic congestion at Lisbon Airport and modernizing existing airports are critical. Recently, and a decision has just been announced (May 2024). The choice was the investment in the existing military airfield of Alcochete, located 45 km from Lisbon center, which will take 10 years to build. Meanwhile the Government agreed with Vinci on expanding and improving the existing airport in Portela.

- **Urban Rehabilitation:** Urban development in Lisbon and Porto, driven by tourism and new residents, offers opportunities in real estate and construction, but stressed house prices.

  Creative solutions need to be developed to solve the issue for future generations, with an obvious solution being the expansion of the main metropolitan areas. To make it happen, we need to rethink the Lisbon and the Porto metro areas to new limits, with metro transportation systems that enhance connectivity and reduce commutes, while profiting from novel work experiences remotely and in shorter working weekdays. The country has the perfect conditions not only for digital nomads, but also for sporadic digital commuters.

- **Governmental infrastructures:** significant investments are imperative. Hospitals, schools, universities, industrial and innovation parks, governmental buildings, courthouses, prisons, fire and police stations, and military installations and quartels have all suffered from chronic underinvestment. The forthcoming decade will be pivotal for revitalizing these crucial infrastructures to meet contemporary needs and standards. This rejuvenation will not only enhance service delivery but also fortify the foundational structures that support Portugal's socio-economic fabric.

- **Cultural Infrastructure:** Investing in restoring historical sites and developing cultural centers enhances tourism and supports local economies. Investing in cultural infrastructure is critically important for Portugal. Firstly, it plays a pivotal role in preserving the rich and diverse cultural heritage of Portugal, which includes literature, music, dance, and historic sites, maintaining the country's national identity and pride for future generations. Additionally, cultural attractions significantly enhance Portugal's appeal as a tourist destination, boosting tourism revenue.

Tourism Industry

Portugal's tourism sector has undergone significant growth and transformation, positioning the country as a premier destination. With a significant weight in the economy, investment opportunities are to continue investing in improving and diversifying the visitors experience, while mitigating the strains on resources.

- **Sector Impact and Growth:** tourism has grown significantly, contributing over 8% to GDP. The sector has rebounded post-COVID-19, employing over 1.6 million people. Portugal ranks 6th in Europe for inbound tourism expenditure.
- **Attractive Features:** The sector benefits from diverse experiences, rich cultural heritage, strategic location, quality infrastructure, government support, renowned gastronomy, safety, affordability, mild climate, and sustainability practices.
- **Accommodation and Food Services:** Characterized by diverse establishments and increasing local housing options.

  Portugal accommodates 52.055 corporations operating in the Accommodation and Food Service Activities sector, which collectively contribute to a turnover of 17 billion euros and maintain a gross profit margin of 35,3%.

  The Portuguese tourism industry is currently undergoing a dual surge, marked by an increase in both quantity and quality. This simultaneous growth in quantity and improvement in revenue metrics signifies the industry's capacity for both expansion and enhancement.
- **Financing:** Asset management organizations and institutional investors are both significant sources of capital for the hotel sector.
- **Future Trends:** Looking to the future, Portugal's tourism industry is poised for further growth and innovation. Anticipated trends include increased investment from foreign hotel chains and private equity firms, emphasis on sustainable tourism practices, integration of technology in tourism services, promotion of cultural heritage and culinary offerings, diversification of tourism offerings, and collaboration between public and private sectors.

Agriculture and Forest Industry

Portugal's agriculture and forestry sectors present robust investment opportunities, supported by favourable climatic conditions, strategic location, and a commitment to sustainability. Investors can benefit from the strong global demand for Portuguese agricultural products, ongoing sector innovation, and government support for sustainable practices.

- **Economic Contribution:** Agriculture is important for Portugal's economy, with extensive arable land and significant roles for livestock farming and forestry. The sector contributes €3 billion to GDP.
- **Export Growth:** Agricultural exports grew by 45% from 2018-2022, with key exports including wine, olive oil, and horticultural products.
- **Diverse Production:** Portugal produces a variety of crops, with vineyards covering 176,000 hectares and being a significant export and tourist attraction.
- **Forestry Sector:** Offers sustainable investment opportunities with primary species including eucalyptus, maritime pine, cork oak, and stone pine.
- **Investment Opportunities:** Favorable conditions and global demand support investment, with government backing for sustainable practices. Advanced technologies and sustainable management promise long-term benefits.

Introduction

As Portugal marks its 50th anniversary under democracy, the country takes the opportunity to consider the challenges that lie ahead. Over the past five decades, Portugal has made significant advancements, joined the European Union and achieved steady development.

This integration, forty years ago, has transformed Portugal into a key player within a democratic and prosperous Europe.

The journey has not been without difficulties; the nation has faced a number of crises and hurdles but, showing remarkable resilience and strength, the Portuguese governments and Portugal´s citizens and companies continually adapted to align with European standards while keeping a global outlook.

As the country emerged from the pandemic and discusses recovery strategies, it is evident that sustainability and resilience cannot depend solely on public investments.

Engaging the private sector, with its creativity, innovation capacity, and efficient decision-making, is essential to complement and enhance the efforts of the government and the European Union.

To this end, the Applied Research Centre (CEA) was tasked by Euronext Lisbon and AEM (the Portuguese Issuers Association) to identify opportunities where national and international private capital can play a critical role in the recovery project.

Despite significant progress over the past decades, Portugal needs to accelerate its growth to catch up with its European partners.

Thus, our starting question is: what sectors can act as catalysts for sustainable development, be profitable for private investors, and help speed up the path towards prosperity and progress?

We start our journey by choosing the health care industry, as it represents a crucial sector for investment due to its significant contribution to the economy and its potential for growth: in 2022, health expenditure accounted for 10.6% of GDP, with private financing constituting 34.2% of total expenditures.

The private sector delivers the majority of health care services, but the market is fragmented, with many small firms and a few large players.

The COVID-19 pandemic highlighted the volatility in returns, particularly for large firms, which had a higher average return on equity but also greater volatility.

Investment opportunities are abundant, ranging from consolidation of fragmented services to opportunities to capitalize on economies of scale, to specific areas like biotechnology startups, elderly care, medical tourism, and veterinary care.

Public-Private Partnerships (PPPs) also present significant investment prospects, especially in hospital construction and equipment.

And the possibility of new listings on Euronext Lisbon in a near future further underscores the sector's investment potential.

Professor Miguel Gouveia, a renowned specialist in Public Economics and most specially in Health Economics is the key specialist in this area.

The energy sector is the next stop in our journey as a result of its pivotal role in the Portuguese economy transformation.

Portugal's energy sector is a crucial area for investment, with primary energy consumption in 2022 reaching 21,315 ktoe, mainly from fossil fuels and renewables.

The country achieved a milestone by eliminating coal from power generation and focusing on renewable energy, which made up 70.7% of power generation in 2023, and despite significant external energy dependence, final energy consumption has decreased due to improved efficiency.

The market has evolved since 1995, embracing liberalization and competition, attracting numerous private players like EDP Group and Galp.

Financing in the energy sector involves a mix of debt, equity, and government incentives, particularly for renewable projects.

Regulatory oversight by ERSE and DGEG ensures fair competition and consumer protection.

Portugal's Energy Transition Plan (PNEC) 2030 targets significant reductions in greenhouse gas emissions, increased energy efficiency, and expanded renewable energy usage.

Key investment opportunities include offshore wind auctions, cross-border interconnections, LNG – liquified natural gas storage, electric vehicle infrastructure, and desalination plants, alongside potential mergers and acquisitions in renewable energy and sectorial service providers.

Eng. Jorge Borrego and Professor Anibal Santos, the key experts in the area, have extensive experience as practitioners and key decision-makers in the private and public sectors relating to the energy industry.

Portugal's infrastructure sector offers diverse investment opportunities that are crucial for fostering economic growth and improving competitiveness.

Significant areas for investment include modernizing the extensive road network, which is one of the best globally, and addressing the lagging rail system to enhance connections within Portugal and to neighboring Spain.

Additionally, there is a critical need to address airport capacity issues, particularly at Lisbon Airport, and to expand urban rehabilitation projects in cities like Lisbon and Porto, driven by tourism and new residents.

Investments in efficient utility grids and innovative water management solutions, such as large-scale desalination plants and water transportation systems from the water-rich north to the arid south, are vital for addressing water shortages exacerbated by climate change.

Moreover, cultural infrastructure investments, including restoring historical sites and developing new cultural centers and museums, can enhance Portugal's appeal as a tourist destination and support local economies.

These infrastructure initiatives, supported by a combination of public funding and private investment, aim to enhance transportation networks, address the impacts of climate change, and boost tourism.

Engaging private investors can accelerate developments, ensuring sustainable growth and economic resilience.

The team of experts, led by Professor Ricardo Ferreira Reis, head of the Public Private Partnerships Observatory with vast experience in infrastructure analysis, will guide this part of our journey.

We cannot talk about Portugal's competitiveness without looking at tourism.

Portugal's tourism sector has experienced remarkable growth and transformation, establishing the country as a leading destination in Europe and globally.

With its rich history, diverse landscapes, and warm hospitality, Portugal offers a unique mix of cultural authenticity and modern appeal.

Key factors contributing to its attractiveness include diverse experiences, rich cultural heritage, strategic location, quality infrastructure, government support, excellent gastronomy and wine, safety, affordability, mild climate, and sustainable tourism practices.

International recognition and numerous awards have further solidified Portugal's status as a top tourist destination.

Economically, it ranks sixth in Europe for inbound tourism expenditure, significantly impacting the European tourism outlook and contributing steadily to Portugal's GDP.

The accommodation and food service sector, employing over 1.6 million people, showcases resilience and recovery, especially post-COVID-19, attracting both domestic and international visitors.

Portugal's transportation infrastructure, including airports and cruise ports, facilitates international travel despite challenges.

Future trends in the tourism industry point to further growth and innovation, with anticipated increases in foreign investment, sustainable tourism practices, technology integration, cultural and culinary promotion, diversification of offerings, and collaboration between public and private sectors.

Professor Rute Xavier is the expert in the tourism sector, with extensive experience in sectorial studies in this industry and all related fields.

Portugal's agriculture sector is a vital and evolving industry, deeply rooted in the nation's history.

With its diverse climate, fertile soils, and strategic location, the country is ideal for a variety of crops, including olives, wine grapes, and various fruits and vegetables.

Significant investments in sustainable practices and advanced agricultural technology are driving innovation and enhancing productivity, making the sector increasingly attractive for investment.

Portuguese agricultural exports have seen impressive growth, increasing by 45% from 2018 to 2022. Key products such as wine, olive oil, and berries are highly valued in international markets.

The sector contributes €2.96 billion to the Portuguese GDP and spans over 560,000 hectares of irrigated land, with regions like Alentejo and Ribatejo playing crucial roles.

Investments in forestry, focusing on eucalyptus, maritime pine, cork oak, and stone pine, enhance CO2 capture, biodiversity, and provide sustainable construction materials.

Portugal's agriculture and forestry sectors offer robust investment opportunities supported by favorable conditions and strategic sustainability commitments.

The global demand for Portuguese agricultural products, combined with ongoing innovation and government support, ensures long-term benefits for investors.

Gonçalo Santos Andrade, an expert in agricultural management and economics and the president of Portugal Fresh, is the key expert in this area.

In conclusion, we are commited to showcase Portugal as a leading destination for investment, with a special focus on its more dynamic sectors.

From healthcare and energy to infrastructure, tourism, and agriculture, Portugal offers vast opportunities for private capital to drive sustainable growth and innovation.

Our comprehensive analysis and expert insights aim to highlight the potential for profitable and impactful investments, ensuring that Portugal is well-prepared for the challenges and opportunities of the coming decades.

Join us in this exciting journey to shape a prosperous future for Portugal, leveraging the resilience, creativity, and dedication of its people, companies and industries.

Investment Opportunities in Portugal

Competitiveness and Business Environment

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Executive Summary – Competitiveness and Business Environment

- **Economic Resilience and Growth:**
  - Portugal's economy exhibits steady growth, with a notable increase in foreign direct investment (FDI), demonstrating investor confidence.
  - Diversified economic sectors, including technology and renewable energy, contribute to reduced reliance on traditional industries.
  - From 2019, Portugal achieved its first budget surplus in five decades, indicating strong fiscal management.
- **Strategic Location and Logistics:**
  - Portugal's strategic location offers unparalleled access to Europe, Africa, and the Americas through its world-class ports and logistics infrastructure.
  - The country's investment in transportation and logistics supports its vision of becoming a pivotal global supply chain hub.
  - Major ports, such as the Port of Lisbon and the Port of Sines, enhance trade capabilities.
- **Sustainability and Green Energy:**
  - Portugal's commitment to sustainability includes substantial investments in renewable energy, aiming for carbon neutrality by 2050.
  - Renewable energy sources, including wind, solar, and hydroelectric power, constitute over 60% of Portugal's electricity production.
  - Green energy initiatives attract investments in sustainable technologies and projects.
- **Investor-Friendly Policies:**
  - Government incentives such as tax benefits, residency programs, and streamlined business registration processes foster a supportive investment environment.
  - Portugal ranks 2nd in the OECD for low restrictiveness on foreign direct investment, with no restrictions in the secondary sector.
  - The stable political climate ensures a secure landscape for foreign investments.
- **Quality of Life:**
  - Portugal offers a high standard of living, with top-tier healthcare and education systems.
  - The country ranks consistently in the top 10 of the Global Peace Index, reflecting social stability and security.
  - The cultural heritage and favorable climate make Portugal an attractive destination for global talent.

Economic and Financial Update:

- **Reinvention and Competitive Edge:**
  - Portugal's tourism sector has been repositioned as a key economic driver, attracting international visitors.
  - The technology sector benefits from a vibrant startup ecosystem, supported by government initiatives and international investments.
  - Agriculture advancements include water-efficient irrigation and organic farming, enhancing productivity and sustainability.
- **Fiscal Responsibility:**
  - Portugal's public debt was reduced to below 100% of GDP in 2023 for the first time since 2009.
  - The country has achieved budget surpluses in recent years, with continued fiscal discipline expected to decrease public debt further.
  - Fiscal responsibility has led to improved international credit ratings and lower borrowing costs.

- **International Investment:**
  - Significant foreign investment in real estate is driven by favorable tax policies and residency programs.
  - Portugal ranks high in the OECD Foreign Direct Investment Regulatory Restrictiveness Index, particularly in the primary and tertiary sectors.
  - The SME sector attracts international investors, offering innovative and scalable opportunities.

ESG Strategy:

- **Environmental Sustainability:**
  - Portugal implements strategic adjustments in agriculture and tourism to align economic growth with environmental conservation.
  - Policies to prevent forest fires and enhance forest resilience are key components of environmental strategy.
  - Investments in green infrastructure, such as renewable energy facilities, support sustainable urban development.
- **Social Sustainability:**
  - Post-COVID investment packages focus on enhancing healthcare, education, and justice to build a resilient society.
  - The country's approach to inward migration addresses demographic challenges and enriches social diversity.
  - Education investments ensure access to quality education, fostering social stability and cohesion.

Innovation and Development:

- **Research and Development:**
  - I&D expenditure has grown significantly, with notable contributions from the private sector, state entities, and universities.
  - Universities in Portugal have increased their I&D investments, driving research and industry collaboration.

The involvement of private foundations and NPOs supports a vibrant innovation ecosystem, attracting global talent and advancing new technologies.

Portugal's Competitiveness

Portugal emerges today as a beacon of opportunity, offering a unique blend of economic resilience, strategic location, and a dazzling cultural heritage.

This Report aims to address the myriad reasons that make investing in Portugal, in a selected number of sectors and industries, not just a promising venture but a potentially rewarding journey into one of Europe's most dynamic economies.

Portugal's economy, characterized by steady growth, fiscal stability, and a commitment to innovation, presents a fertile ground for investment.

The country has successfully diversified its economy, reducing its reliance on traditional sectors, and embracing technology and renewable energy.

This economic transformation is supported by a robust framework of policies aimed at fostering innovation, entrepreneurship, and international trade.

As a result, Portugal has seen a surge in foreign direct investment (FDI), which speaks volumes about its economic health and the confidence it inspires among global investors.

Strategically located at the crossroads of important maritime routes, the country offers unparalleled access to key global markets: its world-class ports and logistics infrastructure serve as gateways to Europe, Africa, and the Americas, making it an ideal location for businesses looking to expand their international footprint.

The country's investment in transportation and logistics is a testament to its vision of becoming a pivotal logistics hub in the global supply chain, further enhancing its appeal to investors looking to tap into a wide consumer base.

Furthermore, Portugal's commitment to sustainability and green energy sets it apart as a forward-thinking investment destination.

With significant investments in renewable energy sources and ambitious targets to become carbon neutral, Portugal is at the forefront of the global shift towards sustainability, not only positioning the country as a leader in green energy but also offering lucrative opportunities for investment in new and ongoing sustainable projects and technologies.

The Portuguese governments' investor-friendly policies provide a supportive environment for foreign investment: tax incentives, residency programs for investors, and streamlined business registration processes exemplify Portugal's proactive approach to attracting and retaining foreign capital.

These measures, coupled with a stable political climate, ensure a secure and favourable investment setting.

Moreover, Portugal's quality of life is a significant draw for investors and professionals alike. Boasting a rich cultural heritage, exceptional healthcare, and education systems, and a high standard of living, Portugal offers an attractive environment for both living and doing business, which not only enhances the country's appeal as an investment destination but also aids in attracting global talent, which is crucial for the success of any investment.

In conclusion, Portugal represents a compelling investment opportunity, backed by its economic resilience, strategic location, commitment to innovation and sustainability, and a supportive regulatory environment.

As this Report further elaborates, the convergence of these factors makes Portugal not just a safe harbour for investment but a launchpad for global enterprises looking to thrive in a competitive world.

The following sections provide a detailed exploration of Portugal's investment environment, offering insights and analyses to guide investors towards making informed decisions in this market.

1 Update on the Country's ESG Strategy

Environmental Sustainability

Portugal's journey toward facing environmental challenges showcases a profound commitment to safeguarding the environment and ensuring the stability and sustainability of life on earth (Sustainable Development Goal 15 of the United Nations).

The country has embarked on a multifaceted approach to climate adjustment, particularly in critical areas such as agriculture, tourism, and infrastructure development. By prioritizing territorial organization and stability, Portugal aims to foster integrated development that aligns economic growth with environmental conservation.

This delicate balance is maintained through strategic adjustments in agricultural practices and tourism development, ensuring that both sectors evolve in harmony with the country's environmental objectives.

One of the noteworthy aspects of Portugal's environmental strategy is the strategic governmental intervention: recent governments have adopted a guiding rather than a governing approach, stepping in with policy adjustments primarily when necessary to address urgent challenges.

A prime example of this approach is the adjustments made to forest fire policies. Portugal has leveraged its experience with recurrent forest fires to develop and implement comprehensive strategies that not only aim to prevent such disasters but also to enhance the resilience of its forests and the communities that depend on them.

In agriculture, Portugal has recognized the need for adjustments to sustain its natural resources and ensure food security. The country has been at the forefront of integrating sustainable practices, such as water-efficient irrigation techniques (namely, the Alqueva development in the South) and organic farming, into traditional agriculture. These adjustments are crucial for mitigating the impacts of climate change on agriculture, ensuring the long-term productivity and sustainability of this vital sector.

Tourism, a significant pillar of Portugal's economy, has also undergone substantial adjustments to align with environmental goals.

The country has made concerted efforts to promote eco-tourism and sustainable travel options, enhancing the value of its natural landscapes while minimizing the ecological footprint of tourism activities.

This strategy not only preserves Portugal's pristine environments but also ensures the long-term viability of the tourism sector, making it a model for sustainable tourism development.

The development and maintenance of infrastructures in Portugal have been approached with an acute awareness of environmental implications.

The country has invested in green infrastructure, from renewable energy facilities to sustainable urban planning, to ensure that development projects contribute to, rather than detract from, environmental objectives.

This integrated approach to environmental challenges, encompassing climate adjustment in critical areas, demonstrates Portugal's commitment to a sustainable future where territorial organization, economic development, and environmental conservation go hand in hand.

Social Sustainability

Portugal's approach to social sustainability reflects a deep understanding of the complexities and interconnectedness of social issues, particularly in the face of global challenges.

The country has remained remarkably peaceful, with social tensions largely absent even during periods of intense stress, such as the financial adjustment and the COVID-19 pandemic.

This resilience is a testament to the strength of Portugal's social fabric and its ability to navigate crises with solidarity and foresight.

The absence of significant social unrest during these times speaks volumes about the societal cohesion and the effectiveness of governmental responses to ensure stability and security for its citizens. These was true at the central level, the regional governments in the islands, and at a local level with municipalities.

Recognizing the clear infrastructural opportunities that lie in enhancing the quality and accessibility of public services, Portugal has directed its post-COVID investment packages towards bolstering health, education, and justice among other sectors. This strategic investment is not merely a response to the immediate impacts of the

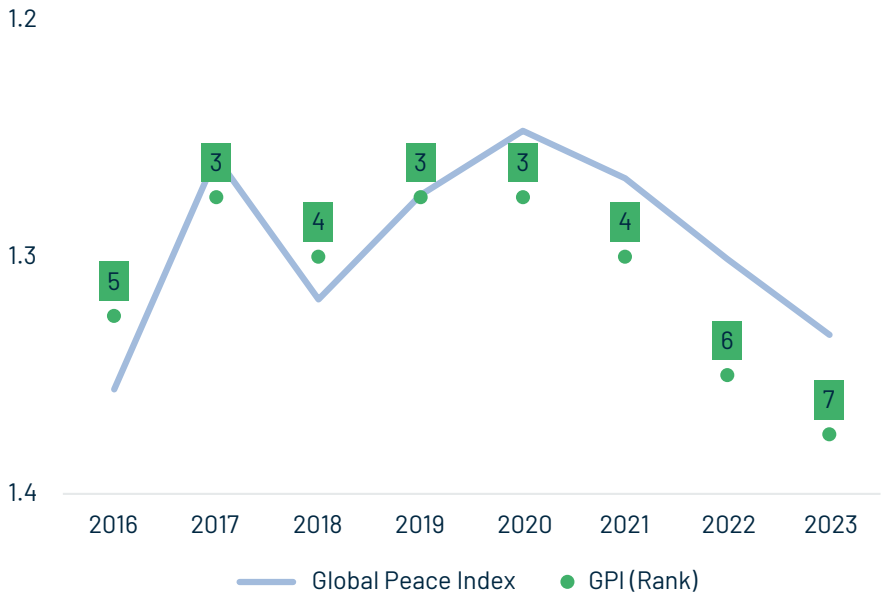
pandemic but a forward-looking approach to building a more resilient and inclusive society. By addressing these infrastructural needs, Portugal is laying the groundwork for a social system that can better withstand future challenges while ensuring that all citizens have access to essential services.

However, Portugal, like many other countries, faces demographic challenges that could impact its social sustainability.

The aging population and the outward migration of youth present potential hurdles to maintaining a dynamic and innovative society.

Yet, Portugal has managed to counterbalance these trends with relatively peaceful inward migration. By welcoming immigrants, Portugal not only addresses its demographic challenges but also enriches its social fabric, fostering a diverse and inclusive society that contributes to the country's social stability.

Figure 1. Portugal's Global Peace Index



The impact of education on social sustainability in Portugal cannot be overstated. The country's investment in education, both as part of its post-COVID recovery plan and its broader social strategy, plays a crucial role in fostering social stability.

By ensuring access to quality education, Portugal equips its citizens with the skills and knowledge necessary to participate fully in society and the economy: this focus on education not only enhances individual opportunities but also contributes to building a more cohesive, informed, and resilient society.

In conclusion, Portugal's approach to social sustainability illustrates a comprehensive understanding of the multifaceted nature of social well-being. Through strategic investments in infrastructure, a welcoming stance on inward migration, and a commitment to education, Portugal is navigating its way towards a future that ensures social stability and inclusivity. These efforts, coupled with the country's ability to maintain peace and cohesion even in challenging times, position Portugal as a model for social sustainability in the contemporary world. Portugal has been consistently in the top 10 nations in the Global Peace Index in the last decade.

Governance and Sustainability

In the governance dimension, Portugal recent years stand out for its remarkable consensus on fiscal responsibility.

This consensus was initiated by a centre-right government during the financial adjustment period in the early years of the past decade and has been continued with massive success by a left-leaning government, showcasing an exceptional example of bipartisan cooperation in an era where such collaboration is increasingly rare.

The seamless continuation of prudent fiscal policies across governments of different political orientation underscores a shared commitment to the nation's long-term economic health and stability, transcending the usual partisan divides.

The country's political environment is characterized by stable political debate and relative parliamentary stability, which has been instrumental in fostering a conducive atmosphere for governance and policymaking.

This stability in the political arena has been crucial in enabling governments to pursue ambitious reforms and policies aimed at securing Portugal's future prosperity.

The peaceful handover of power between parties not only exemplifies the strength of Portugal's political system but also contributes to a sense of continuity and predictability in governance, which is essential for both domestic and international confidence.

In essence, Portugal's governance dimension after 50 years of the Carnations Revolution, reflects a consolidated understanding of the challenges and opportunities facing the country.

By prioritizing fiscal responsibility, maintaining a stable political debate, and ensuring peaceful governmental transitions, Portugal has laid a solid foundation for sustainable development and prosperity.

2 Economical and Financial update

From a Stagnant Economy to Reinventing a Competitive Edge

In the last decades, Portugal has successfully transitioned from a past of economic stagnation to a present where it is reinventing and enhancing its competitive edge across various sectors.

The transformation is particularly evident in tourism, technology, agriculture, healthcare, innovation, science, research, and higher education. By leveraging its unique cultural and natural assets, Portugal has repositioned its tourism sector as a key driver of economic growth, attracting visitors from all corners of the globe. In technology, the country has fostered a lively startup ecosystem, supported by government initiatives and international investment, making it a burgeoning hub for innovation in Europe.

In agriculture, Portugal has embraced sustainable practices and technological advancements, enhancing productivity and environmental sustainability.

Healthcare has seen significant improvements with investments in infrastructure and services, making the system more resilient and accessible.

Furthermore, the country has made impressive strides in science and research, facilitated by collaborations between universities, research institutions, and international partners. Higher education institutions in Portugal have also gained recognition for their quality and research output, attracting students and academics from around the world.

These developments signify Portugal's commitment to not just economic recovery but to a sustainable and diversified economic model.

The focus on innovation and technology, alongside traditional strengths in tourism and agriculture, positions Portugal well for future growth and competitiveness on the global stage.

From Depressed Public Finances to Fiscal Responsibility

Portugal's journey from depressed public finances to achieving fiscal balance, and in some cases surpluses, is a testament to its strong political will and effective economic management.

This turnaround was facilitated by a generalized political consensus on the importance of fiscal responsibility, transcending party lines.

The commitment to fiscal prudence began under a centre-right government and continued under a left-leaning government, demonstrating a rare bipartisan approach to economic governance. This consensus has been crucial in implementing necessary but difficult financial adjustments and reforms, leading to a more sustainable fiscal path.

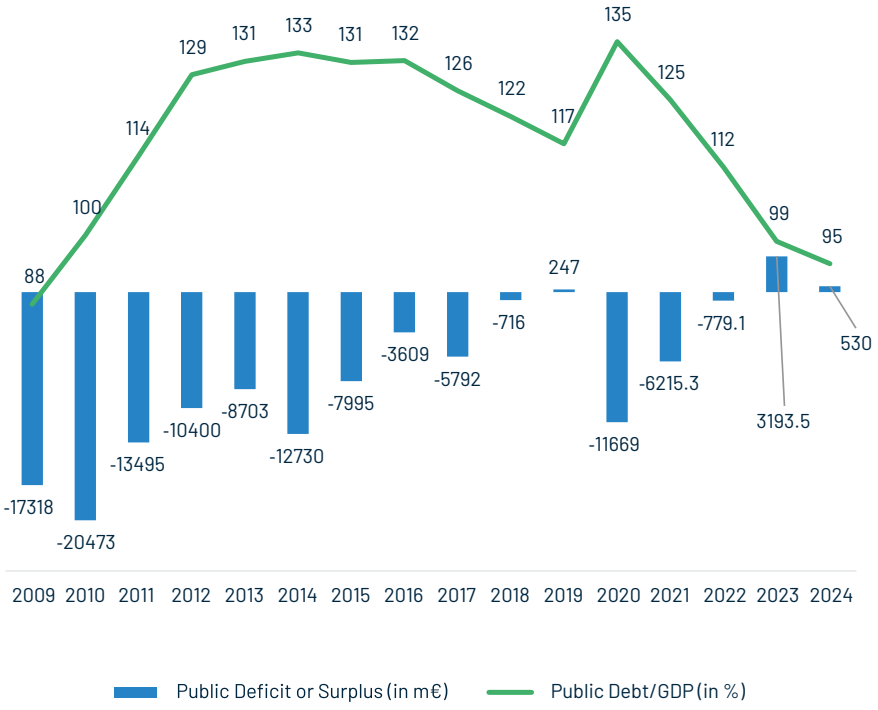
The country's efforts have resulted in significant reductions in the budget deficit, with Portugal achieving its first budget surplus in 5 decades in 2019.

This fiscal discipline has improved Portugal's credibility on the international stage, leading to upgrades in its credit rating and a decrease in borrowing costs. The focus on maintaining a balanced budget has also provided the government with more flexibility to invest in critical areas such as healthcare, education, and infrastructure, further supporting economic growth and social well-being.

The sustained commitment to fiscal responsibility amid challenges underscores Portugal's dedication to ensuring long-term economic stability and prosperity. It reflects a mature approach to governance and economic management, setting a precedent for other nations grappling with similar fiscal challenges.

For the first time since 2009, Portugal has achieved in 2023 to lower its public debt below 100% of the GDP; anticipated surpluses in the upcoming fiscal year should continue the process of decreasing the public debt.

Figure 2. Public Debt in Percentage of GDP and Deficit/Surplus in m€



Source: Pordata, data for 2024 are based on predictions from the Ministry of Finance and the National Budget

Portugal as a Hub for International Investment

Portugal has emerged as a magnet for international investment, attracting significant capital inflows into real estate, small and medium-sized enterprises (SMEs), and through occasional opportunities that highlight the country's open economy.

Despite challenges in generating its own capital to invest competitively, Portugal has successfully attracted foreign investors by offering a stable and favorable business environment, coupled with high-quality infrastructure and a skilled workforce.

The country's strategic location, acting as a gateway to Europe and the Lusophone countries, further enhances its appeal to international investors.

The real estate sector, in particular, has seen a boom in foreign investment, driven by favorable tax policies and residency programs.

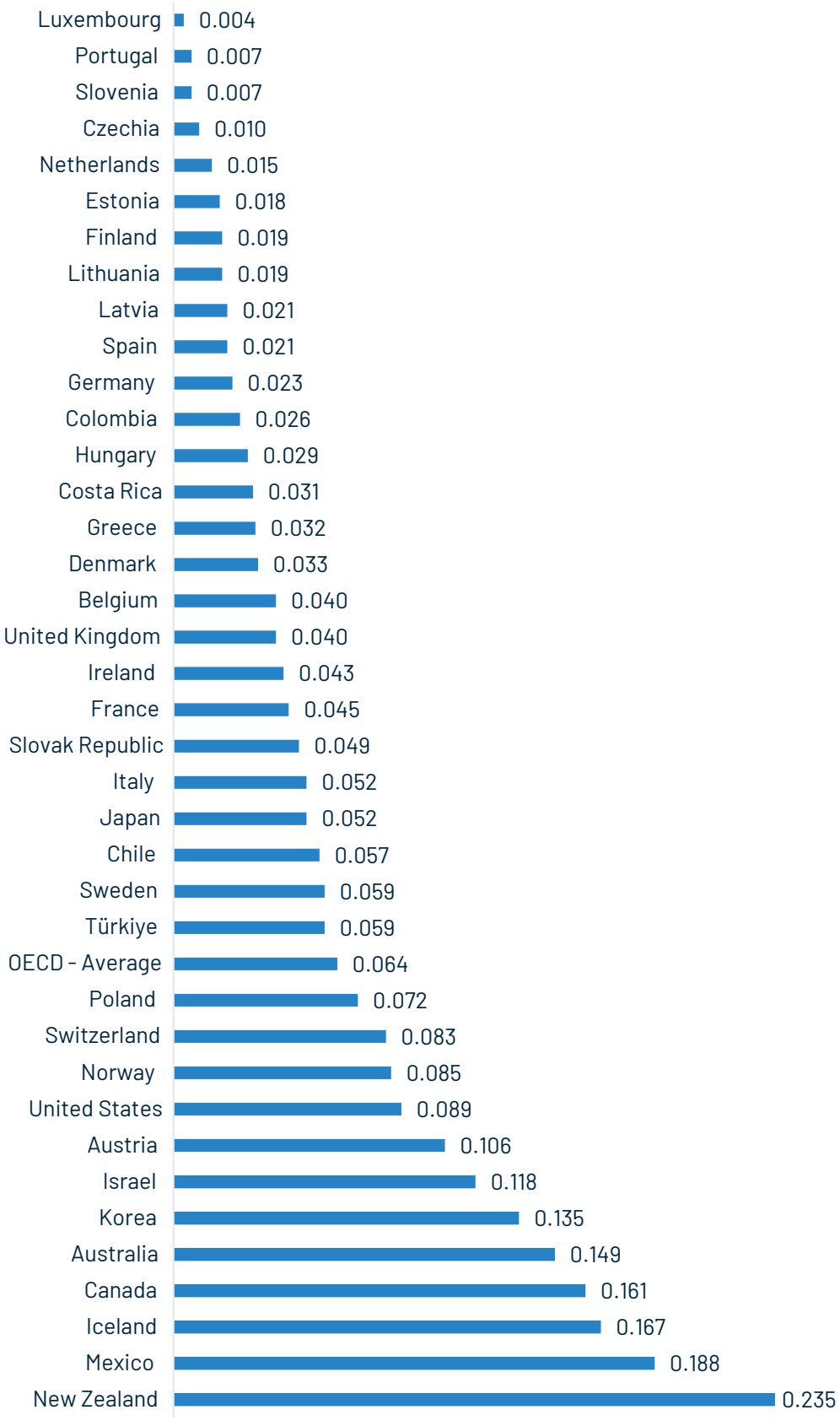
Similarly, the growth and dynamism of Portugal's SME sector have attracted attention from international investors looking for innovative and scalable opportunities.

Specific large-scale investment projects also underscore the country's attractiveness for diverse types of investment, from technology to renewable energy.

Portugal's success in attracting international investment demonstrates the strength of its open economy and its integration into global trade and investment networks. However, the reliance on foreign investment also underscores the need for Portugal to bolster its own capital generation capabilities. Enhancing domestic investment is crucial for sustaining growth and reducing economic vulnerabilities.

The successful policies in removing restrictions on foreign direct investment has left Portugal as the second country in the OECD in the Restrictiveness Index. When accounting for sectors, Portugal ranks 6th on the primary sector among the 38 OECD member countries, after the 5 countries that have no restrictions on FDI; Portugal ranks 1st along with the other countries that have no restrictions in the secondary sector, and 3rd after Luxembourg and the Netherlands in the tertiary sector.

Figure 3. OECD Foreign Direct Investment Regulatory Restrictiveness Index, 2020



Source: OECD. Stat

A Language of Trade as a Tool for Economic Globalization

The Portuguese language stands as a pivotal tool in global economic trade and international diplomacy, wielding influence that spans continents from South America to Asia, and deeply impacting key African nations.

As the most spoken language in the Southern Hemisphere, largely due to Brazil's substantial population, Portuguese facilitates a unique cultural and economic bridge that connects diverse regions of the world. This linguistic bond plays a crucial role in fostering economic partnerships, particularly in sectors such as agriculture, mining, and technology.

The shared language enhances communication, simplifies trade negotiations, and strengthens cultural ties, making Portuguese-speaking countries attractive trading partners to each other.

Furthermore, Portuguese serves as an important leverage in international diplomacy, facilitating dialogue and cooperation among countries within the Community of Portuguese Language Countries (CPLP). This linguistic group includes nations spread across four continents, such as Brazil in South America, Angola and Mozambique in Africa, and East Timor in Asia, highlighting the global spread and significance of the Portuguese language.

In China, Portuguese's status as an official language in Macau amplifies its importance, acting as a conduit for Chinese engagement with Portuguese-speaking countries, particularly in investment and cultural exchange.

This unique positioning enhances Portugal's strategic importance and its role in global geopolitics, offering a gateway for nations looking to deepen ties with the Portuguese-speaking world.

The expansive reach of the Portuguese language underscores its capacity to foster economic and diplomatic ties, facilitating access to markets and communities across the globe. From Brazil's booming economy to the strategic importance of African countries in global supply chains and Macau's role as a cultural and economic bridge between the East and the Portuguese-speaking world, the language is a cornerstone of international relations. It embodies a shared heritage that transcends national borders, promoting unity, enhancing mutual understanding, and opening doors to untapped economic and diplomatic opportunities. The significance of the Portuguese language in global affairs highlights the enduring influence of linguistic connections in shaping the world's economic and political landscapes.

Building a Dynamic Ecosystem for Research and Development

Portugal has demonstrated a remarkable commitment to innovation and development (I&D) over the past decades, as illustrated by the increasing I&D expenditure from various sectors.

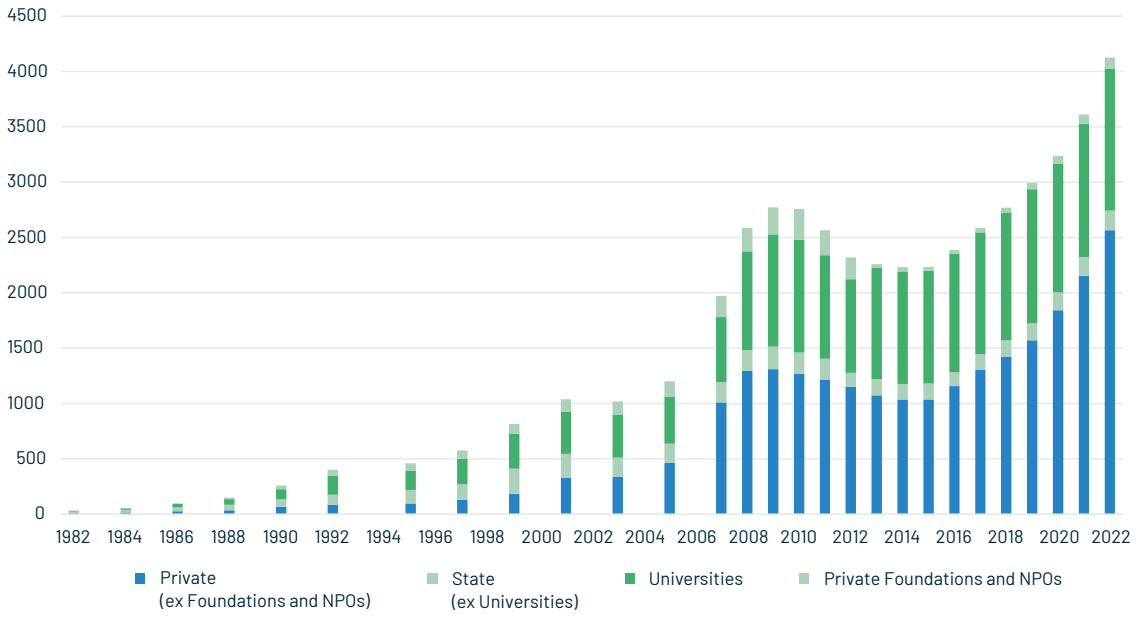
The growth in investment from the private sector, state entities, universities, and private foundations and non-profit organizations (NPOs) underscores the country's strategic focus on fostering an open environment conducive to new ideas and technologies.

In the past decades, Portugal's I&D expenditure has seen a significant upward trajectory. This growth accelerated notably in the 2000s, reflecting a robust increase in funding across all sectors. The private sector has shown a substantial rise in investment, indicating strong industry engagement in innovation activities. The contributions from state entities and universities further highlight the government's and academic institutions' roles in supporting research and development initiatives.

Universities in Portugal have emerged as vigorous centers for innovation, playing a critical role in driving research and fostering collaboration with industry partners. The steady increase in university expenditures for I&D reflects their commitment to advancing knowledge and technology. Additionally, the involvement of private foundations and NPOs has provided an additional boost to the innovation ecosystem, supporting various research projects and initiatives.

Overall, Portugal's strategic investments in I&D have positioned the country as a dynamic hub for innovation. This sustained focus on research and development not only enhances the nation's technological capabilities but also attracts global talent and encourages the growth of new enterprises. By fostering a collaborative and well-funded environment for innovation, Portugal continues to establish itself as a leader in the global scenery of new technologies and scientific advancements.

Figure 4. Investment in Innovation (R&D expenditure) per source (in m€)



Source: Pordata

Investment Opportunities in the Healthcare Industry

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April, 2024

Executive Summary – Health Care Industry:

- **The private sector of the Health Care (HC) industry in Portugal is highly relevant.** The health expenditure share of GDP was 10.6% in 2022, above the OECD average. Private financing was 34.2% of total expenditures in 2022. Most of the HC in Portugal, 58.6% in 2021, is delivered by the private sector.

- **The private health care market structure is very fragmented.** Between 2006 and 2022 the number of firms, turnover, and the number of employees in HC firms have grown. In 2022 the average firm was still quite small, with less than 4 employees and an annual average turnover of 338 thousand euros per firm, 94 thousand euros per employee. Large firms, with a headcount above 250 or a turnover above € 50 million were 0.15% of the firms in 2022 but 34.3% of the turnover and 24.6% of employment.

- **Covid increased the ROE volatility.** The pandemic and the subsequent recovery changed the figures for volatility. For all the HC firms the Return on Equity (ROE) between 2010 - 2022 was 11.3% and the volatility was 3%. Over the same period, for large HC firms, the mean ROE was 18.9% and the volatility was 7.4%.

- **Financing.** Firms in the HC industry rely more on equity than firms in the overall economy (46.5% vs. 38.8%), but large HC firms rely more on financial debt for their funding than the other HC firms (51% vs. 21.3%).

- **The experience of healthcare related firms in Euronext Lisbon.** The firm later named Luz Saúde was a relevant stock first listed in January 2014. Luz Saúde was delisted in 2018. Early in 2023 the parent company Fidelidade made public that it intended to relist Luz Saúde. The media has reported that Fidelidade wants to sell a minority stake, between 30% and 45% of Luz Saúde.

- **The public sector and the case of Public Private Partnerships (PPP).** PPP have been used for construction and equipment of hospitals and as providers of care for the National Health Service (NHS). Since 2010 four hospital PPP were active as HC providers but there is only one PPP active as of 2024. However, construction and equipment PPP are still active, and more are planned for new hospitals. These are large investments and the firms winning the public tenders may use the capital markets for funding.

- **Other Investment Opportunities in Health-Related Areas.** The private HC industry in Portugal is very fragmented. There are potentially large gains from consolidation as it makes it possible to benefit from economies of scale and scope across currently isolated HC units. There is low hanging fruit in achieving efficiency gains stemming from standardization of procedures, centralization of procurement and logistics, and sharing IT infrastructures. Consolidation should also improve returns by easing the creation and development of brand equity.

- **Specific areas for investment.** These very heterogeneous. They include biotechnology startups, units specializing in care for the elderly, medical tourism, and other HC related markets including medical goods retailers and veterinary care.

1 | Background

The future holds plenty of opportunities for investment by private parties in the Portuguese healthcare industry. This chapter of the Report presents and discusses those opportunities.

a) The private sector of the Health Care industry in Portugal is highly relevant.

In many countries Health Care is one of the largest if not the largest industry. In OECD countries the average share of Gross Domestic Product (GDP) spent on current expenditures on health in 2022 was 9.3%, a little down from the Covid-19 peak of 9.7% reached earlier in 2021.

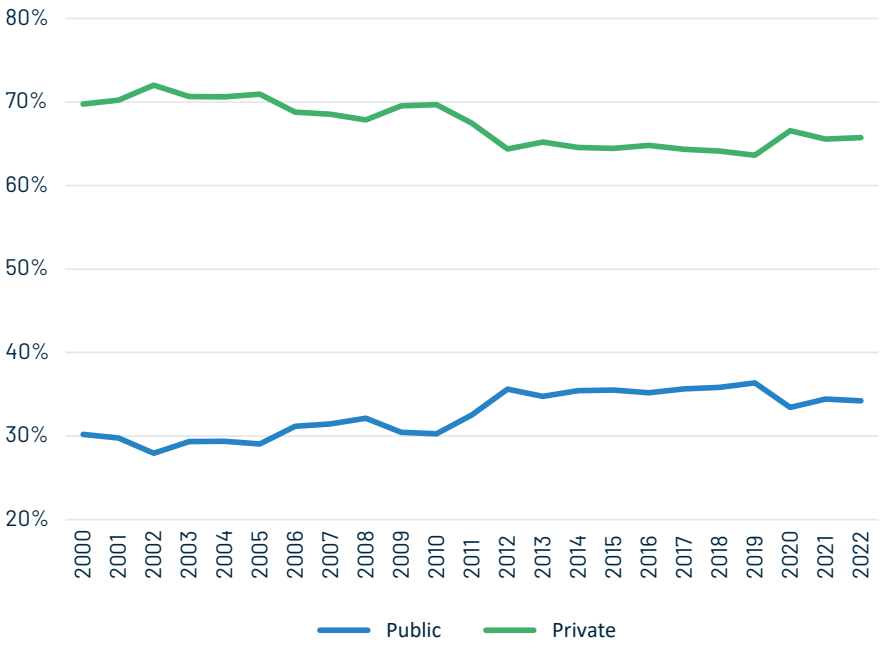
Portugal has figures above the OECD average: the GDP share was 10.6 % for 2022 and it had been 11.1% in 2021.

The health care industry is not only large but also very heterogeneous. To make sense of it, we need to make a distinction between the financing of health care on the one hand and the provision of health care services on the other.

Financing is about the sources of funds that pay for health care. Like most European countries, the most important source of funds paying for health care in Portugal is the public sector. More specifically, the tax and general government revenues fund National Health Service in the mainland and the Regional Health services in the Islands of Madeira and Azores are the most important sources of health care funds. These sources together with other public sector entities were responsible for over 60% of all health care expenditures in Portugal, in 2022.

Figure 5 shows how the percentage of public financing (and the complementary percentage of private financing) has evolved since 2000. The figure shows a trend towards an increasing importance of private financing, interrupted by the Covid-19 pandemic. In 2022, private financing was 34.2% of total expenditures, with 28.6% coming from household out-of-pocket payments and the remainder coming from voluntary health care payment schemes, including employer sponsored schemes (1.6%) and commercial health insurance (3.9%).

Figure 5. Health Care financing in Portugal



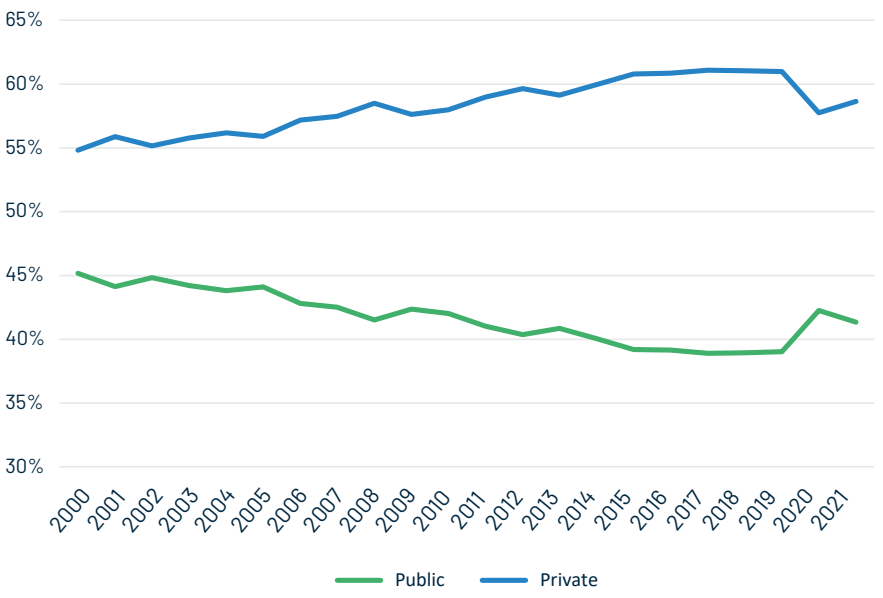
Source: Portugal Health Satellite Accounts

The provision of services has a public-private composition that is quite different from the case of financing. Provision figures measure the health care produced by all entities by the amounts that they are paid. As in the case of financing we can see data showing the division between public and private health care providers. Figure 6 shows the evolution of the public/private split since 2000 and up to 2021, the most recent year with provision data available.

Figure 6 shows that most of the health care in Portugal is delivered by the private sector.

This was already true in 2000, when the private sector provided 54.8% of total health care. The private share has increased to 58.6% in 2021 despite the impact of Covid-19. A fraction of private providers are non-profits, but for-profit businesses have been growing remarkably in the last 20 years.

Figure 6. Health Care Provision in Portugal



Source: Portugal Health Satellite Accounts, National Statistical Institute

The relationship between financing and provision can be clarified by a matrix such as the one in Table 1, that shows how financing and provision are related for the year of 2021: we can see that the public financing has a 65.6% share of total expenditures and that it allocates 40.8% to paying public providers and 24.7% to paying private providers. In contrast, private funding is spent mostly paying private providers.

Table 1. Financing-Provision Matrix for 2021

2021			
Provision / Financing		Public 65.6%	Private 34.4%
Public	41.4%	40.8%	0.5%
Private	58.6%	24.7%	33.9%

Source: Portugal Health Satellite Accounts, National Statistical Institute, and author's calculations

The bottom line is that private providers of health care, financed from both public and private funds, are the largest providers of health care in the country and they have been in that position for a long time.

b) The private health care market structure is very fragmented.

The available data on private health care firms shows an extremely fragmented industry, composed mostly of small firms and displaying low levels of industry concentration.

Banco de Portugal, the Portuguese central bank, makes available some information characterizing the private health care industry, including, among other topics, the number and average size of firms. For the year 2017 we also have estimates for the levels of industrial concentration.

The number of firms in the private health sector is roughly 4 percent of the total number of firms in Portugal and it has been growing, as shown in Table 2. Between 2012 and 2022 the number of health care firms has grown at an annual rate of 4.3 percent, a figure 2 percent above the annual growth rate of firms for all industries in Portugal.

Turnover has been increasing every year since 2006, except for 2020 where the Covid-19 shock lead to a 7.4 percent drop, followed by a strong recovery in 2021 with a turnover growth of 27 percent. Between 2012 and 2022 turnover increased at an annual average rate of 6 percent. The Covid-19 shock had negative consequences for the private health care industry because it generated defensive behavior on the part of the population involving keeping some distance from health care units. This drop in demand was compounded by two types of decisions by public health authorities, the first suspending access to health care unrelated to the pandemic and the second to concentrate all pandemic related health care in public sector hospitals.

Table 2. Private Health Care Firms- Some Statistics

	2006	2022
Number of firms	8 862	19 627
Turnover	2 550 M€	6 627 M€
Employees	34 241	70 216
Average Employees by Firm	3.9	3.6
Average Turnover by Firm	287 745 €	337 647 €
Average Turnover by Employee	74 472 €	94 380 €

M€-million euros. Source : bpstat.bportugal.pt/conteudos/publicacoes/1350.

Table 2 shows that the average firm is quite small, with less than 4 employees. In 2022 the annual average turnover was about 338 thousand euros per firm, and 94 thousand euros per employee. Table 3 shows a few examples that illustrate the small average size of Portuguese health care firms in specific areas. The classification of firms is based on the Portuguese version of NACE, the European Classification of Economics Activities, where human Health Activities correspond to division 86.

Table 3. Some Examples of Private Health Care Segments, 2022

NACE	Description	# Firms	Average Sales (1.000€)
86901	Clinical Analysis Laboratories	263	2 787
86902	Ambulances	103	577
86903	Nursing Activities	443	81
86904	Collection Centers and Organs Banks	9	567

Source: Bank of Portugal and CEA research.

Class sizes for enterprises are defined in the EU recommendation 2003/361 and are based on staff headcount and turnover. Micro firms have staff headcounts of less than 10 and annual turnover less than two million Euros; for small firms the limits are 50 and ten million Euros, respectively. Medium firms have limits of 250 in headcount and 50 million Euros in turnover, with the remainder firms being classified as large.

In 2022, 96.3 percent of firms were classified as micro-enterprises. Small and medium firms represented 3.6 percent of the total number of firms. The number of large firms was only 0.2 percent of the total. Table 4 displays, by size class, the respective shares of the total number of firms, turnover, and employees.

Table 4. Private Health Care Firms: Shares by Size Class, 2022

	Micro enterprises	Small enterprises	Medium enterprises	Large enterprises
Number of firms	96.28%	3.02%	0.55%	0.15%
Turnover	34.25%	13.93%	17.54%	34.28%
Employees	44.75%	14.75%	15.91%	24.58%

Source : bpstat.bportugal.pt/conteudos/publicacoes/1350

The Banco de Portugal data divided firms into three market segments. The market segments considered were outpatient (Medical and Dental Practice Activities, NACE 86.2), inpatient (Hospital Activities, NACE 86.1) and a segment of other human health activities (clinical analysis laboratories, nursing services, etc., NACE 86.9). Table 5 summarizes the data.

Table 5. Private Health Care Firms by Economic Activity Segments

	Hospital Activities	Medical and Dental Practice Activities	Other Human Health Activities	Large enterprises
# of firms	2.13%	94.22%	3.64%	0.15%
Turnover	33.11%	55.21%	11.68%	34.28%
Employees	23.85%	65.53%	10.62%	24.58%

Source : bpstat.bportugal.pt/conteudos/publicacoes/1350

The available data show that the (few) large firms in the health industry can be found mostly in the hospital-based care segment (64% of large firms) with a few in the area of clinical analyses (12.1%). The largest hospital-based enterprises include Group CUF, SA, in addition to Luz Saúde, SA, Group Lusíadas SGPS, SA and Group Trofa Saúde SGSPS, S.A. In the area of clinical analyses, the largest players include Group Joaquim Chaves Saúde, SGPS, S.A., Unilabs and Grupo Germano de Sousa.

A detailed analysis of the 2017 data showed that, by comparison with what was observed in the overall economy, the private health sector had a low concentration of turnover.

While in Portuguese companies in general, the top 10% and 1% of firms generated 88% and 63% of the total turnover, in the case of health care the top 10% and 1% of companies were responsible for 74% and 52% respectively, of the total turnover. In the most concentrated market segment, that of hospital activities, the top 10% and 1% of companies generated 89% and 27% of turnover. The turnover share for the top 10% is almost equal to that of all companies in general in the country, and that of the top 1% is much lower, showing that the private health industry is less concentrated than most areas of economic activity in Portugal.

The role of exports in the private health care sector is still quite small. In 2022 only 0.73% of the turnover came from exports, with hospital firms exporting 0.61%, ambulatory firms 0.75% and other activities exporting 1.01%.

c) Profitability and the funding of health care firms

The data available includes estimates of the Return on Equity (ROE). In the years prior to the pandemic, up to 2019, the ROE was relatively stable. For all the firms in the database, between 2010 and 2019 the mean ROE was 10.9% with a volatility (standard deviation of the annual time-series) of 2.6%. Large firms had a larger ROE (19%) but experienced larger volatility (6.8%).

The Covid-19 pandemic and the subsequent recovery changed the figures for volatility. For all the firms the ROE between 2010 - 2022 was 11.3% and the volatility was 3%. Over the same period, for large firms, the mean ROE was 18.9% and the volatility was 7.4%.

One can also examine the ROE according to market segment. Between 2010 and 2019 the mean ROE (volatilities) were 7.3% (9.2%) for hospitals, 12.3% (1.8%) for ambulatory firms and 9.6% (3.9%) for other human health activities. Including the pandemic years 2020 - 2022, we have that from 2010 through 2022 the mean ROE was 5.4% (10.2%) for hospitals, 12.3% (1.9%) for ambulatory firms and 11.6% (5.7%) for other activities.

Table 6. Equity and Financial Debt in the Health Care Industry, 2022

(values in % of Total Assets)	Equity	Financial Debt
All firms, all industries	40.1	29.4
All firms in Health Care	48.8	29.0
Large Firms, Health Care	25.4	51.0
Micro, Small and Medium Firms in Health Care	56.9	21.3

Source: https://www.bportugal.pt/QS/qsweb/Dashboards.

Health Care is division 86 in NACE

As for the sources of funding, a broad perspective on the role of equity can be gleaned from Table 6. It shows that firms in the health care industry rely more on equity than firms in the overall economy (48.8% vs. 40.1%), but also that large health care firms rely more on financial debt for their funding than other firms (50.9% vs. 21.3%).

A recent study by Banco de Portugal research department estimated that Portuguese firms in general have higher leverage ratios (ratios of debt to assets) than European firms. However, using data from firms in five Euro Area countries (Belgium, Slovakia, Spain, France and Italy) the study estimated a model for the target levels of leverage taking into account the characteristics of the firms and the countries. The results show that Portuguese firms are on the target levels of leverage on average, although there is a lot of heterogeneity by firm size and by industry. According to the study, for the Portuguese health care industry the leverage gap is 4.9%, meaning the level of leverage is higher than the model defined target. The leverage gap differs across firm size: it is 5.4% for micro firms, 0.4% for small firms, 4.7% for medium firms and 17% for large firms.

These results suggest that the health care industry, particularly large firms, may need to move in the direction of more equity replacing debt.

Digging deeper into financial debt, Table 7 displays information on the sources of financial debt.

Table 7. Sources of Funds in the Health Care Industry

(Values % of Total Financial Debt)	Bank Loans	Group Loans*	Other Loans	Debt Securities
All firms, all industries	40.3	41.1	5.5	13.2
All firms in Health Care	59.4	36.5	4.0	0.2
Large Firms, Health Care	56.9	40.6	2.3	0.2
Micro, Small and Medium Firms in Health Care	61.5	33.0	5.4	0.2

Source: https://www.bportugal.pt/QS/qsweb/Dashboards. *Financing by firms in the group.

The health care industry firms use bank loans more intensely than firms in the overall economy but use Group Loans less intensely. The largest contrast is in the use of debt securities, which are almost nonexistent in the health care industry. This may indicate some barriers are present, such as a heavy tax burden on foreign investors, the fact that many firms are too small or even that large firms, the potential issuers, have low ratings.

Nevertheless, given the current modest starting point, even minor policy changes and renewed interest from investors could create significant opportunities for debt securities to expand their role.

d) The case of Health Insurance

A few additional market segments are close to health care and deserve attention.

The most important examples include pharmaceutical production and distribution (both retail and wholesale) and the production and distribution of optical and orthopedic goods.

There are other economic activities closely associated with health care for a variety of reasons such as Residential Nursing Care, or a little further away from health as in the case of Residential Care for the Elderly and Disabled. Other activities in the vicinity of the health care industry that might be relevant include such disparate segments as Veterinary Activities, Research and Development on Biotechnology, and last but certainly not least, Health Insurance.

According to the information available from the recently available Observatory of Health Insurance , put together by the regulatory agency for insurance and pension funds [ASF], in 2022, health insurance in Portugal covered about 3.7 million people, roughly 36 per cent of the population. Despite this level of coverage, voluntary health insurance finances only 3.9 per cent of the total current expenditures on health care in Portugal, or about 11.3 per cent of the total private expenditure. Gross revenue from insurance premia in 2022 was 1.2 billion Euros leading to an average insurance premium per person insured of only 323 Euros.

Regarding insurance types, in 2022, the percentage of people insured covered by individual insurance was 46.9, with the remaining 53.1 percent covered by group health insurance, this last type of insurance mostly provided as fringe benefits by employers.

The residents in Portugal covered by private health insurance keep entirely their rights to use the National Health Service and have no compensation for using health care privately financed. There are however some Corporate Income Tax benefits related to insurance premium payments that may be claimed by employers,

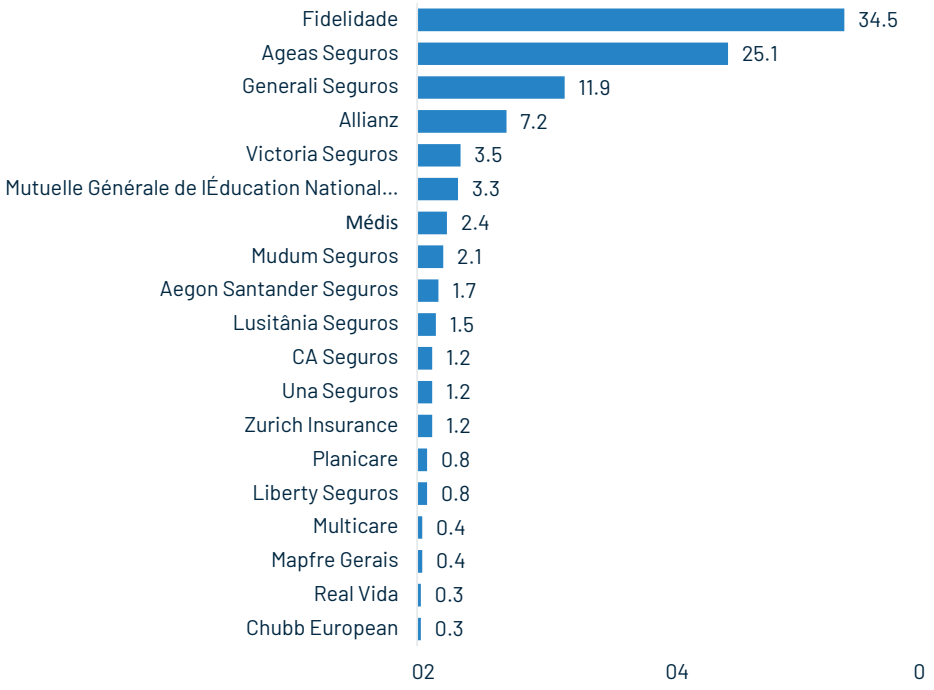
and some Individual Income Tax benefits that may be claimed by individual policy holders.

In the Portuguese insurance market, health insurance is not provided by insurance companies specialized solely on health but by general insurance companies.

The health insurance market is relatively concentrated, as an examination of Figure 7 can attest. The top 5 firms had a market share of 82 percent in 2022, and the top 10 firms had a market share of 93 percent. The majority of the market corresponds to firms that are foreign owned.

For example, in 2022 the top 3 firms in health insurance in Portugal were Fidelidade (market share 34.5 percent), owned by Fosun, headquartered in Shanghai; Ageas Seguros (25.1 percent), owned by Ageas, headquartered in Brussels; and Generali Seguros (11.9 percent), owned by Assicurazioni Generali S.p.A, headquartered in Trieste, Italy. This market composition also helps explaining why, for the time being, there have been no insurance firms in Euronext Lisbon, since the largest insurance companies' operation in Portugal are either subsidiaries or branches of foreign headquartered firms.

Figure 7. Portuguese Health Insurance Market Shares in 2022 (%)



Source: Observatório dos Seguros de Saúde

Based on the description provided, it is clear that relying on capital markets for financial investments has not yet been seen as a path for the health insurance industry financial investments.

However, the international links of the main insurers in the Portuguese market may facilitate the creation of partnerships with new international investments in the health care area.

e) Conclusions

Upon reviewing the available statistical information, it becomes apparent that the healthcare private sector exhibits considerable fragmentation, which suggests significant potential for gains and substantial opportunities for growth through consolidation.

The financing landscape for firms in the healthcare industry has been relying predominantly on banking credit, with minimal utilization of debt market instruments, even among the few large enterprises in the industry.

This presents a significant opportunity for growth and development in this area.

2 The experience of healthcare related firms in Euronext Lisbon

Health care or health care related enterprises have had a presence in Euronext Lisbon in the last 15 years, although of modest scale and varying consistency.

In the last 10 years, there was a relevant stock beginning in Euronext Lisbon which later delisted from the stock exchange.

At the time of its Initial Public Offering, in January 2014, it was named Espírito Santo Saúde SGPS, SA., being a part of the Espírito Santo financial group. In the aftermath of the end of the Espírito Santo financial group, the firm changed its name to Luz Saúde, S.A.. The stock was delisted in November 2018, a decision by its new parent company "Companhia de Seguros Fidelidade". At the time of delisting its market cap was € 535 million. Early in 2023 Luz Saúde has made public that it intends to go back to the stock market, a topic that will be approached in the next section.

3 Investment in hospitals

a) The public sector and the case for Public Private Partnerships

After a couple of earlier experiments, since 2010, the creation of new hospitals by the National Health Service took the form of Public Private Partnerships (PPP) on four occasions, where private agents invested and managed the operations according to specifications by and performance contracts with the public sector.

The PPP had two separate components. The first component included all the contractual arrangements having to do with buildings and infrastructures. The second type of PPP component included clinical activities and the operational management of hospitals.

Of the four clinical PPP that were active in 2018, after a change in the government's policy orientation, only one remained as of December 2023.

It is not clear if there is going to be another change in government policy in the near future reversing past decisions and relaunching clinical PPP, so it is possible that clinical PPP might be back.

However, in any case, construction and infrastructure PPP were never questioned as a matter of policy, and they are still live both for the four hospitals covered as for investment in new hospitals. The major investment currently under way is the new "Hospital de Lisboa Oriental", announced to begin operating in 2027. A consortium led by Mota-Engil has won the bid for the PPP: Mota-Engil is a listed company and actively traded in Euronext Lisbon.

The new hospital will have 875 beds and will replace most of the care provided by six old and obsolete hospitals in Lisbon, currently aggregated in the "Centro Hospitalar Universitário de Lisboa Central (CHULC)". The investment will partially be financed by the private resources of the winning consortium, but it is large enough to create opportunities for financial markets to participate since the consortium members might find it advantageous to issue equity and/or debt.

Other NHS hospitals are planned. The "Hospital Central do Alentejo" in Évora will have 351 beds but the investment is planned to be financed from public money, including European funds. There are no plans for the use of financial markets for the financing of some smaller "proximity hospitals" such as the new one in Sintra or the planned one for Seixal. However, other investments may be large enough for the use of financial markets to make sense. In July 2023 the Government announced a new hospital for the West region, to be located at Bombarral, about 72 km north of Lisbon. The new hospital will replace three old regional hospitals aggregated in the "Centro Hospitalar do Oeste" and will offer 480 beds. The financial details are not yet known but in 2023 the former Government mentioned that using a building PPP was a possibility under study. If that possibility comes to fruition, mos certainly there will be room for financial markets to play a role in the financing of the new hospital.

b) The IPO of Luz Saúde

As mentioned before, the participation of healthcare related companies in Euronext Lisbon has been modest. Notwithstanding, a major event is in the works as Luz Saúde, S.A. announced to be preparing an IPO to come back to Euronext Lisbon stock's listing. Luz Saúde has 28 hospitals and clinics, employs about 14 thousand staff and has annual revenues of € 600 million. The company is owned by the insurance company Fidelidade - Companhia de Seguros, S.A (Fidelidade) which in turn is mostly owned by the Fosun International Holdings Ltd (Fosun), a company headquartered in Shanghai and incorporated in Hong Kong.

Fidelidade has made public the intention to relist Luz Saúde, S.A. apparently because that corresponds to strategic changes in the management of Fosun. According to some news in the international press, Fosun wants to repatriate capital to the PRC and selling a stake in Luz Saúde is part of the way to achieve that goal.

Fidelidade indicated that it wants to sell a minority stake, between 30% and 45% of Luz Saúde cashing in € 300 million or more, doubling the amount reached in the 2014 first IPO. If it goes ahead the announced IPO will be the largest in Euronext Lisbon in the last 10 years and could place a value on Luz Saúde above a billion Euros.

4 Other Investment Opportunities in Health-Related Areas

a) General Considerations

As the Report has shown in its initial sections, the private health care market in Portugal is very fragmented. This means there are potentially very large gains from consolidation (and organic growth) that can arise in health care provision and in the areas associated with it.

There are multiple reasons for the consolidation gains.

To begin with, there are widespread economies of scale available when the starting case features such a large percentage of micro sized firms. Consolidation also makes it possible to enjoy economies of scope across currently isolated health care units. There is plenty of low hanging fruit in achieving efficiency gains stemming from standardization of procedures, centralization of procurement and logistics and taking advantage of common IT infrastructures. Moreover, another area where consolidation should provide ample rewards is the creation and development of brand equity.

Consolidation is already happening in some cases. Some of the largest private health care players have been buying smaller firms and expanding their network of hospitals. A few recent examples follow.

Lusíadas announced expansions in 2024 into the northern cities of Paços de Ferreira and Santa Maria da Feira, and Vilamoura, in the South, as well as the acquisition of Hospital Monsanto in the Greater Lisbon area.

Cuf, the largest private group, has recently announced an expansion to the city of Covilhã and the acquisition of the northern private group "Arrifana de Sousa".

The consolidation trend is also being pursued by other entities. One example is the private equity fund Atena Equity Partners: Atena´s self describes as a fund that "invests in Portuguese (...) companies facing succession or restructuring challenges". Atena has acquired the Malo Clinic, a dental care network, the Hospital Privado de Almada, an outpatient facility near Lisbon, and the Hospital Soerad, located in Torres Vedras.

Another domain experiencing consolidation is the area of Clinical Analysis. The largest firms, the Grupo Germano de Sousa, Unilabs and the group Joaquim Chaves Saúde have been buying local labs and they have been expanding for some years. Soon, it could be that they may try to expand internationally.

The above-mentioned acquisitions and expansions were carried without explicit use of markets for debt or equity, but it is reasonable to assume that a lot more consolidation will take place in the future and that, sooner or later, there will be a need for outside financing for the acquisitions and expansions taking place.

b) Investing in Biotechnology

The number and depth of biotech startups in Portugal has been increasing up to a point that in 2022 the bank for public sector development, Banco Português de Fomento created an investment fund specialized in biotech startups, in partnership with the European Investment Fund. The Biovance Capital Fund I has plans to invest 60 million Euro in 12 biotech firms working to generate innovative medicines. Some of these firms will likely succeed and that means there is a chance that in a not-so-distant future these companies could undertake an initial public offering (IPO).

c) Elderly Care

Some of the most important demographic and social trends in Portugal are very clear, and none other more so than the aging of its population. According to the Eurostat population projections, in 2022 the share of the population 65 years of age or older was 23.7 percent, a number only below the percentage for Italy (23.8) and well above the European Union average of 21.1 percent. Up to 2040 these percentages will grow to 30.9, 32.1 and 27 percent for Portugal, Italy and the European Union, respectively. Moreover, if we focus our attention on the share of the population 80 and over, this age group, in Portugal, is expected to increase from 6.9 percent in 2022 to 10.5 percent in 2040, the largest in the European Union for that year.

The accelerated aging in Portugal is occurring at the same time of other important trends. There has been a secular increase in female labor force participation, household sizes have been shrinking, with a substantiative fall in the average number of children, and there has been a generational growth of disposable income of the elderly. There may also be a trend for improved healthy life expectancy that will keep the elderly able to live autonomously for longer, but the other changes are so massive that the net result will be a large increase in the demand for senior care including retirement homes and assisted living.

One should expect that the public sector and/or non-profit institutions largely supported by the public sector will be the major providers of care to the elderly, but history has shown that demand always outstrips supply in this area. Additionally, the quality of the care provided may not meet the expectations of well to do seniors, leading to a projection that there will be a large demand for private senior care. The two largest private healthcare groups in Portugal have invested in residences for seniors, the José de Mello Residências and the Luz Saúde Casas da Cidade Residências Sénior.

Another interesting example of private investing in this market is the Portugal Senior Health Care (PSHC) fund. The fund has invested in seven senior residences in Cascais, Sintra, Amares, Fátima and Barcelos and is opening two new residences in Coimbra and Marinha Grande. PSHC investments involve its own capital but also a major contribution from the Fund of Capitalization and Resilience from the public sector development Banco Português de Fomento, an instrument for disbursing some of the financing in the Portugal's Recovery and Resilience Plan [PRR].

Despite these cases not using outside private capital, the levels of demand projected for senior residences and assisted living centers are large enough to justify numerous and sizeable private investments and the entry of new players, namely if specialized in this market; hence, there will likely be a need for investment funding that can be sourced from financial markets.

d) Internationalization and medical tourism

Since a joint report by the Economy and Health ministries was published in 2014, medical tourism has officially been considered an area with large development potential in Portugal, as the country has the human and technical resources to be a medical tourism destination.

However, despite some efforts, medical tourism has not taken off. The Covid 19 pandemic has not helped but there may exist other barriers to the expansion of medical tourism. One possibility is that the Portuguese cost advantage may not be as significant as expected.

In any case, there may be plenty of room for expansion if the right market niches are chosen and the strategy followed to recruit patients is an appropriate one.

A 2019 analysis by Ferreira and Castro agrees that "Portugal presents the necessary conditions to be a destination of medical tourism", due to its infrastructure and human resources. Nonetheless, the paper continues, "currently few people know this country for the practice of medical treatments. Although medical tourism is in the introductory phase of the market (...) it is still necessary to position itself in the international market. It will be necessary to create an image of Portugal associated with tourism linked to health care, creating branding and slogans".

Some steps in this direction have been taken: the association of health care institutions Health Cluster Portugal, in collaboration with Turismo de Portugal, the Portuguese Agency for Investment and Foreign Trade (AICEP), and the Portuguese Association of Private Hospitalization (APHP), has created a portal that aims to facilitate medical tourism. The stated aim is to reach 100 million euros annually by 2025. If this and other efforts promoting medical tourism in Portugal are successful, there will be a need for capital, leading to the emergence of new investment opportunities.

e) Health Care related retail markets

One other area where there is currently an excessive fragmentation of the market is in the medical goods retail sector, namely for Optics, Audiology and Orthopedic goods.

We can already notice a trend towards consolidation in these markets, with the penetration and creation of chains taking advantage of scale economies and brand recognition. The most successful of these chains could grow to be large corporations, possibly with presence across multiple countries, and, as in the aforementioned examples, they will require capital.

f) Investing in Veterinarian Care

The "One Health" concept approaches health in a comprehensive way, recognizing the interconnection between human, animal, and environmental health.

An important fact to keep in mind is that the World Health Organization (WHO) estimates that 60% of infectious diseases have animal origins.

The One Health approach has become more important in recent years, and it was reinforced by the concerns of interspecies disease transmission as a possible Covid 19 origin. There are additional reasons to pay attention to veterinary care: in the US, pet ownership as a percentage of households has increased from 56 percent in 1988 to 66 percent in 2023, according to the American Pet Products Association, cited by Forbes . In Europe, according to the European Pet Food Industry association about 46 percent of all households own a pet. In the case of Portugal the same data source indicates that 39 percent of households own a dog and 33 percent own a cat.

The data previously mentioned suggests that there is a large and increasing demand for veterinary services. As in the health care and associated areas, the market for veterinary centers catering to households used to be very fragmented. This has been changing, with the advent and increased market penetration of large veterinary care groups. They are consolidating the industry by acquiring or otherwise integrating traditional standalone veterinary centers. Their growth requires capital and financial markets can be a prime source of that capital.

Investment Opportunities in the Energy Industry

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Executive Summary – Energy Industry

- In 2022, Portugal's primary energy consumption was 21,315 ktoe, **with 64% coming from fossil fuels and 33% from renewable sources.** The country has eliminated coal for power generation and has no nuclear power plants.
- A significant milestone was achieved in 2023, with **renewable energy sources accounting for a record 70.7% of the country's power generation.**
- Portugal's external primary energy dependence decreased to 71.3% in 2022, down from 79.4% in 2001, indicating **an improvement in energy self-sufficiency.**
- Final energy consumption in 2022 was 16,521 ktoe, showing a **reduction due to improvements in industrial efficiency and changes in sectoral energy use.**
- Since 1995, Portugal's energy market has undergone significant changes, including the unbundling of vertically integrated operators and the **promotion of liberalization and privatization to foster competition.** The oil market saw new entrants that enhanced consumer offerings, and the sector now operates in a **competitive market without state-controlled companies.**
- **The energy sector is regulated by ERSE and DGEG to ensure fair competition and sustainability.** Major players in the market include EDP Group in the power sector and Galp in the oil and gas sector. Numerous private companies are involved in electricity generation, distribution, and industrial production, with service providers mainly consisting of small and micro companies.
- **Portugal's Energy Transition Plan (PNEC) 2030 aims to enhance energy security and sustainability.** The plan targets a 50-55% reduction in greenhouse gas emissions from 2005 levels, a 35% improvement in energy efficiency, and 47-49% incorporation of renewable energy by 2030.
- Key focus areas of the plan include increasing **cross-border energy interconnections**, expanding **underground storage capacity**, and developing a green hydrogen strategy.
- **Investment opportunities** identified to support Portugal's energy transition include offshore wind auctions, new LNG storage facilities, additional gas pipeline connections with Spain, and the development of electric vehicle charging infrastructure.

I | ENERGY SYSTEM: Main Insights

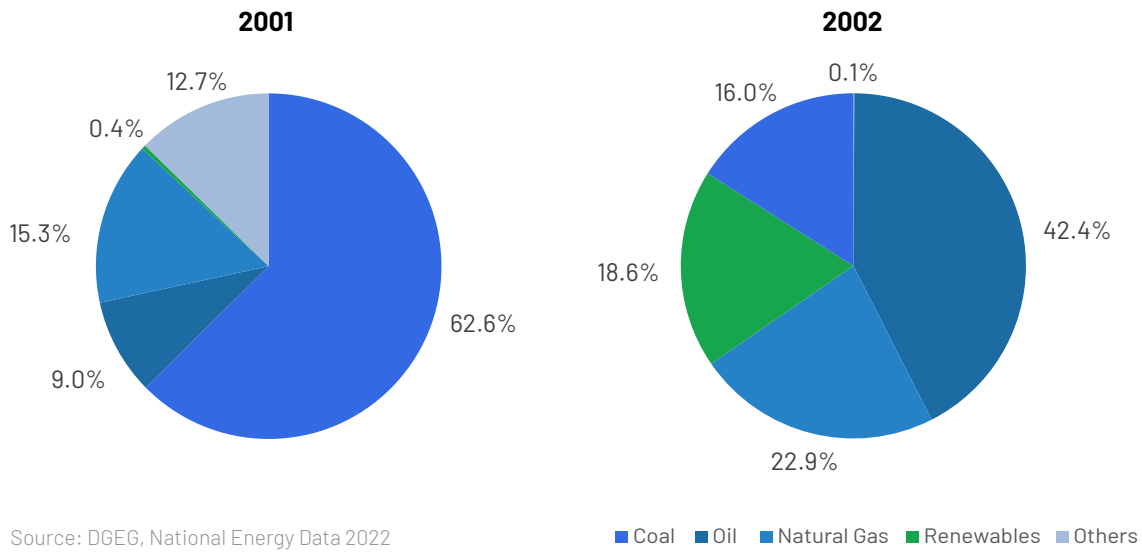
I.1.A Energy Balance

Portugal has made significant commitments under major international legal frameworks by the European Union (EU), the International Energy Agency (IEA), and the United Nations (UN) to address energy markets challenges and promote sustainable development. Since 1995, the evolution of energy market design has responded to the goal of unbundling traditionally vertically integrated business operators, namely in electricity and natural gas, with liberalization and privatization inducing open and free competition and attracting new actors to the market.

In the oil market, traditionally open to competition, but with a major national vertically integrated operator, several new agents have entered the market, introducing new dynamics and offerings to consumers. Also, a sectorial independent regulatory authority was set up, specifically, ensuring transparency in the setting of tariffs and in the access to network usage, as well as increasing consumers protection. These sub-sectorial market structures shall be briefly detailed in the following sub-chapters.

The energy system has also experienced several changes in recent years, with a focus on sustainability, diversifying energy sources, enhancing accessibility to energy and improving efficiency for end-users. According to the latest consolidated available data (2021) some key figures of the national Energy Balance, comparing with 2001, are referred below. The country has made remarkable progress in increasing the share of renewable energy sources in its energy mix. The level of primary energy consumption by source in Portugal is as follows:

Figure 8. Energy Sources

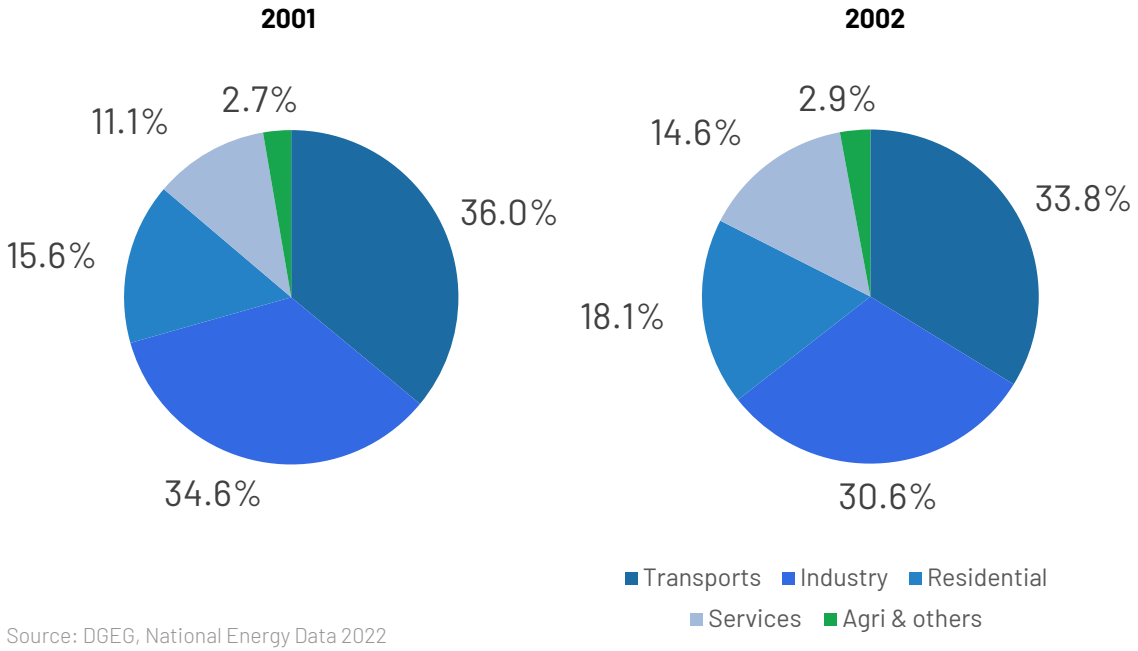


Source: DGEG, National Energy Data 2022

Portugal does not have any operating nuclear power plants. Therefore, nuclear power makes up a negligible portion of the country's primary energy consumption, just originated by random electricity imports.

Final energy consumption refers to the energy consumed by end-users, including households, industries, transportation, and services, in total of 16.521 ktep, reflecting an annual average decrease of 0,7% during the last two decades, mainly due to the impact of oil products consumption reduction. Thus, the breakdown of final energy consumption by sectorial end-use in Portugal can be summarized as follows:

Figure 9. Energy Usage



Source: DGEG, National Energy Data 2022

Buildings, aggregating Residential and Services, show, in 2022 compared with the reference year 2001, a growth around 8,2% of energy consumption – strongly supported by electricity consumption — reflecting the impact of expansion on energy accessibility, the rise in household appliance usage for comfort and service automation, but also the deficiency in passive thermal efficiency within buildings.

Final energy consumption per capita show that from the reference year (2001) to 2022, there has been a predominant decrease in both primary energy and final user consumption. However, there has been a noticeable upward trend in the incorporation of electricity in final consumption since 2015. Comparing to EU countries Portugal is in the top 5 of smaller energy consumption per capita.

Finally, in what regards Strategic Hydrocarbons Reserves, Portugal, being a EU member state and a IEA - International Energy Agency member country is required to maintain strategic Oil (90 days) and Natural Gas (20 days) reserves. These reserves serve as a safeguard for emergencies or disruptions in oil or natural gas supplies and are associated with average consumption levels over certain days.

The oversight and management of these strategic reserves falls under the responsibility of Entidade Nacional para o Sistema Energético, SA (ENSE), a state-owned entity, and their activation, when necessary, is contingent upon government directives.

Moreover, under emergencies or disruptions, the Comissão do Planeamento Energético de Emergência (CPEE), part of the National Emergency Protection System, formulates the plans and measures, for energy consumption priorities, which are to be implemented through Government Orders .

I.1.B Relevant Business Data

The Portuguese energy sector is characterized by being an open and competitive market, without state owned companies, with efficient economic regulation, as described ahead, and several international sectorial major players, namely Acciona, BP, CEPSA, ENI/ENDESA, IBERDROLA, REPSOL.

EDP Group (Energias de Portugal) is a major player in the power segment and Galp (Galpenergia) is the major actor in the Oil & Gas segment.

Several other private companies operate in different segments of the energy sector, such as electricity generation, distribution, commercialization, as well as within the industrial production of heavy equipment's (e.g., EFACEC, Cabelte) and diversified devices.

Services providers including those involved in installation, maintenance, and inspection, predominantly consist of small and micro companies, although some companies have already expanded their presence into international markets – the likes of DST, Painhas, ProCme, Visabeira, among others.

The economic core data and financial indicators presented below offer an overview of the current state of the energy industry.

In terms of financing sources, major companies in the energy sector typically secure funds through a combination of

Table 8: Economic and Financial main indicators on the Energy Industry

	Enterprises (No.)	Employees (No.)	Turnover (M€)	GVA (M€)	GFCF (M€)
2018	4365	13462	22878	3911	1298
2019	4501	13357	21379	4091	1387
2020	4890	13852	19314	4114	1699
2021	4705	13857	23065	3695	1718
2022	6223	15882	36449	4163	1873

Source: GCFC/Ministry of Economy and Sea

	RoE (%)	Asset Turnover (No./times)	Financial Leverage (No./times)
2018	-	-	-
2019	8,4	0,3	2,9
2020	6,6	0,3	2,6
2021	6,4	0,3	2,9
2022	7,5	0,5	2,9

Source: GCFC/Ministry of Economy and Sea

Financing *	
Debt Capital Markets	Banks
70% to 80%	20% to 30%

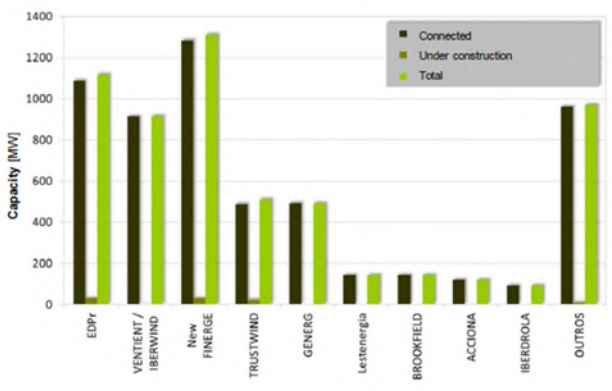
Source: Authors' research

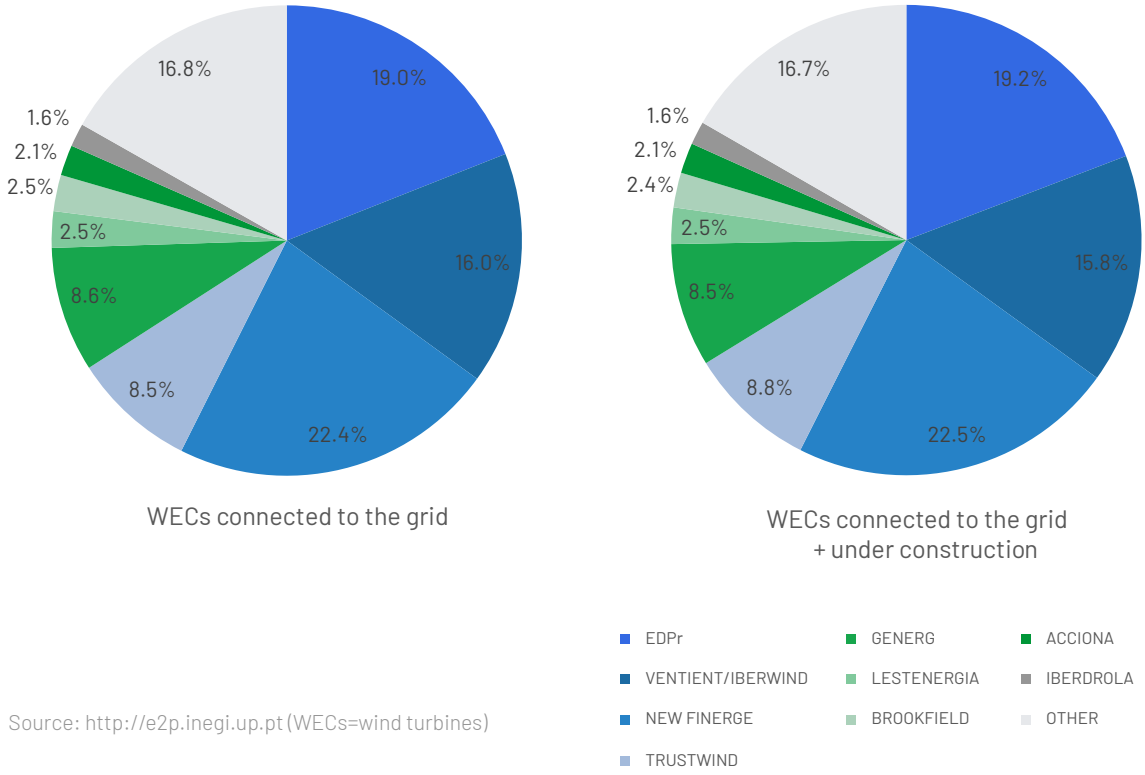
* Major companies as reference. Renewable investment in generation mostly based on project finance.

debt capital markets, bank loans, and grants. Renewable energy projects, in particular, often leverage government grants and incentives, while project finance mechanisms are commonly used for funding. Additionally, ESG bonds are increasingly adopted by various players as well and, since 2018, there has been a notable increase in the issuance of green bonds to finance investments in clean technologies related to energy transition: EDP Group, Greenvolt, Altri/BioElectrica do Mondego, or REN, being excellent examples of successful implementation.

In an effort to offer insight into market players aligned with the primary trends for current Energy Transition priorities – Wind and Solar generation – the following figures provide information regarding the key players in the Portuguese market.

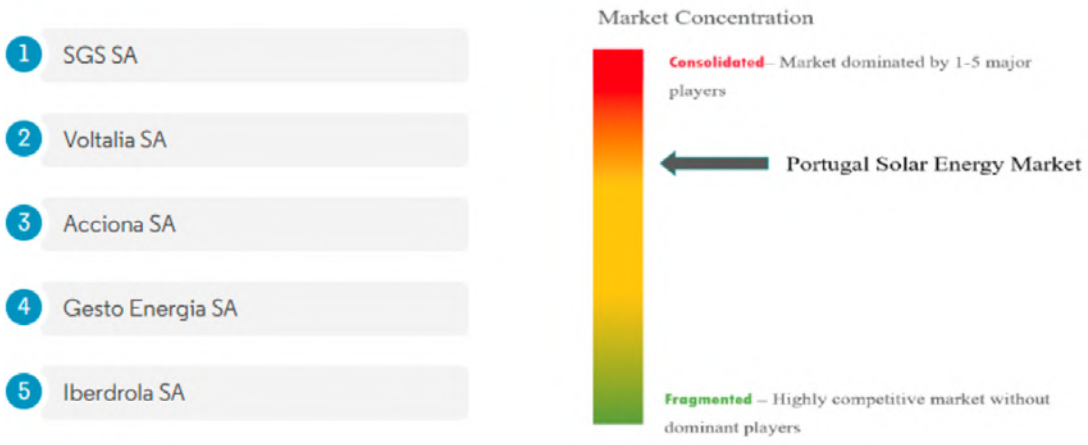
Figure 10: Renewables (Wind) Main Promoters





Source: http://e2p.inegi.up.pt (WECs=wind turbines)

Figure 11. Portugal Solar Energy Market (non-exhaustive)



Source: https://www.mordorintelligence.com/pt/industry-reports/portugal-solar-energy-market

On the success of energy sector and its operators, several noteworthy points should be mentioned.

The country ranks in the top 10 worldwide for renewables incorporation for power generation (2022) according to ENERDATA. EDP Group holds a position in the Top 5 of World Renewables generation 'club'. In 2023 Portugal achieved a national record for incorporating renewable sources into power generation, reaching 70,7 %. The national energy mix has been free from coal for power generation since 2022.

I.2 Electricity Market

The Portuguese electricity market has undergone significant changes in the last two decades, to promote competition, by enhancing efficiency and service quality, ensuring transparency in tariffs, prioritizing client-driven initiatives, and integrating renewable energy sources.

The national electricity market complies with the EU legal framework, namely the 'Internal Energy Market' packages, Portugal being a pioneer, back in the nineties of last century, regarding the unbundling of a vertically integrated national operator (EDP), considering its first round of privatization as well as the setup of a Regulatory Authority (ERSE) — currently covering the energy sector — as well as strongly reinforcing different renewable energy sources (wind, mi-hydro, biomass and solar), besides the traditionally large hydropower plants, for power production.

Table 9: Energy Market Structure (Electricity and Natural Gas)

	Generation/ Aquisition	Trasmission	Distribution	Retail Supply
ELECTRICITY	**ORDINARY REGIME** ▪ Thermal ▪ Hydro ▪ Renewables +CHP, including ▪ Feed in tariffs(legal incentives) / Actions or tenders wCith fixed prices ▪ MIBEL- Electricity Iberian Market	National Grid for Very High Voltage(National Public Service Concession) *Include Global Management of National Electrical System*	National Grid for High & Medium Voltage (National Public Service Concession) Grids for Low Voltage (Municipal Concessions)	REGULATED tariffs Retail Companies (Last Resort trader) Non REGULATED tariffs Retail Companies (including aggregators traders) Energy Communities Office for consumers change of Retail supplier (OLMC)
NATURAL GAS	Import Suply Contrats (PPA'S) SPOT MIBGAS, Iberian Gas Market Byogases (local production) *experimental and progrssive regime* *Hydrogen is expected to be include accoding to recent public policy option*	High Pressure NETWORK (National Public Service Concession) LNG TERMINAL (Public Service Concession) Underground STORAGE (Public Service Concession) *Security of Supply obligations* *Underground STORAGE (Commercial Service)*	Medium & Low Pressure NETWORK (National Public Service Concession) Local Regasefication Units (Administrative Licensing)	REGULATED tariffs Retail companies (Last Resort Trader) Non REGULATED tariffs Retail Companies Office for consumers change of Retail supplier (OLMC)

MIBEL	MIBGAS
▪ Regional Power Exchange for SPOT & FORWARD markets ▪ Acess to other EU regional markets ▪ Owned , in a voluntary basis, by regional market players aggregated under OMEL and OMIP companies.	▪ Regional Exchange for SPOT operations ▪ Yet, non finantial derivatives beyond 1 month ahead are available ▪ Owned, indirectly by market players (trough OMEL and OMIP) and several finantial companies

Source: Authors

The growth of renewable generation since the turn of the century has been remarkable. The market structure is characterized by a multitude of small companies, owning one or two Parks, which collectively represent approximately 40% of the installed capacity. Additionally, there are larger nationally based companies (e.g., EDP-Renewables, Greenvolt, Finerge) and several other international operators, predominantly mostly Iberian-based.

The power generation installed capacity rounds 22 GW, from which: 34% Large Hydro; 30% Thermal (natural gas); 26% Wind; 1% Solar, with a last peak power capacity demand around 9,7 GW.

The total electricity consumption in the market, with a peak power capacity demand of approximately 9,4 kMW, reached around 50,4TWh (4185ktep) in 2022, compared to 49,1Twh(4162ktep) in the reference year of 2011. The variation could be attributed to improvements in end-use efficiency and the recent economic slowdown caused by COVID-19. It is also important to note the decommissioning of oil and coal power plants since 2022, in alignment with the joint energy and climate goals set forth over the past decade.

The Electricity market structure concept, based on liberalized access, competition, innovation and a client-friendly approach, consists of four main segments: generation, transmission, distribution, and commercialization, including wholesale and retail. The wholesale market handles the trading of electricity between generators and suppliers, while the retail market focuses on selling electricity to end consumers.

To ensure competition and security of supply to consumers (clients) Transmission (including System Management) and Distribution agents, although privately owned, operate under public concessions contracts, and are fully regulated.

Institutionally, a Sectorial Regulatory Authority (ERSE) ensures ex-ante economic regulation and consumer protection rights proactively, while DGEG handles technical regulatory matters and serves as a 'one stop shop' for permits and other licensing procedures. (see I.5).

Significant progress has been made in diversifying power generation sources, with a strong focus on renewable energy, namely:

Wind Power has a substantial installed capacity for power generation, 5,6GW, and the Government (PNEC 2030) targets for 2030 are 12,4 GW from which 3,5GW from offshore plants (recently replacing the initial 2,0GW).

Solar Power has been growing rapidly in the country, benefiting from ample sunlight (on average h/year,) which makes it an ideal location for solar power installations. Government target (PNEC 2030) is 20,4 GW in 2030, from the existing 1,4 GW.

Biomass plants use organic matter, such as wood pellets, forest, agricultural/livestock waste, and biogas, to generate electricity. They play a smaller but still significant role in the Portuguese energy mix, around 800 MW installed, and expected to grow to 1,4 GMW according to PNEC 2030 forecast.

Providing a characterization of major Agents and its role in the National Electricity System would be beneficial, particularly because they will inevitably be key players, alongside public authorities, in the implementation and operability of various projects associated with investment opportunities (refer to chapter III for more details):

Transmission System Operator (TSO): REN - Redes Energéticas Nacionais is responsible for managing and operating the high-voltage transmission grid. This responsibility encompasses system management, ensuring the balance between supply and demand, and maintaining system stability and security. Additionally, the TSO is responsible for allocating connecting capacity and determining injection points locations for new generation facilities.

Distribution System Operators (DSOs): DSOs are responsible for managing and operating the High, Medium and Low-voltage electricity distribution networks. The DSO is also responsible for introducing smart solutions for metering and for allowing micro/mini power generation units (up to 1MW) to connect to the grid. The national DSO is EDP Distribuição, now E-Redes, through national public concession contracts for High and Medium voltage grid levels, and municipal public concessions regarding the Low-voltage grid. Mostly of these municipal concessions have expired and the Government is currently preparing a competition framework procedure to award new concessions (see III.4).

Market Operator (MO) is OMIP (Operador do Mercado Ibérico de Energia), managing the wholesale electricity market (spot & forward) including the organization of auctions for ancillary services, new sets of renewables power generation, facilitating trading, and ensuring market efficiency.

Office for change of retail supplier (OLMC – Operador Logístico de Mudança de Comercializador) is an independent entity, ADENE (Agência para a Energia) a private association with public utility status. Its mission, under exclusivity, is to facilitate customer requests for changing retail suppliers, completely independent from any other participants in the electricity and gas markets.

Portugal has several cross-border electricity interconnections to enhance regional cooperation and electricity trading. These interconnections facilitate the exchange of electricity with neighboring countries (i.e., Spain), improving energy security and market integration. According to PNEC 2030 the interconnection capacity shall reach 3000 MW (see III.2) from the current 2000MW capacity.

I.3 - Gas Market

The Portuguese natural gas market is, in parallel with Greece, rather recent comparing with most of the EU countries, having started its operations in 1997, initially relying on supply from a Power Purchase Agreement (PPA) with Argelia, facilitated through interconnection links via Spain and Morocco. (see table 10).

Later, in addition to establishing a second interconnection in the north of the country (with small capacity for exchanges), an LNG Terminal was constructed to increase supply reinforcement capacity in response to the rapidly growing demand in the market. This development allowed for the diversification of supply sources, significantly impacting the competitiveness of supply costs as well as expanding options for ensuring security of supply.

This new infrastructure became operational in 2003. To reinforce the resilience of the national gas market, this initiative commenced operations in stages, starting in

2006, using available underground resources, specifically saline domes once their viability was identified.

Presently, there are plans for further development of the Gas System High Pressure network including an expansion of the underground capacity (see chapter II.2) and the establishment of a third interconnection with Spain (see II.2). These developments are expected to bolster the resilience of the Iberian Gas market and provide support for the challenges of Energy Transition.

The Natural Gas market structure concept, like the Electricity equivalent, is based on liberalized access, competition, innovation and a client-friendly approach, and consists of four main segments: Import (plus local biogas production), transmission, distribution, and commercialization, including wholesale and retail. The wholesale market handles the trading for natural gas retailers, while the retail market focuses on selling gas to end consumers. Local biogas production can be mixed through technical reglementary procedures up to 5% of average consumption levels.

Underground storage – managed by a REN affiliated company (REN Armazenagem) under a public service concession — keeps strategic reserves, as Portugal, like other EU member states and IEA member countries, is required to maintain Natural Gas reserves (20 days) according to yearly average daily end-use consumptions. These reserves act as a buffer in case of emergencies or disruptions of natural gas supplies. The remaining capacity is available for market players, by contract.

Hydrogen shall be a complementary decarbonizing fuel to be added, during a transitional period, to natural gas, according to existing public policies (see II.1), gradually up to 15% and several different scale projects are currently under development (see.II.2).

Like in the electricity market, to ensure competition and security of supply to consumers Transmission (which includes LNG and Underground storage facilities and System Management) and Distribution agents, although privately owned, operate under public concessions contracts, and are fully regulated.

A Sectorial Regulatory Authority (ERSE) ensures ex-ante economic regulation and consumer protection rights proactively, while DGEG handles technical regulatory matters and serves as a 'one stop shop' for permits and other licensing procedures. (see I.5).

Table 10 - Main key data for Natural Gas System

Infrastructure		Market	2011	2022
High Pressure pipeline extension (Km)	**1375**	Primary Energy anual consumption (KNm³)	4482	4822
LNG Terminal storage capacity (KNm³)	**390**	LNG Supply share (%)	50.4	98,2
Truck Charges capacity (per day)	**36**	Energy Production (conventional+CHP) (%)	66,1	63,3
Underground Storage potential capacity (KNm³)	**335**	Industry (%)	23	22.8
		Buildings (residential+services) (3%)	10,5	10,3
		Transports (%³)	0,3	0,6
		Agri & Others (%³)	0,1	0,2

Source: authors

Several entities participate in the Transmission, Distribution, and end-use of natural gas, including biogas. Here's a concise overview of the Portuguese natural gas market structure and its key participants:

Upstream Sector: Portugal has no exploration of endogenous resource of Hydrocarbons, therefore only the imports of natural gas through gas pipelines and liquefied natural gas (LNG) via Sines terminal are included. Local biogas units also have some presence, representing a minor contribution.

Midstream Sector encompasses natural gas transportation and storage: it includes the gas transmission network, and underground storage facilities, operated by the Transmission System Operator (TSO), held by REN affiliates. The TSO is responsible for facilitating gas flows, managing interconnections, and coordinating with neighboring countries. Operates and maintains the high-pressure gas transmission network and system management, ensuring the reliable and secure transportation of natural gas, including biogas and biomethane, across the country.

Downstream Sector covers the distribution, supply, and sale of natural gas to end consumers. It involves several Distribution System Operators (DSOs), responsible for the local distribution networks (e.g., Floene, PortGas, Dourogás), including those, not connected to the main network, but connected to local regasification units (UAG) supplied by road tankers. Retailers supply natural gas, and other service offers, to industrial, residential and services, transports (mainly in urban transportation) and other sectors end users, within the respective concession geographical areas. The 'autonomous' local network only requires a permit from DGEG but must comply with regulatory rules and tariffs.

Market Operator (MO) is MIBGAS (Mercado Ibérico de Gas): it manages the wholesale gas market operations (spot), including auctions related with still existing PPA remaining volumes.

I.4- Oil and Fuels Market

The Portuguese oil and fuels market has traditionally been open to competition in the retail segment, although coexisting with a vertically integrate state-owned operator until late nineties of last century.

Presently, all industrial and commercial players are privately owned, a characteristic evident in the retail segment. This includes major international operators, smaller national companies, and the 'incumbent' – Galp Energia — which owns the refining and primary storage capacity.

Table 11: Energy Market Structure (Oil)

	Refining/ Aquisition	Storage/Distribution	Wholesale/Retail Supply
OIL	OIL Refinery (Sines) ▪ 226 kbpd ▪ 91 MW CHP IMPORTS ▪ 12.9 Kton Crude ▪ 2.9 Kton fuels&others ▪ 1.1 Kton Biofuels EXPORTS ▪ 4.9 Kton fuels&others	*5 Major Storage facilities, including security of suplly mandatory obligations* *1 undergroung for LPG* *Multiproduct Pipeline (147 klm) connecting Sines to center of the country operated by CLC (joint venture of several commecial companies)*	Mainly Road and Rail, for fuels supply Extense network of Fuel stations for road transport, owned by comercial operators Local connerce for LPG ciliinders Maritime Bunkers for sea and inland navigation Final clients storages for Aviation and Railways
Relevant remarks	Portuguese oil market is exporter of gasoline and net importer on gasoil Onshore and offshore prospection&exporation for Hydrocarbons is suspended by Governamtal decision	Mandatory oil resrverves complies with IEA 90-day stockolding obligation, prioritizing petroleum products	Competitive marktes for fuels, including LPG (althouh existing a legal 'window' to establish máximum value for comercial margins. Wholesale activities are mostly assumed by larger vertically integrated comercial operators 4 commercial operators account for more then 60% of the retail market Biofuels Incorparation autorized up to 7% (road transport uses)

ENSE	CPEE
▪ Management and oversight of hydrocarbons mandatory legal reserves obligations by comercial operators (including NG) ▪ Monitoring and inspection of energy instalations &products quality ▪ Owned by the Portuguese Republic	▪ Sectorial Civil Protection Committee ▪ Establish plans for emergency situations : critical infrastructures use & protection; energy consumptions priorities setting ▪ Part of National Emergency Civil Protection System Structure

Source: Authors

As previously referred, there is no ongoing hydrocarbons prospection or exploration in the country: in 2019 the Portuguese Government made the decision to suspend all ongoing prospection activities. Thus, all the supply is from Imports, being wholesale a crucial activity both to make efficient imports in crude oil and fuels as to export seasonal refining surplus. Sines Refinery, since the decommissioning of Matosinhos at the end of 2020, is now the only refining facility in the country, with a nominal capacity around 220.000 kbpd, together with a storage capacity around 3Km3, half of it for crude oil.

Downstream Sector includes the distribution, commercial storage, and sale of refined oil products. It involves a number of entities — besides Galp, international operators like BP, Repsol, Cepsa and national/regional operators like Prio, or general stores as Intermarché or Leclerc — as fuel retailers, distributors, and storage operators, as follows:

- Fuel Distributors are responsible for transporting and delivering oil products, primarily by road, from storage parks to retail stations, industrial facilities, and commercial consumers.
- Commercial Storage Operators, owned by retail companies, manage facilities where oil products are stored before distribution. Companhia Logística de Combustíveis (CLC), a company jointly owned by several retail operators, operates significant fuel storage facilities, including those in the Sines Refinery area, which is a major hub for fuel import and export due to its large port facilities, through a multiproduct/multiphase pipeline, and including an LPG cylinders filling unit.
- Fuel Retailers, also known as gasoline stations or service stations, are entities licensed to sell oil products directly to consumers. These retailers offer a range of fuels, including gasoline, diesel, liquefied petroleum gas (LPG), and other petroleum-based products. The supply of LPG for end use is also handled by local dedicated small companies or small retail general commerce stores.

Strategic Oil Reserves: Portugal as a member of the EU and a IEA member country is required to maintain strategic Oil reserves (90 days), which are partially in crude oil and the remaining in end-use fuels. LPG is fully regulated and the Sectorial Regulatory Authority ensures monitoring for pricing, market competition procedures, and consumers rights for all fuels.

DGEG sets technical reglementary standards and issues licenses and permits when applicable.

I.5 -Regulatory Background

As explained above, Portugal has a well-established regulatory framework for all energy markets, which includes electricity, natural gas, and oil products.

Also as already seen, the main regulatory entities responsible for overseeing these markets and ensuring their efficient operation are the Energy Services Regulatory Authority (ERSE) and the National Energy Authority (DGEG). Additionally, Autoridade da Concorrência (AdC), the Portuguese Competition Authority ensures and supervises the full compliance with EU and national legal frameworks when applicable.

Table 12: Regulatory Background

Governement/ Public Services (Direcção Geral de Energia e Geologia/ DGEG)	▪ Establish a medium-long term National Strategy and Targets and the appropriate legal framework for its implementation ▪ Atribution and supervision of Public Service Concessions and administrative licencing ▪ Definition and supervision the padrons of security of supply obligations (under EU and IEA aplicable rules) ▪ Definition of technical regulations and safety standards ▪ Promotion of Grids Inv. Plans assessement & approval	**Four yers regulatory cicles (Eletricity&Gas)** ▼ **Earnings allowed on the basis of demand forecast, cost recovery, including RAB remuneration with incentives to efficiency in OPX/ CAPEX (just for electricity)** **No indexation to consumption variations** ▼ **Predictable and Stable Cash Flows**
Regulatory Entitity for Energy Services (ERSE) **economic regulation**	▪ Independent regulatory entity for the **Energy Sector**; ▪ Defination of regulations for market operations, including quality of Service and Tariffs Code (Electrical&Gas markets) ▪ Defination of costs and prices for Energy Markets regulated operations ▪ Opinion & subsequent supervisión of Grids Inv. Plans costs	
Competition Authority (AdC)	▪ General regulation to enforce EU and national competition laws	

Source: Authors

The regulatory cycles in Portugal's energy, electricity and natural gas markets typically have a four-year duration, with the aim of providing stability and predictability for market participants; in each cycle, the regulatory entity establishes the allowed earnings criteria and incentives when applicable.

Ten-year investment plans for regulated networks are prepared by the respective concessionaires and presented to DGEG and ERSE. This process is followed by institutional consultations promoted by DGEG and a public consultation promoted by ERSE. The outcomes of those consultations, along with their assessments by DGEG and ERSE, are conveyed to the concessionaires. These inputs enable the operators to make a final proposition, which is then submitted by DGEG to the Government member with Energy responsibilities. The proposal is subsequently presented to the national Parliament for debate. Following this, the Investments Plans may be approved by a Council Ministers Resolution (RCM) in accordance with EU Directives and national laws. A biennial revision of these plans shall be approved by the Government member with Energy responsibilities.

Allowed revenue for regulated entities, including Transmission System Operators (TSOs) and Distribution System Operators (DSOs), considering their costs, approved investments, and a reasonable rate of return. The criteria for allowed earnings are structured to incentivize these entities to invest, uphold service quality, and enhance efficiency. Tariffs may be adjusted during each cycle if variations in the cost of supply sources could lead to a deficit.

ERSE is responsible for establishing the main tariffs for electricity and natural gas. It determines the allowed revenue for regulated entities, including Transmission System Operators (TSOs) and Distribution System Operators (DSOs), considering their costs, approved investments, and a reasonable rate of return. The criteria for allowed earnings are structured to incentivize these entities to invest, uphold service quality, and enhance efficiency. Tariffs may be adjusted during each cycle if variations in the cost of supply sources could lead to a deficit.

Regarding the oil products markets, pricing is primarily influenced by international market dynamics. Notwithstanding, ERSE monitors the market to prevent unfair pricing practices and to promote transparency. With the exception of LPG, which is fully regulated, competition or alternative options to natural gas exist in areas without any network coverage.

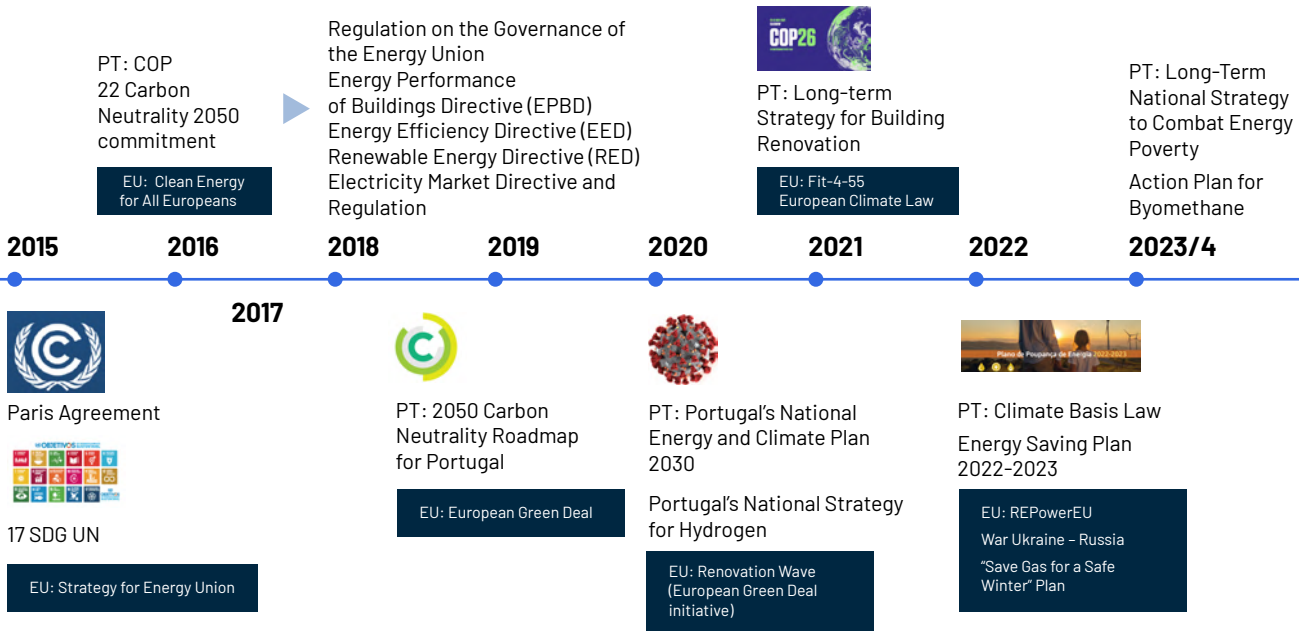
Overall, the regulatory framework in Portugal's energy markets is designed to promote fair competition, safeguard consumer interests, ensure security of supply, and foster the efficient and sustainable operation of these markets, within a framework supported by a strong level of political commitment and consensus in the medium-term.

II | PUBLIC POLICIES

II.1 Priorities

Following the Paris Agreement, beginning in 2016, the Portuguese government committed to achieving emissions neutrality by the end of 2050. This commitment reflects a strategic approach to decarbonizing the national economy, in line with the objectives of the Paris Agreement and similar initiatives undertaken by the international community of United Nations countries.

Figure 12. Portugal's Energy & Climate Policies – Main Milestones



Source: PNEC 2030 (updated)

Aiming to achieve this goal, the 2050 Carbon Neutrality Roadmap (RNC2050) — the national strategic plan that outlines the steps and measures necessary to achieve carbon neutrality, or long-term low-GHG, by the year 2050 — has been developed, identifying the primary decarbonization pathways across the various sectors pf the economy. It outlines policy and measures options aimed at reducing greenhouse gas (GHG) emissions and assesses the expected impact of these measures on emission reductions. It reads as a comprehensive strategy and a roadmap for guiding the transition to a carbon-neutral economy by 2050, providing a framework for policymakers, businesses, and stakeholders to work towards achieving this goal. With this objective in mind, all sectors of the economy must collectively contribute to reducing emissions by enhancing efficiency, fostering innovation, and significantly expanding the use of carbon-free resources. Among these sectors, the energy system and transportation are particularly crucial for transitioning away from traditional power sources.

The production of the Road Map for Carbon Neutrality (RNC2050) was materialized in parallel with the preparatory work for the National Energy and Climate Plan (PNEC 2030), which is the main energy and climate policy instrument for the decade 2021-2030, setting a comprehensive strategy for addressing energy and climate-related challenges up to the year 2030, namely reducing greenhouse gas emissions, increasing renewable energy usage, improving energy efficiency, and enhancing energy security, as well as ensuring better access to energy and new forms of interaction with consumers (incorporating a prosumers dimension), in line with the objectives of carbon neutrality.

The PNEC 2030 establishes national targets and objectives for GHG emissions, renewable energy, energy efficiency, energy security, internal market interconnection, innovation, and competitiveness, as well as a clear approach regarding how to achieve those targets and objectives, outlining key priorities such as energy transition targets, renewable strategy, hydrogen strategy, biofuels strategy and a long-term national strategy to face energy poverty (currently under approval procedure), generally increasing economy decarbonization and energy transition reaching carbon neutrality, supported by a democratic and national cohesion model to foster development and the efficient use of resources.

Moreover, Portugal's energy and climate policies fully align with the correspondent United Nations Sustainable Development Goals (SDGs). By prioritizing decarbonization, renewable energy, and energy efficiency, Portugal contributes to the fulfillment of SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action).

Ultimately, it's important to recognize that the specific targets and strategies may undergo revisions as Portugal evolves and addresses evolving or emerging challenges and opportunities in the energy sector. In fact, currently the PNEC is undergoing its biennial mandatory review, as mandated by EU Directives. The revised document is in a public consulting stage, with the aim of final approval expected during 2024.

II.2- Key Targets for 2030

As explained, the Portugal's Energy Transition Plan (PNEC) 2030 is the national reference framework framework for the Energy Transition – as the main instrument of the Climate Action policies toolbox -maximizing the goals of energy security of supply, eco-social sustainable value chain, and affordability of access to energy for all end-use consumers.

The PNEC 2030 sets five major targets (see Figure 9) in various dimensions to drive the country towards a sustainable and low-carbon energy system.

Figure 13. Portugal's Energy Transition – Main Targets for 2030

55%
EMISSIONS
(no LULUCF, compared to 2005)

Targets GHG reduction
- 75% @2040
- 90% @ 2050

35%
ENERGY EFFICIENCY

Main Focus:
- Renovation on existing residential/ public buildings;
- Renewal of Public lightening devices;
- Mobility (EV+public transport eficiency).

49%
RENEWABLES
(hydro, wind, solar, biomass ...)

Renewables in 2030 [Decree-Law no. 84/2022, of December 9]
- Renewables in Total Energy Consumption 49% (UE is 42.5-45% but still under discussion)
- Power 80%
- Road Transport 29%;Marine and Aviation 9%; Rail 100%
- Biogas: 9,1%(2030) - 18,6%(2040) incorporation in Natural Gas

15%
INTERCONNECTIONS

55%
NATURAL GAS STORAGE

Natural Gas Storage
[RCM no 82/2022, of September 27]
- +0,1 bcm

Increasing 1000MW
on the existing connection capacity PT-SP

Source: PNEC 2030 (updated)

It is important to detail each target ambition and its evolution considering present indicators levels:

Greenhouse Gas (GHG) Emissions: The PNEC 2030 aims to reduce Portugal's GHG emissions by 50%-55% (according to ongoing revision) compared to 2005 levels. This target reflects the country's commitment to addressing climate change and is in accordance with the objectives set forth in the Paris Agreement's objectives.

Achieving this goal will require further decarbonization efforts across sectors such as energy, industry, and transportation, leading to significant carbon emissions reduction, significant to SDG 13: Climate Action.

Energy Efficiency: Portugal aims to improve energy efficiency to 35% by 2030 compared with 2005 levels. This target focuses on reducing energy consumption through various measures, such as building renovation, efficient industrial processes, and transport optimization. Regarding energy efficiency in buildings it is important to refer to the necessity of updating the Long-Term Strategy for Buildings Renovation (ELPRE), as approved by Resolution of Council of Ministers (RCM) nº8-A/2021 of February 3rd. Such revision should aim to thoroughly integrate the objectives outlined in the revised versions of the Energy Performance of Buildings Directive EU/2010/31 and the Energy Efficiency Directive EU/2023/1791, both updated in 2023, namely:

Each Member State will adopt its own national trajectory to reduce the average primary energy use of residential buildings by 16% by 2030 and 20-22% by 2035, allowing for sufficient flexibility to take into account national circumstances. Member States are free to choose which buildings to target and which measures to take.

The national measures will have to ensure that at least 55% of the decrease of the average primary energy use is achieved through the renovation of the worst-performing buildings.

For the non-residential building stock, the revised rules require to gradually improve it via minimum energy performance standards. This will lead to renovating the 16% worst-performing buildings by 2030 and the 26% worst-performing buildings by 2033.

Source: European Commission press release

Portugal has been making significant progress in energy efficiency initiatives, but additional efforts are necessary to meet the 35% target. Increased energy efficiency will lower energy consumption, reduce costs, enhance energy security, and contribute to a more sustainable energy system contributing to achievements in what concerns, respectively, the SDG 7: Affordable and Clean Energy, SDG 9: Industry, Innovation and Infrastructure, and the SDG 13 – Climate Action.

Renewable Energy: The PNEC 2030 sets a target for achieving 47%-49% (according to ongoing revision) of renewable energy in Portugal's gross final energy consumption by 2030. This target represents a significant increase from present indicators levels, where renewables already account for over 30% of the country's energy consumption. Meeting this target will require further investments in wind, solar, and other renewable sources, contributing to the diversification of the energy mix and reducing reliance on fossil fuels. Increased renewable energy deployment will positively impact Portugal's energy balance, reducing external energy dependence and carbon emissions, contributing to achievements regarding, respectively, the SDG 7 Affordable and Clean Energy and the SDG 13- Climate Action goals achievement.

Cross-Border Interconnections: Portugal aims to increase cross-border interconnections for electricity and natural gas, in line with EU priorities for Internal Energy Market development/integration, also reflected in the three Agreements signed by the governments of France, Spain and Portugal (2016-2018-2023).

Portugal has interconnected its electricity grid with Spain, enabling electricity exchange and enhancing grid stability.

The PNEC 2030 foresees to increase around 50% the existing capacity of electricity interconnections to enhance energy security, promote market integration, and facilitate renewable energy integration. Additionally, increasing natural gas interconnections, with a third link with the Spanish gas system will reinforce the Iberian gas market resilience and competition and facilitate a balanced Hydrogen introduction into the Iberian consumption. Those investments are relevant to foster SDG 7 - Affordable and Clean Energy and SDG 9 - Industry, Innovation and Infrastructure.

Natural Gas Underground Storage: Developing underground storage capacity will allow a higher level of strategic reserves and enhance supply reliability. The target — increasing around 25% of existing available capacity – shall contribute to reduce energy external dependence and ensure a stable gas supply for both industries and residential sectors. Investments under this target are equally relevant to foster SDG 7 - Affordable and Clean Energy and SDG 9 - Industry, Innovation and Infrastructure.

Hydrogen: The PNEC 2030, particularly through the National Strategy for Hydrogen, emphasizes the establishment of a hydrogen strategy geared towards fostering the production and utilization of green hydrogen.

Hydrogen consumption ambition, as follows (%), plays a crucial role in decarbonizing sectors such as industry (2-5), transportation, (1-5), domestic maritime transportation (3-5) and incorporation in general natural consumption (10-15). The Plan underscores the necessity for a well-coordinated infrastructure development chain, encompassing green power generation facilities, distribution and storage networks, as well as refueling station for transportation purposes, all of which are currently in a planning phase.

Additionally, the Plan also aims to install 2 GW of electrolysis for green hydrogen by 2030, with a particular focus on achieving the ultimate goal of integrating 25% of green hydrogen into industrial processes.

Thus, this Strategic Plan will bolster the country's decarbonization endeavors and play a pivotal role in fostering a sustainable energy system, particularly in

advancing the goals outlined in SDG 7 - Affordable and Clean Energy, as well as SDG 9 - Industry, Innovation and Infrastructure.

Biofuels: the PNEC 2030 actions package includes two set of measures: firstly, it focuses on the gradual implementation of the AFIR Directive (EU 2023/1804), which involves the development of infrastructure for supplying biomethane and hydrogen for road transportation, and, secondly, it addresses the value chain of biofuels as endogenous resources, with a cautious approach to prevent the misuse of available soils. This includes increasing their incorporation into convention fuels, including natural gas. To achieve this objective, an Action Plan for Biomethane was published on March 15th, by Resolution of the Ministers Council (RCM) nº41/2024, coordinated by LNEG (the National Laboratory for Energy and Geology) setting up a two-phase strategy:

1 – up to 2026 - for: typifying value chains; developing specific technical regulations; identifying the necessity for access to the Natural Gas network;

2 - 2026/2040 – for: design and implementation of incentives mechanisms, if needed; industrial investments development; market consolidation.

As key targets, under the sustainable nature of all activities, it is foreseen to reach 9,1% of biomethane incorporation in the national natural gas consumption until 2030, and 18,6% by 2040.

In conclusion, reaching the targets outlined in the PNEC 2030 will have a profound impact on Portugal's energy landscape and balance. The country will see a reduction in greenhouse gas emissions, a boost in energy efficiency, an expansion of renewable energy deployment, an improvement in energy security, and a promotion of clean and sustainable energy sources. These efforts align closely with SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 13 (Climate Action), underscoring Portugal's commitment to the Energy Transition and transformation and its important role in the global sustainable development agenda.

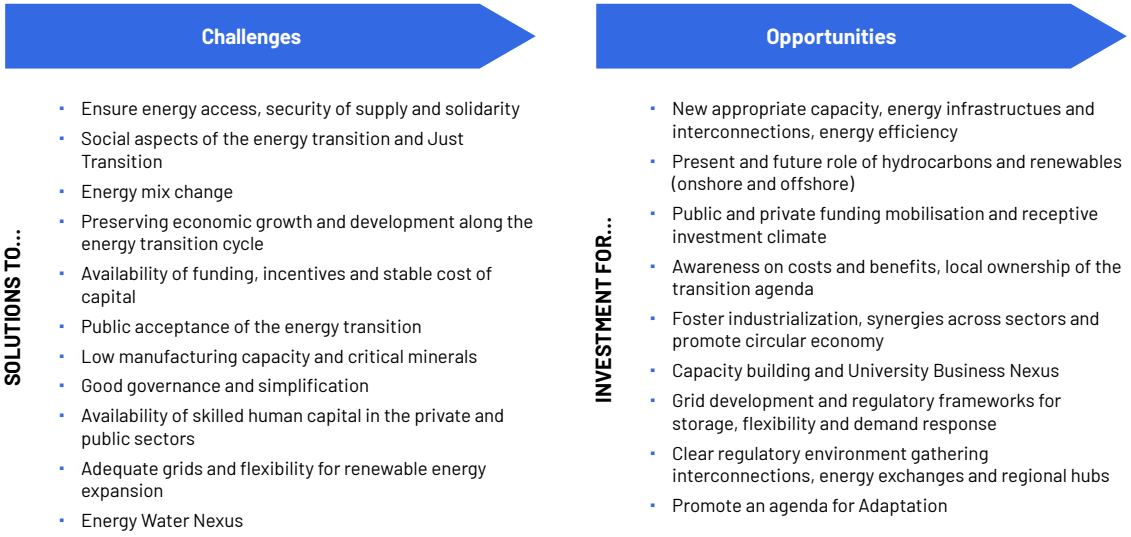
III | INVESTMENT OPPORTUNITIES

The objective of this chapter, following a broad examination of the Portuguese Energy Sector, is to outline several potential intervention opportunities, in a merely indicative way, aimed at attracting the attention and interest of capital market participants to encourage their involvement in providing funding for these opportunities' development .

Investment opportunities result from a non-exhaustive assessment of the medium-term guidance provided by several documents issued by the Portuguese Government from 2020 up to now, namely the PNEC2030, previously presented under chapter II, assuming their goals and targets as a stable forecast for the next 5-7 years.

Those official documents, along with several others mentioned, referred to in Annex, References, have been partially detailed, on their more relevant content for this purpose, along the preceding chapters in order to sustain the selection of opportunities referred to in the following pages.

Figure 14. Challenges and Opportunities on Portugal's Energy Transition



Source: PNEC 2030 (updated)

Matching the identified potential solutions with the national challenges reveals several investment areas with significant opportunities for positive decision and supporting project implementation. The rationale for prioritizing these areas is based on four main axes:

- Consistency with existing markets organic growth;
- Complementarity of goals/targets across multiple areas;
- Positive collateral impacts on other public policies (e.g. Innovation, R&D, Industrial Competitiveness, better and affordable access to energy)
- Clear contribution for international policy goals (e.g. EU Internal Market consolidation or fostering UN SDG'S achievement)

The collected information may not fully suffice to construct an academic case but, hopefully, it can encourage an informed and deep exploration of each opportunity. This investigation should take into account existing legal frameworks, and align closely with the practical experiences and priorities of each new player.

Numerous of these investment opportunities are poised to thrive within regulated markets or public service concession contracts. Rather than viewing these as barriers, we see them as opportunities to craft innovative financing solutions for concessionaire companies and to provide new players with alternative pathways to traditional models.

As explained, licenses and permits regarding energy related facilities are issued by DGEG, acting as a 'one-stop-shop' for promotors and market participants, according to National laws and applicable EU Directives,

notwithstanding the intervention of other sectorial or transversal administrative authorities, namely related to Environment.

The Portuguese Energy market, like any other, is subject to risks inherent in an open economy, such as inflation, fluctuations in public debt interest rates, and and international stock exchange prices of critical raw materials. Volatility in tariffs and exposure to fluctuations in energy stock exchange market prices, influenced by the decoupling of the national market from the international regional market (MIBEL) are expected to be minimized with the planned increase in interconnection capacity. Regulatory and technical regulations have remained stable and any updates typically involve public consultations or institutional dialogue with representative associations of market participants.

Public funding may be available to a meaningful number of these investment opportunities, some already the subject of application requests by their promoters, allowing, in case of success, for a mix of equity funding — public subsidies and private capital — smoothing capital costs and increasing the acceptability of projects and their economic viability.

Hydrogen is increasingly recognized internationally as a significant future component of the Energy mix, indeed as outlined in the Portuguese Hydrogen Strategic Plan referenced earlier in section II.2, which establishes targets for the next decade.

Given this commitment, the current landscape in Portugal reveals a clear intention among several industrial companies toward the production of 'green hydrogen' (e.g. Galpenergia, Bondalti) primarily for internal consumption. Some are also engaging in small-scale production to demonstrate the viability of of blending it with natural gas for end-use consumption (e.g. Floene). This substantial commitment to investments in 'green hydrogen' production necessitates developments in several areas: firstly, there is a need for the growing availability of renewable power generation (see III.1); additionally, investments in power transmission are required to convey the significant amount of power needed for hydrogen production. Moreover, there is a need for adaptation and reinforcement of gas infrastructure. And finally, in both cases, there is a growing demand for interconnectivity with Iberia and central European grids (see III.2).

Figure 15. Portugal's Energy Transition checklist (non-exhaustive and just indicative)

Investment opportunities (with relevant potential for capital markets intervention)

-Elegible, case by case option, for loans, debt capital markets/ bonds (also green), venture capital, project-finance, PPP's....-

- **Strong Renewable Electricity generation increase**

  1st Wind offshore Auction, for 3,5 GW, is pending of new government decision

- Interconnections reinforcements between Iberian countries towards Central Europe markets (according to PNEC 2030);

  Linha Beariz-Fontefria(ES) -Ponte de Lima (PT) – 400kV/90km – (value 0.055M€ tbc)

  LNG underground storage (2 new caves/0,1bcm capacity)~0.089M€

  3th gas pipeline connection with SP (162 km)-0,320 M€ (tbc)

- **Revamping / Repowering/Hybridizing (RRH)of wind and solar parks**

  Potential of ~750 MW (wind parks) installed up to 2007 (less efficient for actual technology standards): estimated investment cost ~1M€

- **Renewal of Concessionaires for BT (Municipal level) of Power Distribution grids**

  Tender Concessionaires selection (pending on tender terms approval by government)~1,300M€ BAR

- **Development of Electric Vehicles public charging infrastructure (according with MOBI.E/TIS Study, July 2023)**

  Investment foreseen in MOBI.E (+14250 public charging stations) up to 2035 ~ 0,270 M€

- **Challenging Green Energy Demand : Water Desalinization**

  Desalinization Plant in Algarve (16-20hm3/year): under Procurement/licensing, foreseen to start up to 2026, investment~ 0,090M€ (50% EU/PRR)

  Desalinization Plant in Sines (up to 20hm3/year): foreseen to be operative «2030

- **Consolidation**

  About 10% of operating wind/solar Parks and mini-hydro («10MW each) are owned by individual companies :RRH(above) offers, also, a relevant potential for M&A

  More then 50% of sectorial services providers (installation/ maintenance/inspection) are micro or small companies, offering also significant potential for M&A

Source: PNEC 2030 (updated)

Thus, the opportunities referred above, as depicted in Figure 11 and briefly presented in the following pages, do not explicitly reference hydrogen. Such omission is intentional because we believe that while there are projects focused on specific applications or consumption purposes, creating a more open investment environment requires a clearer and more established context, as outlined above.

The information collected to support the following pages originated from public or other nature sources, generically listed in the Annex.

III.1 Strong Renewable Electricity Generation Increase

Portugal has been actively investing in renewable energy, particularly in wind and solar power, during the last two decades.

The country aims to increase its renewable energy capacity to meet European Union targets and enhance energy sustainability. Past decisions have shown a commitment to expanding wind and solar farms, with an emphasis on reducing greenhouse gas emissions. The evident growth on renewable generation capacity shall be crucial, for fostering the development of the Portuguese Hydrogen Strategic Plan, the electric vehicles transition and the Water Desalinization projects 'green' implementation.

According to the PNEC 2030 (currently undergoing public consultation for an updated 2024 version) the target for incorporating renewable sources into power generation by 2030 is 85%. This substantial increase will be primarily driven by wind and solar (photovoltaic) energy, with biomass/biogas and waste playing smaller roles in the transition. As for Hydropower, it is understood that the potential for new plants is nearly maximized, but investments in systems modernization, including pumping/storage infrastructure ,may lead to some level of production increase, albeit subject to variations in hydraulic cycles.

Regarding Wind energy, in addition to the aspects to be referred in section III.3, the PNEC 2030 sets ambitious targets: the onshore installed capacity is projected to reach 10,4 GW by 2030, nearly doubling the current installed capacity of 5,6GW. Furthermore, offshore capacity is expected to reach 2 GW by 2030, with 25MW already in operation and plans for continuous growth in the next decade. The government plans to open the first auction for offshore wind projects in the coming months, offering 7 lots in a total of 3,5 GW in three designated coastal areas: Viana do Castelo (1GW), Leixões (0,5 GW), Figueira da Foz (2GW), with an estimated investment of approximately 14b € - with floating systems being seen as the most suitable option, - according to recent Government statements.

A call for "expression of interest", for these offshore wind projects was launched in the second half of 2023, attracting around 50 potential players, although, meanwhile, a few of of these participants have expressed that they may revise their commitment priorities due to technological considerations or different geographic locations preferences.

The Solar photovoltaic technology is also a national priority, either in solar parks or under a decentralized generation installation (industries, small communities and households), with targeted objectives for 2030 of respectively 14,9 GW and 5,5 GW – currently an overall of 2.6 GW are installed — with an estimated global investment around 9b €.

With the exception of already existing plants and most decentralized solar generation systems, both Wind and Solar technologies require licensing path issued by the DGEG and a prior guarantee of grid connection availability by the operator responsible for the relevant grid tension level (E-Redes or REN).

III.2 Interconnections reinforcements inside and beyond Iberia

Portugal and Spain have been actively working on cross-border interconnection reinforcement projects to enhance their energy systems' integration and ensure a more reliable and secure supply of electricity and natural gas. The existing levels of interconnectivity have significantly contributed to energy security, grid stability and the minimization of market price volatility.

The new priorities and targets, in both countries, for renewables power generation (incorporating its intermittent availability impact), hydrogen production and distribution and storage — H2MED, the hydrogen pipeline, objective to convey hydrogen to Central Europe — and the new EU requirements about natural gas national storage reserves, drive the necessity of increasing infrastructure existing capacities.

The PNEC 2030 sets several targets for Portugal, including:

1. increasing electrical interconnectivity capacity by 15% (1,000 MW);

2. expanding the gas network through a third connection to Spain (Celza project);

3. boosting natural gas storage capacity by 55% (0.1 bcm).

as follows:

Electrical Interconnection: this project involves the construction of a new double 400 kV high-voltage line between Spain and Portugal. The planned capacity is around 1,000 MW, connecting the substations of Beariz (Spain/Galicia) and Ponte de Lima substation (Portugal), with an extension of around 90 klm (18 in Spain and 72 in Portugal). The foreseen investment rounds 55M€ tbc (Portuguese share).

NG High-Pressure Network interconnectivity expansion (3rd connectivity) has been foreseen several years ago but is reborning now, as part of an Hydrogen European corridor (Portugal/Spain connection) designated as

Celza project, in the scope of a future Barcelona-Marseille maritime gas pipeline (H2Med) to deliver Iberian green Hydrogen as part of broader efforts to develop a trans-European hydrogen network. The Celza project, connecting Celorico da Beira (Portugal) to Zamora (Spain) shall have a 248klm extension (162klm in Portugal), with a foreseen investment of 320M€, also contributing for the security of supply, market competition and reduction of prices volatility in the Iberian market.

Underground storage facilities play a crucial role in ensuring a more secure and stable supply of natural gas, by providing storage capacity during periods of low offer/high supply costs and enabling more flexibility in the system.

Acknowledging that, and additionally the need for providing answers to both the new requirements of supply reserves and Portugal Hydrogen Strategy, the PNEC 2030 sets an investment in underground storage (salt caverns), foreseeing an increase of 55% of capacity (around 0.1bcm) considering an investment of around 90 M€.

III.3 Revamping/Repowering/ Hybridizing (RRH) of wind and solar Parks

To reach the target of 49% of renewables incorporation in the end use of the National Energy Mix, the PNEC 2030 also acknowledges the importance of the revamping/ repowering of wind parks, as well as the hybridizing of wind parks with solar facilities or hydropower dams.

Portugal's Government support is effective through specific policies and incentives, namely:

i. Decree-Law n.º 51/2010: this legislation regulates the development, installation, and operation of wind energy projects, including repowering activities. It provides guidelines for the approval process, technical requirements, and environmental impact assessments;

ii. Resolution of the Council of Ministers n.º 35/2019: this resolution establishes the strategic objectives for wind energy in Portugal and encourages the repowering of existing wind parks as a means to increase renewable energy production;

iii. Decree-Law n.º 15/2022: this legislation establishes the design and structure of the Portuguese electrical system, addressing a dedicated section to frame the conditions for the use of single grid injection point for integration of different renewable technologies facilities for power production, either for new projects or existing ones. Revamping/Repowering wind parks involves upgrading or replacing outdated turbines, enhancing grid connections, improving maintenance processes, and implementing advanced monitoring systems; investing in technology upgrades can significantly increase the energy generation capacity and overall profitability of wind parks.

Investing in the hybridization of existing wind parks in Portugal, with new or existing solar or hydro power facilities combining different renewable energy sources, can optimize energy production, increase overall efficiency, and enhance grid stability.

Portugal has a significant number of existing wind parks that are prime candidates for revamping /repowering. The country had an installed wind power capacity of around 5,600 MW, from which almost 1000MW were installed until 2007 (now having more 17 years in operation).

A recent study, promoted by APREN (National Association of Renewables Energy Companies) together with Delloitte and pulished in November 2023, identifies a potential of 3.5b € investment between 2023/30 for repowering, possibly involving estimated 1500/2000 MW to achieve modernization.

A special very interesting case for investment may emerge from the opportunity to provide a "second life cycle" to the replaced equipments, minimizing their waste management costs and impacts.

III.4 Renewal of Municipal Concessions (Power Distribution Grids - Low Tension)

In Portugal, the electricity sector is regulated by the Energy Services Regulatory Authority (ERSE). The concessionaires for electricity distribution grids operate under concession contracts, which are subject to renewal at the end of each term. The renewal of these contracts follows a specific process outlined by the relevant legislation and regulatory framework.

Regarding the Portuguese continental territory, first concessions started expiring in 2017 and the last ones shall expire during 2024.

Everytime a concession contract is about to expire, the municipality or municipalities involved in the distribution grid are required to initiate a new tendering process to select the concessionaire for the next term. The aim is to ensure fair competition, transparency, and efficiency, in the selection process, while also considering the quality and continuity of the service for electricity distribution.

The amount of regulated assets base, in the continental territory, according to available information, in a rough estimation, shall reach 1.31b €, with an average estimation of 130 M€/year of investment, during the coming years.

The Government approved a recent Resolution (RCM n.º 27/2024, of February 23rd) framing the pre- tender stage schedule, namely setting:

- 31 July 2024, for ERSE (regulatory Authority) to deliver to Municipalities the assets value list of each municipal concession. Later, at the time of the tender launching, such value list shall be updated by ERSE;
- 31 October 2024, for municipalities to close the agreement for an awarding consortium for a new concessionaire. Also, by this date, Municipalities who shall not want to integrate the previously referred awarding consortium, are required to present their own tender documents;
- 31 Mars 2025, to conclude all the relevant tender documentation, by the awarding consortium;
- 30 July 2025, as limit for the launching of the public tender for the awarding of municipalities power grid (low tension) concessions.

III.5 Development of Electric Vehicles public charging infrastructure

The Portuguese government has shown a strong commitment to promoting electric mobility and has implemented several initiatives to support the adoption of EV's. The PNEC 2030 places particular emphasis on this technology regarding the decarbonization of land transportation, especially for light vehicles, while also highlighting the role of biofuels in heavy road transport vehicles. Also, a good example deserved to be mentioned regarding internal waters is the ongoing renovation of Transtejo/Soflusa to fully electric (10 vessels). The global objective is to reach about 23% of green energy sources in the transportation sector by 2030 (from around 8 % in 2019).

One of the key initiatives is the MOBI.E program (started in 2015) which aims to create a nationwide network of EV charging stations. Under this program, Portugal has already deployed thousands of charging points across the country (~5250, by 2022) including both standard charging stations and fast-charging stations. These charging points are strategically located in urban areas, highways, and major transport corridors to ensure convenient access for EV owners.

Additionally, Portugal has also implemented various incentives to encourage the purchase and use of electric vehicles, including tax benefits, reduced toll fees, free parking in certain areas, and financial support for the installation of private charging infrastructure.

Table 13. Market Organization on E-Mobility

Market Organization	
	Operators: Public Operators: The MOBI.E program, managed by the state-owned company Mobi.E, has played a central role in developing and operating the public charging infrastructure in Portugal. Mobi.E has been responsible for deploying and maintaining the majority of the public charging points across the country. Private Operators: In addition to the public infrastructure, private companies have also established their own charging networks in Portugal. These private operators contribute to the overall charging infrastructure and provide additional charging options for EV owners. **Charging Infrastructure:** Public: an extensive network of public charging points is being implement, which include both standard (AC) and fast-charging (DC) stations. These charging points are typically located in urban areas, shopping centers, parking lots, and along highways to ensure convenient access. Home / Work: several EV owners in Portugal have installed private charging stations at their residences, enabling convenient overnight charging; some employers have also installed charging stations at workplaces to support employee EV charging.

Source: Authors

Recent information shows that in 2023 the EV's represented 1,8 % of existing national fleet, although the sales of EV's during 2023 doubled the 2022 sales. The market shows a clear potential for EV's sales growth, having in mind that the national vehicles average age rounds 15 years and 21% of those vehicles are more than 20 years old. Barriers may lay on the cost of EV's (still high for middle-class owners, without effective incentives), competitive and flexible commercial offers for specific electricity supply (now starting) and on the availability of public charging stations, essentially because the most part of existing buildings (residential and services) don't have private parking.

The government aims to increase the number of public charging points and improve their distribution to ensure comprehensive coverage across the country, with the objective to provide convenient and reliable charging facilities, both in urban areas and along major travel routes.

A study promoted by MOBI.E TIS (July 2023), according with AFIR rules (EU FIT 55 - Alternative Fuels Infrastructure Regulation, September 2023) sets the need of investment in the MOBI.E network around 290M€ for around 12500 charging stations until 2030.

III.6 - Challenging Energy Demand: Water Desalinization

Portugal, particularly in the southern regions of Alentejo and Algarve, has been experiencing, along the last decade more severe impacts of climate change on water availability, namely as a result of the decrease in precipitation and the increase in average temperatures combined with a significant increase of water end-use, both for agriculture and leisure (tourism and households).

The southern regions of Alentejo and Algarve are already prone to drought, and climate change can exacerbate these conditions. Prolonged drought cycles may have severe consequences for agriculture, ecosystems, and water supply for both domestic and tourism purposes.

The Government, together with regional planning authorities and municipalities started to implement remediation solutions in Algarve under the frame of RCM 26-A/24 of February 20th, some of them included in the PRR (national plan for recovering and resiliency) financed by EU, namely:

i. Water Conservation and Efficiency: implementing conservation measures and improving water use efficiency in agriculture, services and households;

ii. Diversification of Water Sources: use of recycled water and treated wastewater in public gardens, leisure (golf courts) and some agriculture areas;

iii. Upgrading/renovating water infrastructure: including reservoirs and distribution systems, preventing losses, and ensuring a more reliable water delivery.

Desalination, particularly in coastal areas, can be a viable solution to address water scarcity. Seawater desalination involves the removal of salt and impurities, providing a new source of freshwater. While desalination can be energy-intensive, technological advancements and renewable energy integration are making it more sustainable.

This last technology, once energy-intensive consumer, needs to be supplied by renewable power origin, to keep the main objectives and targets of PNEC 2030, therefore increasing added pressure on renewable power generation availability in coming years as well as in the reinforcement of the network for power transmission.

Thus, the reasons to include foreseen investments in desalination, under regional water concessionaires' responsibility, can be listed as follows:

A. The investment on a desalinization plant in Algarve has been included in the above referred PRR. The plant shall be able to produce 16-20 hm3/year, by 2026, representing around 1/3 of the region current average water needs, without remediation measures. The foreseen investment of 90M€, according to the Aguas de Portugal public tender procedure, will benefit from a grant of 45M€ from the PRR.

B. A similar investment, foreseen to be in operation by 2030, is under consideration to be taken for Alentejo (maybe at the Sines location) driven to ensure supply needs mainly for industry and agriculture (mostly fresh vegetables and red fruits/berries). No PRR grants were identified yet.

III.7 Consolidation Opportunities

In the Portuguese energy sector, particularly within renewable power generation companies and small and micro service providers focused on energy installation, maintenance, and inspection, an increase in business consolidation can arise from various factors.

Consolidation allows companies to achieve economies of scale, improving operational efficiency and reducing costs. This is crucial in the renewable energy sector, where the upfront costs of projects can be high, but the ongoing operational costs need to be competitive, and the industry faces different risks, including market volatility and regulatory changes.

Consolidation can provide a buffer against these risks by diversifying operations and resources. On the other hand, service providers (small and micro companies) need to

increase their financing tools, innovative technologies and equipment, and new markets where competitors may have another dimension scale.

The global trend towards sustainable energy solutions encourages collaboration and partnerships. Consolidation can facilitate the formation of strategic alliances, joint ventures or partnerships with major players or international companies, enabling access to new markets and technologies.

Merged entities can enhance their project portfolios, combining expertise in various aspects of the value chain, namely regarding the Hybridizing of renewables power sources or, regarding services providers, enhancing the portfolio of expertise and their market dimension coverage.

From the knowledge of this sector, and information available, the Authors may estimate:

- Around 10% of operating wind/solar Parks and mini-hydro («10MW each) — ~750 MW — are, apparently, owned by individual companies. RRH previously referred (see III.3) may also offer a relevant potential for M&A.

- More than 50% of sectorial services providers (installation/maintenance/inspection) are micro or small companies, which may be a field in which to explore the potential for M&A.

Investment Opportunities in Infrastructure

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Executive Summary: Infrastructure Industry

- Infrastructure is fundamental to Portugal's economic growth. There are 55 831 companies in the construction sector, representing a turnover of 30 538 million euros (M€) and employing 335 566 people.
- Portugal has one of the world's best highway systems. Infraestruturas de Portugal (IP), a state-owned company, currently operates a network spanning 15,056 km. Of this, 14,042 Km fall directly under IP'S management, while an additional 1,014 km are sub-concessioned.
- Private sector players have an important role in the highway network framework. There are currently 14 concessions (Public-Private Partnerships – PPP) in place on the Continent. In addition to these, there are also two concessions on the Autonomous Region of Madeira and one on the Autonomous Region of the Azores and 7 sub-concessions of IP.
- The rail system in Portugal is underdeveloped, offering substantial opportunities for modernization and expansion. Only 71% of the current rail network is currently electrified and the number of traction vehicles has been decreasing in recent years. The network includes high-speed rail lines, cargo transport from major ports and expanded suburban and urban train services for sustainable mobility.
- Modernizing existing airports and addressing traffic congestion at Lisbon Airport are critical needs. Commercial air transport sector in Portugal witnessed a significant surge in business volume, registering €4.8 billion, a 103.2% increase from 2021, and a 9.9% rise from pre-pandemic levels in 2019.
- Urban rehabilitation in cities like Lisbon and Porto, spurred by tourism and new residents, offers opportunities in real estate and construction. This includes addressing housing affordability and expanding metro transportation systems.
- Investing in cultural infrastructure, including restoring historical sites and developing new cultural centers, enhances Portugal's attractiveness as a tourist destination and supports local economies.
- Portugal's infrastructure sector presents diverse investment opportunities, ranging from modernizing transportation networks to addressing climate change impacts and enhancing cultural assets.
- Engaging private investment alongside public funding can accelerate infrastructure development, ensuring sustainable growth and economic resilience.

1 | Context

Infrastructure is the backbone of any economy, providing essential services that enable other industries to thrive. In Portugal, the significance of a robust infrastructure network is recognized as a critical component for fostering economic growth, enhancing quality of life, improving the competitiveness of the national economy on a global scale, and adapting to a new paradigm of sustainability. The scope of this report covers the expansive range of investment opportunities within a larger Portugal's infrastructure sector.

Portugal's geographic location, at the crossroads of important maritime and air routes in Europe, provides a unique advantage, making it an attractive destination for infrastructure investments. Ever since joining the European Union (EU), the Portuguese government has demonstrated a proactive approach to improving infrastructure, facilitated by a combination of public funding, private investment, and EU grants. These efforts are geared towards modernizing existing infrastructure, developing new assets to meet future demands, and ultimately driving socio-economic development.

Overcoming the infrastructure gap has been a dominant challenge of the country. After a few decades of building roadways in the 80s and 90s, the country entered the new millennium with the challenge to operate and maintain these recently built infrastructure. By the end of the first decade of this century Portugal had one of the best highway systems in the world with hundreds of kilometers of concessioned roads that opened the floodgates to private investments through several Public Private Partnerships.

The story of those years was one of rapid construction, with the concessionaires being primarily drawn from constructions companies. The natural risk sharing characteristics of these contracts lead them to be further acquired by national and international road operators and, as we approach the maturity of these contracts, ultimately by international funds, seeking a stable rent. We are entering the decade where all these contracts will mature, and either be renewed, or the Government will reorganize the entire grid. The reorganization would be extremely timely and convenient, as new mobility solutions are being introduced in the next decade as well. This would constitute a golden investment opportunity for the Country as the bulk of the expensive (brick and mortar) infrastructure is already made but would need to be adapted to new technologies (e-mobility for instance), and more rationalized forms of integrating the road grid into mobility hubs that use interchangeably urban planning, with connecting highways, railways, and even seaways for greener passenger and cargo commute.

Over the past decades, the strong investment in a state-of-the-art road system left the Portuguese railways system lagging. This gap also represents an opportunity now, as significant investments are necessary to accommodate a modern high speed train system that extends the highly developed systems already operating in the neighboring country. In addition to expanding the Spanish world-class system to Portugal, there is also the need to invest in the renovation and enhancement of the existing one, as a greener mobility demands a bigger contribution of national, regional, suburban and urban rail solutions.

In addition to this, the modernization of the existing airports, concessioned to the French company Vinci has left the country with the eternal question of how to handle the increasing traffic of the Lisbon Airport. The existing airport is extremely convenient as it is located inside the capital city's limits. It is extremely difficult to replace as no other considered location is as convenient as the current one. Recently, a political consensus has left the Government with a limited set of alternatives, and a decision has just been announced (May 2024). The choice was the investment in the existing military airfield of Alcochete, located 45 km from Lisbon center, which will take 10 years to build. Meanwhile the Government agreed with Vinci on expanding and improving the existing airport in Portela.

Simultaneously, Portugal's recovery from the financial crisis has been based on an overwhelming embrace of waves of tourists and attraction of new residents. This has placed a significant pressure on the construction industry, with urban rehabilitation, particularly in the main urban and touristic areas becoming one of the drivers of the economy. Real estate for upper income households have been booming in Lisbon, Porto, Algarve, Funchal and other areas of the country. A certain gentrification of city centers and tourism saturation has led to a national debate on a comprehensive housing policy that follows similar debates around the world. Creative solutions need to be developed to solve the issue for future generations, with an obvious solution being the expansion of the main metropolitan areas. To make it happen, we need to rethink the Lisbon and the Porto metro areas to new limits, with metro transportation systems that enhance connectivity and reduce commutes, while profiting from novel work experiences remotely and in shorter working weekdays.

The country has the perfect conditions not only for digital nomads, but also for sporadic digital commuters.

In the so-called invisible infrastructure, the country has a very efficient utilities grid, in what concerns energy,

domestic water and wastewater management, and telecommunications (fiberoptics and 5G). Maintaining, upgrading, and enhancing these grids seems critical. Two areas in particular require more investments: the energy transition, which we address in the energy section, and the water supply infrastructure, which we partly address in the agriculture section.

The climate emergency has significantly impacted freshwater levels in the south of Portugal, necessitating innovative solutions. To address this, Portugal should consider the implementation of large-scale desalination stations, not only to support agriculture, but also to cater to the needs of the population and tourism sectors. The overuse of water resources for activities like golf courses in the Algarve is unsustainable, depleting water reserves and phreatic aquifers. Additionally, constructing water channels and transfer systems from the northern regions, where rainfall remains abundant, to the drier southern areas could follow successful models used in neighboring Spain. Introducing a more rational and market-based approach to water management will also be essential to ensure sustainable usage and distribution of water resources.

Regarding other governmental infrastructures, it is evident that significant investments are imperative. Hospitals, schools, universities, industrial and innovation parks, governmental buildings, courthouses, prisons, fire and police stations, and military installations and barracks have all suffered from chronic underinvestment. The forthcoming decade will be pivotal for revitalizing these crucial infrastructures to meet contemporary needs and standards. This rejuvenation will not only enhance service delivery but also fortify the foundational structures that support Portugal's socio-economic fabric. Strategic, targeted investments will help bridge the current gaps and prepare these institutions for future demands, ensuring that they can provide high-quality services to the Portuguese population.

A final word for a much-needed investment in cultural infrastructure: Investing in cultural infrastructure is critically important for Portugal for a variety of compelling reasons. Firstly, it plays a pivotal role in preserving the rich and diverse cultural heritage of Portugal, which includes literature, music, dance, and historic sites, maintaining the country's national identity and pride for future generations. Additionally, cultural attractions significantly enhance Portugal's appeal as a tourist destination, boosting tourism revenue.

The creation of jobs through cultural infrastructure projects stimulates local economies, particularly beneficial in smaller towns and rural areas. These projects also promote community pride and social cohesion, offering platforms for expressing diverse cultural identities and fostering inclusive communities. Moreover, cultural facilities contribute to educational enhancement, by providing diverse learning environments that foster creativity, critical thinking, and understanding of different perspectives. A spirited cultural sector also elevates Portugal's global image, attracting foreign investments and enhancing its diplomatic stature, which in turn strengthens economic ties and national influence on the global stage.

Considering the vast benefits, investments in Portugal's cultural infrastructure would wisely include the restoration and enhancement of historical sites, to improve accessibility and attract more visitors. Developing new cultural centers and museums would help preserve valuable art and historical artifacts while also serving as hubs for cultural events and exhibitions. Investing in performing arts venues would support the local arts scene, providing spaces for performances that boost the cultural landscape and provide economic opportunities for artists.

Additionally, supporting artistic residencies and workshops can nurture local talent and attract international artists, leading to a more high-spirited and diverse arts community. Advancing digital infrastructure for cultural engagement, such as virtual tours and online exhibitions, can make cultural experiences more accessible, especially for those unable to travel. Finally, implementing sustainable cultural tourism projects can ensure that the influx of visitors enhances rather than degrades Portugal's cultural sites, ensuring long-term preservation and enjoyment.

2 | Construction industry

In assessing the landscape of investment opportunities within the infrastructure sector, it is important to consider the role of the construction industry. This industry is foundational in shaping the feasibility, costs, and execution timelines of infrastructure projects. As a critical component, the construction industry encompasses a diverse range of companies, technologies, and methodologies dedicated to the development and maintenance of infrastructure. The capabilities and health of this industry directly influence project timelines, budgets, and respective executions. Thus, a thorough analysis of the construction industry is vital, providing essential insights that help stakeholders make informed decisions and optimize their investment outcomes.

According to data from the Bank of Portugal for 2022, there are 55 831 companies in the construction sector, representing a turnover of 30 538 million euros (M€) and employing 335 566 people.

Table 14 – Construction Companies per Dimension Classes and per Segment of Activity (2022)

	Micro	Small	Medium	Large	Total
Nr. of companies	86,8%	11,7%	1,4%	0,14%	100%
Turnover	23,8%	32,2%	24,0%	20,0%	100%
Nr. of employees	33,0%	35,0%	19,0%	13,0%	100%

	Construction of buildings	Civil engineering	Specialized Activities	Total
Nr. of companies	59,6%	5,0%	35,4%	100%
Turnover	49,8%	22,8%	27,4%	100%
No. employees	48,9%	16,8%	34,3%	100%

Source: Bank of Portugal, https://bpstat.bportugal.pt/conteudos/publicacoes/1304

In this section, we will examine two primary segments of the industry: building construction and infrastructure construction. The building construction segment covers a variety of projects including residential housing to supply the real estate market, industrial buildings, and service-related structures such as offices and commercial spaces.

This segment also addresses the construction of critical logistics facilities, such as warehouses, which are particularly important in the current market. The construction of critical logistics facilities, such as warehouses, has gained heightened importance in today's market due to several evolving economic and consumer trends. As more people opt for online shopping, the demand for efficient delivery systems has surged, making the role of strategically located and well-designed warehouses crucial. These facilities are pivotal in handling the vast volumes of goods that move from manufacturers to consumers, facilitating quicker and more efficient distribution processes.

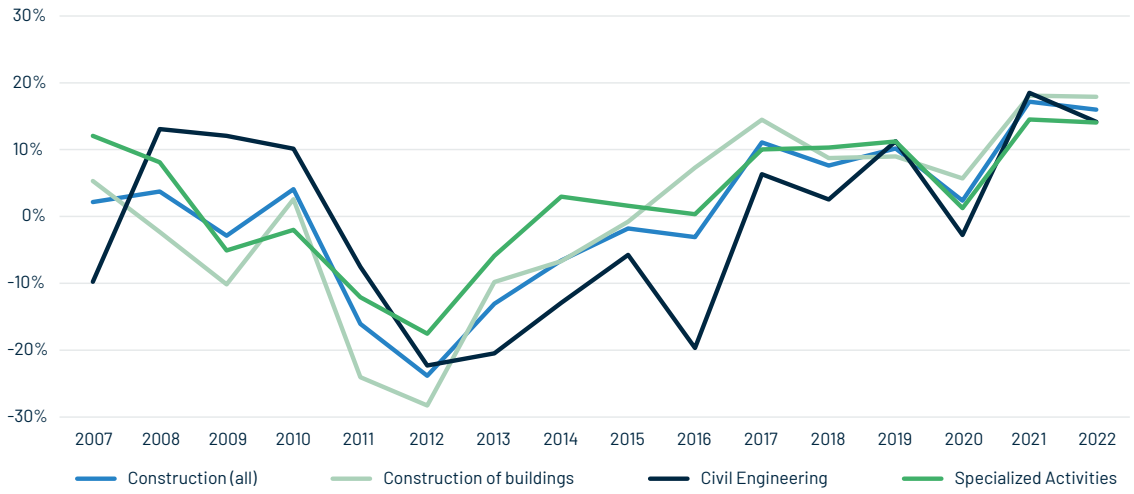
Additionally, the rise in e-commerce has shifted the traditional retail distribution model. Warehouses now serve, not only as storage hubs, but also as critical nodes in the supply chain that enable direct-to-consumer

shipping, bypassing traditional retail outlets. This change is reshaping the landscape of logistics, necessitating the construction of sophisticated logistics centers that can handle complex operations, such as inventory management, order fulfillment, and rapid dispatch. As such, the construction of these facilities is not just about building physical structures, but also integrating advanced technologies that support automation and real-time data tracking to enhance the efficiency of the supply chain. This development underscores the strategic importance of logistics facilities in an increasingly digital and delivery-oriented market environment.

The infrastructure construction segment, also known as civil engineering, includes several vital components. These are: the construction of roads, bridges, tunnels, airport runways, and railways; the development of essential utility networks like water transport, sewage systems, energy distribution, and telecommunications; and other civil engineering projects, including hydraulic engineering endeavors. This segment is significant due to its influence on the stock market and the global presence of the companies involved.

A brief review of the overall industry indicates that the construction sector in Portugal faced substantial challenges due to the financial crisis in the early 2010s. A reduction in public spending and a recession in the private sector led to a noticeable decline in activity, with the absence of construction cranes becoming a common sight in Portuguese cities during those years. The industry began to recover in 2017 and 2018, driven primarily by private building projects and a resurgence in public works, allowing the construction sector to gradually return to its pre-crisis levels. While the COVID-19 pandemic temporarily disrupted this recovery, the years 2021 and 2022 marked a significant rebound in construction activity.

Figure 16 – Annual rate of change of turnover by segments of economic activity



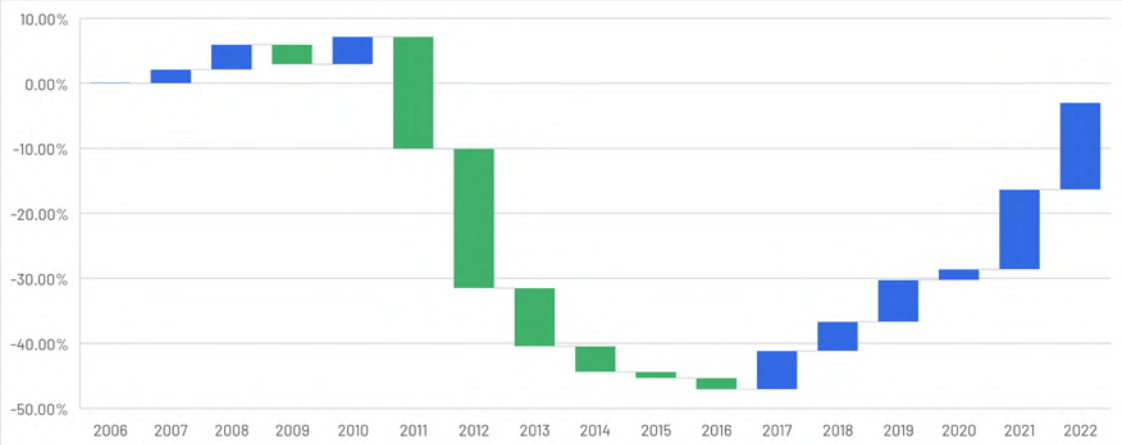
Source: Bank of Portugal, https://bpstat.bportugal.pt/conteudos/publicacoes/1304

In terms of financial performance, in 2022 we were about to return to the 2006 turnover levels for the entire construction industry (the 2022 level is 97% of the 2006 turnover level), but we were still at 90% of the pre-financial crisis level of 2010. As we wait for the 2023 dataset, we expect the good indicators of last year, and the good signs during the current year to be enough for the 2010 levels to have finally been achieved.

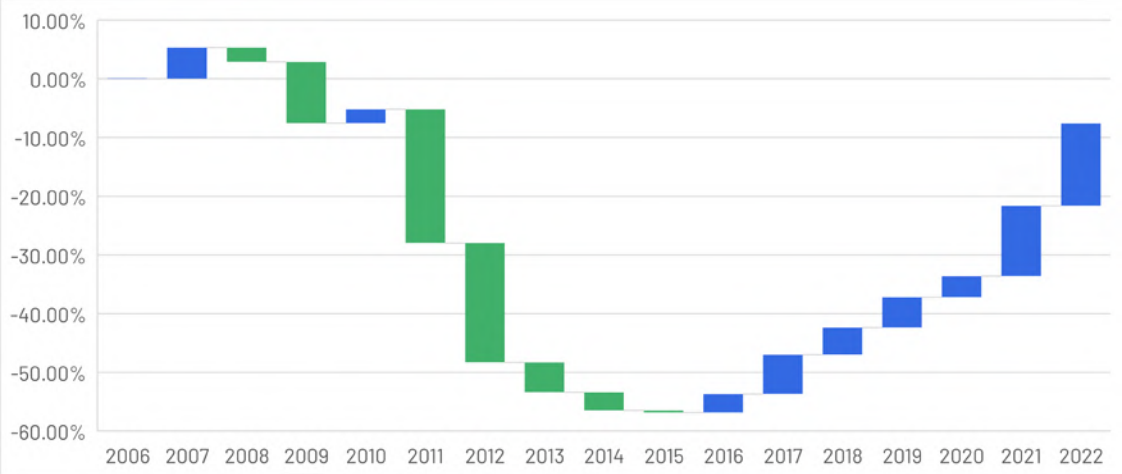
As for the civil engineering segment specifically, it still only recovered to 76% of its former 2006 level by 2022. While this analysis underscores the resilience and gradual revival of the construction industry in Portugal, highlighting its crucial role in infrastructure development amid fluctuating economic conditions, we are still far behind the years before the financial crisis of 2010 (the current level is only 60% of that of 2010). Nevertheless, considering that those levels were achieved under a completely different mindset of public finances, and that significant investments are anticipated in the Resilience and Recovery Program, we are certain that the recovery to pre-crises levels will be attained soon, and under a more solid public finances stance.

Figure 17 – Annual accumulated growth of turnover (Base year: Turnover 2006)

a. For entire construction industry



b. For construction of buildings



c. For civil engineering

Source: adapted from Bank of Portugal

Increase Decrease

The international activity of the construction industry, particularly within the civil engineering segment, plays a vital role in understanding the sector's resilience and adaptability. During the most challenging years of the financial crisis, when domestic markets struggled significantly, it was the international activity of Portuguese construction firms that proved crucial. The proportion of exports in total turnover shows how the international activity, not only helped keep the segment afloat, but also highlighted the competitive edge and capability of Portuguese civil engineering on a global scale. The markets where the Portuguese companies were able to expand activity are areas in Latin America and Africa, where the infrastructural gap is like the one Portugal faced a few decades ago.

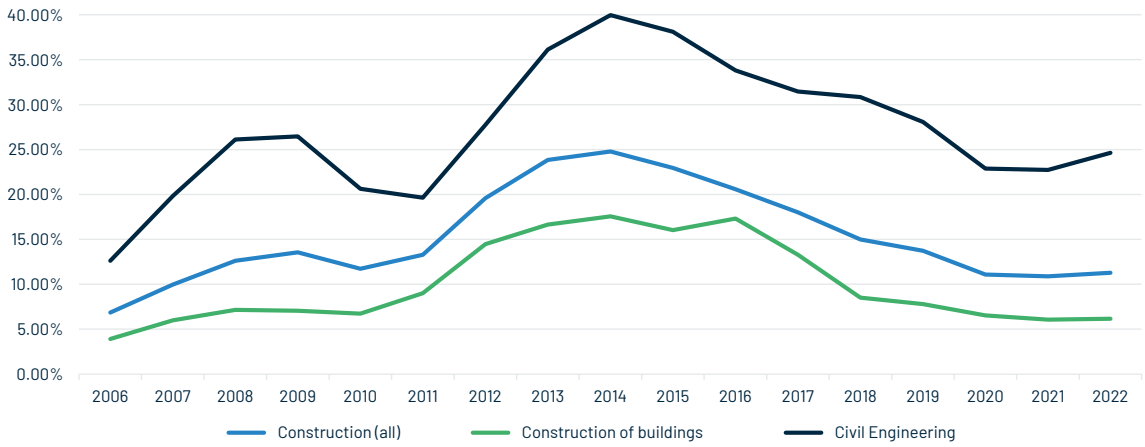
As the domestic market began to recover, the relative weight of exports in the segment's turnover naturally decreased, reflecting a resurgence in local projects and investment. However, data from 2022 suggests a robust recovery in both domestic and international markets. This dual recovery is particularly significant, as it demonstrates the sector's ability to leverage external markets during downturns while simultaneously responding to growth opportunities at home.

Expanding further, the international success of Portuguese civil engineering firms can be attributed to several factors:

- Reputation and Expertise: Portuguese civil engineering companies have developed a strong reputation for quality and expertise in specific areas, such as bridge and road construction. This reputation has been instrumental in winning contracts in competitive international markets.
- Strategic Partnerships: Engaging in strategic partnerships with local firms in target markets has enabled Portuguese companies to navigate different regulatory environments and cultural landscapes, enhancing their ability to secure and manage international projects effectively.
- Diversification of Markets: By entering diverse geographical markets, Portuguese civil engineering firms have mitigated risks associated with economic fluctuations in any single region. This diversification strategy has proven particularly beneficial during periods when the domestic economy was less stable.
- Government Support, Cultural Proximity and Diplomacy: Support from the Portuguese government, in the form of diplomatic ties and trade agreements, has also facilitated smoother entry and operations in foreign markets, allowing firms to expand their international footprint, especially in Portuguese speaking countries in Africa and Latin American countries.

Looking ahead, the ongoing recovery of the civil engineering sector suggests a balanced growth model that includes both strengthening domestic capabilities and expanding international outreach. The continued emphasis on export activities is, not only a growth strategy, but also a risk management tactic that hedges against potential domestic downturns. Maintaining this balance has already been critical for the survival of the larger companies in recent years and will be crucial for the sustained success and stability of the civil engineering sector in Portugal. This approach will likely involve further enhancing technological capabilities, investing in sustainable practices, and strengthening international collaborations to stay competitive in the global market.

Figure 18 – Weight of exports in turnover by segments of economic activity



Source: Bank of Portugal, https://bpstat.bportugal.pt/conteudos/publicacoes/1304

Analyzing the financial situation of the industry on short DuPont Analysis of the Return on Equity, this is a sector characterized by a very heavy operational structure, that drives down Assets Turnover (as measured by Sales/Average Total Assets), which lies way below 0.6 for 2022. This, coupled with a financial leverage (as measured by Total Assets/Total Equity) that is around 3, forces the profitability margin to be high in order to attain competitive levels of Return on Equity.

Noticeably the Civil Engineering segment struggles in the 3 variables that determine the ROE analysis in comparison with the overall industry, which is a reflection of the tight budgetary constraints in public works, the heavy operational structure required to build and a stronger leverage than the other segments in the industry.

Table 15 – Short DuPont Analysis on the Return on Equity for 2022

	Construction (All)	Construction of Buildings	Civil Engineering
Profit Margin 2022	5.56%	6.29%	4.81%
Assets Turnover 2022	0.58	0.49	0.50
Financial Leverage	2.88	2.91	3.17
ROE	**9.3%**	**9.0%**	**7.6%**

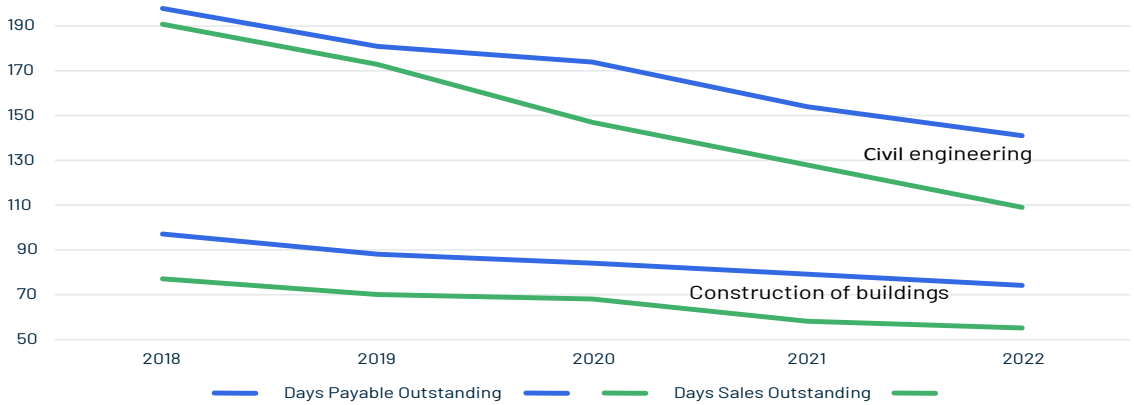
Source: adapted from Bank of Portugal, https://www.bportugal.pt/QS/qsweb/Dashboards

The financial structure of the industry clearly demonstrates the substantial operational burden it carries, while also highlighting two significant concerns related to current assets that merit attention. In the building construction segment, current assets are heavily affected by inventories (properties, finished or under construction, that are yet to be sold), which constitute 34.5% of total assets. In contrast, the civil engineering segment faces a substantial impact from receivables, making up about 16.6% of its total assets. More notably, the civil engineering segment exhibits a more substantial operational structure, accounting for 42.9% of the assets. Additionally, about 10.2% of assets in this segment are tied up in non-financial investments, which include strategic partnerships and other investments essential for ongoing operations. This distribution underscores the complex asset management challenges within the different segments of the construction industry.

The financing structure of the civil engineering balance sheet reveals a notable trend: a decreasing reliance on equity and an increasing dependence on payables, in contrast to the building construction segment. This pattern is characteristic of a segment that heavily utilizes subcontractors. The shift towards payables suggests a strategic approach to managing cash flow and capital, leveraging the flexibility that subcontracting provides to adjust costs and resources dynamically.

This effect of payables and receivables can also be observed by analysing the days payable vs days receivable outstanding differences in both segments. A considerable drop in paying terms in the economy has been observed on both sides of the difference for both segments. Civil Engineering practically halved the receivables days outstanding, increasing the cash cycle difference from about a week to about a month, while the Construction of Buildings segment has about a 3 weeks cash cycle (ignoring inventories) outstanding.

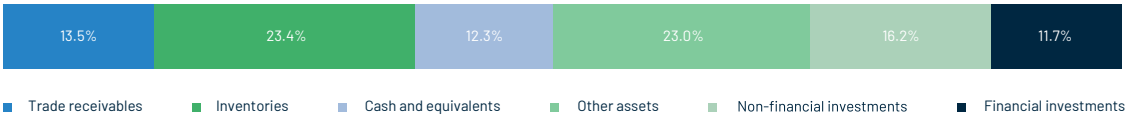
Figure 19 – Cash cycle in number of days (ignoring inventories) for the two segments



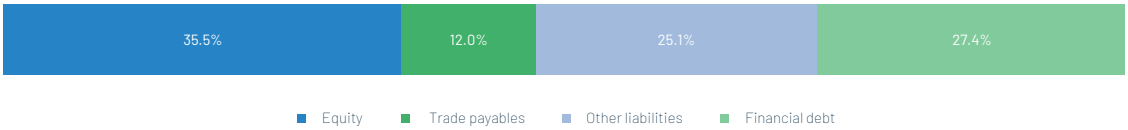
Source: Bank of Portugal, https://bpstat.bportugal.pt/conteudos/publicacoes/1304

Figure 20 – Balance Sheet Structure for 2022

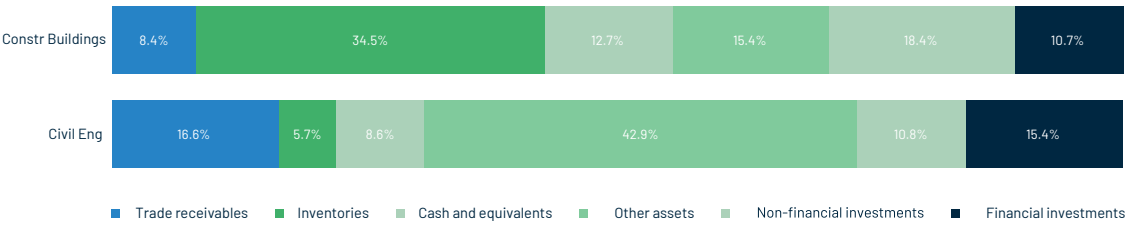
a. Assets for the overall Construction Industry



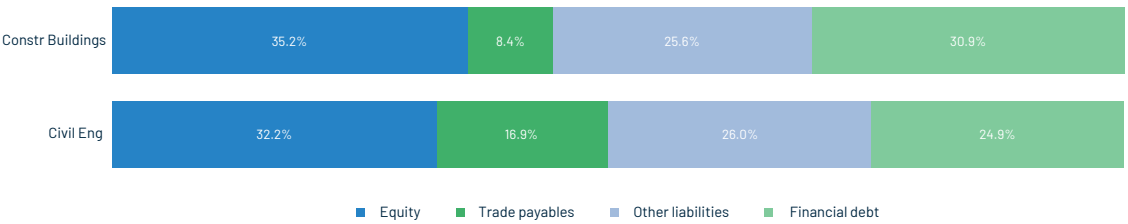
b. Financing (Equity and Liabilities) for the overall Construction Industry



c. Assets for both segments: Civil Engineering and Construction of Buildings



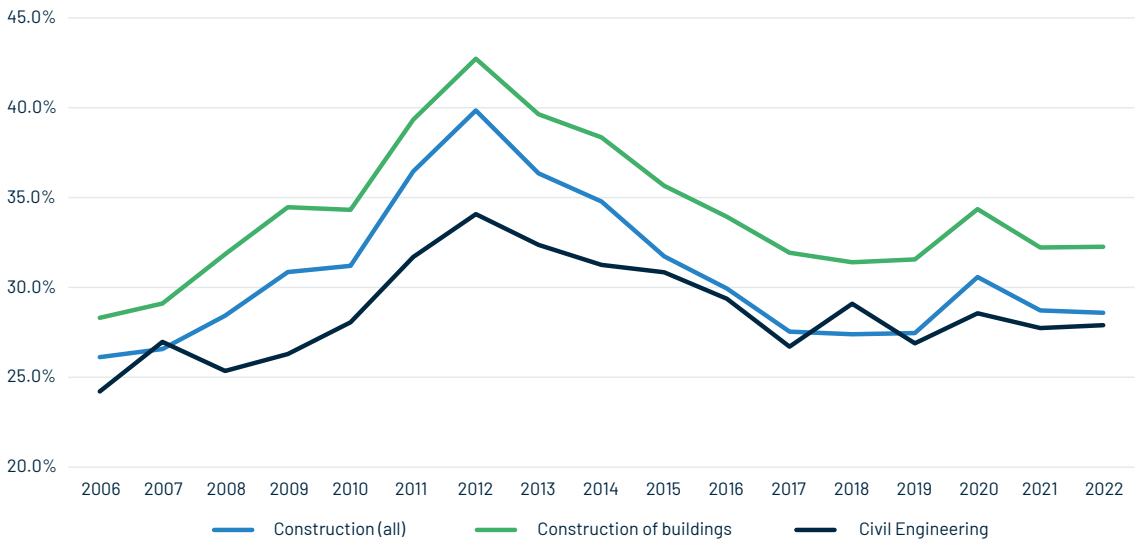
d. Financing (equity and liabilities) for both segments: Civil Engineering and Construction of Buildings



Source: adapted from Bank of Portugal, https://www.bportugal.pt/QS/qsweb/Dashboards

In the profitability analysis, it's essential to highlight the improvement in the margins of these companies. The proportion of companies with a negative EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) peaked in 2012 but has since declined, returning to levels comparable to those before the financial crisis. Additionally, operating income has shown an upward trend, except for a brief dip during the COVID-affected years of 2020. This recovery in profitability indicates a resilient sector adapting well to post-crisis economic conditions.

Figure 21 – Percentage of Companies with negative EBITDA



Source: adapted from Bank of Portugal, https://www.bportugal.pt/QS/qsweb/Dashboards

The evolution of the Return on Equity (ROE) indicator from this analysis provides a clear indication that the construction sector is regaining its stability and returning to solid profitability levels. Notably, the civil engineering segment has shown significantly higher volatility in returns compared to the construction of buildings segment. However, both segments appear to have stabilized recently.

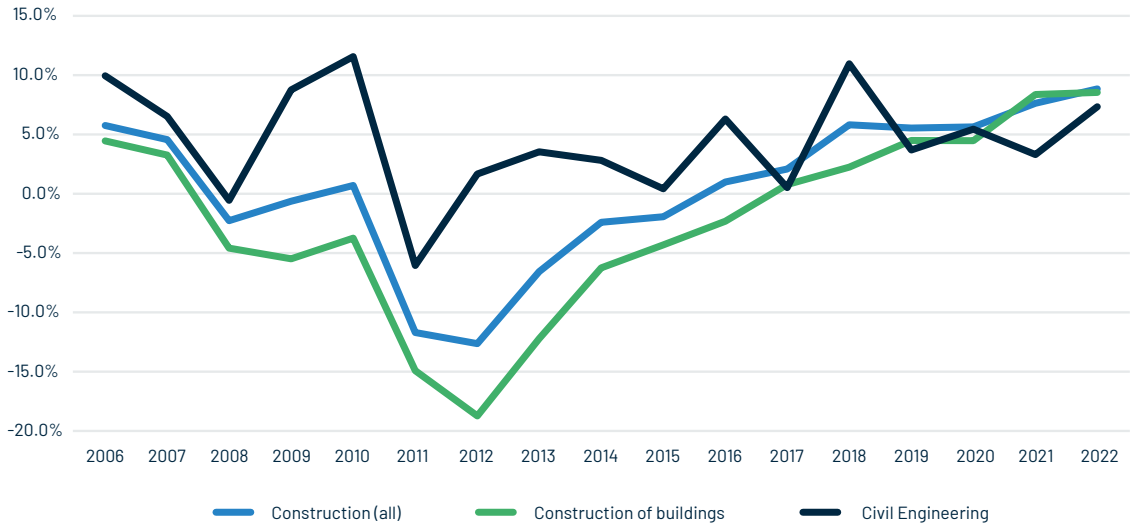
Looking ahead, the construction sector is poised for positive transformation. Significant investments are anticipated across the economy to shift towards a more sustainable paradigm, aligned with Resilience and Recovery Program. These investments are expected to drive growth within the industry, particularly as demand increases for sustainable and green construction practices. This shift is likely to spur innovation, lead to the adoption of new technologies, and open new markets for construction services that align with environmental sustainability goals. Ultimately, this transition is expected to bolster the overall profitability and stability of the sector, positioning it as a key player in the broader move towards sustainability.

Currently, the following companies are listed in Portugal at Euronext.

Table 16 – Listed Construction Companies in Portugal

Name	ISIN	Symbol	Market
CONDURIL	PTCDU0AE0003	CDU	Euronext Access Lisbon
MARTIFER	PTMFR0AM0003	MAR	Euronext Lisbon
MOTA ENGIL	PTMEN0AE0005	EGL	Euronext Lisbon
TEIXEIRA DUARTE	PTTD10AM0000	TDSA	Euronext Lisbon

Figure 22 – Annual Industry and Segment aggregated ROE



Source: adapted from Bank of Portugal, https://www.bportugal.pt/QS/qsweb/Dashboards

3 | Mobility

3.1. Roads

In continental Portugal, the National Road System currently is mainly operated by Infraestruturas de Portugal, EP (InfraP), a state-owned company, with the attribution of managing and operating road and railways in the country. InfraP currently operates a vast network spanning 15,056 kilometers. Of this, 14,042 kilometers fall directly under InfraP's management, while an additional 1,014 kilometers are sub concessioned.

The National Road Network's classification, as outlined in the National Road Plan (Plano Rodoviário Nacional PRN2000), is established by Decree-Law No. 222/98, which organizes roads into three hierarchical tiers: IP, IC, and EN.

a. IP (Main Itineraries): This category comprises 2,325 kilometers.

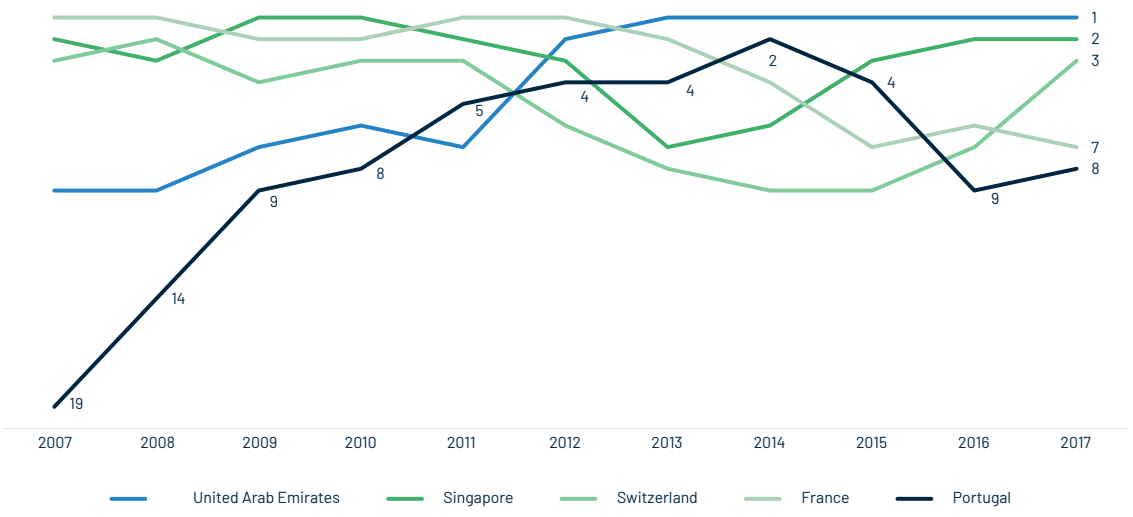
b. IC (Complementary Itineraries): These roads total 1,925 kilometers.

c. N (National Road): Covering the largest expanse, these roads span 4,862 kilometers.

The IP classification encompasses nine routes, commencing with IP1. Spanning from the Northern-Northwest border of Portugal with Spain, in Galicia, to the Southern border on the East of the Algarve, IP1 forms the longest possible L-shaped roadway in the country. Notably, it serves as a vital link between Porto and Lisbon, traversing major motorways and highways across its itinerary.

Navigating Portugal's road designations can be somewhat intricate due to the various categorizations involved. While the national road plan delineates those three primary categories, there's also the classification of "autoestrada" or motorway. These roads feature multiple lanes in each direction, physically separated, and devoid of level crossings. Identified by the distinct blue signage indicative of motorways, they bear designations ranging from A1 to A44. It is on the operation of these "autoestradas" that we find Public Private Partnerships.

Figure 23 – Quality of Roads rankings according to the World Economic Forum



Source: World Economic Forum https://prosperitydata360.worldbank.org/en/indicator/WEF+TTCI+EOSQ057

The quality of road infrastructure in Portugal, particularly on the concessioned motorways, is internationally renowned. The significant advancements achieved between 2007 and 2014 were the culmination of substantial investments made by both InfraP and private concessionaires. However, the inability to sustain this investment momentum has resulted in a degree of infrastructure degradation, placing Portugal in a position of catching up with other nations.

Looking ahead, the upcoming decade presents an opportunity to restructure and elevate the system once more to expectedlevels of excellence through innovative approaches.

There are currently 14 concessions (Public-Private Partnerships – PPP) in place on the Continent. In addition to these, there are also two concessions on the Autonomous Region of Madeira and one on the Autonomous Region of the Azores and 7 sub concessions of InfraP.

Table 17 – Road Concessions in Portugal

Concession	Public counterpart	Private counterpart	Time Frame	Main roads	Extension (kms)	
Brisa	State	Brisa - Concessão Rodoviária, S.A.	1972-2035	A1, A2, A3, A4, A5, A6, A9, A10, A12, A13(S), A14, A15, CSB	1100.1	Real Tolls
Tagus Crossing in Lisbon	State	Lusoponte - Concessionária para a Travessia do Tejo, S.A.	1994-2030	25 de Abril Bridge (A2), Vasco da Gama Bridge (A12)	24.0	Real Tolls
Oeste	State	Auto-Estradas do Atlântico, S.A.	1998-2028	A8, A15	170.0	Real Tolls
Norte	State	Ascendi Norte - Auto Estradas do Norte, S.A.	1999-2029	A7, A11, A42	178.9	Availability
Beira Interior	State	Scutvias - Auto-Estradas da Beira Interior, S.A.	1999-2032	A23	177.5	Real Tolls
Algarve	State	Autoestrada do Algarve – Via do Infante, S.A.	2000-2030	A22	129.7	Availability
Costa de Prata	State	Ascendi Costa de Prata - Auto-Estradas da Costa de Prata, S.A.	2000-2030	A17, A25, A29, A44	76.0	Availability
Interior Norte	State	Norscut - Concessionária de Auto-Estradas, S.A.	2000-2030	A24	156.6	Availability
Norte Litoral	State	Auto-Estradas Norte Litoral – Soc. Conc. - AENL, S.A.	2001-2031	A27, A28	47.4	Availability
Beira Litoral/ Beira Alta	State	Ascendi Beiras Litoral e Alta - Auto-Estradas das Beiras Litoral e Alta, S.A.	2001-2031	A25	172.6	Availability
Grande Porto	State	Ascendi Grande Porto, Auto Estradas do Grande Porto, S.A.	2002-2032	A4, A41, A42, VRI	48.7	Availability
Litoral Centro	State	Brisal - Auto-estradas do Litoral, S.A.	2004-2034	A17	92.7	Real Tolls
Grande Lisboa	State	Ascendi Grande Lisboa - Auto-Estradas da Grande Lisboa, S.A.	2007-2037	A16	23.0	Availability
Douro Litoral	State	AEDL - Auto-Estradas do Douro Litoral, S.A.	2007-2034	A32, A41, A43	73.0	Real Tolls
Via Litoral	Madeira Region	Vialitoral – Conc. Rodov. da Madeira, S.A.	2000-2025	VR1	36.9	Virtual Tolls
Via Expresso	Madeira Region	VIAEXPRESSO da Madeira, S.A.	2004-2029	VE1-VE5	69.0	Virtual Tolls
Açores	Azores Region	Euroscut Açores - Sociedade, S.A.	2006-2036	E-S, E-NS, E-N, E3-1ª	86.4	Virtual Tolls

Source: adapted fromAMT – Relatório das Concessões 2019, 2021
https://www.amt-autoridade.pt/media/3012/relatorio_das_concessoes_2019_amt.pdf

Table 18 – Infraestruturas de Portugal Contract and Subconcessions

Concession	Public counterpart	Private counterpart	Time Frame	Main roads	Extension (kms)	
Infraestruturas de Portugal	State	Infraestruturas de Portugal, S.A.(InfraP) (not exactly a private counterpart)	2007-2082	National Road Network (continental, except concessions)	14235.0	
Autoestrada Transmontana	Infraestruturas de Portugal	Auto-Estradas XXI - Subconcessionária Transmontana, S.A.	2008-2038	A4/IP4	134.0	Availability / Service
Douro Interior	Infraestruturas de Portugal	Ascendi Douro - Estradas do Douro Interior, S.A.	2008-2038	IP2, IC5	242.0	Availability / Service
Algarve Litoral	Infraestruturas de Portugal	Rotas do Algarve Litoral, S.A.	2009-2039	N125	118.0	Availability / Service
Baixo Alentejo	Infraestruturas de Portugal	SPER - Sociedade Portuguesa para a Construção e Exploração Rodoviária, S.A.	2009-2039	IP2,IP8, IC1	342.0	Availability / Service
Baixo Tejo	Infraestruturas de Portugal	AEBT Auto-Estradas do Baixo Tejo, S.A.	2009-2039	A33/IC32	47.0	Availability / Service
Litoral Oeste	Infraestruturas de Portugal	AELO - Auto-Estradas do Litoral Oeste, S.A.	2009-2039	A19/IC2, COL, VPL, A8/ IC36, N242, IC9	112.0	Availability / Service
Pinhal Interior	Infraestruturas de Portugal	Ascendi Pinhal Interior - Auto-Estradas do Pinhal Interior, S.A.	2010-2040	A13/IC3, IP#/IC2	93.0	Availability / Service

Source: adapted fromAMT – Relatório das Concessões 2019, 2021
https://www.amt-autoridade.pt/media/3012/relatorio_das_concessoes_2019_amt.pdf

The various Public Private Partnerships (PPPs) have developed different contractual arrangements, with most now operating under toll systems. Even when tolls are collected, many PPP concessionaires transfer the toll revenue to the state, ultimately receiving payment based on availability or the service they provide. Consequently, the public sector often assumes the demand risk. The primary responsibility of the private sector is to maintain the roads in excellent condition. These contractual terms have been shaped through several negotiations and renegotiations, especially as weakened public finances in Portugal compelled the government to accept terms that placed the majority of risks on the state. As a result, these contracts have become particularly attractive to infrastructure funds seeking stable returns and have increasingly been acquired by such entities. The shareholders of the private counterparts are detailed in the table below.

Table 19 – Shareholders of the private counterparts (as of 2019)

Concessionaire	Concession/Subconcessions	Shareholders	% of Equity
Brisa Concessão Rodoviária, S.A.	Brisa	Brisa – Autoestradas de Portugal, S.A.	70,0%
		Global Roads Invest., SGPS, Lda.	30,0%
Lusoponte, S.A.	Lusoponte	Lineas – Concessões de Transportes, SGPS, S.A.	41,8%
		Vinci Highways, S.A.S.	41,0%
		Autostrade Portugal S.R.L.	17,2%
Auto-Estradas do Atlântico, S.A.	Oeste	Brisa – Autoestradas de Portugal, S.A.	50,0%
		Roadis – Transportation Holding, S.L.U.	50,0%
Ascendi Norte, S.A.	Norte	Ascendi Group, SGPS, SA	75,3%
		Ascendi PT SGPS, SA	24,7%
Scutvias – Autoestradas da Beira Interior, S.A.	Beira Interior	Globalvia Inversiones, S.A.U.	100,0%
Autoestrada do Algarve – Via do Infante, S.A.	Algarve	DIF Participations IV Luxembourg SARL	49,0%
		Cintra Infraestructuras, S.E.U.	48,0%
		Several construction companies	3,0%
Ascendi Costa de Prata, S.A.	Costa de Prata	Ascendi Group, SGPS, SA	80,2%
		Ascendi PT SGPS, SA	19,8%
Norscut, S.A.	Interior Norte	Meridiam NG Portugal, SGPC, S.A.	100,0%
Auto-Estradas Norte Litoral, S.A.	Norte Litoral	DIF Participations IV Luxembourg SARL	51,0%
		Cintra Infraestructuras, S.E.U.	49,0%
Ascendi Beiras Litoral e Alta, S.A.	Beiras Litoral e Alta	Ascendi Group, SGPS, SA	80,2%
		Ascendi PT SGPS, SA	19,8%
Ascendi Grande Porto, S.A.	Grande Porto	Ascendi Group, SGPS, SA	80,2%
		Ascendi PT SGPS, SA	19,8%
Brisal, S.A.	Litoral Centro	Brisa – Autoestradas de Portugal, S.A.	70,0%
		SMLN, S.A.	20,0%
		Banco Comercial Português, S.A.	10,0%
Ascendi Grande Lisboa, S.A.	Grande Lisboa	Ascendi Group, SGPS, SA	80,2%
		Ascendi PT SGPS, SA	19,8%
Auto-Estradas do Douro Litoral, S.A.	Douro Litoral	Brisa – Autoestradas de Portugal, S.A.	99,9%
		Several construction companies	0,1%
Autoestradas XXI, S.A.	Autoestrada Transmontana	Globalvia Inversiones, S.A.U.	95,0%
		Soares da Costa, S.A.	4,0%
		Operalia Infraestructuras, S.A.	1,0%
Ascendi Douro Interior, S.A.	Douro Interior	Lineas - Concessões de Transportes, SGPS, S.A.	80,7%
		Banco Comercial Português, S.A.	4,9%
		Several construction companies	14,4%
Auto-Estradas do Baixo Tejo, S.A.	Baixo Tejo	Brisa – Autoestradas de Portugal, S.A.	36,8%
		TIICInvest – Sociedade Unipessoal, Lda	25,0%
		Several construction companies	38,2%
SPER, S.A.	Baixo Alentejo	Several banks	33,6%
		Several construction companies	49,8%
		Several concession operators	16,6%
Auto-Estradas do Litoral Oeste, S.A.	Litoral Oeste	Roadis – Transportation Holding, S.L.U.	65,0%
		TIICInvest – Sociedade Unipessoal, Lda.	20,0%
		Brisa – Autoestradas de Portugal, S.A.	15,0%
RAL – Rotas do Algarve Litoral, S.A.	Algarve Litoral	Several construction companies	74,4%
		Several concession operators	25,6%
Ascendi Pinhal Interior, S.A.	Pinhal Interior	Ascendi, SGPS, S.A.	80,0%
		Several construction companies	20,0%
Vialitoral, S.A.	Vialitoral	Mirova Core Infrastructure, SARL	35,2%
		Region of Madeira	20,0%
		Several construction companies	40,0%
		Banco BPI	4,8%
Viaexpresso, S.A.	Viaexpresso	Mirova Core Infrastructure, SàRL	23,8%
		Region of Madeira	20,0%
		Several construction companies	56,2%
Euroscut Açores, S.A.	Açores	Cintra Infraestructuras, S.E.U.	89,2%
		Several construction companies	10,8%

Source: adapted fromAMT – Relatório das Concessões 2019, 2021
https://www.amt-autoridade.pt/media/3012/relatorio_das_concessoes_2019_amt.pdf

That said, the current contracts are set to expire within the next decade. The risk-sharing terms of future contracts are likely to change, considering several key factors:

Political risk: Implementing tolls on roads in more isolated regions of the country, where there are few viable alternatives, presents significant political challenges. This is compounded by EU policies mandating tolls on motorways, likely leading to more complex demand risk-sharing arrangements.

Technological and innovation risk: With expected advancements in road technology to support more sustainable mobility options, future contracts will need to be flexible to accommodate various eco-friendly transport methods. This suggests a move towards shorter, more adaptable contracts to incorporate innovative mobility solutions.

Organizational setting: Re-evaluating the organization of mobility systems to integrate sea, rail, and road networks could be crucial. This would entail a comprehensive reassessment of the transportation grid, originally designed with construction deadlines and availability in mind. Now that construction is largely complete, there is an opportunity to integrate roads into a cohesive international (Iberian and trans-European), national, regional, and local framework, treating rail and road transport as complementary for both passenger and cargo movement.

Construction, operation, and maintenance risk: With most construction completed; future contracts can be more flexible. Although operation and maintenance are costly, they carry relatively low risk if consistently managed. Infrastructure should be affordable to maintain and upgrade. In areas with traffic congestion, where expansion isn't feasible, or where traffic is too sparse to justify expansion, new roads or mass transit options like urban, regional, or national rail may be necessary. The introduction of new technologies could position the Portuguese road system as a global collaborative laboratory involving the construction and mobility industries—from vehicle manufacturers to energy providers and from material researchers to urban planners—and, naturally, universities and research centres.

The next decade, supported by government interest and EU funding, will be crucial in leveraging these opportunities, with significant potential for substantial returns and yields.

In terms of the analysis of recent trends and developments, in 2022, the national road network experienced a slight expansion of 0.1% due to the completion of a 7.1 km section in the district of Aveiro, bringing the total to 14,332 km. The road density index continued to decline, reaching 1.44 km (-1.1%). The district of Guarda saw the most significant increase (+1.2%; 5.6 km), while the district of Santarém experienced the largest decrease (-2.0%; 2.06 km). The districts of Lisbon (0.37 km) and Bragança (6.84 km) remained as the districts with the lowest and highest road density indices, respectively.

Daily road vehicle crossings over the Tagus River grew by 13.8% (+7.9% in 2021) to a total of 206.8 thousand vehicles in 2022. Traffic on Ponte 25 de Abril (25th of April Bridge) increased by 13.3% to 141.1 thousand vehicles, surpassing pre-pandemic levels (+0.3% compared to 2019). Traffic on the Vasco da Gama Bridge saw a sharper rise (+14.9%) to 65.7 thousand vehicles. Traffic on this bridge accounted for 31.7% of the total (+0.3 percentage points).

In 2022, the fleet of vehicles presumably in circulation increased by 2.2% to 7.2 million vehicles. The heavy vehicle fleet grew slightly more than the light vehicle fleet (+2.5% and +2.2%, respectively).

Fuel and energy consumption in the road sector grew by 6.1% in 2022 to 5.6 million tons of oil equivalent (tep), according to data provided by DGEG. Diesel remained the primary fuel source (78.0% of the total) with 4.4 million tep consumed. Compared to 2019, there was a decrease of 2.2% in fuel and energy consumption, although gasoline consumption exceeded pre-pandemic levels (+0.5%; 1.1 million tep). The consumption of electricity saw the most significant increase (+129.7%) despite only representing 0.1% of the consumption in tep.

According to information provided by ANSR, the number of accidents with casualties continued to rise in 2022 to 34.3 thousand accidents (+11.7%). The number of victims increased across all categories: the number of fatalities rose by 10.2% to 618 victims; the number of seriously injured increased by 6.5% (2.3 thousand victims); and the number of slightly injured rose by 11.9% (40.1 thousand).

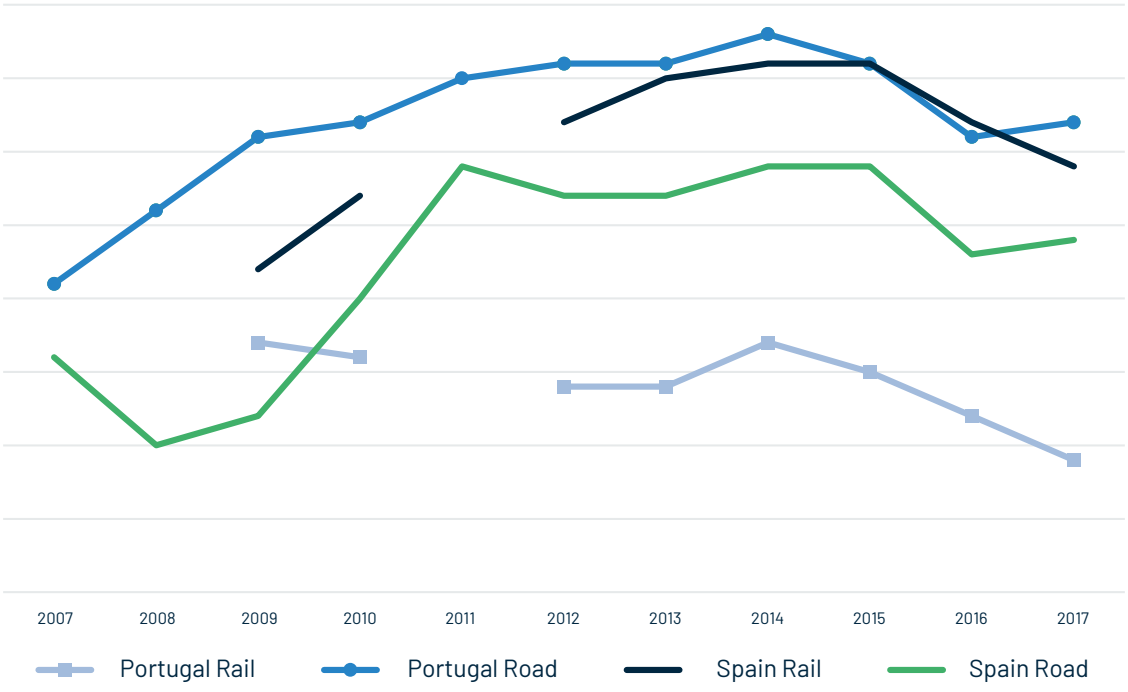
3.2. Railways

Investment in railway infrastructure in Portugal has significantly lagged behind that in road infrastructure. While Portugal boasts a stellar performance in road investments, ranking in the top 10 globally for road quality, its investment in railways has fallen considerably behind. This disparity has resulted in a stark contrast in international rankings, with Portugal's rail quality positioned in the 30s worldwide. This discrepancy highlights the uneven focus and development between the two modes of transportation within the country.

Portugal's excellence in road infrastructure ranks comparably to Spain's highly esteemed rail system, which is renowned for its extensive and world-class high-speed train grid. In Spain, while the road network is robust, it slightly lags behind the rail system, which is a testament to the country's commitment to rail

development. On the other hand, Portugal, which began with a rail system ranking similar to Spain's back in 2009, has seen its position deteriorate over the years.. This marked difference highlights the distinct approaches that the two neighbouring countries have taken regarding the prioritization and development of their transportation infrastructures. It also underscores the potential opportunities for Portugal to enhance and align its rail system more closely with the advanced network of its next-door neighbour, Spain.

Figure 24 – Comparison of Quality of Roads and Rails rankings in Portugal and in Spain as per the World Economic Forum



Source: World Economic Forum (not all years are available for the rail ranking)
https://prosperitydata360.worldbank.org/en/indicator/WEF+TTCI+EOSQ057

This significant disparity in infrastructure development is something recent governments in Portugal are actively seeking to address. Recognizing the imperative of sustainable mobility, there is a clear shift towards enhancing railway infrastructure to reduce reliance on road transport. The move towards more rail is driven by the need to create a more environmentally friendly and efficient transportation network, which is essential for sustainable development. This strategic pivot reflects a broader understanding, that improving rail infrastructure not only supports ecological objectives, but also offers a more sustainable solution for managing the country's long-term mobility needs.

This commitment to enhancing rail infrastructure involves several key projects aimed at expanding and improving Portugal's rail grid. Central to these efforts is the improvement of the heavily saturated rail connection between Lisbon and Porto, which forms the backbone of the national rail system. Additionally, efforts are underway to strengthen rail links to the borders with Spain, focusing on three main axes: Galicia, the central region, and the Lisbon-Madrid corridor.

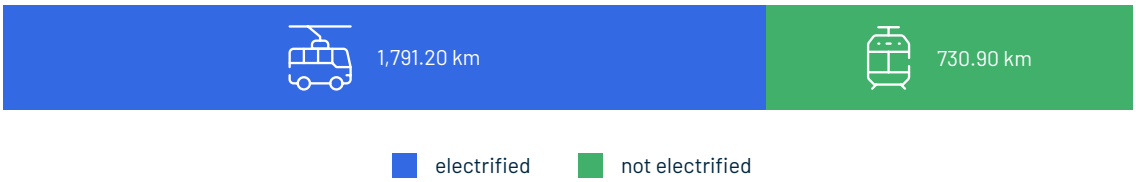
There is also consideration for introducing high-speed rail lines, which would significantly reduce travel times and boost economic connectivity. Proposed lines include one connecting Lisbon to Porto and another linking Lisbon to Madrid, enhancing both passenger and business travel efficiencies.

Moreover, the enhancement of cargo rail connections is a priority, particularly from major Portuguese ports such as Sines, Lisbon, Setúbal, Aveiro, and Leixões. These improvements aim to extend the reach of rail logistics from these coastal entry points to the inland areas and further into Europe. This development is expected to bolster Portugal's position as a logistical hub in Europe, improving the movement of goods across the continent, while supporting more sustainable transport modalities.

In 2022, the national railway network, consisting of both utilized and non-utilized lines and branches, had a total extension of 3,621.6 km, unchanged from 2021. Approximately seventy percent of the network (69.8%) was in operation, spanning 2,527.1 km. The electrified portion of the network (1,791.2 km) accounted for 70.9% of the total operational network, which remained unchanged compared to 2021.

In 2022, the operational network was distributed as follows: 46.6% was the main network (1,177.0 km), 35.2% was the complementary network (890.3 km), and 18.2% was the secondary network (459.7 km). Regarding major infrastructure, the railway included 1,847 bridges, 80 tunnels, 546 stations, and 820 level crossings.

Figure 25 – Extension of the operational railway network by type of electrification, 2022



Source: Survey to the Railways infrastructure

In 2022, the railway fleet consisted of 377 traction vehicles, a decrease of 29 units from 2021. This reduction was the result of a decrease of 12 diesel locomotives, 12 diesel tractors, 4 diesel railcars, and 2 electric railcars, along with an increase of 1 electric locomotive. The freight transportation equipment, in 2022, comprised 2,225 units, marking a decrease of 3.2% (-73 units). The number of passenger transport vehicles (1,011 units) registered a decrease of 6 units, due to the reduction of 7 electric railcars and 12 diesel railcars, offset by the addition of 13 passenger carriages.

In 2022, 285.6 million kWh of electrical energy was consumed for railway transportation, representing an increase of 5.2% (+5.8% in 2021 and -11.0% in 2020). Diesel consumption (20.9 million litres) increased by 9.2%, after an increase of 6.4% in 2021 and a decrease of 1.2% in 2020. In 2022, personnel employed in railway companies stood at 7,000 workers, a decrease of 1.0% from 2021. The main increase in employees occurred in General Administration (+2.6%), while the opposite was observed in workshop staff (-8.9%). General Administration comprised the majority of the workforce (25.6%), followed by Station staff (18.1%) and Driving personnel (15.7%).

In 2022, the extension of the underground and metro networks in Lisbon, Porto, and South Tagus (without overlapping sections) remained unchanged from the previous year: 44.5 km, 66.7 km, and 11.8 km, respectively. As in previous years, the total number of metro vehicles in service across the three systems was 459 units in 2022: Lisbon Metro had 333 vehicles, Porto Metro 102 vehicles, and South Tagus Metro 24 vehicles.

In 2022, the three metro systems consumed a total of 164.5 million kWh of electricity, a 7.9% increase from 2021. This increase was due both to a rise in energy used for other purposes (+10.9%) and an increase in energy used for traction (+7.4%). The Lisbon Metro saw a 9.4% increase in electric energy consumption (+8.3% in traction energy), the Porto Metro had a 6.9% increase (+7.2% in traction), and the South Tagus Metro experienced a 2.5% decrease (-3.3% in traction energy).

In 2022, 2,153 employees worked for the metro companies, marking a 3.8% increase from the previous year (+5.2% in 2021). The Lisbon Metro employed 1,569 people (+3.5% from 2021), the Porto Metro had 453 employees (+7.9%), and the South Tagus Metro employed 131 workers (-5.1%).

In Portugal, public passenger transport services are predominantly managed by CP – Comboios de Portugal, E.P.E. (CP), Fertagus – Travessia do Tejo, Transportes S.A. (Fertagus), and the Spanish State operator Renfe, which codeshares the international lines with CP.

CP's operations encompass several key service areas:

- Long Haul Services: This category includes "Intercidades" (intercity), "Alfa-Pendular" (high-speed), and international connections, facilitating long-distance travel across Portugal and beyond.
- Regional and Inter-Regional Services: These services connect smaller towns and cities within specific regions, playing a crucial role in local connectivity.

- Urban and Suburban Services in Lisbon: These services connect Lisbon to nearby areas including Azambuja, Sintra, Setúbal (Sado Beaches), and Cascais, catering to daily commuters and local travellers.

- Urban and Suburban Services in Porto: Linking Porto with nearby cities such as Aveiro, Caldas de Reis, Braga, and Guimarães, these trains are vital for regional commuting.

Fertagus operates on the North-South Railway Axis, providing suburban rail services between Setúbal and Roma-Areeiro in Lisbon.

Analysing the passenger distribution data from 2019 to 2022, we observe several trends:

Long Haul: There was a decline in 2020, likely due to the impact of COVID-19, with recovery in the subsequent years. The percentage increased from 22% in 2020 to 26% in 2022, indicating a rebound in long-distance travel.

Regional: This segment remained relatively stable, showing a slight increase in 2020 and maintaining a consistent share of around 32% in 2021, with a minor decrease to 31% in 2022. This stability suggests a steady demand for regional transport services.

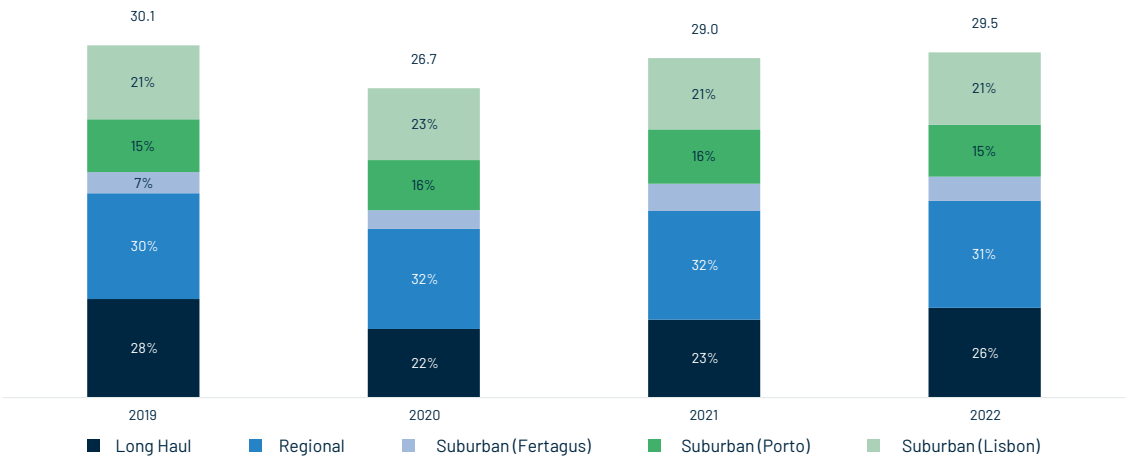
Suburban (Fertagus): The Fertagus line saw an increase from 6% in 2019 and 2020 to 8% in 2021, before dropping slightly to 7% in 2022. This could reflect variations in commuter patterns, possibly influenced by changes in work-from-home policies during the pandemic.

Suburban (Porto): This sector showed a slight increase during the pandemic, stabilizing at 16% in 2021 and then reverting to 15% in 2022, likely mirroring the general mobility trends in the region.

Suburban (Lisbon): Passenger percentages in the Lisbon suburban trains peaked at 23% in 2020 but normalized back to 21% in the subsequent years, indicating a temporary surge during the peak pandemic year followed by a return to usual levels.

These trends highlight the resilience and essential nature of rail services in Portugal, catering to a diverse range of travel needs from local commuting to long-distance journeys. The rail transport sector continues to play a critical role in the mobility infrastructure of Portugal, serving as a reliable alternative to road transport and supporting the nation's goals for sustainable transportation.

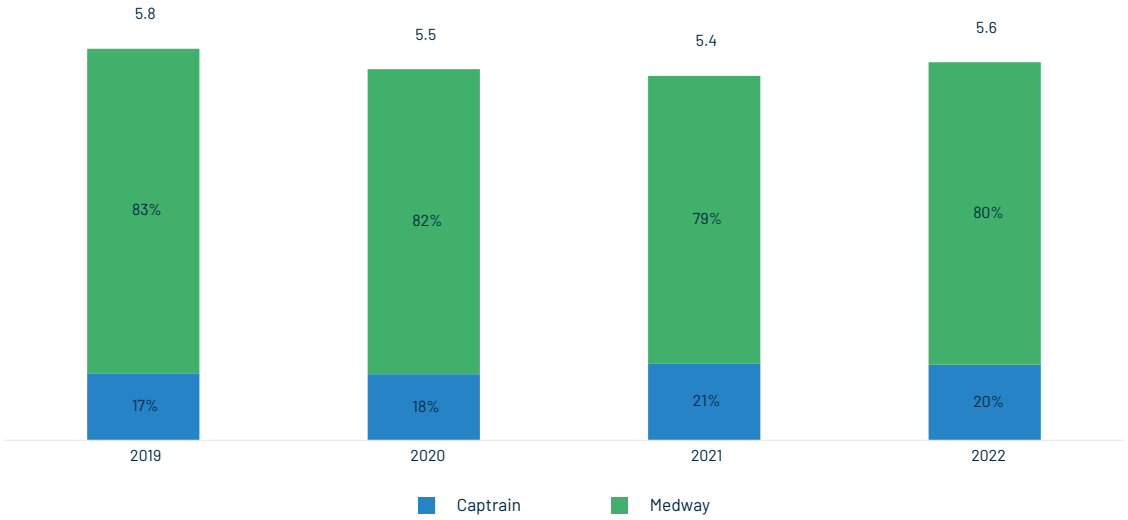
Figure 26 – Evolution and characterization of the passenger offer by type of service, in terms of train-Km (106) run



Source: Operators

In 2022, Medway and Captrain (formerly Takargo) were the sole railway operators managing all rail freight transport within Portugal. Medway dominated the national market, accounting for 92% of the total freight transport measured in tonne-kilometres (TKm). Of Medway's activities, 86% were focused on domestic transport, with the remaining 14% attributed to international operations. Takargo Transporte de Mercadorias S.A., which belonged to the Mota Engil Group, is now, since 2022, Captrain Portugal S.A., owned by SNCF (wholly owned by the French State).

Figure 27 – Evolution and characterization of the freight offer by type of service, in terms of train-Km (10^6) run



Source: Operators

The comprehensive overhaul and enhancement of Portugal's rail network present substantial investment opportunities, driven by European Union mandates and broader sustainability goals. Key initiatives include the continuous modernization of the existing grid, the electrification of remaining segments, and the reduction of single-lane sections to improve efficiency and safety. Introducing high-speed rail lines along main corridors will significantly cut travel times between major cities and boost economic connectivity.

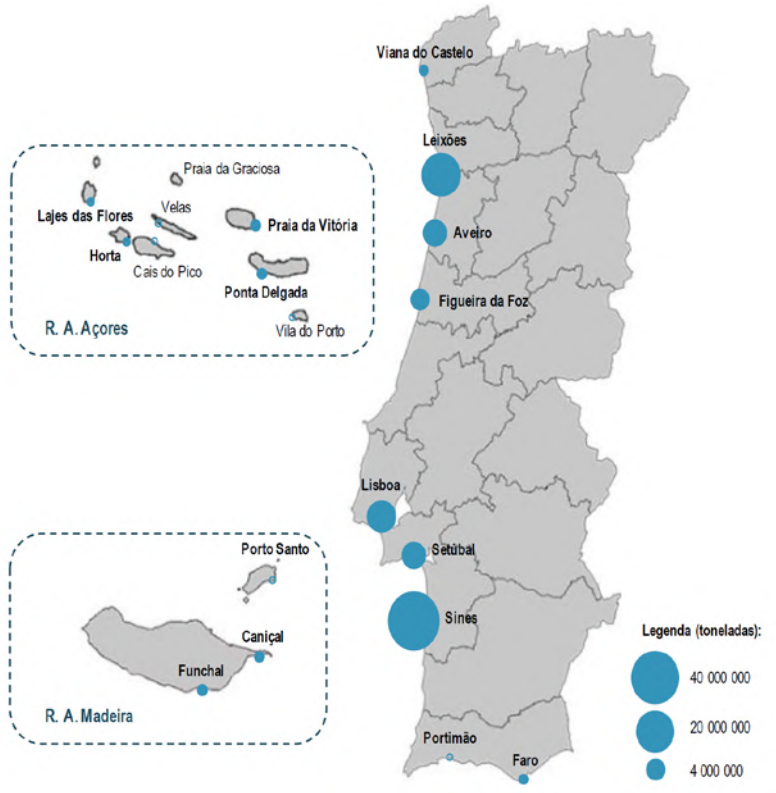
Further improvements are planned for cargo transport, with upgrades to lines and facilities that will better serve cargo operators. This is critical for enhancing logistics, particularly in integrating rail services with major ports and airports, which could transform rail into a more viable option for short-distance urban commutes, regional travel, and connections across the Iberian Peninsula.

Expanding the capacity and frequency of suburban and urban train services, as well as public mass rail transport systems like metros in major metropolitan areas, will address growing demand for sustainable urban mobility solutions.

Given the scale and importance of these projects, relying solely on public funding is not only impractical but also overlooks the potential for private investment. Engaging private investors can accelerate these developments and leverage private sector efficiencies and innovations, making these initiatives not just necessary for compliance with environmental standards, but also lucrative opportunities for sustainable investment.

3.3. Seaways and Ports

Figure 28 – Location and Tonnage of the National harbours



Source: AMT, 2019

Portugal's maritime infrastructure is a crucial component of its economic framework, encompassing an extensive range of activities and opportunities linked to its strategic coastline and pivotal geographic positioning. Here is a detailed overview of the key facets of this infrastructure:

1. **Deepsea Port (Sines):** This port is a critical hub in international shipping routes, essential for handling significant volumes of global cargo and pivotal in supporting Portugal's import and export activities.

2. **Cargo and Freight Docks:** Vital for the efficient movement of goods, these docks support both domestic needs and international commerce, forming the backbone of the country's logistics and supply chain network.

3. **Medium-Sized Ports:** These ports facilitate a variety of shipping activities, from regional cargo operations to local industry support, playing a crucial role in the economic vitality of their respective regions.

4. **Fishing Activity:** As a traditional industry, fishing is a significant contributor to Portugal's local economy and food supply, with specific ports dedicated to supporting fishing fleets and seafood processing.

5. **Navigation Safety and Border Security:** Ensuring the safe and secure navigation of maritime routes is essential for the protection of national borders and the safe operation of both commercial and private vessels.

6. **Essential Maritime Supply for Islands:** The islands of Madeira and the Azores are heavily reliant on continuous maritime supply for essentials, given their isolated locations. Efficient and reliable shipping routes are critical to ensure these islands are well-stocked with necessary goods.

7. **Cruise Ship Destinations:** Cities such as Lisbon, Porto, Funchal, and the Azores have become key destinations in the cruise ship industry, with Lisbon emerging as a particularly important port due to its cultural attractions and strategic location.

8. **Leisure and Yachting:** The leisure industry, including yachting, is a major draw for tourism, with facilities like marinas enhancing the coastal regions' appeal for recreational activities.

9. **Ocean Economy Opportunities:** Beyond traditional sectors like shipping and fishing, the ocean economy is expanding into marine biotechnology, ocean energy, and aquaculture, offering new opportunities for economic growth and employment.

10. **Nearshore and Onshore Opportunities:** Activities here include sustainable fisheries, natural sea sanctuaries, and marine life conservation, all contributing to biodiversity, tourism, and educational initiatives.

11. **Offshore Opportunities:** Opportunities for the extraction of natural and mineral resources are significant, alongside innovations in digital navigation, clean energy, and the integration of maritime operations with space and aeronautics technologies.

These elements collectively underscore the multifaceted nature of Portugal's maritime sector and highlight the potential for further growth and innovation. By capitalizing on these diverse opportunities, Portugal can enhance its maritime infrastructure, promote sustainable practices, and strengthen its position in the global maritime industry.

Maritime Transport

In 2022, 12,800 vessels entered national ports, a 5.3% increase compared to 2021, representing a total gross tonnage (GT) of 236.8 million, up by 25.0%. Of these, 11,260 were cargo vessels, marking a 1.9% increase from the previous year, with a gross tonnage of 170.2 million GT, a growth of 3.2%.

Additionally, 1,542 passenger vessels entered the ports in 2022, a significant increase of 40.2% from 2021, with a gross tonnage of 66.7 million GT, a staggering rise of 171.3%. Among these, 871 were cruise ships, showing a 136.0% increase, following a 126.4% rise the previous year.

Container ships accounted for 35.6% of the total gross tonnage of vessels entering national ports (down from 45.1% in 2021), followed by cruise ships (25.9%, up from 10.4% the previous year), and liquid bulk carriers (17.3%, down from 19.6% in 2021). Passenger ships made up 2.3% of the total.

At the Leixões port, 18.6% of the vessels entered, in Sines 14.8%, and in Lisbon 15.1%, representing 13.9%, 34.9%, and 19.2% of the total gross tonnage, respectively. In the autonomous regions of the Azores and Madeira, 17.4% and 10.0% of the vessels entered, corresponding to 5.6% and 14.3% of the total gross tonnage, respectively.

Overall, the national maritime ports handled 85.0 million tons of cargo, an increase of 2.3% after a rise of 4.7% in 2021. This follows declines of 7.0%, 5.6%, and 3.2% recorded in 2020, 2019, and 2018, respectively. The cargo comprised 32.6 million tons loaded (down 1.6%; up 3.2% in 2021) and 52.5 million tons unloaded (up 4.9%; 5.6% the previous year).

In 2022, Portuguese ports recorded a total of 71.5 million tons of international traffic, showing a slight decrease of 0.1% after an increase of 4.8% in 2021. This accounted for 84.1% of the total traffic, divided between 26.1 million tons loaded (a decrease of 4.5%) and 45.3 million tons unloaded (an increase of 2.6%).

Of the goods loaded for Europe, 15.6 million tons were destined for the continent, making up 59.6% of the total. Within this, 42.0% was destined for the European Union (EU). In the EU, Spain was the top destination with 3.0 million tons (a decrease of 1.6%), constituting 11.5% of the total loaded goods, followed by the Netherlands with 3.0 million tons (an increase of 2.0%) and Italy with 1.0 million tons (3.8% of the total).

Outside the EU, the United Kingdom stood out with 2.8 million tons (an increase of 20.9%), making up 10.8% of the total, and Turkey with 794,500 tons, accounting for 3.0% of the total. The American continent was the destination for 6.5 million tons of loaded goods (a decrease of 10.5% compared to the previous year), making up 24.7% of the total, of which 3.2 million tons were destined for the USA (a decrease of 14.1%).

For Africa, 2.7 million tons were loaded, accounting for 10.5% of the total loaded goods. Key destinations included Morocco with 601,700 tons (2.3% of the total), Cabo Verde with 552,300 tons (2.1%), and South Africa with 416,700 tons (1.6%). Asia was the destination for 1.1 million tons of goods (a decrease of 11.7% and making up 4.3% of the total), with China receiving 297,500 tons and Singapore 282,300 tons, both accounting for 1.1% of the total.

Imports into national ports totalled 45.3 million tons of goods from abroad (an increase of 2.6% compared to 2021). Goods originating from Europe accounted for 19.2 million tons (a decrease of 11.7%), making up 42.3% of the total, of which 14.0 million came from the EU (a decrease of 2.7%; 30.9% of the total). Spain (5.0 million tons), the Netherlands (3.2 million tons), and France (1.5 million tons) were notable contributors.

From non-EU European countries, Turkey stood out with 2.6 million tons, making up 5.7% of the total, and the UK with 1.2 million tons (2.7% of the total). From America, 13.3 million tons arrived (an increase of 18.5% compared to 2021; 29.4% of the total), notably from Brazil with 7.8 million tons (17.2% of the total) and the USA with 3.1 million tons (6.8% of the total).

From Africa, 8.3 million tons were unloaded, representing 18.3% of the total tonnage, with 3.5 million tons originating from Nigeria (7.8% of the total) and 1.4 million tons from Algeria (3.0%). Asia contributed 4.3 million tons (9.4% of the total), with India sending 1.1 million tons (2.4% of the total) and China 924,600 tons (2.0% of the total). The ratio of loaded to unloaded goods stood at 57.7%, a decrease of 4.2 percentage points from 2021.

In 2022, Portuguese ports loaded 32.6 million tons of goods, which represented a 1.6% decrease compared to 2021. The category "Coke and Petroleum Products" saw a 2.8% reduction from the previous year, yet it remained the most significant, comprising 24.0% of the total. This was followed by the category "Other Non-metallic Mineral Products," which saw a 0.6% increase from the previous year, representing 13.3% of the total goods loaded.

Conversely, 52.5 million tons of goods were unloaded at the national ports, marking a 4.9% increase from the previous year. The leading category was "Coal, Lignite; Crude Petroleum and Natural Gas" (up 4.9% from 2021), followed by "Products of Agriculture, Animal Production, Hunting, and Forestry; Fish and Other Fishing Products" (up 20.6% from 2021), representing 26.9% and 15.7% of the total, respectively.

Regarding the classification of dangerous goods under the "IMDG - International Maritime Dangerous Goods," 32.2 million tons of such goods were moved, marking a 3.1% increase (down 1.5% in 2021). "Flammable Liquids" increased by 2.5% from 2021, maintaining their dominance at 76.0% of the total. This was followed by "Compressed, Liquefied or Dissolved Gases under Pressure" (down 0.4% from 2021), which accounted for 17.2% of the total, and "Substances Liable to Spontaneous Combustion" (up 28.9% from 2021) comprising 1.9% of the total movement. Unloading movements accounted for 72.7% of the total movement of dangerous goods, increasing by 1.4 percentage points from the previous year.

The number of cruise ship passengers surged to 1.1 million due to an increase of 326.9% from 2021 (+17.9% in 2021). Transit passengers, whether disembarking or not, saw a 337.7% increase, while the numbers of embarked and disembarked passengers grew by 265.0% and 219.1%, respectively. Lisbon remained the busiest port, experiencing a 296.6% increase to 495.3 thousand passengers moved (43.9% of the total), followed by the port of Funchal, which saw a 260.6% increase from 2021, moving 413.9 thousand passengers (36.7% of the total).

River Transport

In Portugal's inland waterways, regular crossing services (national and international) transported 19.3 million passengers, marking a 44.6% increase from the previous year (+2.0% in 2021, -42.8% in 2020). International passenger transport on the Guadiana River accounted for 0.6% of the total (up 0.2 percentage points from 2021). A total of 330.8 thousand vehicles were transported (up 17.0%; +3.2% in 2021 and -28.0% in 2020), divided between 277.2 thousand cars and heavy vehicles and 53.5 thousand motorcycles and bicycles, registering increases of 15.5% and 25.5%, respectively. The Tagus River saw 15.8 million passengers cross (+47.9%, -1.1% in 2021), representing 81.9% of the total river transport. The "Terreiro do Paço - Barreiro" and "Cais do Sodré - Cacilhas" connections accounted for 52.9% and 35.1% of the total Tagus routes, respectively.

In summary:

Investing in Portugal's seaways and maritime sector may present some interesting opportunities:

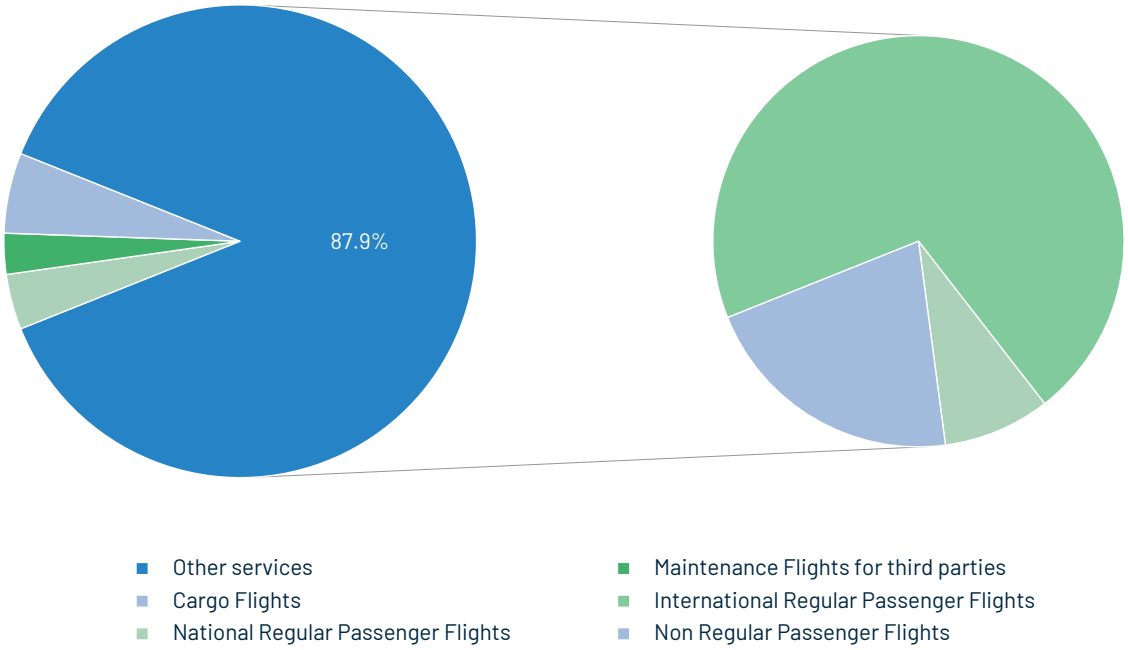
- Strategic Location: Portugal's prime position on the Atlantic coast offers a gateway to Europe, Africa, and the Americas, making it a critical node in international shipping routes.
- Robust Infrastructure: With major ports like Sines and Lisbon and a commitment to enhancing maritime and port facilities, Portugal is poised for growth in cargo handling and logistics.
- Growing Cruise Destination: The popularity of Lisbon, Porto, Funchal, and the Azores as cruise destinations, especially with the booming cruise market, points to significant tourism and service sector opportunities.
- Diverse Maritime Economy: Opportunities abound not just in traditional shipping but also in the burgeoning areas of the ocean economy, including marine biotechnology, aquaculture, and renewable energy.
- Government Incentives: Portugal offers various incentives for maritime investments, fostering a supportive environment for business growth and development.
- Sustainable Development: With a focus on sustainable and eco-friendly maritime solutions, investors have the chance to contribute to and profit from green initiatives that are increasingly valued globally.

3.4. Airways and airports

In 2022, the commercial air transport sector in Portugal witnessed a significant surge in business volume, registering €4.8 billion, a 103.2% increase from 2021, and a 9.9% rise from pre-pandemic levels in 2019. The gross added value (GAV) for the sector reached €670.4 million, up from €125.3 million in 2021. Total gross investment in the sector also saw a substantial increase of 60.2%, with investments in flight equipment rising sharply by 83.9%.

Passenger transport services accounted for 87.9% of the total business volume, up from 79.7% in 2021, with regular traffic experiencing significant growth to 69.4% from 51.8% in 2021. Cargo transport made up 5.5% of the total business volume, down from 10.5% in 2021.

Figure 29 – Turnover of national carriers in 2022, by type of revenue



Source: Operators, ANAC and INE

As of December 31, 2022, the workforce in the national air transport companies numbered about 11,000 employees, marking a slight decrease of 0.3% from 2021. The fleet at the end of 2022 comprised 220 aircraft with a maximum takeoff weight of 9,000 kg or more, a decrease of six aircraft from 2021. The average age of these aircraft was 10 years.

Fuel consumption (Jet A1) by certified air transport companies in Portugal totaled 1.2 million tons in 2022, marking a 74.2% increase from 2021, with a total fuel cost of €1.3 billion, up 232.5%.

National operators offered 21.4 million seats in 2022, an 80.6% increase from 2021, with 16.2 million passengers transported, up 121.5%. The occupancy rate reached 75.8%, up from 61.8% in 2021.

Cargo and mail transport by national air operators totaled 103.4 thousand tons in 2022, reflecting a 32.5% increase from the previous year.

By the end of 2022, the National Civil Aviation Authority had certified 38 airport infrastructures, the same number as the previous year. Of the 82 certified runways, 16 held the highest certification, allowing the movement of aircraft with a maximum takeoff weight exceeding 350 tons.

Commercial traffic at national airports and aerodromes accounted for 435,500 aircraft movements in 2022, a 61.8% increase, with regular commercial traffic accounting for 95.1% of the total commercial traffic.

In terms of passenger movement, national airports and aerodromes handled 56.8 million passengers in 2022, up 121.7% from 2021, though still not reaching pre-pandemic levels (-5.6% compared to 2019). Disembarked passengers numbered 28.4 million, slightly exceeding the number of embarked passengers (28.1 million). Direct transit passengers totaled 197,400, up 27.0%.

In cargo movement, there was a 17.1% increase in cargo handling (totaling 209.4 thousand tons) and a 14.3% increase in mail movement (13.5 thousand tons).

Lisbon Airport concentrated 45.5% of landed aircraft movements and 49.8% of passenger movements. Porto Airport and Faro Airport also saw significant increases in aircraft movements and passenger numbers. Madeira and Ponta Delgada airports also recorded substantial growth in both metrics.

The busiest air traffic routes to and from Portugal in 2022 were primarily with the United Kingdom, France, Spain, Germany, and Italy, each showing significant increases in passenger numbers.

4 | Housing and Real Estate

Portugal's housing and real estate sector is grappling with a complex set of challenges that reflect broader socio-economic trends within the country. Key among these challenges are issues of affordability and aging infrastructure, exacerbated by demographic changes and shifts in societal needs. These challenges are particularly pronounced in urban hubs like Lisbon and Porto, as well as tourist-heavy regions such as the Algarve.

In recent years, cities like Lisbon and Porto have experienced significant gentrification, driven largely by mass tourism and foreign investment. This influx has transformed these historic cities into highly desirable destinations for both short-term tourists and foreign residents, looking to capitalize on lower living costs compared to other Western European cities. As a result, property values and rental prices have surged dramatically.

This rise in property prices, while beneficial to property owners and investors, has created a pressing social issue. Many local residents, particularly those on fixed or lower incomes, find themselves priced out of neighborhoods where they have lived for years, leading to a displacement effect. In the Algarve, the situation mirrors these developments, with seasonal tourism driving up rental prices, making it difficult for locals to find affordable housing year-round.

In response to these challenges, the Portuguese government has implemented various strategies, including the Resilience and Recovery Program. This initiative is part of a broader European effort to ensure that the recovery from the economic impacts of COVID-19 is sustainable and equitable. Specifically, the program aims to address the adverse effects of gentrification and provide more inclusive housing solutions.

- Increase Housing Supply: By funding the construction of affordable housing units and rehabilitating existing buildings, the government aims to increase the housing stock available to lower and middle-income families.
- Regulate Rental Markets: Introducing policies to control rent increases and protect tenants from being priced out of their homes due to tourism-driven demand.
- Support for Vulnerable Populations: Offering subsidies and support programs for the elderly, low-income families, and migrants to secure housing.
- Promote Sustainable Tourism: Encouraging the development of tourist accommodations that do not adversely affect local housing markets, such as regulating short-term rental platforms.

For investors, these government initiatives open up a range of opportunities. The focus on building and renovating affordable housing, for instance, allows investors to engage in projects that not only yield returns but also benefit from government incentives and support. Furthermore, as the government looks to balance tourism growth with housing affordability, investments in alternative tourist accommodations outside of the traditional hotspots could prove lucrative.

Investors can also look to sectors that directly respond to demographic changes, such as developments tailored for the elderly, which are increasingly in demand due to Portugal's aging population. Similarly, student housing continues to be a robust sector given Portugal's growing reputation as an educational hub in Europe.

Ultimately, while the challenges in Portugal's housing and real estate sector are significant, they also present a unique spectrum of opportunities for those willing to engage with and invest in solutions that align with governmental and societal goals. By focusing on sustainability, inclusivity, and strategic growth, investors can play a crucial role in shaping the future of Portugal's urban landscapes.

Here are a few dimensions of the issue that need to be addressed in the upcoming decade:

1. Renovation and Recovery

Portugal has seen an uptick in the renovation of older buildings, particularly in urban areas. Investors can capitalize on government (central, regional and mostly local) incentives aimed at urban renewal and the rehabilitation of dilapidated properties. This, not only preserves cultural heritage, but also revitalizes neighborhoods and boosts property values.

2. Public Real Estate Recovery

The government, as one of the largest property owners in the country, has initiated several programs to utilize and transform public real estate assets. Investment opportunities abound in partnerships for converting underused public buildings into housing, lodging, commercial spaces, or mixed-use developments, thereby generating significant returns while aiding public resource management.

3. Local Solutions through Municipalities

Municipalities across Portugal are increasingly involved in local housing solutions, often providing land and regulatory support for housing projects. Investors have opportunities to collaborate with local governments to develop housing that aligns with community needs and local economic development plans.

4. Housing Cooperatives and Third Sector Initiatives

There is growing interest in cooperative housing models, driven by the third sector. These initiatives focus on sustainable and affordable housing solutions, often supported by local government subsidies and grants. Investing in cooperative housing projects can yield stable returns due to the managed costs and shared responsibilities among residents.

5. Home Adaptation for the Elderly

With Portugal's aging population, there is a pressing need for homes adapted to the safe lifestyle of the elderly, aiming to postpone institutionalization. This includes investments in retrofitting homes with mobility aids, emergency systems, and other age-friendly features, creating a significant market for specialized residential developments.

6. Tourism and Temporary Lodging

The tourism boom continues to drive demand for temporary lodging. Investors can benefit from converting traditional properties into vacation rentals or boutique hotels, particularly in tourist-heavy areas. This sector offers high occupancy rates and the potential for significant rental income, particularly with the rise of platforms like Airbnb.

7. Housing for Migrants

With the increasing influx of migrants, there is a growing demand for suitable housing solutions. This demographic often faces challenges in accessing quality housing. Developing housing projects that cater specifically to the needs of migrants can tap into new tenant bases and government support programs, providing social and economic returns.

8. Student Housing

The increase in student mobility, both locally and internationally, has created a demand for student housing near universities and educational institutions. This sector promises robust demand and resilience to economic downturns, making it an attractive opportunity for developers and investors.

Final Considerations on the Housing Market

The dynamics of Portugal's real estate market have evolved through various stages, influenced by numerous factors over the decades. Traditionally, real estate in Portugal was considered a stable and secure investment. This perception was reinforced by a culture of saving, alongside encouragement from banks and financial institutions that promoted mortgages, especially when interest rates were low. Construction companies and urban planners further supported this trend through initiatives aimed at urban renovation. This convergence of factors led to a conservative market characterized by an aging population in city centers and a structural excess in supply.

However, as tourism surged in the mid-2010s and the effects of demographic shifts began to manifest, the real estate market experienced a dramatic transformation, particularly in the urban centers of Lisbon and Porto, but also affecting broader areas. The influx of tourists and the shifting demographics created ideal conditions for intensified renovation activities. Prime tourist locations began to see the development of luxury condominiums, leading to a sharp increase in housing prices. A market that once had an excess supply suddenly faced waves of heightened demand, which began to ripple outward, affecting broader geographic areas. This shift attracted a significant influx of real estate funds, capitalizing on opportunities in residential properties, office spaces, and tourism accommodations.

These evolving market conditions in Portugal present a plethora of opportunities for astute investors. By leveraging government initiatives and aligning with demographic trends and specific sector needs, investors can realize profitable ventures that also support community and urban development. This approach not only promises financial returns, but also offers the potential to make meaningful contributions to the communities and demographics impacted by these investments. As the real estate market continues to adapt to both challenges and opportunities, the role of informed and strategic investment becomes ever more crucial in shaping the sustainable growth and transformation of Portugal's urban landscapes.

5 Infrastructure in response to Climate change

5.1. Water Infrastructure

As climate change impacts Portugal, particularly the southern regions, water shortages are becoming a significant concern. To address and mitigate these challenges, Portugal could benefit from adopting several strategies, inspired by several nations, known for their ultra-efficient water management. These strategies include investing in four key types of infrastructure: water desalination plants, wastewater recycling and reuse facilities, water transportation systems from north to south, and groundwater storage systems. Such investments would not only help in saving water but also ensure its rational use across the country.

1. Water Desalination Plants:

These facilities are crucial for transforming seawater into potable water. Desalination involves removing salts and other impurities to provide fresh water suitable for human consumption and irrigation. The technology, while energy-intensive, has advanced significantly, with improvements in reverse osmosis making it more energy-efficient and cost-effective. This solution is particularly viable for coastal regions and can serve as a reliable water source during prolonged droughts.

Desalination can be an essential component in addressing water needs for water-intensive agriculture and managing peak demand during dry summer months, particularly in regions like the Algarve, where agriculture and tourism significantly strain water resources.

Crops like Citrus and Avocado require substantial water, particularly in their growing and fruit-bearing stages. In areas like the Algarve, where natural water resources can be limited, desalination provides a steady and reliable water supply that is crucial for maintaining the health and yield of these crops. This is vital not only for local consumption but also for the export markets these agricultural products often serve.

The primary advantage is the consistent availability of water, irrespective of seasonal variability in rainfall. This reliability allows farmers to plan and maintain their irrigation schedules without the risk of water shortages, ensuring crop health and productivity. Moreover, desalinated water can be tailored to have lower levels of salts and minerals, which is beneficial for the soil health and reduces the risk of salinization, a common issue in regions relying heavily on groundwater for irrigation.

Golf Courses in the Algarve are significant to the region's tourism and local economy but are also highly water-intensive. Using desalinated water for maintaining these courses can prevent the depletion of local freshwater resources, which are necessary for residential and ecological needs.

Incorporating desalinated water for irrigation in golf courses is a sustainable practice that aligns with global trends in sports and recreation management. It ensures that natural water bodies and groundwater are conserved and that the recreational areas continue to contribute economically without harming the local environment.

The influx of tourists during the summer significantly increases water demand, stressing the already scarce water resources. This surge can lead to water shortages and restrictions, impacting not only residents but also the tourist experience and the hospitality industry.

By supplementing the existing water supply with desalinated water, regions can manage the peak loads more effectively. Desalination plants can operate continuously or increase output during high-demand periods, providing a buffer that helps maintain water supply without overtaxing local resources.

Modern desalination facilities can be designed to be scalable and flexible in operation. This means they can increase production in response to the higher demand during tourist seasons, ensuring that both the local population and the tourists have adequate water.

Incorporating desalination into the water management strategy of water-scarce regions like the Algarve provides a solution that addresses both the agricultural demands and the seasonal peaks in water usage, thereby supporting sustainable economic growth and environmental conservation. This is already being done, but the scale needs to be increased and having private investment involved is something to be considered. This is something that should be used in other coastal areas further North, along the Atlantic shore.

2. Wastewater Recycling and Reuse Facilities

By treating and reusing wastewater, these facilities significantly extend the utility of water resources. Advanced treatment processes ensure that recycled water meets safety standards for various uses, including agricultural irrigation, industrial processes, and replenishing water bodies. This not only conserves fresh water but also reduces the environmental impact of wastewater discharge, making it a sustainable component of water management strategies.

Again, focusing on the Algarve, where the water shortages are more commonly felt, the increased presence of tourists during the summer months significantly raises the region's water demand, which presents both a challenge and an opportunity for sustainable water management. The key lies in the recycling and reuse of wastewater, a practice that becomes even more advantageous as water usage escalates.

The more tourists stay and engage in daily activities in the Algarve, the more wastewater is generated. This wastewater, when properly treated, becomes a valuable resource rather than a waste product. Advanced treatment processes allow wastewater to be cleaned and repurposed for other needs. These processes remove contaminants to levels that meet strict safety standards, making the treated water suitable for a variety of uses, including irrigation and industrial processes.

Treated wastewater can be especially beneficial for irrigating crops such as citrus fruits and avocados, which require substantial water inputs. Utilizing recycled water for agriculture in the Algarve not only conserves freshwater aquifers and resources but also ensures that agricultural productivity is maintained even during periods of low rainfall.

Using treated wastewater in agriculture near urban areas offers additional advantages. It reduces the need to transport fresh produce over long distances, cutting down on transportation costs and carbon emissions. This local production and consumption cycle enhances food security and supports local economies.

By using recycled water for agricultural and landscaping needs, such as golf courses, the pressure on the already depleted Algarve's natural freshwater aquifers is significantly reduced. This is crucial for maintaining the ecological balance and supporting biodiversity in the region.

Treating and reusing wastewater minimizes the volume of untreated effluents discharged into rivers and seas, thereby protecting marine and coastal ecosystems from pollution. This also aligns with European regulations and global environmental standards, bolstering the region's green credentials. The capacity to treat and reuse wastewater can be scaled up during peak tourist seasons, offering a flexible and responsive approach to water management. This ensures that water availability is aligned with demand, optimizing resource use throughout the year.

In summary, the integration of wastewater recycling and reuse facilities in the Algarve provides a sustainable solution that harnesses the increased water output during tourist seasons. It supports local agriculture, reduces environmental impact, and offers a practical approach to managing seasonal fluctuations in water demand. This not only promotes sustainability but also enhances the region's resilience to water-related challenges posed by both climate variability and economic activities.

3. Water Transportation Systems from North to South:

Recognizing the regional disparities in water availability, constructing infrastructure to transport water from water-rich northern regions to the arid south can help balance the distribution. This could involve a network of canals and pipelines, often referred to as "water highways," which would facilitate the efficient transfer of surplus water to areas experiencing deficits, thereby mitigating regional water scarcity.

Addressing the disparities in water availability between the water-rich northern regions of Portugal and the arid south is crucial for managing water resources more equitably and sustainably across the country. The construction of infrastructure to transport excess water from the north to the south, utilizing a network of "water highways" is a practical solution to balance these regional differences.

The northern part of Portugal experiences seasonal surpluses of rainfall during the winter and spring months. Much of this surplus water currently flows unused into the ocean, representing a wasted resource. Capturing this excess water to redistribute it to the drier southern regions can mitigate wastage and address water scarcity in the south.

Similar systems are already operational in Spain, where water is transferred between the same river basins (from the Douro Basin to the Guadiana Basin and beyond in Spain). This precedent not only demonstrates the feasibility of such projects but also provides valuable insights into the environmental and logistical challenges involved.

While Spain's project has faced environmental challenges, these can inform the planning and implementation in Portugal to minimize ecological impact and improve system efficiency.

Existing water reserves in Portugal need expansion to support the increased capacity required for north-to-south water transfer. This includes both enhancing storage facilities and ensuring they can handle the increased load.

The Alqueva irrigation system in the south, which is pivotal for regional agriculture, could serve as the main hub in the south. Linking this with other southwestern irrigation systems would create a comprehensive network, allowing for effective water management across a broader area.

The integration of these systems requires not just physical infrastructure but also coordinated management practices to ensure water is available where and when it is needed most.

By effectively managing and redistributing water resources, Portugal can promote more balanced economic and agricultural development across its territories. This helps in reducing regional inequalities and in enhancing the resilience of southern regions to climate-induced water shortages.

This strategy also acts as a hedge against the uncertainties of climate change, ensuring that water scarcity in one region can be mitigated by surplus in another, thereby securing water needs for agriculture, industry, and domestic use across the country.

The development of water highways from north to south would not only optimize the use of national water resources but also foster economic stability and environmental sustainability. This forward-thinking approach aligns with global best practices in integrated water resource management, ensuring Portugal is better equipped to handle future climatic and demographic challenges.

4. Groundwater Storage and Recharge Systems

These systems involve artificially recharging aquifers with surplus surface water during times of abundance (like during the rainy season) for retrieval during drought periods. Such systems not only provide a buffer against drought but also help in maintaining groundwater levels, preventing land subsidence, and reducing the evaporation losses associated with surface storage. The best example of this is provided in California.

The Sustainable Groundwater Management Act (SGMA) of California offers a valuable model for managing groundwater resources sustainably, which can be adapted to the context of southern Portugal, where water scarcity is increasingly a concern due to climate change and seasonal demand peaks.

Like California's approach, southern Portugal could establish local groundwater management agencies responsible for assessing and managing the groundwater resources within their jurisdictions. These agencies would be tasked with developing and implementing groundwater sustainability plans. It is crucial to involve local communities, agricultural stakeholders, and industry representatives in the planning process to ensure that the plans reflect the needs and capabilities of each region. Given the scope of these investments having private investment partners will prove indispensable.

The development of groundwater sustainability plans should focus on achieving a balance between groundwater extraction and natural recharge rates. During wetter periods, active measures should be taken to enhance the recharge of aquifers, storing water for future dry spells. Implementing a robust system for monitoring groundwater levels and usage is essential. This data will guide policy decisions and help adjust strategies as environmental conditions and water demand evolve. Recognizing groundwater and surface water as interconnected parts of the same hydrologic cycle is vital. This understanding should guide the development of comprehensive water resource management strategies that address both surface and groundwater. Infrastructure to facilitate the efficient movement and storage of water, such as canals and recharge basins, should be constructed. This would allow for the directed recharge of aquifers during periods of excess surface water.

As part of the groundwater management strategy, southern Portugal needs to prepare for climate-driven extremes, such as prolonged droughts and heavy rainfalls. This means developing infrastructure and regulatory frameworks that can quickly adapt to changing conditions. Modern technologies such as satellite imagery and advanced hydrological models can be employed to better predict water availability and plan recharge efforts effectively.

Finally, adopting legislation similar to SGMA would provide the legal backing needed to enforce groundwater management policies. This framework should include provisions for penalties in cases of non-compliance and incentives for sustainable water use practices. Just as California's state government supports local efforts through the Department of Water Resources (DWR), Portugal's national government and even the European Commission could play a supporting role, providing technical assistance and funding for local and regional initiatives.

Educating the public about the importance of groundwater conservation and sustainable management practices is essential for gaining broader support for these initiatives. This could include workshops, informational campaigns, and school programs.

Implementing a system similar to SGMA in southern Portugal would not only help mitigate current and future water shortages but also promote a more sustainable and equitable use of water resources across the region. This proactive approach is essential for ensuring the long-term viability of water resources in light of anticipated climatic changes.

Implementing these solutions requires significant investment and planning but can provide a robust framework for sustainable water management in response to the growing challenges posed by climate change.

5.2. Coastal protection and severe weather risk management

Sea level rise, precipitated by climate change, poses a significant threat to coastal regions globally, with low-lying coastal areas being especially vulnerable. Among the regions at risk, Portugal's Atlantic coast, particularly from the Lisbon metropolitan area stretching to Setúbal along the Tagus and Sado Estuaries, faces a challenge. Predictions of sea level rise of a few meters could have impacts on these densely populated and economically vital areas. This scenario necessitates comprehensive measures to protect infrastructure, ecosystems, and communities against the encroaching sea.

Furthermore, the increasing frequency of severe weather patterns, likely intensified by climate change, adds another layer of urgency to these efforts. Storm surges, combined with higher sea levels, can lead to flooding, overwhelming existing coastal defenses and drainage systems. This situation demands a proactive approach to rebuilding and reinforcing coastal defenses, such as seawalls, dikes, and storm surge barriers, and enhancing drainage systems to manage the extraordinary volumes of water from heavy rainfall events. Such infrastructural upgrades will be crucial in safeguarding lives, properties, and the local economy.

The Lisbon drainage system exemplifies proactive measures already being implemented to mitigate such risks. This system, designed to handle significant water flow and prevent flooding in urban areas, represents the kind of robust infrastructure needed across vulnerable coastal regions. It includes components like expanded sewer lines, upgraded pumping stations, and emergency overflow facilities, all integrated with real-time monitoring systems to ensure efficiency and rapid response during heavy rainfall events.

Figure 30 – Facsimile of the Lisbon Drainage Master Plan

Source: Municipality of Lisbon

To extend these protections, a comprehensive strategy that encompasses planning, engineering, and community involvement is essential. Such strategies should include the development of new, technologically advanced infrastructure and the retrofitting of existing facilities to accommodate anticipated future conditions. Additionally, public awareness and engagement strategies are crucial in ensuring community preparedness and resilience. By expanding upon the current initiatives seen in Lisbon and applying them more broadly, Portugal can better secure its coastal areas against the threats posed by climate change and sea level rise.

Additionally, the issue of river flooding, which was somewhat controlled by the construction of dams in the 1960s and 70s, presents a renewed challenge. These dams were instrumental in regulating the flow of Portugal's main rivers, mitigating flood risks during that era. However, with increasingly drastic weather patterns due to climate change, there is a clear need for new investments in flood management infrastructure to cope with the more extreme conditions expected in the future.

In line with the approach taken in previous decades, these new infrastructural investments should involve significant private sector participation. This collaboration can bring in not only additional funding but also innovation and efficiency from the private sector, essential for developing and implementing the sophisticated solutions needed today. This public-private partnership model was effective in the past and can be adapted to meet current and future challenges.

Portugal has the opportunity to lead by example in managing coastal and riverine flood risks. By making timely and strategic investments in advanced, flexible coastal defenses and river flood management systems, Portugal can protect its invaluable coastal and riverine real estate and support its economy. Such proactive efforts would not only safeguard properties and ecosystems but also foster a constructive dialogue between land and ocean stewardship. As Portugal moves forward, it can showcase how integrating robust infrastructure with innovative management practices can mitigate the impacts of climate change, preserve natural resources, and enhance resilience against the increasing threats of rising waters and more severe weather events.

Investment Opportunities in the Tourism Industry

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Executive Summary: Tourism Industry

- **Portugal's tourism sector has experienced significant growth**, transforming the country into a premier destination renowned for its rich history, diverse landscapes, and warm hospitality.
- **Portugal has received international recognition and numerous awards, solidifying its status as a top tourist destination.** The 30th World Travel Awards held in Batumi heralded Portugal as the "Best Europe's Destination," a title reflecting its enduring appeal among international travelers.
- **The capital city, Lisbon has become a critical node,** linked to 120 cities across the globe, while Oporto is a major actor with connections to 72 international cities. This characteristic renders Portugal an alluring location for trade, investment, and cultural interchange.
- **The sector appeals to a wide range of travelers** by offering a unique blend of cultural authenticity and contemporary allure, driven by the nation's commitment to sustainability, innovation, and resilience. In 2023, Portugal was the 4th more researched country on Google.
- **Portugal occupies the sixth spot in Europe with respect to inbound tourism expenditure,** disclosing a significant inbound tourism expenditure of EUR 34,7 billion, which accounts for 5% of the total tourism expenditure of the European Union.
- **The tourism sector's contribution to Portugal's GDP has been steadily increasing.** The tourism GDP ratio increasing from 7,8% in 2017 to 8,4% in 2022. This positive trend is reinforced by significant growth in overall exports, which has increased from 18% to 27%.
- **The accommodation and food service sector is characterized by a diverse range of establishments** and an increasing trend in local housing options, demonstrating resilience and capacity for recovery post-COVID-19.
- **The industry recorded a noteworthy balance of 16 billion euros,** with tourism exports reaching a remarkable 21 billion euros. This sector employs over 1.6 million individuals and continues to attract both domestic and international guests.
- **The Accommodation and Food Service Activities sector boasts a turnover of 17 billion euros and maintain an average gross profit margin of 35%,** accommodating 52.055 corporations operating in this sector.

1 | Portugal at a glance

Located on the Iberian Peninsula, Portugal has emerged as a captivating destination, offering a set of experiences that weave together rich history, diverse landscapes, and warm hospitality.

This analysis of Portugal's tourism sector navigates through the key components that have shaped its evolution and continue to define its trajectory.

From the sunny of the Algarve to the historic charm of Lisbon and Porto, Portugal beckons travelers with a unique blend of cultural authenticity and contemporary allure. Over the years, the tourism landscape has witnessed transformative shifts, reflecting the nation's commitment to sustainability, innovation, and resilience.

This document will navigate through statistical insights, regulatory changes, and emerging trends that paint a comprehensive picture of Portugal's tourism prowess. From the bustling corridors of local accommodations to the soaring heights of international airports, each element contributes to the dynamic narrative of Portugal's tourism story.

The purpose it to unravel the complexities and embracing the opportunities that lie within Portugal's tourism industry, as navigate through a landscape shaped by tradition, propelled by innovation, and poised for continued growth in the years to come.

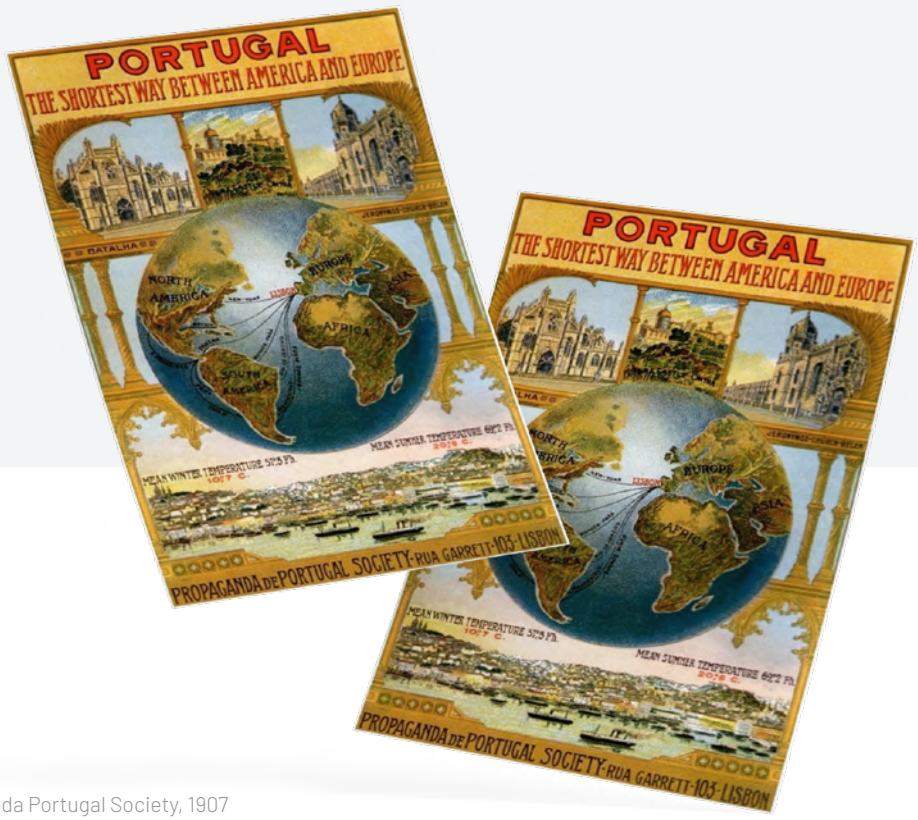
There are several advantages and key differentiating factors that make Portugal an attractive target for tourism investment. This includes:

Diverse Experience: Portugal offers a diverse range of landscapes, including stunning coastlines, picturesque countryside, and historic cities. This diversity appeals to a wide range of tourists, from beachgoers to cultural enthusiasts or sports lovers.

Rich and Cultural Heritage: Portugal has a rich cultural heritage with historic cities, castles, churches, and traditional festivals. The blend of Moorish, Roman, and Christian influences provide an unique and immersive experience for visitors.

Strategic Location: Portugal's strategic location on the Iberian Peninsula makes it easily accessible for tourists from various parts of Europe to/from Africa and America, contributing to its popularity as a travel destination. At the same time, it offers valued distance from international conflict zones.

Figure 31. First Portuguese touristic flyer



Source: Propaganda Portugal Society, 1907

Infrastructure Quality: Portugal has invested in modern infrastructure, including well-maintained roads, airports, and public transportation. This facilitates easy travel within the country and enhances the overall convenience for tourists.

Government Support: The Portuguese government has shown a commitment to supporting the tourism industry through various initiatives, infrastructure projects, and promotional campaigns.

Being the political stability a crucial factor for long-term tourism investments, Portugal has a stable political environment, contributing to a sense of security for investors.

Gastronomy and Wine: Portuguese cuisine, known for its seafood, pastries, and traditional dishes, is a significant draw for food lovers. Additionally, Portugal is famous for its wines, including port wine, vinho verde, and the **wines of the Douro Valley and Alentejo.**

Warm Hospitality: Portuguese people are known for their warmth and hospitality. A friendly and welcoming atmosphere can enhance the overall experience for tourists, encouraging repeat visits and positive word-of-mouth recommendations.

Safety destination: It is recognized its low incidence of criminal activity. The perception of a secure nation is heightened during times of international conflict.

Affordable Destination: the country is often considered more affordable compared to many other Western European countries. This affordability makes it appealing to budget-conscious travelers and can contribute to a higher return on investment for tourism businesses.

Mild Climate: Portugal enjoys a Mediterranean climate with mild temperatures, making it an attractive destination throughout the year. The pleasant weather is conducive to outdoor activities and exploration.

Sustainable Tourism Practices: There is a growing emphasis on sustainable tourism in Portugal, with efforts to preserve natural beauty and promote eco-friendly practices. This aligns with the preferences of modern travelers who value responsible and sustainable tourism.

1.1 International Recognition

Portugal is renowned for its extensive collection of distinctions, which have firmly established it as a paradigm in the field of international tourism. Portugal has received numerous accolades attesting to its excellence. The recognition Portugal has received from travel authorities and international organizations demonstrates its dedication to providing exceptional experiences for discerning tourists.

- **Business Environment**

Portugal, seizes the 39th position worldwide and the 17th position in Europe in terms of business friendliness, as confirmed by the World Bank's authoritative "Doing Business 2020" report. This classification highlights Portugal's dedication to cultivating an environment that is favorable and forward-thinking for business. By implementing investor-friendly policies the country has strategically positioned itself as an alluring center for commerce and entrepreneurship. The recognition not only serves as an indication of Portugal's robust economic condition, but also underscores its ongoing endeavors to optimize procedures and foster a conducive atmosphere for entrepreneurial success. As we explore this narrative, the factors that contribute to Portugal's reputation become apparent, rendering it an appealing location for domestic and foreign companies in search of a dynamic and encouraging business climate.

- **Strategic Location**

Portugal, situated at the crossroads of continents, benefits from a strategic geographical position that grants it access to worldwide interconnections. Portugal's geographical proximity to the United States and other American countries enables it to serve as a conduit for smooth transatlantic trade and cultural interchanges. The strategic extension of its proximity beyond the Americas to Africa facilitates the development of economic and diplomatic relations. Lisbon, the dynamic capital, functions as a critical node linked to 120 cities across the globe. In addition to its historical allure, Oporto is a major actor with connections to 72 international cities. Portugal's economic importance is not only bolstered by its advantageous geographical location, but it is also characterized by its function as a link between various economies and cultures spanning the Atlantic and further afield.

- **Competitive advantages**

Portugal distinguishes itself as a t tourist destination by virtue of an array of competitive advantages that enthrall and captivate travelers from around the world. The country is endowed with a favorable climate that manifests in a variety of settings, spanning from sunny beaches to verdant vineyards, thereby establishing an enticing allure throughout the year. Ensuring safety is a fundamental aspect of Portugal's appeal as a tourist destination; the country is consistently ranking among the safest, instilling in visitors a sense of assurance.

Portugal offers a good equilibrium between affordability and high-quality experiences. The region's tourism environment is a seamless fusion of nature, culture, heritage, and cuisine, offering a diverse appeal to suit the preferences of any traveler.

Portugal holds the sixteenth spot on the 2022 Travel & Tourism Competitiveness Index, compiled by the World Economic Forum. Furthermore, it ranks ninth in Europe. This acknowledgment emphasizes the strength of its infrastructure, effectiveness of its services, and dedication to sustainability, thereby consolidating its position as a frontrunner in the international tourism sector.

- **International Awards**

In 2023, Portugal once again consolidated its position as a leading global tourist destination by earning a plethora of prestigious awards, showcasing its diverse offerings and commitment to excellence in various aspects of the tourism industry.

The 30th World Travel Awards held in Batumi heralded Portugal as the "Best Europe's Destination," a title reflective of its enduring appeal among international travelers.

Table 20 – Main international awards

30th World Travel Awards in Batumi (2023)	Best Europe's Destination
Google	4th more research country on Google in 2023
Condé Nast Traveller	Best international Destination
30th World Travel Awards in Batumi (2023)	▪ Europe Leading Destination: Portugal ▪ Europe's Leading City Destination: Lisbon ▪ Europe's Leading Cruise Port : Lisbon ▪ Europe's Leading City Break Destination: Oporto ▪ Europe's Leading Island Destination: Madeira Islands ▪ Europe's Leading Beach Destination: Algarve ▪ Europe's Leading Adventure Touristic Attraction: Passadiços do Paiva (Arouca UNESCO Global Geopark) ▪ Europe's Leading Airline to Africa: TAP Air Portugal ▪ Europe's Leading Airline to South America: TAP Air Portugal ▪ Europe's Leading All-Inclusive Resort: Pestana Porto Santo All Inclusive ▪ Europe's Leading Boutique Hotel: Verride Palácio de Santa Catarina ▪ Europe's Leading Boutique Hotel Operator: Amazing Evolution ▪ Europe's Leading Hotel Management Company: Amazing Evolution ▪ Europe's Leading Island Resort: Saccharum, Portugal ▪ Europe's Leading Landmark Hotel: Bairro Alto Hotel ▪ Europe's Leading Lifestyle Resort: Vale de Lobo ▪ Europe's Leading Luxury Boutique Hotel: Valverde Hotel ▪ Europe's Leading Luxury Business Hotel: Pestana Palace Lisboa ▪ Europe's Leading New Tourist Attraction: Quake – Lisbon Earthquake Center ▪ Europe's Leading Resort Villas: Dunas Douradas Beach Club ▪ Europe's Leading River Cruise Company: Douro Azul ▪ Europe's Leading Sports Resort: Cascade Wellness Resort ▪ Europe's Leading Villa Resort: Martinhal Sagres Beach Family Resort ▪ Europe's Leading Wine Region Hotel: L'AND Vineyards ▪ Europe's Most Romantic Resort: Monte Santo Resort Hotel ▪ Europe's Responsible Tourism Award: Dark Sky Alqueva

Source: Author

Beyond this recognition, Portugal emerged as the 4th most researched country on Google in 2023, indicating a heightened global interest in exploring the nation's wonders. This increased online engagement underscores Portugal's popularity and allure as a sought-after destination, drawing attention from curious travelers around the world. Condé Nast Traveller, a renowned travel publication, also bestowed recognition on Portugal, further emphasizing the country's standing as a favored destination among discerning travelers. Such acknowledgments from authoritative sources contribute to Portugal's reputation for offering exceptional travel experiences. The 2023 World Travel Awards European segment proved to be a momentous occasion for Portugal, as the country clinched a remarkable 17 awards across various categories. Portugal was honored as "Europe Leading Destination" highlighting its overall appeal and attractiveness to a global audience.

Lisbon, the capital city, earned dual distinctions as "Europe's Leading City Destination" and "Europe's Leading Cruise Port," underscoring its unique blend of cultural richness and maritime allure. Oporto was celebrated as "Europe's Leading City Break Destination," emphasizing its role as a captivating urban retreat. Portugal's natural beauty was also recognized with awards such as "Europe's Leading Island Destination" for the Madeira Islands and "Europe's Leading Beach Destination" for the Algarve. These accolades underscore the country's diverse landscapes, from pristine islands to sun-kissed beaches, catering to various traveler preferences.

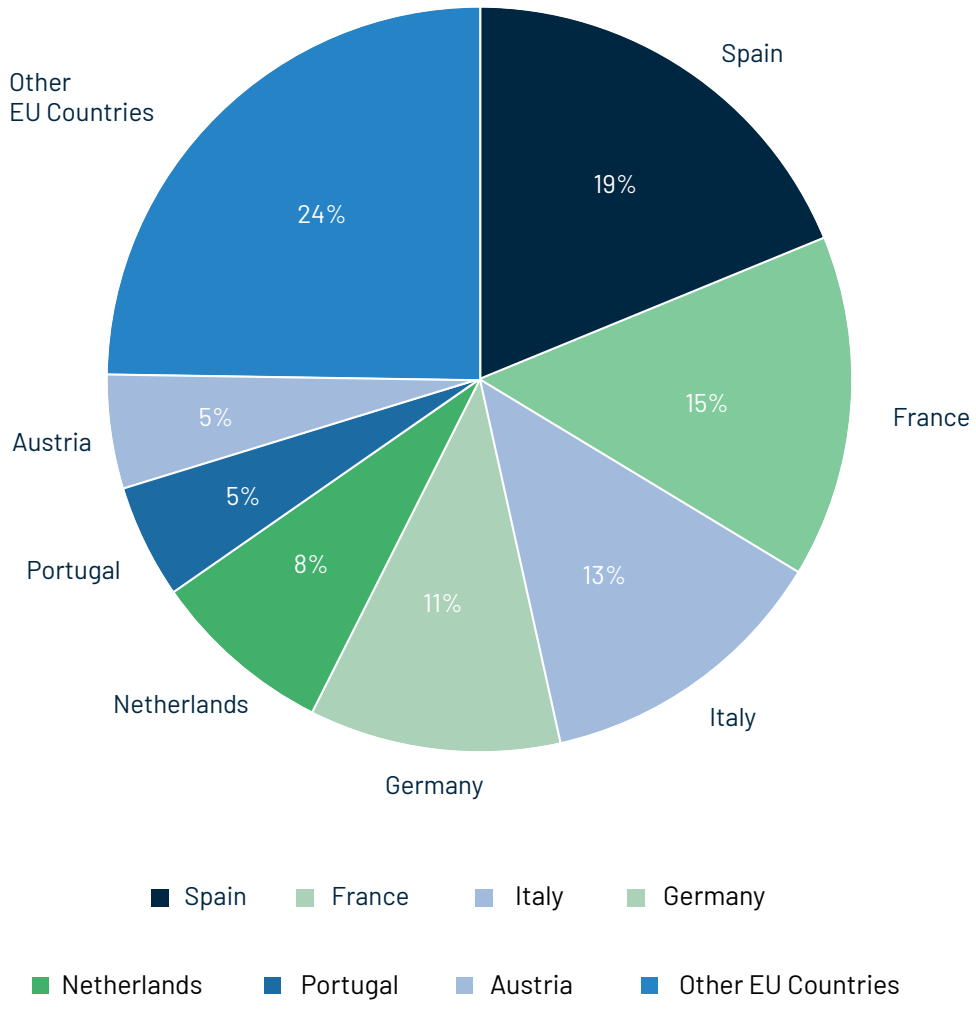
The World Travel Awards European segment delved into specific attractions and entities within Portugal, showcasing excellence in various domains. Notable winners included the Passadiços do Paiva in Arouca UNESCO Global Geopark, recognized as "Europe's Leading Adventure Touristic Attraction," and TAP Air Portugal, securing awards for "Europe's Leading Airline to Africa" and "Europe's Leading Airline to South America." The accommodation sector saw remarkable triumphs, with awards such as "Europe's Leading All-Inclusive Resort" for Pestana Porto Santo All Inclusive, "Europe's Leading Boutique Hotel" for Verride Palácio de Santa Catarina, and "Europe's Leading Hotel Management Company" for Amazing Evolution. Individual properties, including Bairro Alto Hotel, Vale de Lobo, Valverde Hotel, and Pestana Palace Lisboa, were recognized for their excellence in various categories.

Portugal's commitment to responsible and sustainable tourism was acknowledged through awards such as "Europe's Responsible Tourism Award" for Dark Sky Alqueva. In conclusion, Portugal's outstanding performance in the 2023 World Travel Awards and related accolades not only solidifies its status as a top European destination but also highlights the collaborative efforts of the tourism industry, showcasing the country's allure across diverse categories, from cultural richness and adventure attractions to luxurious accommodations and responsible tourism practices.

2 Macroeconomic impact of the Tourism ecosystem in Europe

Portugal occupies the sixth spot in Europe with respect to inbound tourism expenditure, a figure that underscores the impact it has had on the collective spending of the European Union. Spain has reached a significant milestone by generating 82,7 billion EUR in inbound tourism expenditures, which accounts for 19% of the total expenditure of the European Union. Italy occupies the third position with a value of EUR 55,4 billion, while France closely trails in second place with EUR 65,4 billion. Germany and the Netherlands, with expenditures of EUR 46,9 billion and EUR 21,2 billion, respectively, occupy the fourth and fifth positions. Portugal, which holds the sixth position, discloses a significant inbound tourism expenditure of EUR 34,7 billion, which accounts for 5% of the total expenditure of the European Union. The combined expenditures of these six countries exceed 70% of the overall sum incurred by visitors while visiting the European Union.

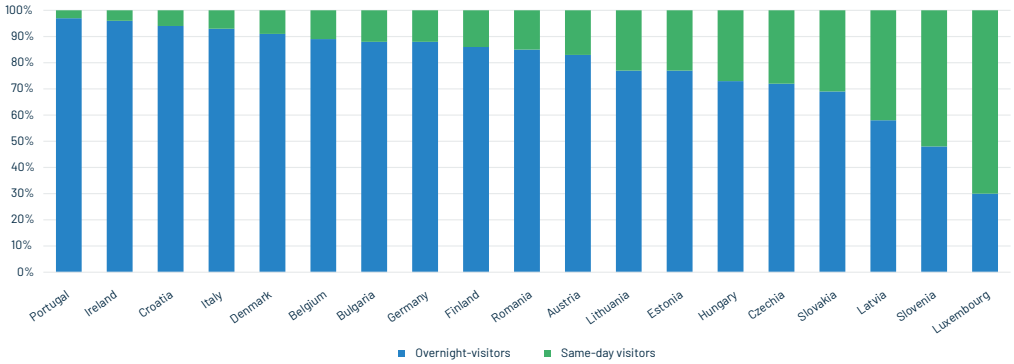
Figure 32: Inbound tourism expenditure: top countries (% share in EU total)



Source: Eurostat, Data collection on TSA 2022; Tourism satellite Accounts Europe, 2023 Edition

Geographically located on the periphery of Europe, Portugal offers considerable prospects as well as formidable obstacles within the domain of tourism. Portugal, despite its relatively remote location, distinguishes itself as a tourist destination that, once visited, consistently encourages visitors to prolong their sojourn, frequently choosing to spend at least one night. Portugal holds the distinction of having the greatest proportion of overnight visitors in Europe, with a noteworthy 97%. This data highlights the distinctive allure of the nation, as tourists are not only motivated to investigate but also opt for a more extensive and immersive experience..

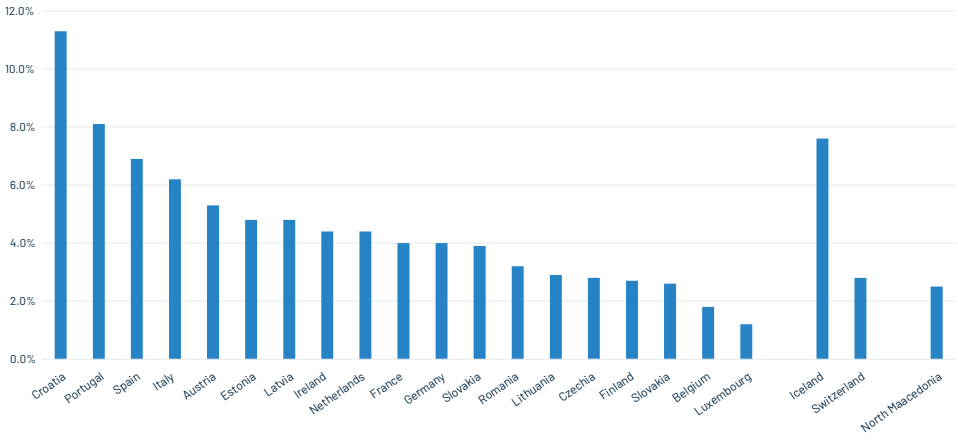
Figure 33: Inbound tourism expenditure, overnight visitors (tourists) and same day visitors



Note: EU aggregate estimated for this publication available data. Missing data for EL, ES, FR, CY, MT, NL, PLSE
Source: Eurostat, Data collection on TSA 2022; Tourism satellite Accounts Europe, 2023 Edition

Within the European Union, the tourism ratio is approximated at 3,7% (equivalent to 4,5% on the Total Gross Value Added), signifying the proportion of internal tourism consumption relative to domestic supply at purchasers' prices. Notably, Croatia, Portugal, and Spain emerge as countries with the highest tourism ratios at the national level. Croatia leads with a notable percentage of 9,5%, followed by Portugal at 6,6%, and Spain at 6,5%. These elevated ratios in Croatia, Portugal, and Spain underscore the substantial impact of tourism on their respective economies, indicating a significant reliance on tourism consumption as a driving force in their economic landscapes. This data sheds light on the economic significance of the tourism sector in these countries, showcasing their dependence on domestic and international visitors for sustained economic growth and development.

Figure 34: Tourism share in total gross value added



Note: EU aggregate estimated for this publication available data.
Source: Eurostat, Data collection on TSA 2022; Tourism satellite Accounts Europe, 2023 Edition

3 The dynamics of Tourism in Portugal

The significant growth of Portugal's tourism sector is reflected in the Tourism GDP ratio increasing from 7,8% in 2017 to 8,4% in 2022. This positive trend is reinforced by significant growth in overall exports, which has increased from 18% to 27%. Furthermore, there has been an increase in employment within the services sector from 7% to 7,3%, and exports of services have increased from 43,4% to 50.1%. The developments underscore the expanding economic impact and growing significance of tourism in molding Portugal's wider economic landscape. The sector's performance not only makes a substantial contribution to the country's gross domestic product (GDP), but also indicates a flourishing and ever-evolving tourism environment that is crucial to the economic resilience and expansion of Portugal.

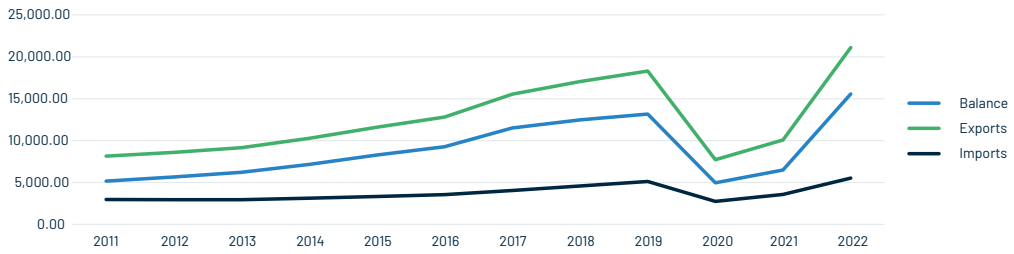
Table 21: Tourism economics growth

Ratio			2017	2022
	GDP	Tourism Revenues / GDP	7,8%	8,4%
	Total Exports	Tourism Revenues / Total Exports	18,0%	27,0%
	Services Exports	Tourism Revenues / Services Exports	50,1%	43,4%
	Employment	Tourism Revenues / Total Employment	7,0%	7,3%

Source: "Turismo em Portugal | 2012" from Travel BI, Turismo de Portugal based on INE information; "PORTUGAL | an investment destination in tourism", Turismo de Portugal. Accommodation: income in hotels, aparthotels, holiday resorts and apartments

Post-COVID-19, the tourism industry in Portugal demonstrated resilience and recuperation in 2022, characterized by significant expansion. The industry recorded a noteworthy balance of 16 billion euros, with tourism exports reaching 21 billion euros. The industry's resurgence serves as evidence of its resilience and capacity to recover, indicating a revitalized sense of assurance among tourists and generating a favorable economic influence. Notwithstanding the obstacles presented by the pandemic, these outcomes not only indicate a resurgence but also underscore the sector's capacity for continued growth, thereby confirming its enduring importance and potential to make a substantial contribution to Portugal's economic welfare going forward

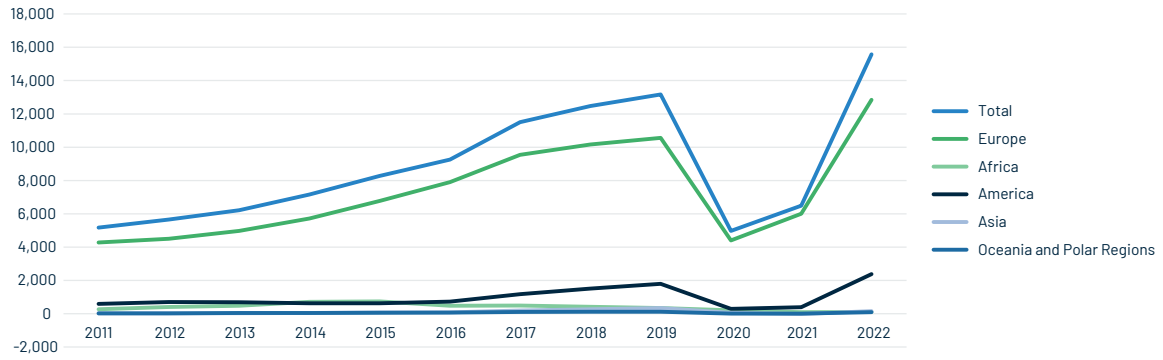
Figure 35: Travel and tourism account



Source: Source: Bank of Portugal – Balance of Payments Statistics; Pordata

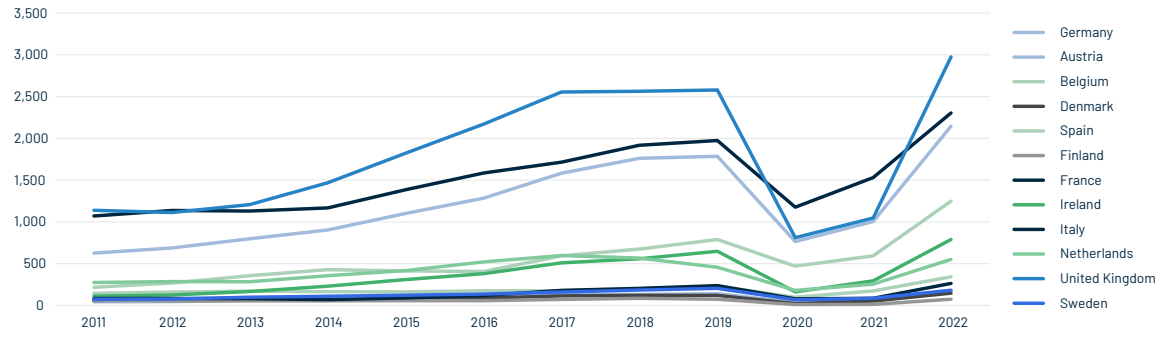
Portugal generated 16 billion euros in tourism revenue in 2022, of which a substantial 13 billion euros originated from European countries. Significantly, the United Kingdom emerged as the primary contributor in Europe, contributing 3 billion euros. France and Germany followed suit with contributions of 2,3 billion euros and 2,1 billion euros, respectively. The involvement of American nations was also noteworthy, as they contributed 2,3 billion euros in tourism revenue. The statistics underscore the prevailing impact of European countries on tourism expenditure, wherein pivotal contributors including the United Kingdom, France, and Germany significantly shape the economic repercussions of the sector. The broad range of origin markets, which include both Europe and the Americas, highlights the international allure of Portugal. The diversity present in Portugal's tourism sector not only strengthens its foundation but also protects it against reliance on a single market, thereby bolstering its resilience and sustainability amidst evolving global dynamics.

Figure 36: Travel and tourism account: balance by Continent



Source: Bank of Portugal – Balance of Payments Statistics; Pordata

Figure 37: Travel and tourism account: balance by European countries

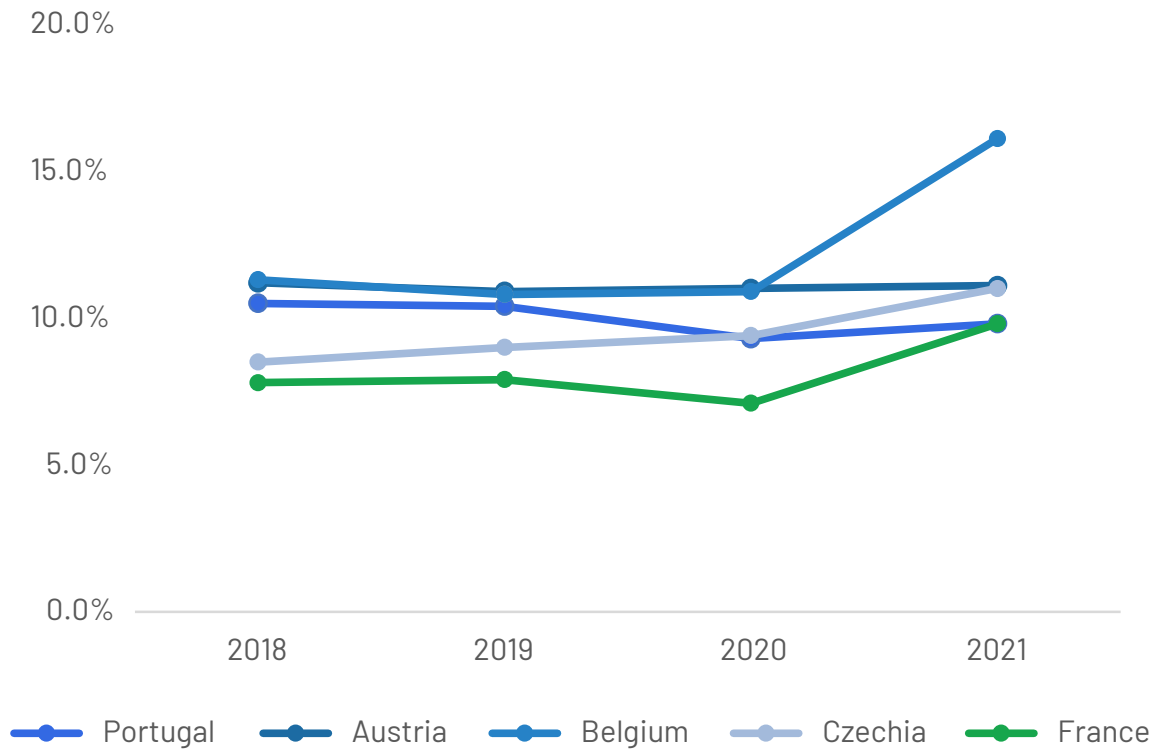


Source: Bank of Portugal – Balance of Payments Statistics; Pordata

Portugal emerges as a dynamic destination in the domain of Accommodation and Food Service Activities, owing to its economic performance. It is worth noting that Portugal's Margin EBITDA as a percentage of Revenue surpasses that of even France, placing it in the company of European nations such as Austria, Belgium, and the Czech Republic. This financial indicator serves as an indication of the favorable business climate and efficient revenue management strategies in Portugal. The stability of Portugal is further underscored by its association with economically robust nations, which not only accentuates the country's competitiveness but also makes it an attractive option for

enterprises and investors in search of a financially stable and prosperous environment. The fact that Portugal can effectively compete with firmly established European nations highlights its appeal as a strategic location for individuals seeking to participate in the industry of accommodation and food service activities.

Figure 38: Margin EBITDA (% of revenues)

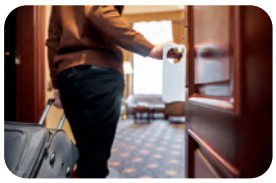


Source: Bank of Portugal – Table Sector for accommodation and food services

4 Tourism Core Economic Activities

From a microeconomic perspective, the analysis of tourism-focused corporations centered on four core sectors: Accommodation (including Hotels, Lodging, Aparthotel, Inns, Motels, Tourism Villages, Hostels, Local Housing, Rural tourism, Bed & Breakfast and Camping Grounds); Restaurants & Bars (including Restaurants, Bars, Cafés, Snack-bars, Pastries & tea shops and Catering); Transportation (including Airports and Cruise Ships & ports); and Travel & Tourism (including Travel Agencies, Tour Operators, Organization of Recreational Tourism Activities).

Figure 39: Tourism core activities



ACCOMODATION

- Hotels
- Lodging
- Aparthotel
- Inns
- Motels
- Tourism Villages
- Hostels
- Local Housing
- Rural tourism
- Bed & Breakfast
- Camping Grounds

RESTAURANTS AND BARS

- Restaurants
- Bars
- Cafe
- Snack-bars
- Pastries and tea shops
- Catering

TRANSPORTATION

- Airports
- Cruise ships

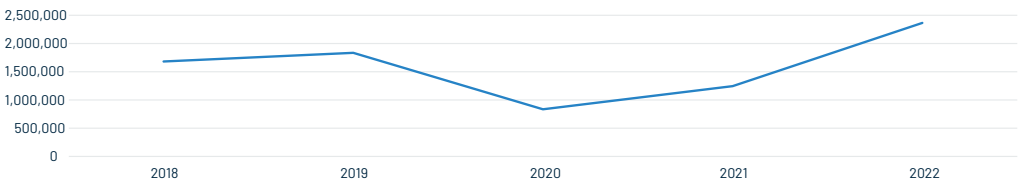
TRAVEL AND TOURISM

- Travel agencies
- Tour operators
- Organization of recreational tourism activities

4.1 Accommodation and Food service activities

Portugal accommodates 52.055 corporations operating in the Accommodation and Food Service Activities sector, which collectively contribute to a turnover of 17 billion euros and maintain a gross profit margin of 35,3%.

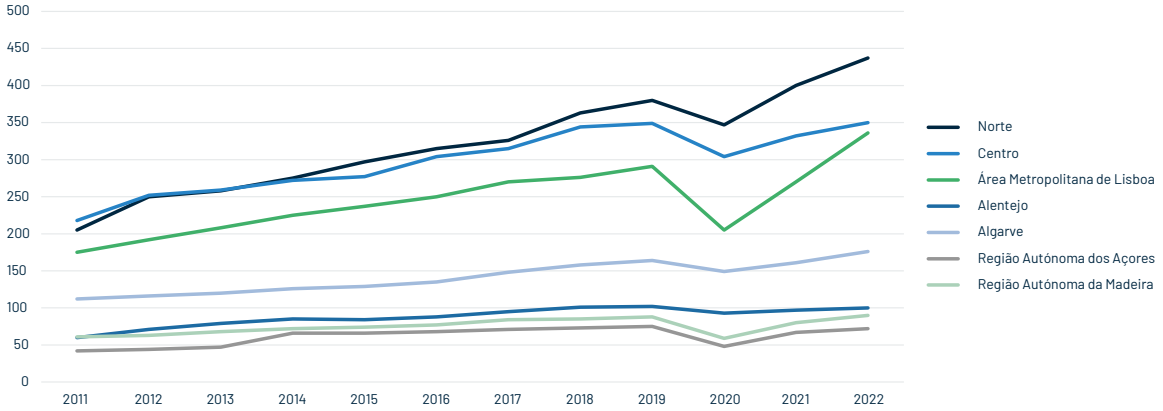
Figure 40: Gross Margin



Source: Bank of Portugal; Sector Tables

Notwithstanding the substantial obstacles encountered throughout the Covid-19 pandemic, the industry is presently engaged in a proactive recovery phase, demonstrating exceptional fortitude and a resolute endeavor to exceed its pre-pandemic condition. The recovery serves to emphasize not only the sector's capacity to adjust but also its resolute determination to recover from the detrimental effects of the worldwide health crisis.

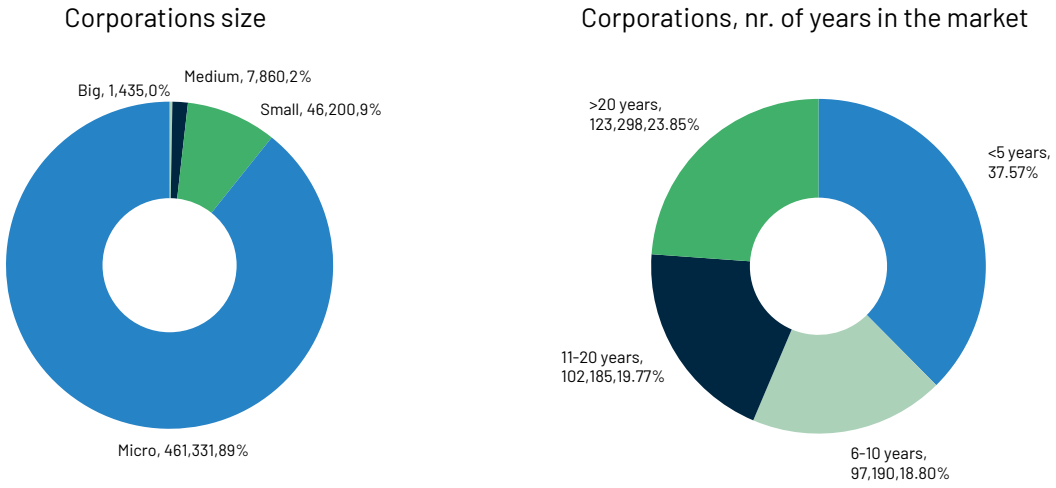
Figure 41: Number of Hotels per NUTS II



Source: Source: Bank of Portugal; Sector Tables

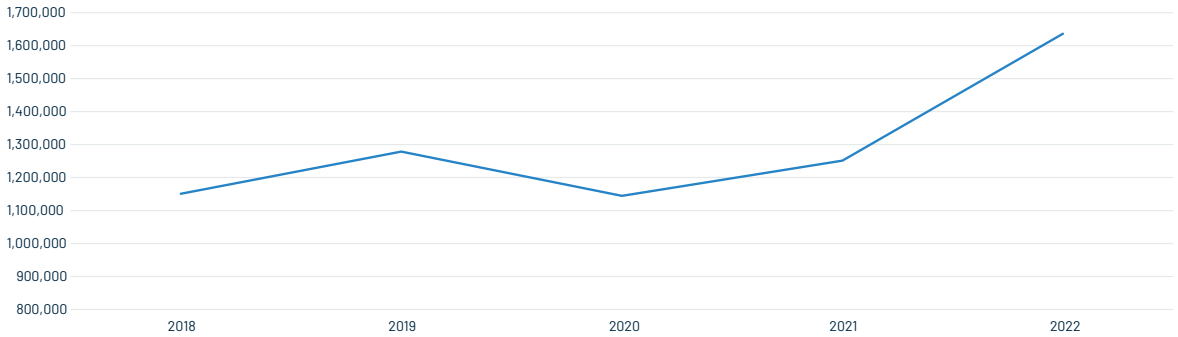
In the landscape of micro-corporations (cafés, snack bars, local housing, tourist tours, etc.), Portugal exhibits a fragmented market, with 89,3% comprising these entities. It has 1.435 Big Corporations and 7.860 Medium-Size Enterprises, accounting for 10,5% SMEs. Demonstrating resilience, a significant portion (23,9%) has operated for over two decades, while 19,8% fall within the 11 to 20-year range. Conversely, 37,6% are relatively new, having operated for less than five years. This nuanced distribution emphasizes the industry's diverse temporal and structural characteristics, contributing to its overall resilience.

Figure 42: Accommodation and food services: size and years in the market



Source: Bank of Portugal; Sector Tables, 2022

Figure 43: Staff expenditure

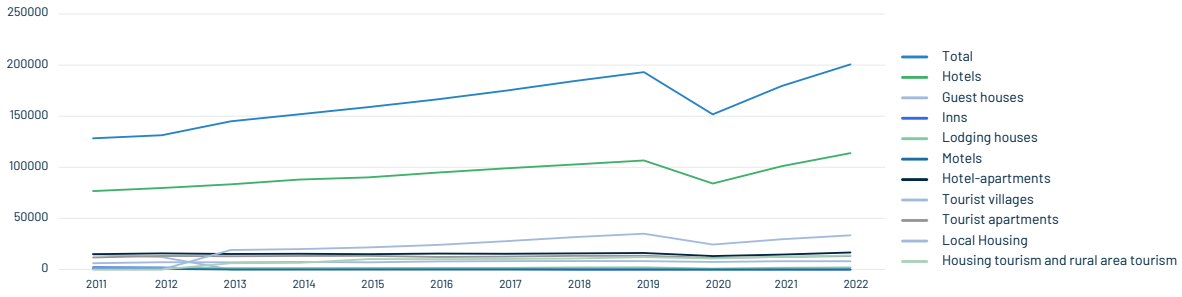


Source: Bank of Portugal; Sector Tables, 2022

4.2 Accommodation

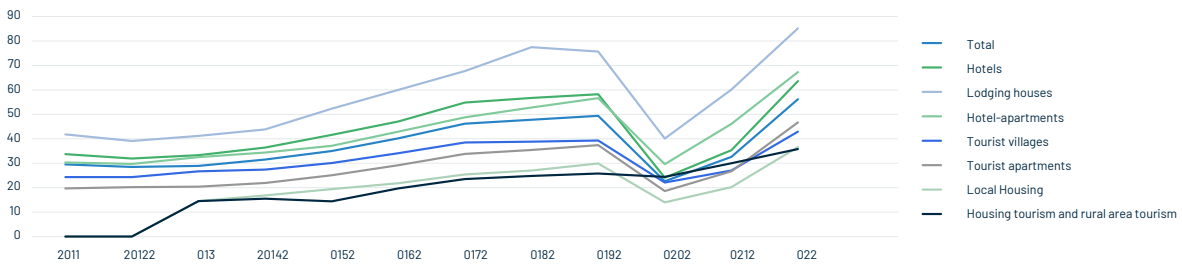
The Portuguese tourism industry is currently undergoing a dual surge, marked by an increase in both quantity and quality. Within the accommodation sector, there are a total of 200.748 bedrooms (and this number is on the rise), spread across various establishments.

Figure 44: Number of Bedrooms in Touristic accommodations



Source: Statistics Portugal; Pordata

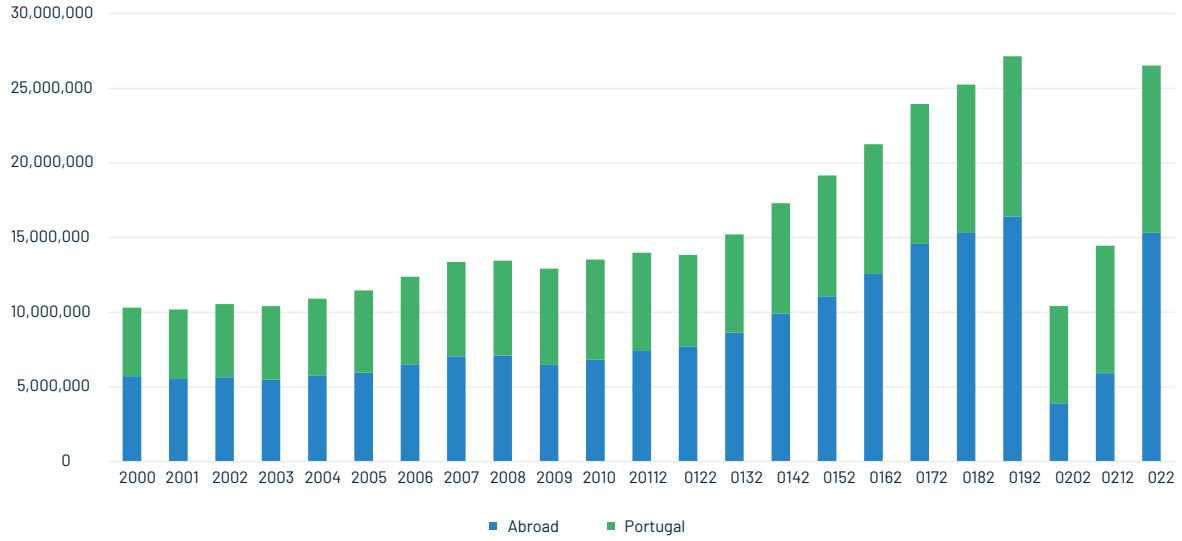
Figure 45: Revenue per Bedroom in tourist accommodations: total and by type of establishment



Source: Statistics Portugal; Pordata

Noteworthy is the growing trend in the average revenue per bedroom, with lodging houses leading at €85, followed by hotel-apartments at €67, and hotels at €64. This simultaneous growth in quantity and improvement in revenue metrics signifies the industry's capacity for both expansion and enhancement.

Figure 46: Guests in tourist accommodations: residents in Portugal and residents abroad



Source: Statistics Portugal; Guests' Stay in Hotels and Other Accommodations Survey; Pordata

The tourism sector exhibits a steady increase in the number of guests, with occasional disruptions noted during the Covid pandemic years. This upward trend encompasses both domestic residents and international visitors. Notably, foreign tourists comprise a significant 60% of the total. Despite external challenges, the nation's consistent ability to draw visitors from around the world underscores its diverse attractions, cultural richness, and vibrant hospitality. The sustained influx of both local and international guests not only contributes to economic vitality but also accentuates Portugal's standing as a preferred destination within the global tourism landscape.

Hotel Groups

The ten greatest hotel chains in Portugal comprise the industry's backbone. Pestana, Vila Gale, Accor, Minor, and Hoti/Melia Hotels follow in that order. These organizations function as the fundamental cornerstones of the country's lodging industry, exerting significant influence on the formation of its varied and vast hotel complex. The strong presence of reputable chains highlights the market's inherent resilience and competitiveness.

Table 22 – Top 10 Hotel Groups

TOP 10		Hotel Establishments	Accomodation Units	Beds
1. Pestana Hotels and Resorts	PESTANA HOTEL GROUP	73	8.337	17.289
2. Vila Gale Hotels	Vila Galé	25	4.586	9.382
3. Accor Hotels	ACCOR	33	3.500	6.748
4. Minor Hotels	MINOR HOTELS	16	2.950	6.322
5. Hoti Hotels / Media Hotels and Resorts	Hoti Hotels	19	2.767	5.501

6. Mariot Hotels and Resorts	11	2.492	5.690	
7. SANA Hotels	13	2.120	4.204	
8. VIP Hotels	12	2.107	4.338	
9. Intercontinental Hotels Group -IHG	10	1.727	3.425	
10. DHM - Discovery Hotel Management	16	1.581	3.708	

Source: Deloitte, 2020; Atlas2020 – Portuguese Hospitality 15th Edition

Regarding the geographical distribution within the country, Lisbon and Madeira boast the highest occupancy rates at 76,1% and 69,9%, respectively. The Algarve region stands out for having the greatest lodging capacity, providing the most rooms. Lisbon and Algarve also lead in terms of revenues, with Lisbon generating 1.071.924 and Algarve 908.087. Additionally, these regions record the highest numbers of overnight stays and guests. Notably, Madeira has an average stay of 5 days, while Algarve's average stay is 4,1 days, indicating the duration of visitor engagements in these destinations.

Table 23: Accommodation: Hotel regional analysis (NUTS II)

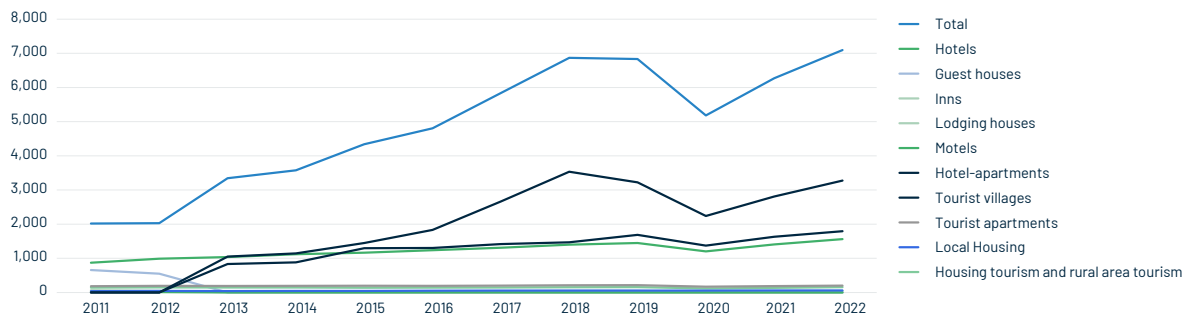
RevPAR	**74,23€**	**54,54€**	**44,33€**	**42,41€**	**38,10€**	**33,03€**	**25,06€**
	Lisbon	**Algarve**	**RAMadeira**	**North**	**RA Acores**	**Alentejo**	**Center**
Ocupancy rate	76,1%	65,8%	69,9%	65,0%	62,3%	57,1%	46,3%
Lodging capacity (nr. rooms)	32.366	46.404	15.389	23.378	5.212	6.701	20.788
Lodging revenues (€)	1.071.924	908.087	268.118	490.155	90.968	126.434	250.159
Overnight stays (m)	8.109	5.074	1.483	5.827	774	1.586	4.121
Average stay	2,27	4,13	5,04	1,84	2,95	1,82	1,72

Source: Deloitte, 2020; Atlas2020 – Portuguese Hospitality 15th Edition

Local Housing

In addition to the traditional hotel accommodation, Portugal has witnessed an exponential surge in local offerings, reshaping the lodging landscape. This growing trend is evident in the numbers: there are 3.277 local housing establishments (with more than 10 beds), reflecting a flourishing preference for personalized and local experiences. Furthermore, a remarkable 32.622 registered local accommodations, spanning across regions, highlight the widespread embrace of alternative lodging.

Figure 47: Tourist accommodations: total and by type of establishment



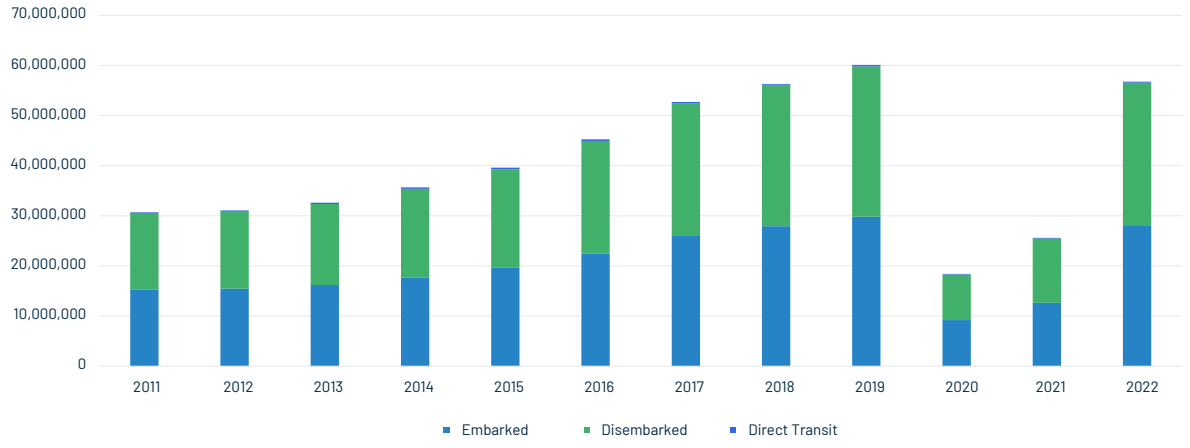
Source: Statistics Portugal; Pordata

Recent legislation in Portugal's local housing sector introduces some changes, including a halt in issuing new licenses in coastal and Algarve areas, an extra 15% tax (CEAL), condominiums gaining the right to oppose local housing in apartments, and fiscal incentives for converting local housing into long-term rentals.

4.3 Transportation

The international passenger transportation system of Portugal is dependent on ten airports, which are situated in strategic locations including Lisbon, Oporto, Faro, Madeira, Porto Santo, Ponta Delgada, Santa Maria, Horta, and Flores. Despite a gradual recovery in the sector since the pandemic until 2022, full restoration has not yet been accomplished.

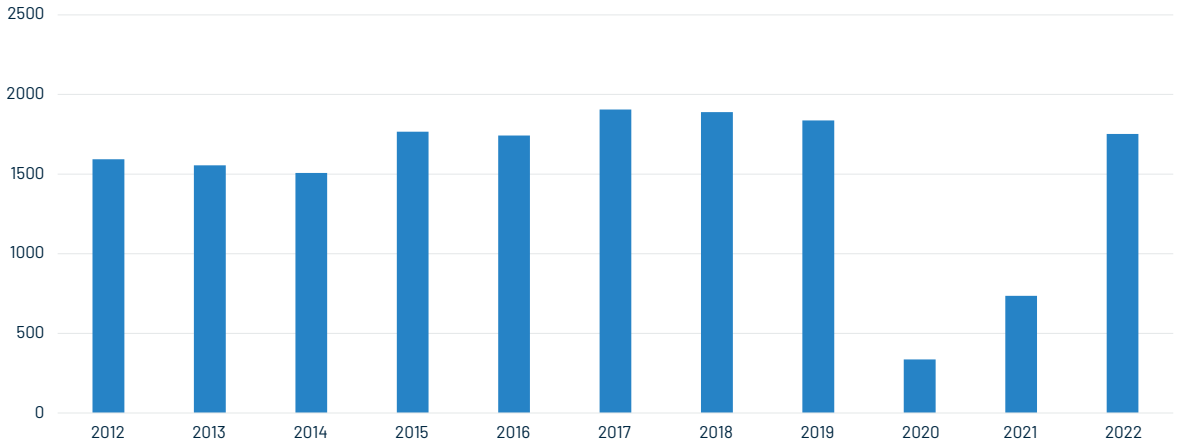
Figure 48: Passenger traffic at major airports



Source: Statistics Portugal; Airports Survey; Pordata

Portugal experiences a consistent flow of cruise ships in its ports, which are predominantly there to accommodate transit passengers

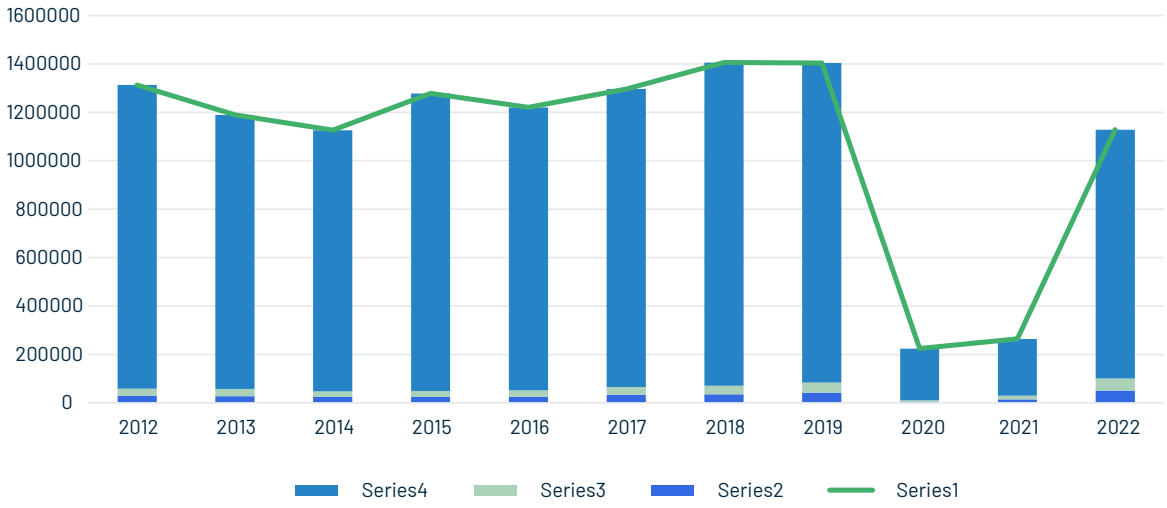
Figure 49: Number of Cruise ships



Source: Statistics Portugal; Maritime Transport of Passengers and Goods Survey; Pordata

Notwithstanding the difficulties, the growing volume of cruise ship operations indicates that Portugal remains an appealing destination for cruise lover tourists.

Figure 50: Number of Passengers in cruise ships

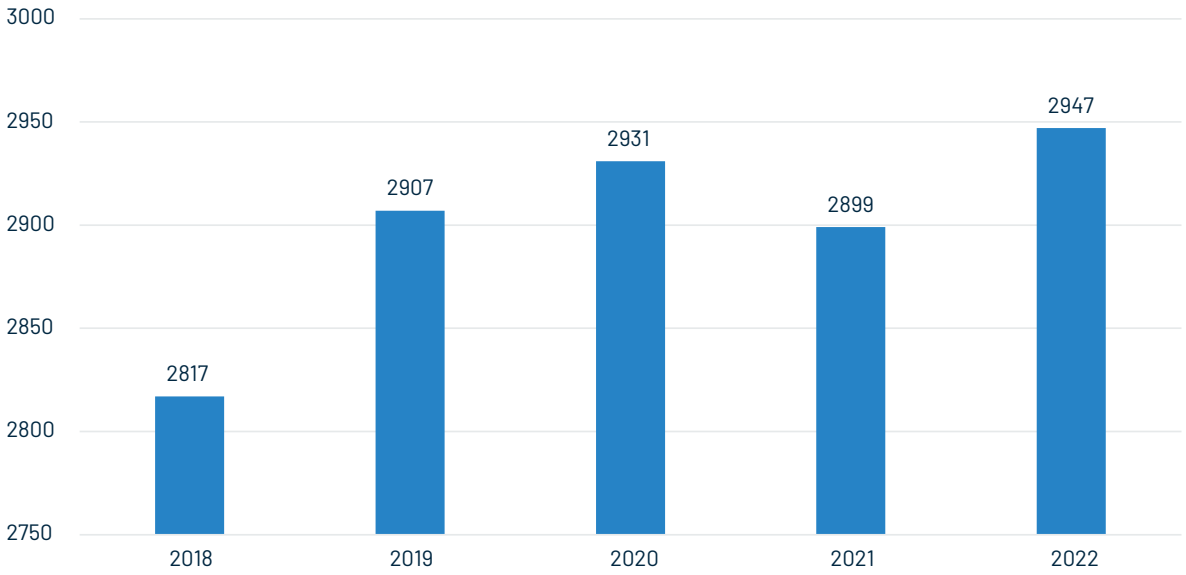


Source: Statistics Portugal; Maritime Transport of Passengers and Goods Survey; Pordata

4.4 Travel and Tourism

The travel industry in Portugal has displayed both resilience and expansion, with the number of entities increasing from 2.817 corporations in 2018 to 2.947 in 2022.

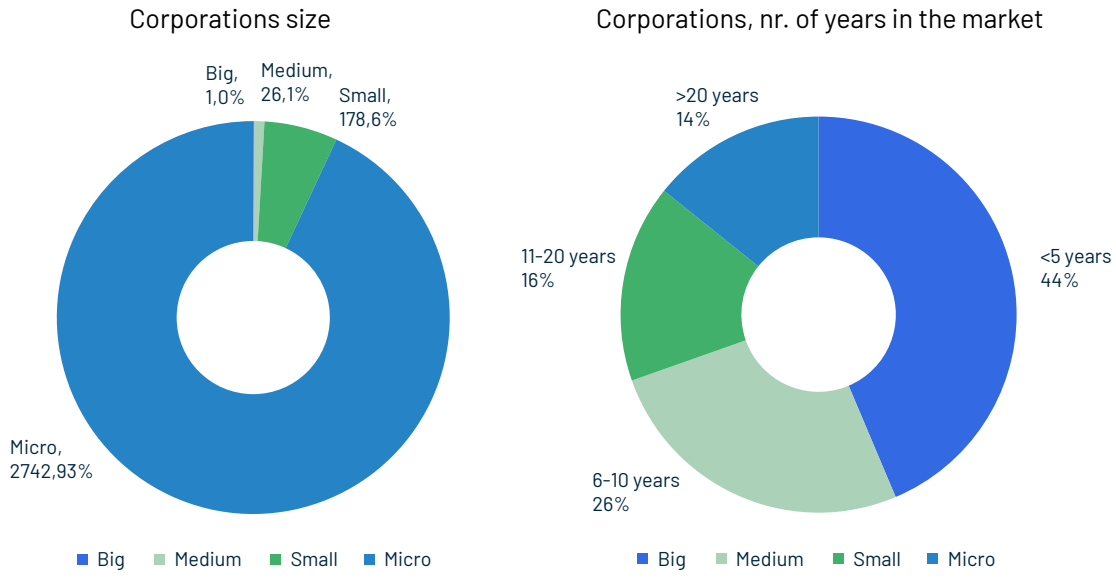
Figure 51: Travel agencies, touristic operators and similar



Source: Bank of Portugal; Sector Tables, 2022

Notably, 93% of these entities are micro-corporations, underscoring the prevalence of small-scale businesses, while 7% fall within the SME category, with only one large corporation in the mix. This distribution highlights the sector's diversity, shedding light on the entrepreneurial spirit and adaptability inherent in micro and small enterprises. The continuous growth observed in travel agencies, tour operators, and similar entities reinforces the dynamic nature of Portugal's tourism landscape, showcasing the substantial role played by both smaller businesses and larger players in shaping and contributing to the country's travel industry.

Figure 52: Travel agencies, touristic operators and similar corporations: size, years in the market



Source: Bank of Portugal; Sector Tables, 2022

5 Tourism investment opportunities

Portugal's tourism sector presents a set of investment opportunities, reflecting its remarkable evolution and flourishing global appeal. The countries' strategic location, robust infrastructure, and commitment to sustainability further enhance its attractiveness to investors. Portugal's government actively supports the tourism industry through favorable policies and initiatives, creating a conducive environment for business growth. With its blend of affordability, safety, and innovative tourism practices, Portugal stands out as a prime destination for investment in tourism, promising substantial returns and long-term growth potential.

5.1 Asset management and tourism management

Investment in asset management and tourism management presents a compelling opportunity, especially in Portugal's dynamic market.

A growing trend that can be observed is the separation of real estate management from touristic and hotel activity management, allowing for specialized focus and expertise in each domain. This separation enables investors to maximize returns by leveraging professional management of physical assets while enhancing the tourist experience through dedicated hospitality management.

Portugal's rich heritage and diverse real estate landscape offer a wide investment potential. In urban areas like Lisbon, Oporto, Braga, Coimbra, among others, recovering historic buildings and transforming them into boutique hotels or cultural attractions can yield high returns. The city's blend of historical charm and modern vibrancy attracts a steady influx of international tourists. Additionally, Portugal's rural regions present unique opportunities for high-value-added tourism. Properties such as thermal baths, abandoned train stations, public estates, and religious heritage sites can be revitalized into luxurious retreats, wellness centers, or niche cultural destinations. These projects not only preserve and enhance local heritage but also cater to the growing demand for unique and immersive travel experiences.

With government support and a favorable investment climate, Portugal's tourism sector stands poised for significant growth. Asset and tourism management investments in this vibrant market promise substantial returns while contributing to sustainable and innovative tourism development.

5.2 Wine Tourism

Wine tourism in Portugal represents an interesting investment opportunity, capitalizing on the country's rich viticultural heritage and growing global reputation for high-quality wines. Portugal's diverse wine regions, such as Douro, Alentejo, and Dão, offer unique experiences that attract wine enthusiasts and tourists seeking authentic cultural experiences. The scenic beauty of these regions, coupled with historic wineries and vineyards, provides a perfect backdrop for developing sophisticated wine tourism infrastructure.

Investing in wine tourism can yield high returns due to several factors. First, the rising global interest in wine culture and experiential travel drives demand for well-curated wine tourism experiences. Tourists are increasingly seeking immersive activities, including vineyard tours, wine tastings, and participation in harvests, which Portugal can uniquely provide. Additionally, wine tourism encourages longer stays and higher spending per visitor, enhancing overall economic impact.

Moreover, wine tourism fosters regional development by creating jobs and supporting local businesses. It also encourages sustainable tourism practices, preserving the natural landscape and cultural heritage. Portugal's commitment to quality and authenticity in its wine production, coupled with its robust hospitality sector, ensures that wine tourism ventures can thrive.

With its blend of tradition, scenic beauty, and modern hospitality, investing in Portugal's wine tourism sector promises substantial returns while promoting sustainable growth and cultural preservation.

5.3 Health Tourism

Health tourism in Portugal is a growing sector offering a compelling investment opportunity due to the country's blend of high-quality medical services, skilled professionals, and affordable pricing. Portugal boasts a wide range of healthcare services, including primary care, dental care, hair health, hemodialysis, senior care, and cancer treatment, all delivered by highly qualified doctors, surgeons, practitioners, nurses, and specialized auxiliary staff.

Investing in health tourism in Portugal is advantageous for several reasons. First, the country is home to modern,

well-equipped medical facilities that meet international standards, ensuring high-quality care for patients. Additionally, many healthcare professionals in Portugal are fluent in English, enhancing communication and comfort for international patients. The affordability of medical services in Portugal, compared to other Western countries, makes it an attractive destination for those seeking cost-effective yet excellent healthcare.

Moreover, Portugal's strategic location in Europe, combined with its pleasant climate and rich cultural heritage, makes it an appealing destination for health tourists who can combine medical treatment with leisure and recovery. This holistic approach not only improves patient outcomes but also enhances the overall experience, encouraging longer stays and higher expenditure.

Investing in Portugal's health tourism sector promises substantial returns, leveraging the country's medical excellence, competitive pricing, and appealing environment to attract a growing global market seeking high-quality, affordable healthcare solutions.

5.4 Eco Tourism

Eco-tourism presents a significant investment opportunity in Portugal, driven by the country's diverse natural landscapes commitment to sustainability, and growing demand for environmentally responsible travel. From Azores Island, Madeira Islands to Alentejo, Trás-os-Montes and Minho one can find rich biodiversity, from the rugged coastlines of the Algarve to the lush forests and mountains of the North, offers a wide range of eco-tourism activities such as hiking, BTT trails, bird watching, volcanic islands, marine exploration (eco-dolphins watching in Tejo and Sado rivers and Azores, Mantas conservation experience, whales watching, among others), Sky observation (Portugal Dark Sky Reserves) and wild beaches.

Investing in eco-tourism in Portugal is advantageous for several reasons. Firstly, the global trend towards sustainable travel is increasing, with tourists seeking destinations that prioritize environmental conservation and offer authentic nature-based experiences. Portugal, with its numerous protected areas and national parks, is well-positioned to cater to this growing market. The country's efforts in promoting green initiatives and sustainable tourism practices further enhance its attractiveness as an eco-friendly destination. Portugal has 17 destinations classified as Unesco Heritage.

Additionally, eco-tourism in Portugal supports local economies by encouraging the development of small-scale, community-based tourism enterprises. This not only helps preserve local cultures and traditions but also provides unique, personalized experiences for visitors. The Portuguese government's support for sustainable tourism projects, through grants and incentives, also makes it easier for investors to develop eco-friendly tourism infrastructure and services. Eco-tourism in Portugal offers an attractive investment opportunity, leveraging the country's natural beauty, sustainable practices, and supportive policies to meet the rising demand for responsible and immersive travel experiences.

5.5 Sports Tourism

Sport tourism in Portugal represents a compelling investment opportunity, driven by the country's diverse and high-quality sports infrastructure, natural landscapes, and supportive amenities. Portugal boasts an impressive array of golf courses, many of which are world-renowned for their stunning locations and top-notch facilities, making it a premier destination for golf enthusiasts. Additionally, the country's 14 Sportive High Competition Centers (Centros de Alto Rendimento- CARs) cater to a wide range of sports, providing high-end facilities:

Table 24: High-competition centers list and sports supported

CAR da Anadia	Cycling, Fencing, Gymnastics, Judo, Modern Pentathlon
CAR das Caldas da Rainha	Badminton
CAR da Golegã	Equestrian sports
CAR da Maia	Athletics
CAR de Montemor-o-Velho	Canoeing, Open water swimming, Rowing, Triathlon
CAR da Nazaré	Bodyboard, Longboard, Surf
CAR de Peniche	Bodyboard, Bodysurf, Longboard, Surf
CAR de Rio Maior	Swimming

CAR de S. Jacinto (Aveiro)	Bodyboard, Longboard, Surf
CAR de Viana do Castelo	Bodyboard, Longboard, Surf
CAR de Vila Nova de Gaia	Taekwondo, Table tennis
CAR de Vila Real de Sto. António	Athletics, Football, Judo, Swimming and Triathlon
CAR do Jamor (Oeiras)	Athletics, Basketball, Canoeing, Endurance, Climbing, Football, Field hockey, Golf, Judo, Motorcycling, Swimming, Padel, Rugby, Taekwondo, Tennis, Archery, Triathlon, XCO cycling
CAR do Pocinho (V.N. de Foz-Coa)	Canoeing, Rowing

Source: Fundação do Desporto

Portugal's appeal as a sports tourism hub is further enhanced by its well-developed hospitality sector. The numerous hotels and restaurants near (or integrated with) these sporting centers offer tailored services to athletes, teams, and national squads, ensuring they have the necessary support and comfort during their training and competitions. This synergy between sports facilities and hospitality services creates a comprehensive and attractive environment for sport tourism.

Moreover, the country's mild climate and picturesque landscapes provide ideal conditions for outdoor sports and training camps year-round. The government's commitment to promoting sports tourism through infrastructure investments and hosting international sporting events further underscores the potential for growth in this sector.

Investing in sport tourism in Portugal is attractive due to its extensive sports infrastructure, supportive hospitality sector, and conducive environment for a wide range of sports activities. This creates numerous opportunities for investors to tap into the growing market of sport tourism.

5.6 Elderly Tourism

Portugal is an attractive destination for investment in elderly tourism due to its excellent healthcare services, favorable climate, and high quality of life. The country offers a wide range of specialized medical care, specialized in elderly diseases provided by highly qualified professionals such as doctors, surgeons, nurses, and specialized auxiliary staff. These services are delivered in modern, well-equipped facilities, ensuring that elderly tourists receive top-notch care during their stay.

The mild climate of Portugal, with its warm winters and pleasant summers, is particularly appealing to elderly individuals seeking a comfortable environment to relax and recuperate. The country's rich cultural heritage, beautiful landscapes, and welcoming communities provide a serene and engaging backdrop for elderly visitors.

Furthermore, Portugal's cost of living and healthcare services are relatively affordable compared to other Western European countries, making it a cost-effective option for elderly tourists and their families. The widespread proficiency in English among medical and hospitality staff and among general population ensures clear communication and ease of access to services for international visitors.

Elderly tourism in Portugal is particularly appealing to foreign seniors due to the government's fiscal benefits available until 2023.

Investing in elderly tourism in Portugal is also supported by the country's well-developed infrastructure, including accessible transportation and accommodation options tailored to the needs of senior citizens. This comprehensive support system enhances the overall experience for elderly tourists, making Portugal a prime destination for this growing market.

6 | Tourism looking forward

- It is widely anticipated in the industry that foreign hotel chains and private equity firms will strengthen their way into the Portuguese hotel (and Tourism in general) industry.
- Asset management organizations and institutional investors are both significant sources of capital for the hotel sector.
- The Portuguese government has been favorable towards the expansion of the sector.
- Physical distance from foreign conflicts and a secure environment have contributed significantly to the growth of Portuguese tourism.
- The emphasis on sustainable tourism may increase, with a focus on responsible practices, eco-friendly initiatives, and community engagement to attract conscientious travelers.
- The integration of technology in tourism services, including online booking platforms, virtual experiences, and digital marketing, may further evolve to enhance the overall visitor experience.
- Portugal's rich cultural heritage and diverse culinary offerings could continue to be key attractions, with efforts to promote and showcase these aspects to a global audience.
- Ongoing investment in infrastructure, including transportation and accommodation facilities, may enhance accessibility and comfort for tourists.
- The integration of robust health and safety measures in the tourism sector may persist, addressing ongoing concerns related to public health.
- The diversification of tourism offerings, such as adventure tourism, rural tourism, and niche experiences, may expand to cater to different traveler preferences.
- Increased collaboration between public and private sectors, as well as partnerships with international organizations, may contribute to the overall growth and promotion of tourism in Portugal.
- The overall economic landscape and global geopolitical situations will also influence tourism, with economic stability fostering travel confidence and spending.

The tourism industry needs to stay adaptive and resilient, responding to changing circumstances and leveraging opportunities for innovation and growth. Monitoring global travel trends, aligning with sustainability goals, and ensuring a seamless and enjoyable visitor experience will likely be key factors in shaping Portugal's tourism outlook in the coming years.

Investment Opportunities in Agriculture and Forest

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April, 2024

Executive Summary: Agriculture and Forest

- Agriculture has been a cornerstone of Portugal's economy for centuries, shaping its landscapes, traditions, and livelihoods. The sector remains substantial, with extensive arable land dedicated to cereals, fruits, vegetables, and olives, as well as significant roles for livestock farming and forestry. The agroforestry sector in 2023 represented 5% of GDP.
- As of 2023, family farmers currently comprise 6% of the resident population. Agriculture is understood as being vital for employment, rural community sustainability, and food security.
- Portuguese agricultural exports have grown significantly, with a 45% increase from 2018 to 2022. Key exports like wine, olive oil, and various horticultural goods are highly sought after internationally.
- The agriculture sector spans over 560,000 hectares of irrigated land. Portugal produces a variety of permanent and annual crops, including olives, vineyards, almonds, chestnuts, oranges, corn, and tomatoes.
- The fruits, vegetables, and flowers sector has seen remarkable growth, with production values doubling since 2010 and exports nearly tripling, reflecting the global demand for Portuguese produce. Key products include raspberries, blueberries, blackberries, strawberries, and Rocha pears.
- Vineyards cover 175,791 hectares, with wine being a significant export and tourist attraction. Investments in modern viticulture and irrigation have stabilized production and enhanced quality, whilst maintaining the quality associated with several UNESCO-recognized world heritage regions.
- Portugal is a leading exporter of high-quality olive oil, with modern cultivation techniques boosting production, having positioned itself as the third greatest exporter of olive oil worldwide from 2011 and 2021.
- Renovating traditional forests can enhance CO2 capture, support biodiversity, and provide sustainable construction materials. Portugal's forestry sector, primarily consisting of eucalyptus, maritime pine, cork oak, and stone pine, offers opportunities for sustainable investments.
- Investors can benefit from the strong global demand for Portuguese agricultural products, ongoing sector innovation, and government support for sustainable practices.
- The integration of advanced technologies and sustainable management practices ensures long-term economic and environmental benefits, making Portugal a prime destination for agricultural and forestry investments.

1 | Context

Agriculture in Portugal represents not only a longstanding tradition deeply rooted in the nation's history, but also a progressing industry that assumes a pivotal position in the domestic economy.

With a diverse climate, fertile soils and a strategic geographic location, access to water and technically qualified resources, Portugal offers a favorable environment for a variety of crops and agricultural activities. From producing high-quality olive oil to award-winning wines and a wide range of horticultural products, the country has demonstrated its ability to compete in the global market. In addition, investment in sustainable practices and state-of-the-art agricultural technology is propelling the Portuguese agricultural sector through a period of innovation and modernization. This paradigm shift not only enhances operational effectiveness and output, but also presents fresh avenues for capital investment among enterprises seeking to establish or grow in this industry.

With the intention of elucidating the primary investment prospects in the Portuguese agricultural sector, this synopsis endeavors to underscore the sector's unique attributes, encompassing sustainable agriculture, agrotechnology, and high-quality food production.

2 | Industry History, Size and Relevance

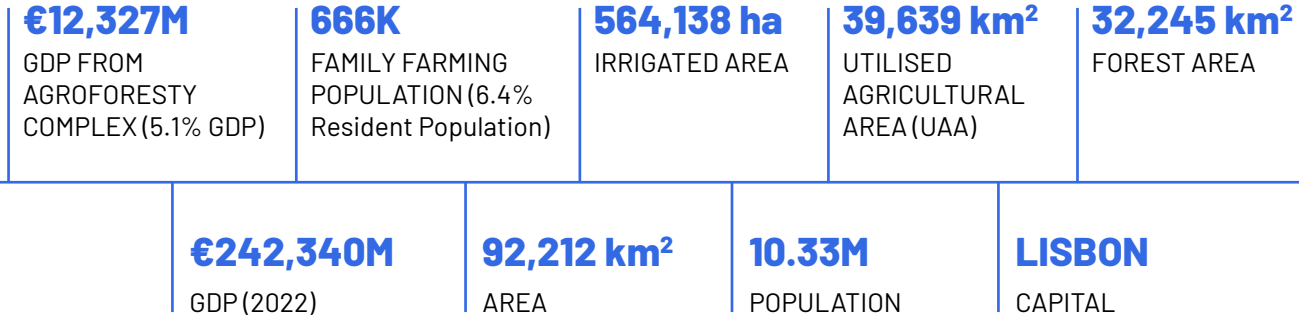
Portugal's agricultural history is deeply rooted in its cultural heritage, dating back centuries. Throughout the ages, agriculture has been a fundamental pillar of the Portuguese economy, shaping landscapes, traditions, and livelihoods across the country. From the terraced vineyards of the Douro Valley to the olive groves of Alentejo, Portugal's diverse geography and favorable climate have fostered a rich mix of agricultural practices.

The size of Portugal's agricultural sector remains substantial, with vast swathes of arable land dedicated to a variety of crops, including cereals, fruits, vegetables, and olives. Livestock farming, particularly of sheep, goats, and cattle, also plays a significant role in the country's agricultural landscape. Additionally, Portugal's extensive forests, covering approximately one-third of its territory, contribute to its forestry sector, supporting timber production and biodiversity conservation efforts.

In terms of relevance, agriculture continues to be a vital sector of the Portuguese economy, providing employment, sustaining rural communities, and contributing to food security. Despite the country's increasing industrialization and urbanization, agriculture remains a cornerstone of Portugal's identity and economy, representing a source of cultural pride and economic resilience. Moreover, the sector's potential for innovation and sustainability positions it as a key player in Portugal's transition towards a more resilient and environmentally conscious future.

Forest area comprises 32 250 km2, "utilized agricultural area" 39 939 km2, and irrigated area 564 138 ha. There are 666 thousand family farmers (6.4 percent of the population), and the agroforestry sector contributes 12.137 million euros (5.1 percent) to the GDP (Consulai, 2023).

Figure 53 – Summary of Portugal's Agriculture



Source: Consulai, 2023, Natural Capital - Roadmap for Sustainable Investment in Agriculture & Forestry

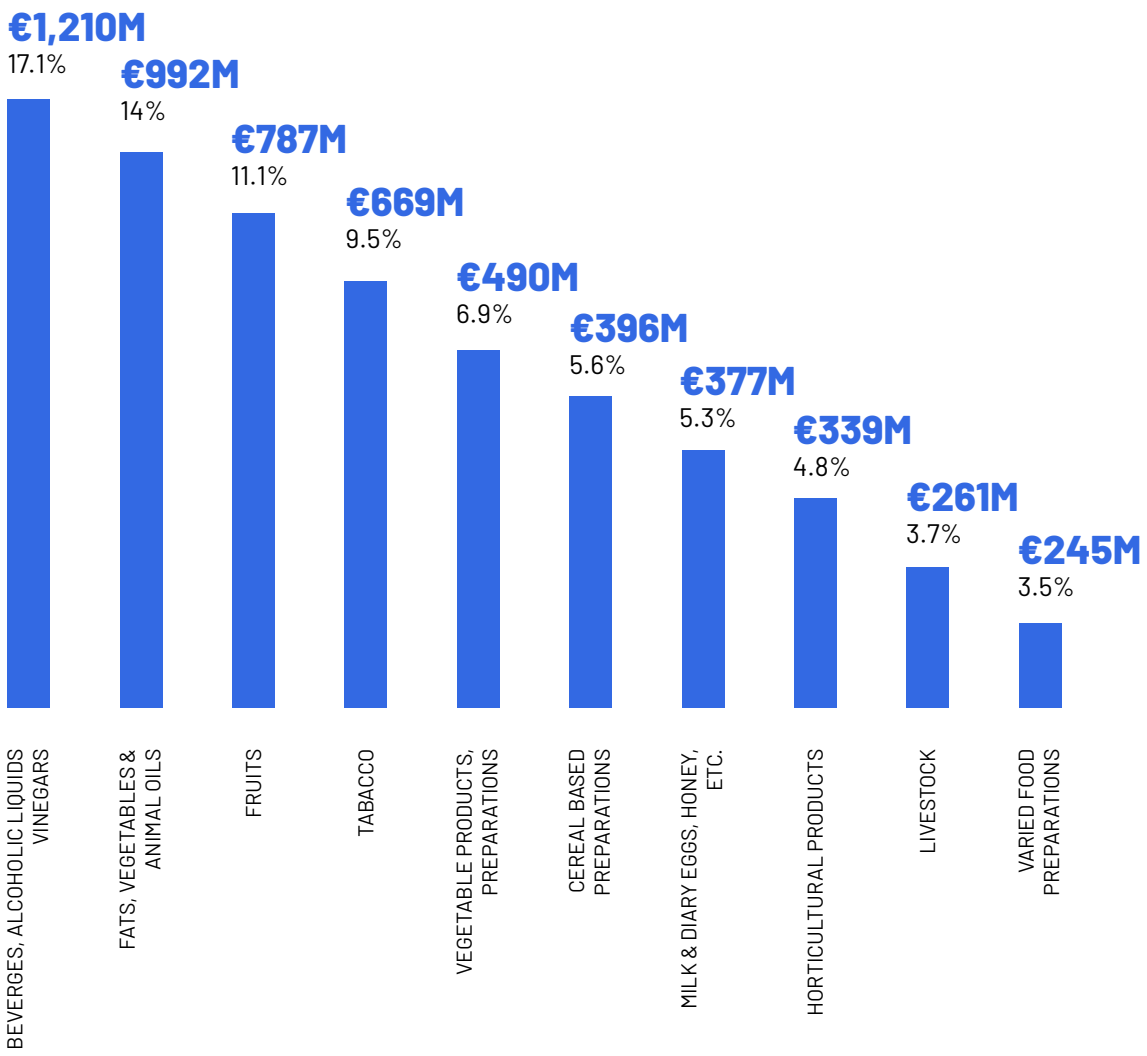
2.1 Exports

Portuguese agricultural products, including fruit, vegetables, and flowers, are highly sought after in international markets, recognized for their superior quality and distinct flavors. Over recent decades, the sector has experienced impressive growth in exports, setting new records continually.

Between 2018 and 2022, Portugal saw a remarkable 45% increase in agrifood exports. This surge reflects significant growth both in the volume and value of the agricultural goods produced within the country.

The primary drivers of this expansion have been alcoholic beverages, notably wine, and fats and oils, with olive oil being particularly prominent. These products, along with fruits and vegetables, have had the most substantial impact on Portugal's export figures as unprocessed agricultural goods. This trend underscores the growing global appreciation for Portuguese agrifoods and their contribution to the country's economy.

Figure 54 – Agrifood exports



Source, INE, Consulai

2.2 Agriculture

Agriculture represents €2,96bn in the Portuguese GDP, and more than 560 thousand ha of irrigated area. There is a clear geographic distribution of smaller farms located north of the Tagus River (North) while the average farm area is larger in the Alentejo region (South).

Irrigation plays a crucial role in sustaining agriculture in Mediterranean region. The Portuguese regions of Alentejo (272K Ha), Ribatejo, and Centro (125K Ha) are regions that have important irrigation areas and contribute to the Portuguese agrifood sector sustained growth. The mainland of Portugal has over +564k hectares of irrigated land.

Alqueva, in Alentejo, stands as the largest irrigation area in Portugal. Since 2016, it ensures 120K Ha of irrigation land. Ongoing constructions are set to expand its reach, aiming for an additional 50K Ha of irrigated land. In Portugal, over 276K Ha of irrigated land are attributed to public irrigation areas, with additional approved projects that could contribute over 79K Ha to this number.

Main permanent and annual crops

Portugal's agriculture thrives on a diverse range of permanent and annual crops. The main permanent crops include olives, vineyards, almonds, chestnuts, and oranges, which flourish in the country's Mediterranean climate. These crops form the backbone of Portugal's renowned olive oil, wine, and citrus industries. In addition, Portugal cultivates a variety of annual crops such as corn, oat, wheat, triticale, rice, and tomatoes for industrial purposes. This agricultural diversity not only contributes to the country's culinary richness but also supports its economy through exports and local consumption.

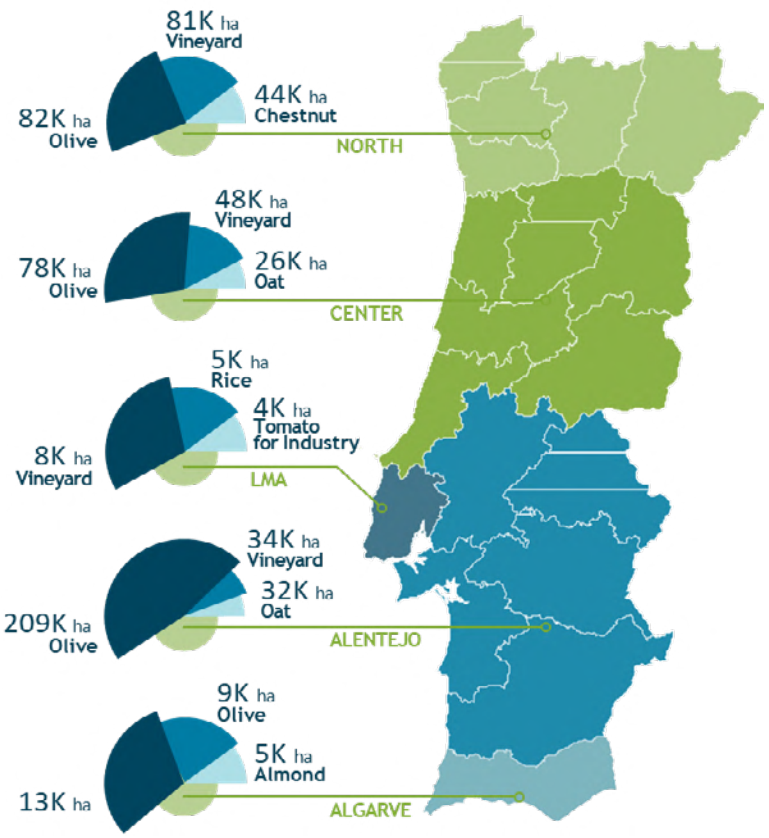
Figure 55 – Permanent and Annual Crops

Permanent Crops

Olive	380K Ha
Vineyard	176K Ha
Almond	64K Ha
Chestnuts	50K Ha
Orange	17K Ha

Annual Crops

Corn	131K Ha
Oat	97K Ha
Wheat + Triticale	46K Ha
Rice	27K Ha
Tomato for industry	15K Ha

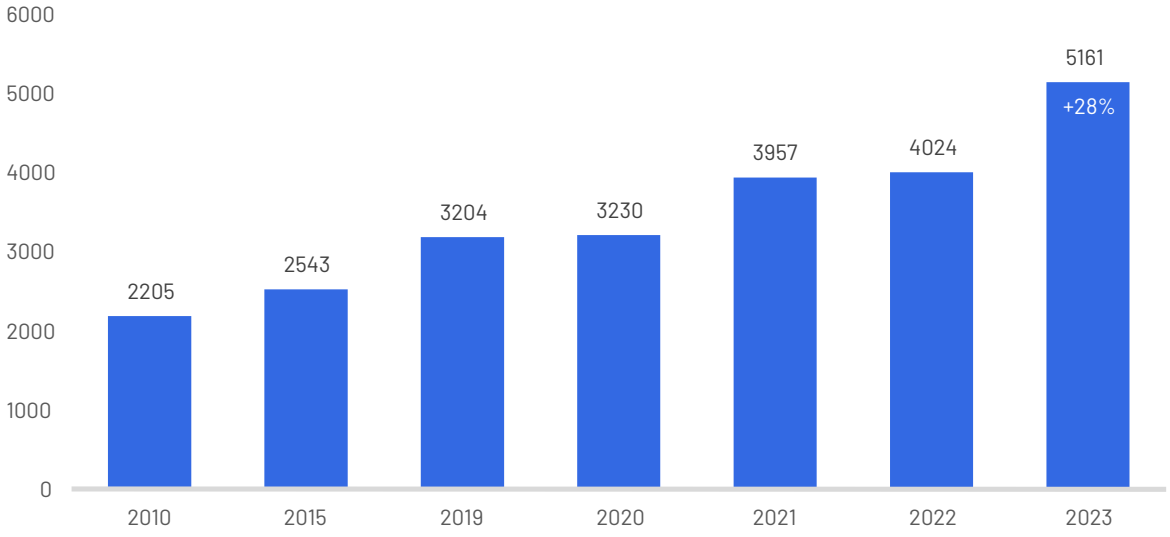


Source: INE, Consulai, 2023

2.3 Fruits, Vegetables, Flowers (FVF)

Since 2010, the fruit, vegetables, ornamental plants, and flowers sector has seen major growth in Portugal, both in terms of the value of production and the value of exports. This growth is particularly marked in fruit and vegetables. economy through exports and local consumption.

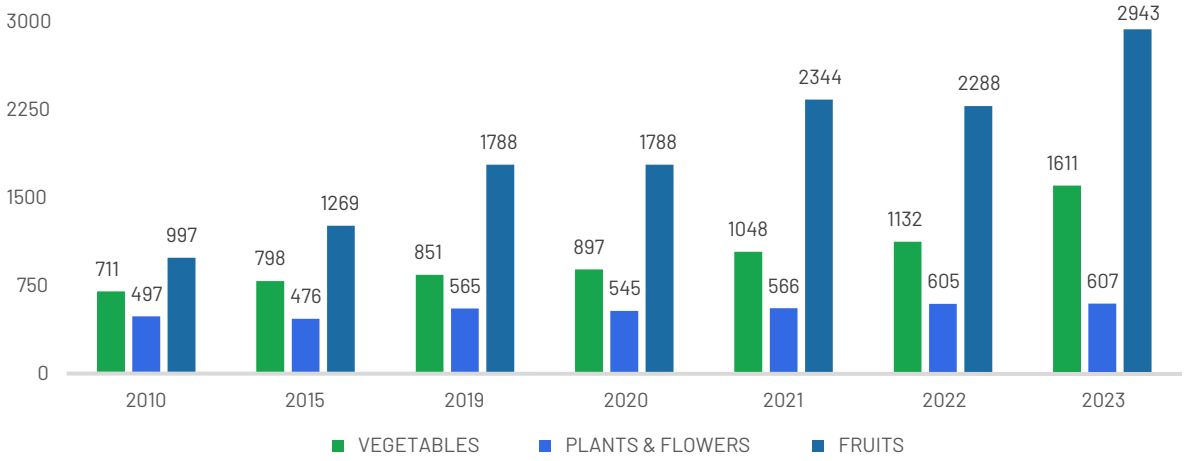
Figure 56 – Total Production of Fruits, Vegetables and Flowers in Portugal in m€



Source:INE

The graph above shows the evolution from 2010 to 2023 of the sector's total production value. In around 13 years it has been possible to more than double the value of production, passing the 5.000 million barrier for the first time in 2023.

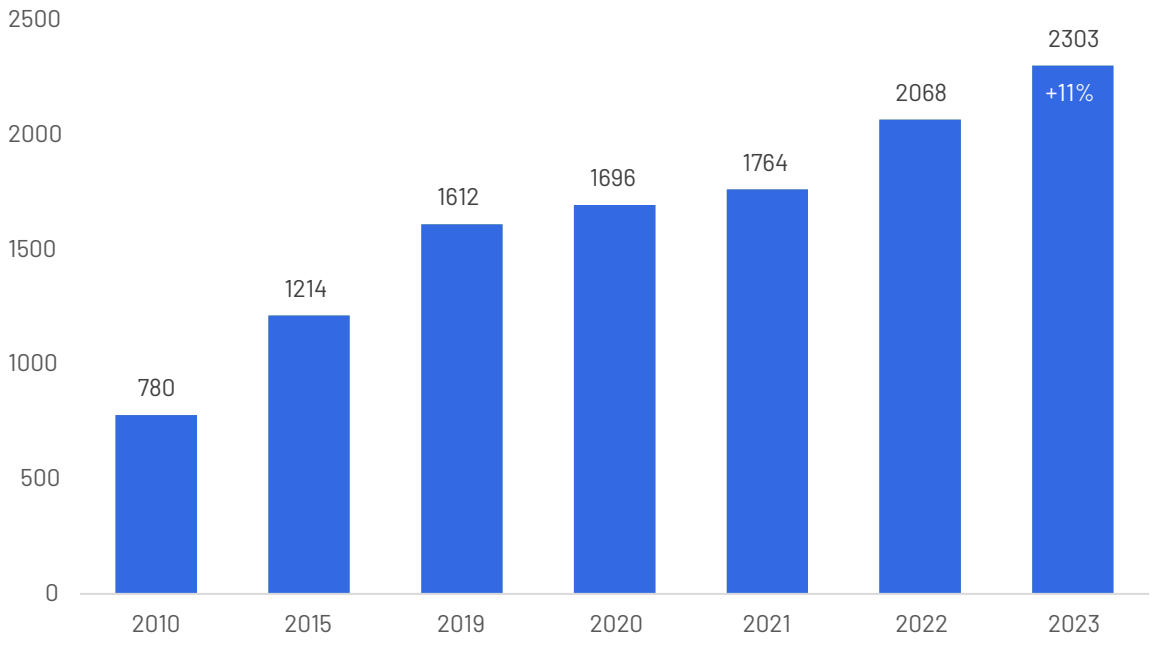
Figure 57 – Production of Vegetables, Plants and Flowers, and Fruits in Portugal in m€



Source:INE

Of the 5,161 million euros in production value, fruit accounts for 57%, vegetables for 31% and ornamental plants and flowers for 12%. As far as exports are concerned, the journey has been impressive. Producers and exporters have focused on international promotion, showcasing the quality of their products and the professionalism of their services, and Portugal is now recognized as a geography of quality products.

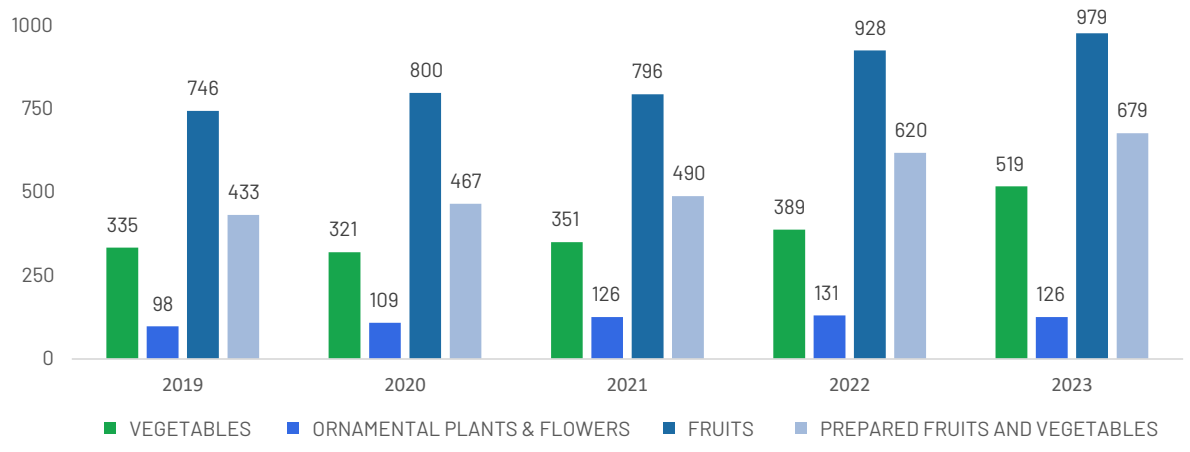
Figure 58 – Exports of the Fruits Vegetables Flowers Sector in m€



Source:INE

The value of exports has almost tripled in the last 13 years, from 780 million euros in 2010 to 2,303 million euros in 2023. Fruit accounts for almost 43% of the value of exports, followed by fruit and vegetable preparations with 29% (industrial tomatoes have a huge share), vegetables with 23% and plants and flowers with 5%.

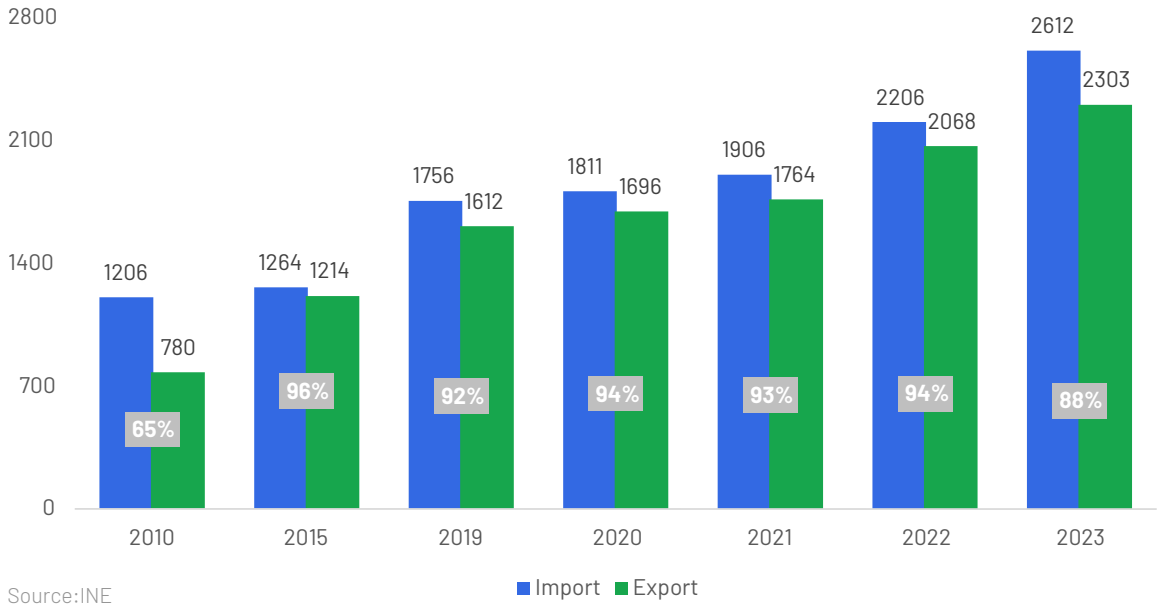
Figure 59 – Exports of Plants and Flowers, Vegetables, Fruits and Prepared Fruits and Vegetables in m€



Source:INE

Even with these developments, Portugal continues to import more than it exports, as can be seen in the graph below.

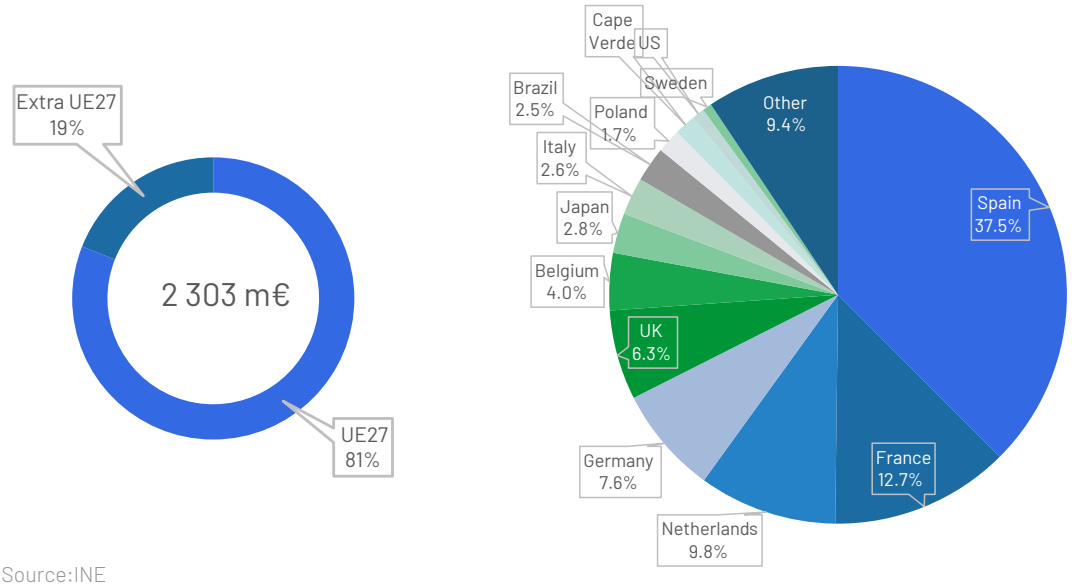
Figure 60 – Agrifood Trade Balance



Source:INE

As far as markets are concerned, the sector exports mostly to the European Union, around 81%, and to countries with closer geographical proximity.

Figure 61 – Main Markets of Exports in Agrifood Products, in 2023



Source:INE

Spain, France, the Netherlands, Germany, and the United Kingdom are the main destinations for our fruit, vegetables, plants, and flowers.

The evolution of the number of companies, staff and turnover in the Fruit and Vegetable Processing and Preserving Industry can be found in more detail in the tables below:

Table 25 – Number of Companies in the Fruit and Vegetable Processing and Preserving Industry

Industry	2010	2015	2019	2020	2021	2022
Preparation and preservation of fruits and vegetables	194	330	414	393	412	417
Preservation and conservation of potatoes	16	24	23	20	21	23
Manufacture of fruit and vegetable juices	10	18	21	18	18	21
Total Fruit and Vegetable Processing Industry	220	372	458	431	451	461
Total of the food industries	**9428**	**9337**	**9566**	**8883**	**9186**	**9359**
Fruit and Vegetable Canning / Food Industries	2,3%	4,0%	4,8%	4,9%	4,9%	4,9%

Table 26 – Number of Employees of Fruit and Vegetable Processing and Preserving Companies

Industry	2010	2015	2019	2020	2021	2022
Preparation and preservation of fruits and vegetables	2805	3758	4751	4860	4925	4933
Preservation and conservation of potatoes	684	691	863	803	852	881
Manufacture of fruit and vegetable juices	287	246	122	115	115	99
Total Fruit and Vegetable Processing Industry	3776	4695	5736	5818	5892	5913
Total of the food industries	**95428**	**92336**	**101295**	**91672**	**92303**	**94022**
Fruit and Vegetable Canning / Food Industries	4,0%	5,1%	5,7%	6,3%	6,4%	6,3%

Table 27 – Turnover of Companies in the Fruit and Vegetable Preserving Industry (m€)

Industry	2010	2015	2019	2020	2021	2022
Preparation and preservation of fruits and vegetables	414m€	664m€	944m€	971m€	1024m€	1276m€
Preservation and conservation of potatoes	54m€	65m€	84m€	81m€	85m€	110m€
Manufacture of fruit and vegetable juices	55m€	40m€	19m€	19m€	22m€	24m€
Total Fruit and Vegetable Processing Industry	523m€	768m€	1047m€	1071m€	1130m€	1410m€
Total of the food industries	10984m€	12099m€	13994m€	13335m€	14562m€	18250m€
Fruit and Vegetable Canning / Food Industries	4,8%	6,3%	7,5%	8,0%	7,8%	7,7%

Table 28 – Sales Value of the Fruit and Vegetable Canning Industry (m€)

Industry	2010	2015	2019	2020	2021	2022*
Fruit and Vegetable preserving industry	548m€	908m€	1124m€	1092m€	1194m€	1546m€
Preparation & preservation of fruits and vegetables by processes, n.e.	246m€	468m€	563m€	572m€	634m€	827m€
Preservation & conservation of potatoes	94m€	115m€	156m€	155m€	166m€	220m€
Manufacture of fruit and vegetable juices	94m€	149m€	153m€	111m€	123m€	158m€
Food and beverage industry	**10954m€**	**12794m€**	**14776m€**	**14449m€**	**15384m€**	**15230m€**

Source:INE, Consulai, 2023

2.4 Specific Fruits

Almond

Over the past decade, Portugal has seen a remarkable transformation in its almond production, driven by significant changes in agricultural practices and regional shifts in cultivation. Traditionally, almond orchards in the northern regions of Portugal were not irrigated, relying solely on natural rainfall. However, over the past two decades, the availability of irrigation water further south, particularly in the fertile southern Alentejo region, has allowed for the expansion and intensification of almond farming. This shift has not only enabled the cultivation of smaller, more productive almond varieties but also contributed to a substantial increase in overall almond yields. From 2011 to 2021, the production of almonds in Portugal experienced a meteoric rise, with total production area growing from 27,000 hectares to 64,000 hectares. This period saw the output of almonds in shell surge from 7,000 tons to 46,000 tons, and shelled almonds from 1,500 tons to 10,000 tons. Such growth is indicative of the modernization and capital investment in new orchards and advanced production methodologies, which significantly enhanced productivity compared to traditional practices. The area devoted to almond orchards in the country doubled during this time, highlighting that modern orchards are considerably more fruitful than their traditional counterparts.

This increase in almond production is significant not just for domestic consumption but also for the European nut market. Europe heavily relies on imported nuts, and the rise in almond production in southern European countries like Portugal is poised to decrease dependency on imports from third countries. Furthermore, this growth facilitates increased exports to various global markets, including Asia, thus expanding Portugal's footprint in the international nut trade.

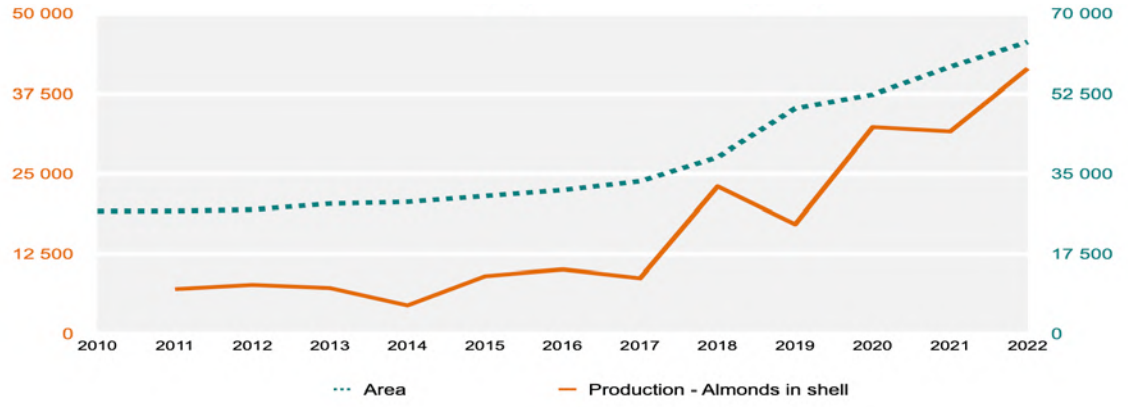
In 2023, the financial impact of this growth was clear. Exports of almonds in shell reached 36 million euros with a volume of 23,000 tons, while shelled almonds accounted for 4,600 tons and generated 18 million euros. This trend underscores a strategic shift in Portugal's agricultural sector, where investment in irrigation and modern cultivation techniques in regions like Alentejo not only bolsters local economies but also positions the country as a burgeoning leader in the global almond market. This success story can serve as a model for similar agricultural transformations, potentially influencing crop production strategies in other regions facing similar climatic and soil conditions.

Table 29 – Almond Production Area and Volume

	Unit	2010	2015	2019	2020	2021	2022
Area	ha	26 842	30 150	49 345	52 344	58 404	63 884
Production – Almonds in shell	ton	7 012	10 090	32 299	31 610	41 452	46 215
Production – Shelled Almonds	ton	1 578	2 270	7 267	7 112	9 327	10 398

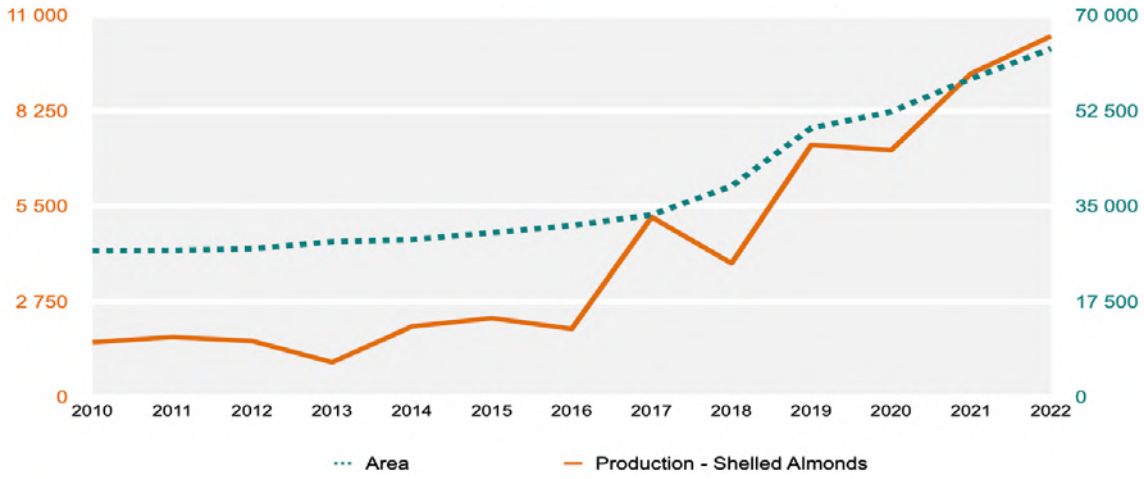
Source: INE – Statistics Portugal

Figure 62 – Almond in shell Production (Tons) and Area (ha)



Source: INE – Statistics Portugal

Figure 63 – Shelled Almond Production (Tons) and Area (ha)



Source: INE – Statistics Portugal

Berries

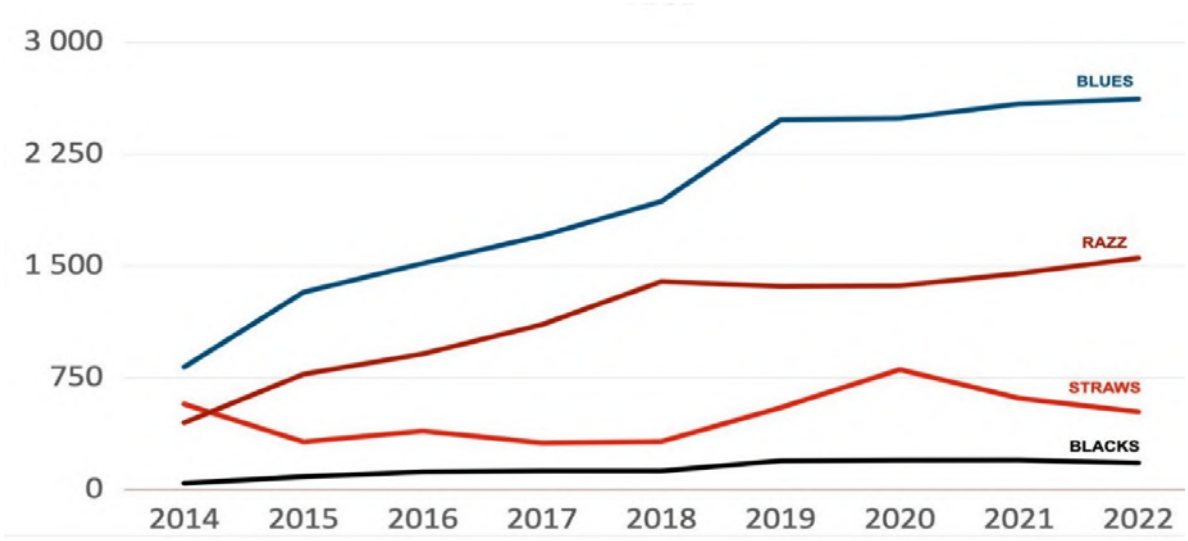
The berries sector in Portugal has a long history, but it has become the most relevant fruit export industry in the last decade. In the 1970s there were Portuguese companies exporting strawberries to various countries, mainly the UK, and we can sometimes taste strawberries from Portugal at the famous Wimbledon Tennis Grand Slam. With the arrival in Portugal of the world leader in the sector, Driscoll's, there was an exponential increase in raspberry production at the beginning of the 21st century. Other groups followed and today we have the world's leading groups in the berries sector in Portugal.

Portugal has diverse soils, many of them poor, but it has an exceptional climate to produce berries, as with most fruit and vegetables, and is the only country in Europe that manages to produce raspberries, blackberries and strawberries every week of the year. Only blueberries have yet to be produced every week of the year.

The largest production area is in the southwest of Alentejo, in the Mira hydro-agricultural scheme, where the vast majority of raspberry and blackberry production is concentrated. The Algarve, Ribatejo and Oeste, and the north of Portugal also produce small fruits, but on a smaller scale.

The production area has been increasing in recent years and is distributed as follows among the various small fruits.

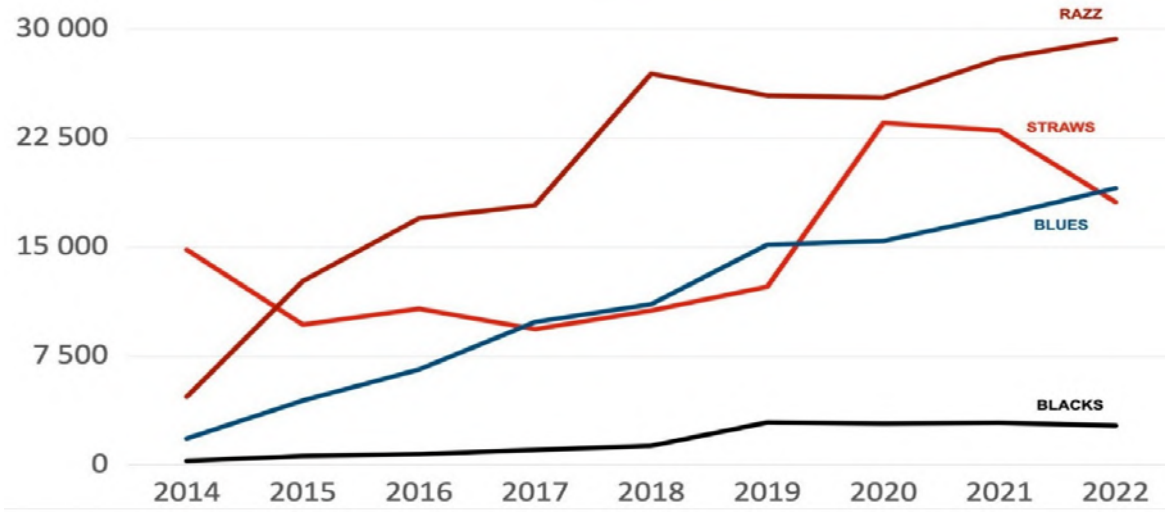
Figure 64 – Berries Production Area (in ha)



Source: INE – Statistics Portugal

Although the largest area is blueberries, it is raspberries that account for the largest production in terms of quantity, followed by myrtles and strawberries, and lastly blackberries.

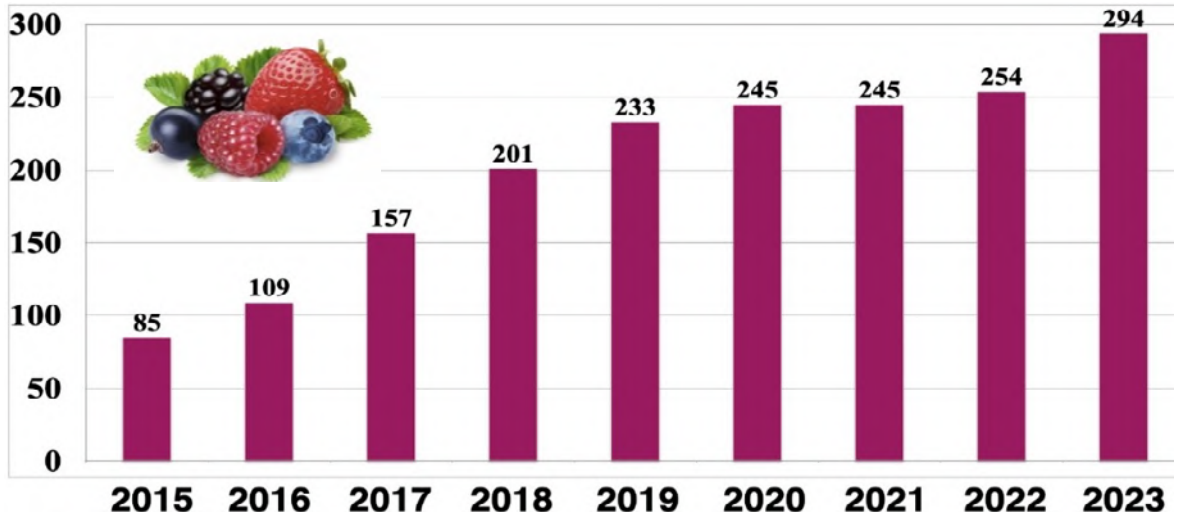
Figure 65 – Berries Production (in tons)



Source: INE – Statistics Portugal

The companies in this sector have planned their production based on market demand and valuation, and for this reason there has been a huge decrease in the focus on strawberries to the detriment of raspberries, blueberries and some blackberries, which will grow in the coming years. In terms of exports, this has been one of the fastest growing sectors in recent years. Small fruits are second only to industrial tomatoes in terms of the value exported, reaching an all- time high of 294 million euros in 2023.

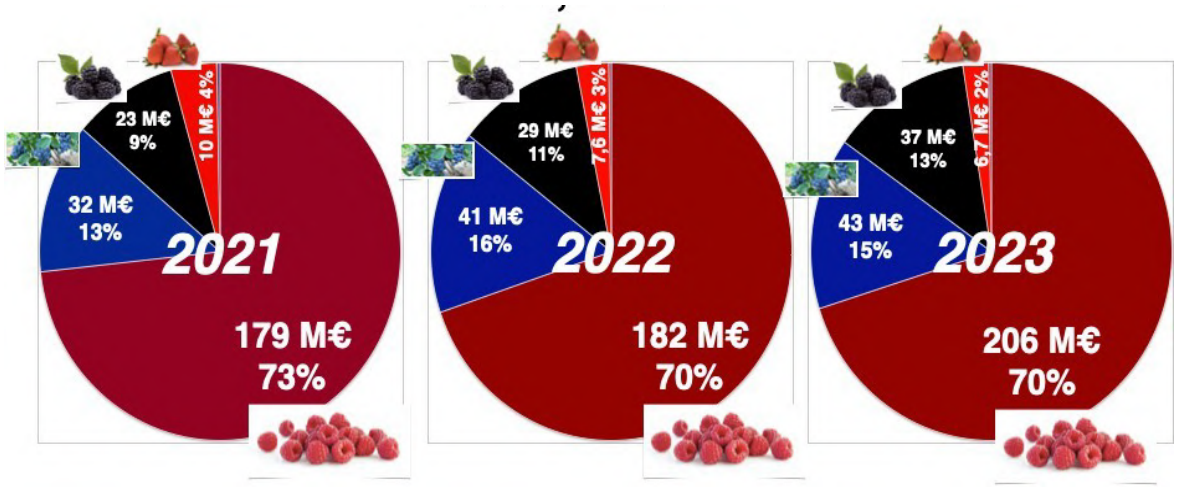
Figure 66 – Annual Exports of Berries in m€



Source: INE – Statistics Portugal

Most of this value comes from raspberries, which reached 206 million euros in 2023. Raspberries have represented about 70% of the export value in recent years, while blueberries have been the second most exported berry, accounting for about 15% of the value in 2023. Blackberries accounted for 13% and have been growing, while strawberries are the least representative and have been losing percentage weight.

Figure 67 – Export Value Breakdown per Type of Berry for 2021, 2022, 2023



Source: INE – Statistics Portugal

Pear

Pear production in Portugal is mainly of the Rocha species and is produced in the West. The "Pera Rocha do Oeste", as it is known, has DOP (Protected Designation of Origin) certification.

For many years, Pera Rocha was the queen of Portuguese exports, and it opened up markets that allowed other products to take advantage of this work.

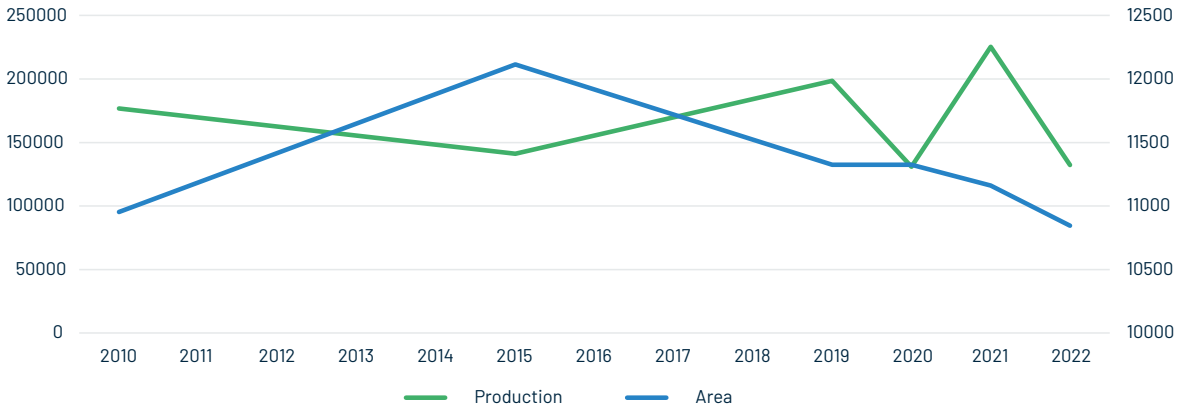
Although the area has undergone little change in the last decade, production varies greatly due to soil and climate conditions and the recent droughts in the West have affected production, which fell sharply in 2022 and 2023. In 2023, companies in the sector exported around 73,000 tons, representing a value of approximately 90 million euros.

Table 30 – Pear Production Area and Volume

	Unit	2010	2015	2019	2020	2021	2022
Area	ha	10 954	12 115	11 325	11 325	11 161	10 845
Production	ton	176 764	141 186	198 465	131 004	225 359	132 283

Source: INE – Statistics Portugal

Figure 68 – Pear Production Area and Volume



Source: INE – Statistics Portugal

Apple

The apple sector is very dependent on the domestic market but has increased its exports over the last decade with very professional promotional work. This is a sector that has undergone enormous technological progress and has seen a major modernization of its orchards over the last 15 years. Orchards that are more productive, more sustainable, and more technological.

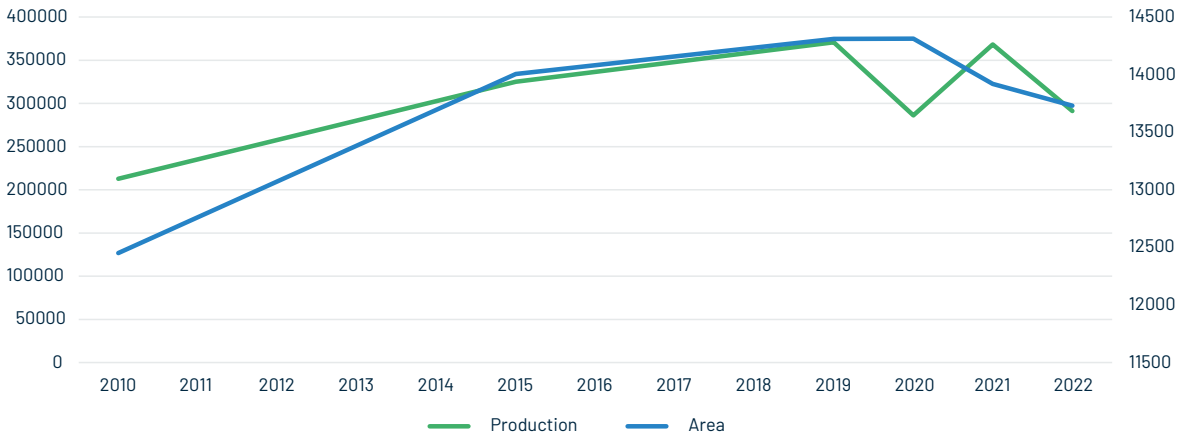
From Alcobaça, Moimenta da Beira, Armamar, Cova da Beira, Viseu, to other geographies, we find apple-growing areas mainly north of the River Tagus. In 2023 the sector exported 72,000 tons with a total value of 51 million euros. Brazil, Spain, Cape Verde, Colombia, and the United Kingdom were the main markets. The Spanish market is used to sell industrial and fresh products.

Table 31 – Apple Production Area and Volume

	Unit	2010	2015	2019	2020	2021	2022
Area	ha	12 450	14 006	14 311	14 313	13 919	13730
Production	ton	212 902	324 994	370 708	286 075	368 225	291 190

Source: INE – Statistics Portugal

Figure 69 – Apple Production Area and Volume



Source: INE – Statistics Portugal

Orange

It is the fruit with the largest production in terms of quantity (tons) in Portugal. The area has varied between 13,500 and 14,500 ha over the last decade and production has been around 300,000 tons per year. The largest production area is in the Algarve, but there are also some orange groves in the Alentejo and Ribatejo.

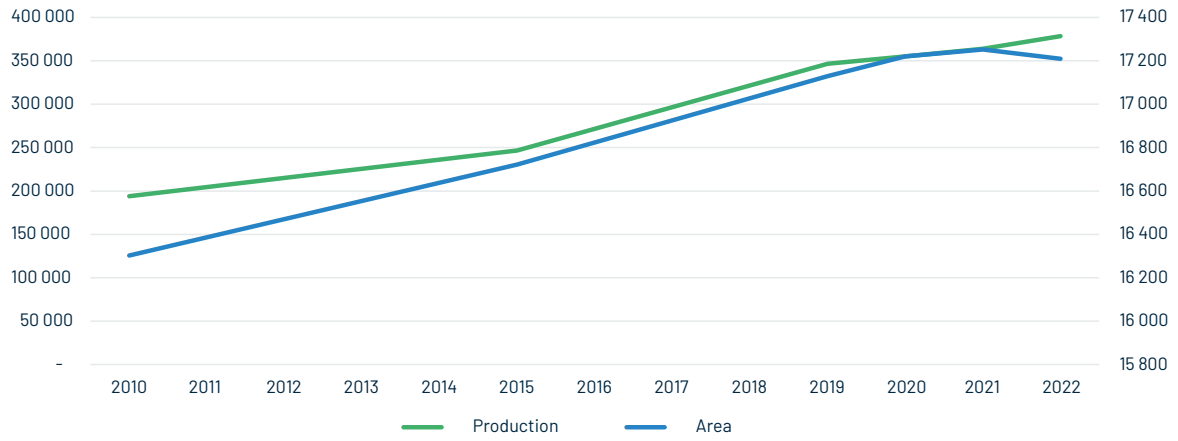
Citrus fruits are the third most exported product group in terms of value, just behind industrial tomatoes and small fruits. In 2023, 119,000 tons were exported, worth 112 million euros. Spain absorbed 64% of the value exported, followed by France and Germany.

Table 32 – Orange Production Area and Volume

	Unit	2010	2015	2019	2020	2021	2022
Area	ha	16 303	16 722	17 129	17 221	17 252	17 210
Production	ton	193 885	246 639	346 510	355 284	363 918	378 452

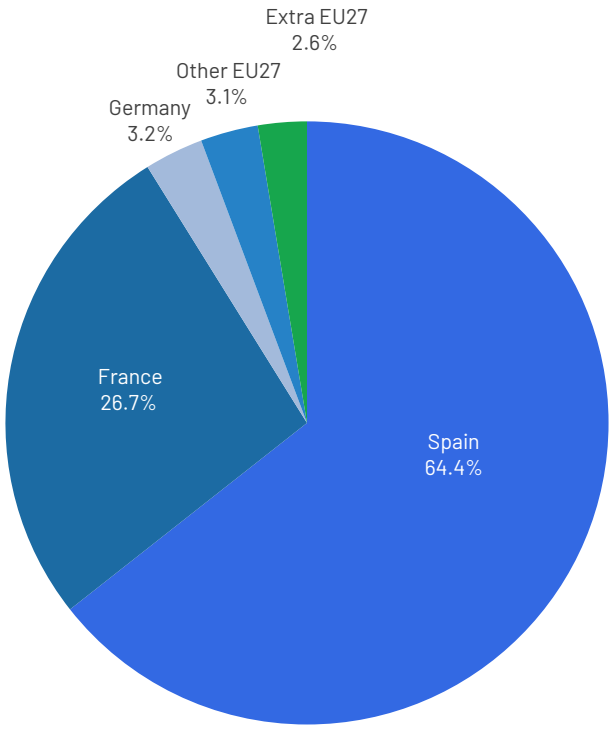
Source: INE – Statistics Portugal

Figure 70 – Orange Production Area and Volume



Source: INE – Statistics Portugal

Figure 71 – Main Export Markets for Orange in 2023



Source: INE – Statistics Portugal

Kiwi

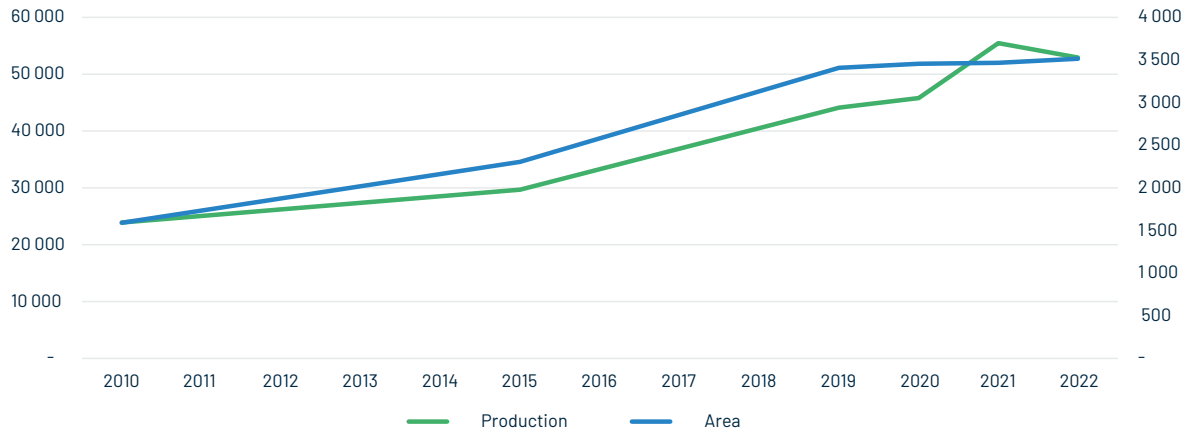
The production of kiwis in Portugal is located north of Coimbra, with the largest area near Guimarães. This fruit adapts very well to the central and northern regions of Portugal, not far from the Atlantic coast. The fruit's quality is highly appreciated, and even Spanish producers themselves talk about and promote the Iberian Kiwi due to the superior quality of the fruit produced in Portugal. The supply has been much lower than the demand, and this is a fruit with enormous potential in Portugal, experiencing increasing demand from international markets.

Table 33 – Kiwi Production Area and Volume

	Unit	2010	2015	2019	2020	2021	2022
Area	ha	1 589	2 305	3 409	3 456	3 467	3 516
Production	ton	23 903	29 664	44 120	45 818	55 461	52 919

Source: INE – Statistics Portugal

Figure 72 – Kiwi Production Area and Volume



Source: INE – Statistics Portugal

30,048 tons were exported, with Spain receiving 22,369 tons. France, Italy, Brazil, and the Netherlands rounded off the top five in 2022.

2.5 Vineyards and Wine

The wine industry in Portugal is a cornerstone of the nation's economy, cultural heritage, and global reputation. With vineyards covering a vast area of 175,791 hectares, they are the second largest permanent crop in Portugal. Most of the grapes grown are dedicated to wine production, underscoring the industry's importance. This section addresses the structure, production, exports, and challenges of Portugal's wine sector, providing a comprehensive overview supported by key statistics and trends.

Wine production in Portugal is not only a significant economic activity but also a vital element of the country's cultural identity. The vineyards span across several regions, with the Alto Douro Vinhateiro region, situated between the Douro and Minho regions, being a UNESCO World Heritage site. This highlights the cultural and historical importance of wine production areas in Portugal, which also attract numerous tourists each year, contributing to the tourism industry.

The Portuguese wine industry comprises a diverse array of enterprises, from microenterprises to large corporations. Specifically, the industry is composed of 7.8% microenterprises, 27.7% small enterprises, 41.9% medium enterprises, and 22.6% large enterprises. This

diversity fosters a competitive market environment with a broad spectrum of producers contributing to the sector's dynamism.

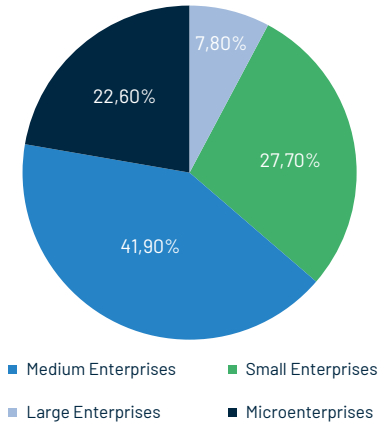
Investments in innovation and modernization have been pivotal in maintaining the long-term stability of Portugal's wine production. Specialized vineyard management techniques and even the availability of irrigation have been crucial in overcoming challenges such as water scarcity. These advancements not only sustain production levels but also enhance the quality of the wine, ensuring that Portuguese wines remain competitive on the global stage.

Moreover, the wine industry significantly impacts Portugal's economy through exports and tourism. The export market for Portuguese wines has seen a steady increase, with the European Union, the United States, and China being key markets. Additionally, wine tourism has become a growing sector, attracting international visitors to Portugal's picturesque wine regions.

Industry Structure

The Portuguese wine industry is composed of a variety of enterprises categorized by size:

Figure 73 – Professional Wine companies by size as per ViniPortugal



Source: ViniPortugal

These figures reflect a diverse industry with a substantial presence of medium and small enterprises, indicating a competitive market with various players.

In addition to the diverse enterprise landscape, cooperatives (adegas cooperativas) and small producers' organizations play a crucial role in the Portuguese wine industry. These entities are traditionally strong in aggregating micro and individual producers, providing them with the necessary support to thrive in a competitive market. Cooperativism and associativism complement the corporate structure of the market, creating a robust ecosystem that benefits all stakeholders. This collaborative approach ensures that even the smallest producers can contribute to and benefit from the industry's overall success.

Data from the national federation of wine cooperatives (Fenadegas) from 2014 indicate that more than 27 000 hectares were explored by more than 20 000 small producers in its 54 member cooperatives.

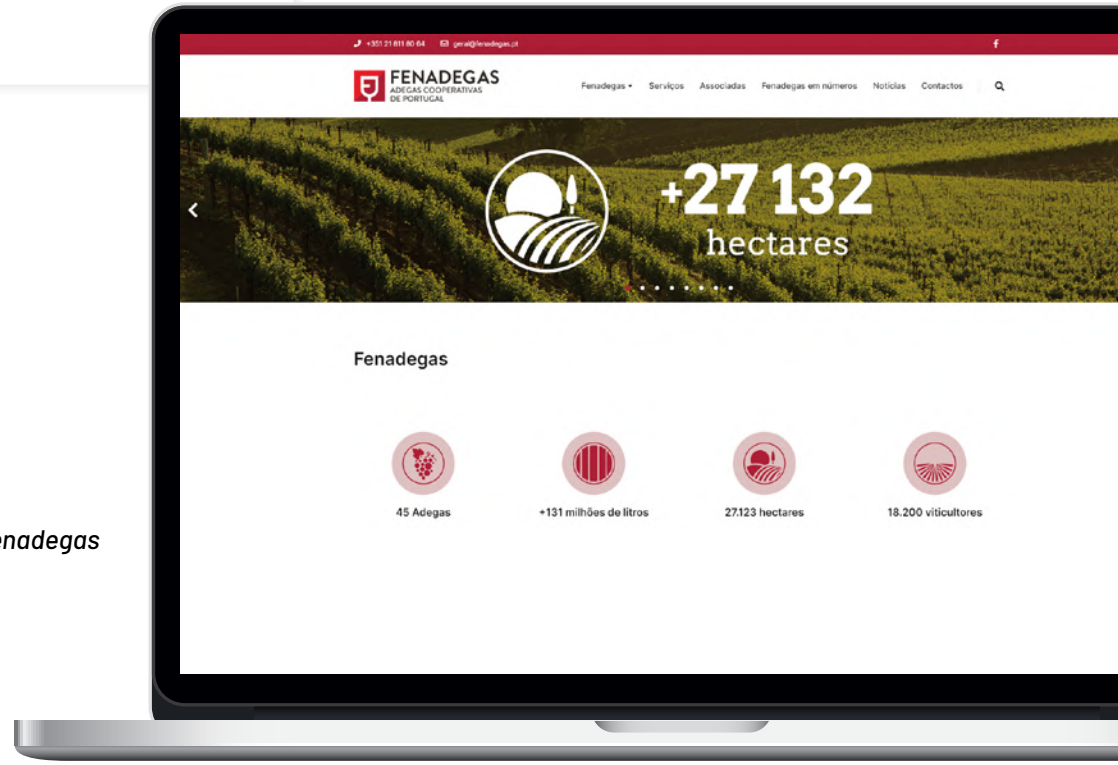


Figure 74 – Entry page of Fenadegas website

Source: fenadegas.pt

Cooperatives and associations face the challenge of increasing and maintaining the quality of their products. Ensuring quality is essential for the sustainability of these organizations and for meeting the high standards expected by both domestic and international consumers. Maintaining origin certification is also a significant aspect of this challenge, as it guarantees that the wine's geographic origin is authentic and adheres to strict regulations. This certification is vital for preserving the reputation of Portuguese wines and enhancing their marketability.

The emphasis on certifying and validating the geographic origin of grapes rather than the grape species is a distinctive characteristic of the Portuguese wine industry. This focus ensures that the unique qualities and traditions of each wine-producing region are preserved and promoted. The geographic origin certification, known as Denominação de Origem Controlada (DOC) or Denominação de Origem Protegida (DOP), plays a critical role in differentiating Portuguese wines from those of other countries. It also helps in protecting the cultural heritage associated with specific wine regions, adding to the overall appeal of Portuguese wines.

It is precisely this strong link to the DOC system that has enabled enologists to innovate by introducing and blending grape varieties of more conventional recognition in international markets. Notably, Portuguese winemakers have begun incorporating popular French grape species, which are well-known in New World wine regions like California, Australia, Chile, and South Africa. This innovative approach has spurred the internationalization of Portuguese wines, boosting export growth while enhancing the overall quality and appeal of the products. By combining traditional methods with internationally recognized grape varieties, Portugal has strengthened its position in the global wine market.

The strong presence of medium and small enterprises within the industry reflects a competitive market with various players. These enterprises contribute significantly to the industry's diversity and dynamism. Medium enterprises, which make up 41.9% of the industry, often serve as the backbone of production, while small enterprises and microenterprises, comprising 27.7% and 7.8% respectively, add to the richness and variety of the wine offerings. This structure fosters a healthy competition that drives innovation and continuous improvement in wine quality.

Overall, the Portuguese wine industry's success can be attributed to its unique combination of corporate and cooperative structures, a strong focus on quality assurance, and a commitment to maintaining geographic origin certification. These elements work together to create a vibrant and resilient industry capable of competing on a global scale. By leveraging the strengths of both large corporations and small producers, Portugal continues to enhance its reputation as a leading wine producer, known for its quality and diversity.

Wine Production

Portugal is renowned for its wine production, with several regions contributing distinct varieties. Key wine-producing regions include Douro, Alentejo, Vinho Verde, and Dão. These regions are celebrated for their unique terroirs and grape varieties, contributing to the rich diversity of Portuguese wines.

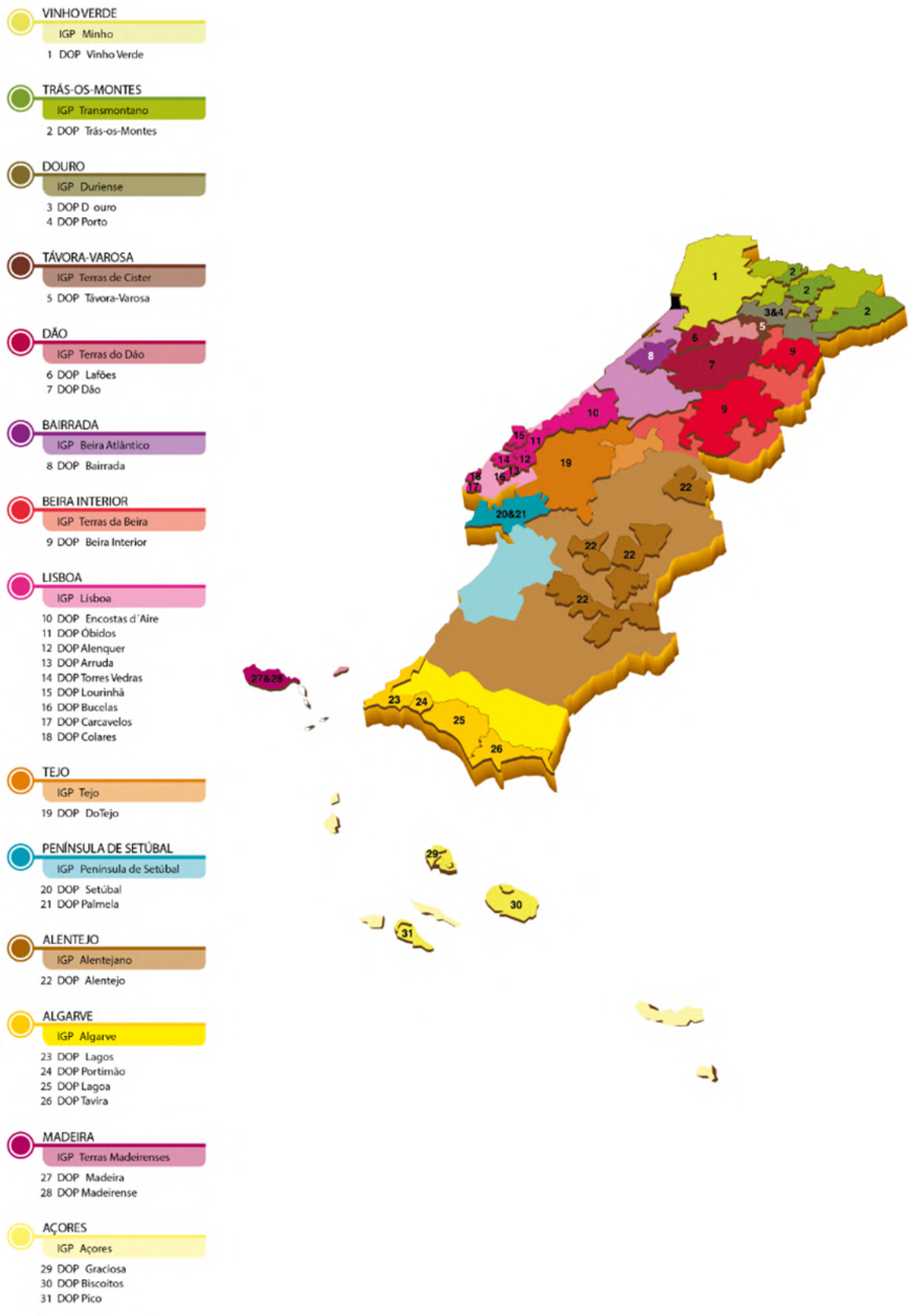
The Douro Valley, a UNESCO World Heritage site, is famous for producing Port wine, a globally recognized fortified wine. The Alentejo region is known for its robust red wines, while the Vinho Verde region in the north produces fresh and vibrant white wines. The Dão region, located in central Portugal, is renowned for its elegant and complex red wines. Each of these regions plays a crucial role in the overall wine production landscape of Portugal, offering a variety of styles that cater to different tastes and preferences.

Portugal's wine production is dominated by red wines, which hold a significant share of the market. White wines also have a substantial presence, especially from the Vinho Verde region. Port wine, primarily produced in the Douro Valley, continues to be a flagship product for Portugal, renowned worldwide for its quality and distinctive character. The variety and quality of Portuguese wines are supported by a rich history of viticulture and a unique combination of traditional practices and modern techniques.

The country boasts more than 30 DOP regions, covering almost the entire nation, including the Atlantic Island with very particular characteristics. Madeira wine, produced on the Madeira Islands, is another globally renowned Portuguese wine. Known for its remarkable longevity and unique aging process involving heat, Madeira wine is celebrated for its rich, complex flavors and has been a favorite of connoisseurs worldwide for centuries.

These DOP regions are crucial for maintaining the quality and authenticity of Portuguese wines, ensuring that the wines produced adhere to strict geographic and production standards. The extensive coverage of DOP regions highlights the widespread viticultural heritage of Portugal, with each region offering distinct characteristics and flavors that reflect their unique terroirs.

Figure 75 – Map of Wine Regions in Portugal



Source: Instituto da Vinha e do Vinho

This robust DOP system not only preserves the traditional aspects of Portuguese winemaking but also allows enologists to innovate by leveraging the incredible diversity of grape varieties available in Portugal. It is possible to make wine from over 350 grape varieties in the country, 261 of which are autochthonous. This vast array of native grapes, combined with the introduction and blending of internationally recognized varieties, has significantly contributed to the growth of exports and the internationalization of Portuguese wines, enhancing their reputation for quality and diversity in global markets.

Universities in Portugal play a crucial role in supporting this innovation and expansion. Through cutting-edge research and development programs, universities are exploring new viticultural techniques, studying the genetic profiles of indigenous grape varieties, and developing sustainable practices to improve wine quality and production efficiency. These academic institutions collaborate closely with the wine industry, providing advanced training for enologists and viticulturists, and driving forward technological advancements that help Portuguese wines remain competitive on the global stage. This synergy between education and industry ensures continuous improvement and adaptation in the dynamic world of winemaking.

Wine Exports

Portugal's wine industry is not only a cornerstone of its agricultural sector but also a significant player in the global wine market. In 2022, the export figures highlight the robust performance and growing international reputation of Portuguese wines.

Portuguese wine exports span across approximately 150 countries, reflecting the global appeal of its wines. The European Union remains the largest market, accounting for the bulk of Portuguese wine exports. This strong presence in the EU is attributed to historical ties, proximity, and established trade relationships. The United States follows as a growing market, driven by increasing appreciation for Portuguese wines among American consumers. China also emerges as a significant market with vast potential, reflecting the strategic efforts to diversify export destinations.

In 2021 , Portuguese wine exports reached a remarkable 926 million euros, marking a significant contribution to the national economy. This figure represents 72% of the beverage sector's exports and 11% of the agro-food sector's exports. The economic impact is further underscored by the wine sector's role in generating employment, supporting rural development, and contributing to fiscal revenue. The industry's strong performance in exports highlights its vital role in balancing Portugal's trade and fostering economic growth.

Table 34– Main Export Markets by Value, Volume and Unit Value

	Value (in m€)	Volume (in million ltrs)	Unit value (in €/ltr)
France	111.5	39.9	2.79 €
USA	106	24.7	4.29 €
UK	85.2	23.9	3.56 €
Brazil	71	23.8	2.98 €
Canada	51.9	12.4	4.19 €
Germany	50.2	21	2.39 €
Angola	49.2	34	1.45 €
Netherlands	49.2	14.1	3.49 €
Belgium	48.7	13.9	3.50 €

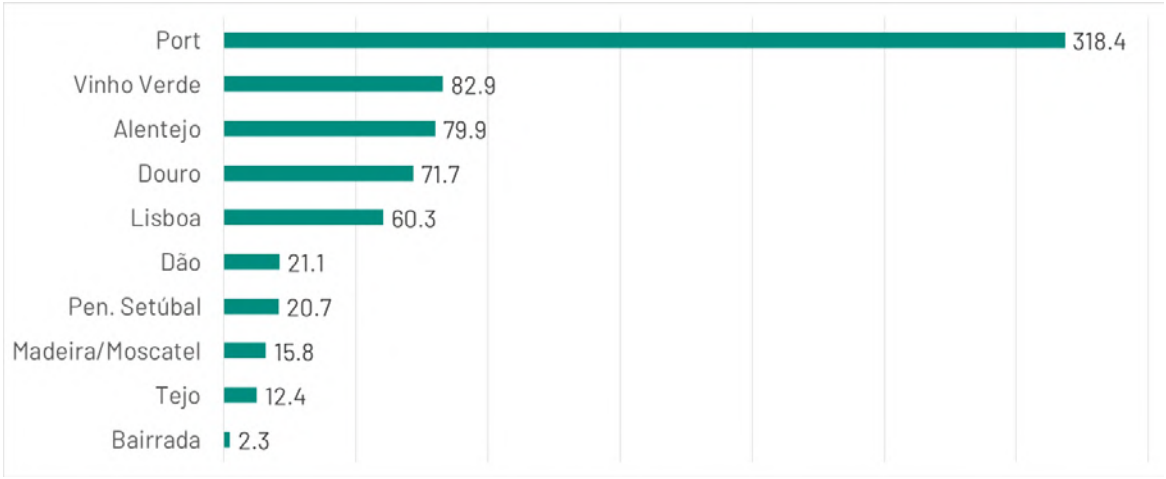
Source: Viniportugal, Report on 2022 exports

The export data from 2022 showcases steady growth in both volume and value, emphasizing the increasing demand for Portuguese wines globally. This growth can be attributed to several strategic initiatives, including enhanced marketing efforts, participation in international wine fairs, and targeted promotional campaigns. These efforts have not only boosted the visibility of Portuguese wines but also strengthened their market position against competitors.

Despite the positive trends, the Portuguese wine industry faces challenges such as climate change, which affects grape yields and wine quality. Additionally, global competition from other wine-producing countries necessitates continuous innovation and marketing efforts. However, these challenges also present opportunities for growth. Adopting sustainable practices, leveraging technological advancements, and exploring new markets can further enhance the industry's resilience and success.

Portwine was responsible for more than one third of the exports in 2022. The following figure summarizes the contributions to the exports by DOP.

Figure 76 – Export Value per DOP (Protected Origin Denomination) Regions in m€



Source: Viniportugal, Report on 2022 exports

The future of Portuguese wine exports looks promising, with ongoing efforts to expand market reach and enhance product quality. Strategic initiatives focusing on sustainability, innovation, and market diversification are expected to drive further growth. As the global wine market evolves, Portuguese wines are well-positioned to capitalize on emerging trends and consumer preferences, reinforcing their status as a key player in the international wine landscape.

In conclusion, the export success of Portuguese wines is a testament to the industry's rich heritage, diverse grape varieties, and commitment to quality. By continuing to innovate and adapt to global market dynamics, Portugal can sustain and enhance its reputation as a leading wine exporter. The collaborative efforts of producers, academic institutions, and regulatory bodies will play a crucial role in shaping the future trajectory of Portuguese wine exports.

2.6 Olive Oil

Olive oil is one of Portugal's most internationally recognized products from the agro-food sector. Over the past two decades, there has been a significant investment in modernizing olive groves in Portugal, enabling the country to secure a prominent position in the global market for this product. Portugal is now acknowledged as one of the countries with the most advanced olive oil production technologies, attracting numerous producers from around the world who visit to learn about these modern practices.

Agronomically, Portugal benefits from being in a prime production area that includes all European countries near the Mediterranean. There has been substantial investment in new, irrigated, and mechanizable olive varieties. In the Alentejo region, mainly due to the Alqueva project, there has been a considerable expansion of the olive oil sector. This sector, which relied heavily on manual labor at the end of the last century, has transformed into one of the most mechanized and competitive industries.

According to data from the International Olive Council (IOC), global olive oil production has been increasing steadily over the past decades. Spain is the world's leading producer, accounting for about 44% of global production. The market potential remains very high. The largest consumers of olive oil are Spain, Italy, Greece, France, and Portugal, which currently represent around 70% of global consumption. This share used to be higher, but international promotion is essential to increase consumption in countries with purchasing power and in regions where the world's population is growing. Per capita consumption in the United States is still low, and there is practically no consumption in Asian countries.

Portugal is the seventh largest producer of olive oil, following Spain, Italy, Greece, Turkey, Tunisia, and Morocco. However, Portugal stands out as the fourth-largest exporter. The quality of Portuguese olive oil is internationally recognized, and the country has the highest percentage of virgin and extra virgin olive oil production.

The production system has traditionally also relied significantly on cooperativism and associativism with olive oil presses (lagar) being owned usually collectively by small olive farmers. This also forced the introduction of a DOC or DOP system for the olives and olive oil to introduce quality assurance mechanisms on the origin of the products, just like with the grapes and the wine.

Modern olive groves are one of the most efficient irrigated crops in terms of water usage per hectare. These modern olive groves are extremely resource-efficient, particularly in the use of water, fertilizers, and phytopharmaceuticals. This type of modern olive grove has enabled Portugal to achieve self-sufficiency in olive oil production. The modernization has also led to the establishment of highly modern mills that ensure proximity between production fields and the processing facilities, concentrating the supply and enhancing the transformation process.

The modernization of olive oil production in Portugal has been driven by several key factors. Firstly, the introduction of innovative irrigation systems has significantly reduced water usage while maintaining high yield and quality. These systems include drip irrigation and other precision agriculture techniques that ensure water is delivered efficiently to the olive trees.

Secondly, the development of new olive varieties that are more resistant to pests and diseases has reduced the need for chemical interventions. This aligns with global trends towards more sustainable agricultural practices. Additionally, these new varieties often have better yields and are more suitable for mechanized harvesting, further increasing efficiency and reducing labor costs.

The Alqueva project in the Alentejo region has been particularly transformative. This large-scale irrigation project has turned the Alentejo into one of the most productive agricultural regions in Portugal, supporting a wide range of crops, including olive groves. The availability of reliable water sources has encouraged investment in modern olive production techniques and infrastructure, leading to significant economic benefits for the region. Portuguese olive oil is also distinguished by its commitment to quality. The high percentage of virgin and extra virgin olive oil produced in Portugal is a testament to the rigorous standards maintained by producers. These oils are often characterized by their rich flavor profiles, which are influenced by the diverse terroirs across Portugal's olive-growing regions.

Internationally, Portuguese olive oil is gaining recognition not only for its quality but also for its innovative production methods. This has led to an increase in exports to non-traditional markets. For instance, in the United States, where olive oil consumption is still growing, Portuguese brands are gaining a foothold due to their superior quality and competitive pricing.

Moreover, the absence of significant olive oil consumption in Asia presents a vast opportunity. With the growing middle class and increasing health awareness in countries like China and India, there is potential to significantly expand the market for Portuguese olive oil. Strategic marketing and educational campaigns about the health benefits of olive oil could drive demand in these regions.

Portugal's achievements in the olive oil sector are also closely linked to research and development. Universities and research institutions in Portugal have been at the forefront of studying olive oil production, from optimizing cultivation practices to improving oil extraction processes. These academic contributions are essential for maintaining the competitiveness of Portuguese olive oil on the global stage.

In this sector, Sovena stands out as a major player. According to the National Statistics Institute (INE), in 2022, there were 372,577 hectares of olive groves in Portugal, producing 774,743 tons of olives for olive oil. For the first time in 2023, the value of national olive oil exports exceeded 1 billion euros. The main export markets for Portuguese olive oil are Spain, Brazil, and Italy.

Production Area and Volume of Olives for Olive Oil

Figure 77 – Production Area and Volume of Olives for Olive Oil

Source: INE

The graph illustrates the trends in olive oil production and the area dedicated to olive groves in Portugal from 2010 to 2022. Over this period, there has been a notable increase in the area of olive groves, reflecting substantial investment in expanding and modernizing olive production. However, the growth in production has not mirrored the increase in area, due to the inherent lag time required for olive trees to mature and yield olives. The period of 2010 to 2016 shows a steady increase in both the area and production, with production fluctuating slightly but generally trending upwards. From 2016 onwards, there is a more pronounced increase in the area dedicated to olive groves, which continues to grow through 2021. This expansion indicates the ongoing efforts to enhance olive production capabilities in Portugal.

The severe decline in production in 2022 is largely due to adverse climatic conditions. This bad year for production has led to a significant increase in olive oil prices, as the supply was unable to meet the usual demand.

	Value (in m€)	Volume (in ton)	Unit value (in €/ltr)
Spain	403,444	117,072	3.45 €
Brazil	300,143	62,405	4.81 €
Italy	133,761	38,078	3.51 €
USA	23,017	5,582	4.12 €
France	16,178	4,239	3.82 €
Angola	10,626	2,117	5.02 €
Poland	9,304	2,060	4.52 €
Mozambique	3,858	918	4.20 €
Germany	3,817	994	3.84 €
Switzerland	3,492	653	5.35 €

The table illustrates the export values, volumes, and unit prices of Portuguese olive oil to various countries. The most expensive olive oil, with a unit value of €5.35 per kilogram, is exported to Switzerland, followed by Angola at €5.02 per kilogram. On the other hand, the cheapest olive oil is exported to Spain, with a unit value of €3.45 per kilogram, and to Italy, at €3.51 per kilogram. So, while Spain absorbs the largest proportion of exports it does so with a volume strategy that neglects quality.

In conclusion, the modernization and international success of Portugal's olive oil industry exemplify the country's broader agro-food capabilities. Through continued investment in technology, sustainable practices, and international marketing, Portugal is well-positioned to expand its influence in the global market for high-quality agricultural products.

2.7 Livestock

According to INE's agricultural statistics for 2022, meat production reached 914,000 tons, almost identical to 2021.

Beef

Beef production reached 104,000 tonnes, reflecting an increase of 0.8% compared to 2021. There were reductions in the meat of calves (-3.7%) and 'steers' (-6.8%), but an increase in the meat of adult cattle (+2.3%), as a result of greater slaughter in the 'cows' (+9.2%), 'heifers' (+14.5%) and 'steers' (+1.5%) categories.

Table 35 – Total cattle (Bovine herd)

Category	Unit	2010	2015	2019	2020	2021	2022
Cattle under 1 year old (Calves)	1000 head	437	510	531	526	528	516
Adults	1000 head	1 066	1 096	1 144	1 166	1 113	1 063
Cattle from 1 to less than 2 years old	1000 head	204	240	240	257	214	201
Cattle aged 2 and over	1000 head	862	856	904	909	899	862
Cows	1000 head	686	719	731	739	739	715
Dairy Cows	1000 head	243	243	234	233	230	222
Other Cows	1000 head	443	476	497	506	509	493
Total Cattle Population	1000 head	1 503	1 606	1 675	1 692	1 641	1 579

Source: INE – Statistics Portugal

Table 36 – Number of Farms with cattle

Category	Unit	2003	2016
Cattle under 1 year old (Calves)	number of farms	56 527	33 832
Adults	number of farms	73 501	38 402
Cattle from 1 to less than 2 years old	number of farms	30 729	22 323
Cattle aged 2 and over	number of farms	64 540	33 630
Cows	number of farms	59 390	31 749
Dairy Cows	number of farms	2 747	8 105
Other Cows	number of farms	34 981	24 447
Total Cattle Population	number of farms	84 773	43 384

Source: INE – Statistics Portugal

Pigs

Pig meat production (370,000 tonnes) fell by 2.0%, as a result of the lower average weight of animals at slaughter, since the number of head slaughtered was very similar to 2021. The slaughter volume saw increases of 5.3% in the 'piglets' category and 16.3% in 'cull breeding stock', while in 'fattening pigs' there was a decrease of 2.5% compared to 2021.

Table 37 – Pigmeat Production

Category	Unit	2010	2015	2019	2020	2021	2022
Pigmeat total	Ton	407 809	400 297	387 918	379 831	377 310	369 712
Meat	Ton	265 076	260 193	252 147	246 890	245 252	240 313
Bacon	Ton	142 733	140 104	135 771	132 941	132 059	129 399
Dried, salted, pickled or smoked pigmeat	Ton	22 282	25 969	28 384	25 506	23 295	23 897
Hams (shoulder and leg)	Ton	7 593	12 227	14 969	15 361	12 799	12 496
Entremeada e entrecosto (bacon)	Ton	7 124	9 477	9 745	6 411	6 391	6 331
Prepared and preserved pork meat and offal	Ton	44 453	43 853	43 246	38 786	39 487	49 280
Ham (shoulder and leg)	Ton	33 501	36 316	31 909	27 344	27 322	34 514
Sausages	Ton	68 851	70 468	65 413	64 021	75 752	78 023

Source: INE – Statistics Portugal

Small ruminant meat production in 2022 saw a reduction in sheep (-7.1%), which did not exceed 14,800 tonnes, but an increase in goats (+4.9%), with 1,300 tonnes produced.

2.8 Forest

A recent worldwide development, with a strong presence in Europe, is the alignment of the forestry industry with environmental sustainability. This alignment offers a variety of economic and social solutions that facilitate sustainable investments. This sustainability is measured by the economic value of forest production and the forest's value-added multifunctionality, which includes carbon sequestration and promotion and biodiversity. The Portuguese forest, in contrast to other European contexts, possesses a competitive edge in its ability to not only adapt to climate change but also to the emerging European standards that are currently being deliberated. This advantage stems from the administrators' extensive knowledge and experience. The economy has demonstrated robust resilience as a result of the abundance of direct and indirect productive factors as well as the ability to generate economic returns.

On an area of 3,224,500 hectares, the Eucalyptus Tree comprises the plurality of the Portuguese forestry sector, followed by the Maritime Pine, Cork Oak, and Stone Pine. The most prominent features are the expansive Alentejo region, which is primarily used for cork oak cultivation, and the North and Center Regions, which are primarily populated by Maritime Pine and Eucalyptus trees.

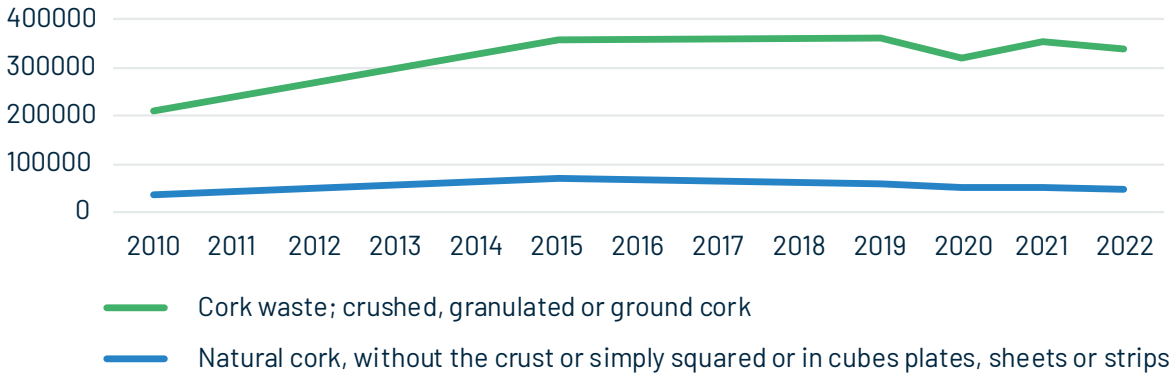
Cork

The largest production areas are in the Alentejo and Ribatejo and this is a sector that makes a huge contribution to preserving the environment and biodiversity.

The industry is concentrated in the Oporto metropolitan area (Santa Maria da Feira), and the other two industrial centres are in Coruche and Ponte de Sor.

This industry is of enormous importance to the national economy because Portugal is the world's leading exporter of this material. There are around 800 companies working in this sector in Portugal, employing more than 8,000 people. In 2023, the sector exported around 1,232 million euros and ten years ago, in 2013, exports were worth 834 million euros. The sector's aim is to reach 1.5 billion euros in exports by 2030.

Figure 78 – Cork Industrial Production (tons)



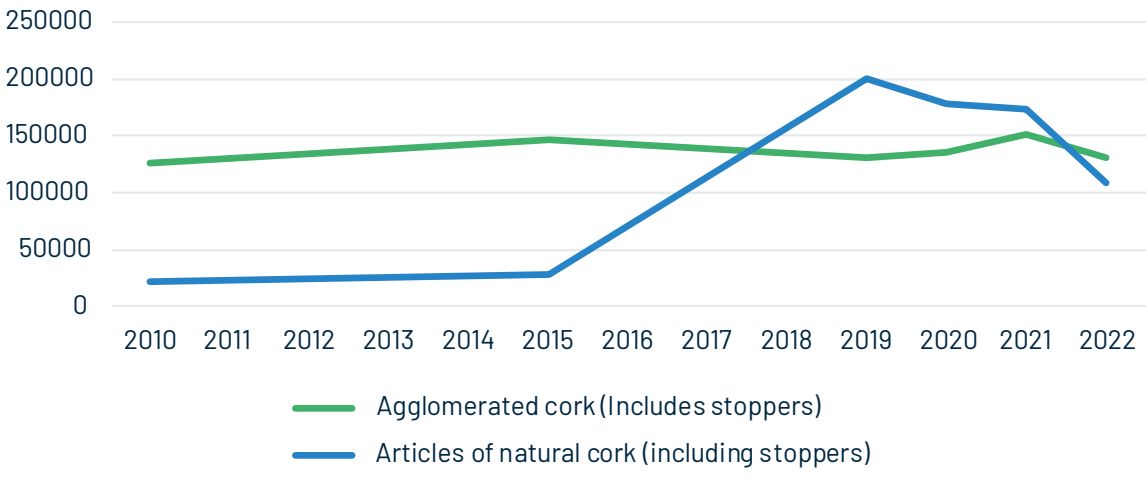
Source: INE – Statistics Portugal

Table 38 – Cork Industrial Production

Category	Unit	2010	2015	2019	2020	2021	2022
Natural cork, without the crust or simply squared or in cubes plates, sheets or strips	Ton	37177	70794	58859	50620	50003	46665
Cork waste; crushed, granulated or ground cork	Ton	208591	358174	362592	319347	355440	337297
Articles of natural cork (including stoppers)	Ton	22472	28335	200586	178416	172857	108884
Agglomerated cork (Includes stoppers)	Ton	126456	146657	130423	136248	151389	131125

Source: INE – Statistics Portugal

Figure 79 – Processed Cork Industrial Production (tons)



Source: INE – Statistics Portugal

3 Investment Opportunities in Key Agricultural and Forestry Subsectors in Portugal

The Portuguese agricultural sector offers diverse and lucrative investment opportunities, particularly in the subsectors of wine, olive oil, tomato, fruits and berries, vegetables, and forestry. These areas are not only foundational to the country's agricultural heritage but also present significant potential for growth and profitability due to global demand, favorable climate conditions, and advancements in agricultural practices.

Wine

Portugal's wine industry is one of its most prestigious and internationally recognized sectors. With vineyards spanning 175,791 hectares and producing world-renowned wines, Portugal's wine regions, such as the Douro Valley, Alentejo, and Vinho Verde, offer unique investment prospects. Investments in modern viticulture techniques, sustainable practices, and advanced irrigation systems can enhance the quality and yield of wine production. Additionally, the strong global demand for Portuguese wines and the association of wine tourism with several UNESCO World Heritage sites make this sector highly attractive for investors looking to capitalize on both production and tourism.

Olive Oil

Portugal is a significant player in the global olive oil market, known for its high-quality extra virgin olive oil. The country's Mediterranean climate, coupled with modern irrigation and cultivation techniques, has led to increased productivity and consistency in olive oil production. The expansion of olive orchards and the implementation of sustainable agricultural practices have positioned Portugal as one of the top olive oil exporters in the world. Investing in this sector offers substantial returns, driven by the growing global demand for premium olive oil and the country's reputation for producing some of the finest olive oils.

Tomato

Tomato production, especially for industrial purposes, is a vital component of Portugal's agricultural exports. The country is a leading exporter of processed tomatoes, including tomato paste and other derivatives. Investment in this sector is promising due to the established infrastructure, availability of irrigated land, and expertise in processing and preserving tomatoes. Enhancing production through technological advancements, sustainable farming practices, and expanding processing capacities can further boost exports and profitability in this subsector.

Fruits and Berries

Portugal's diverse climate allows for the cultivation of a wide range of fruits and berries, with notable success in producing high-quality raspberries, strawberries, blueberries, and almonds. The berry sector, in particular, has seen exponential growth, driven by both domestic consumption and export demand. Investment opportunities in this subsector are vast, including expanding cultivation areas, adopting advanced agricultural technologies, and improving supply chain logistics. The increasing global demand for fresh and processed fruits and berries, coupled with Portugal's ability to produce these products year-round, makes this subsector an excellent investment choice.

Vegetables

The vegetable sector in Portugal has also experienced significant growth, with a diverse range of crops including corn, oat, wheat, triticale, rice, and industrial tomatoes. Investments in greenhouse technologies, hydroponics, and sustainable farming practices can enhance productivity and extend growing seasons. Additionally, the focus on organic and high-quality vegetable production aligns with global trends towards healthier eating habits and sustainable agriculture. Investors can capitalize on these trends by supporting the expansion of vegetable production, improving distribution networks, and tapping into both domestic and international markets.

Forestry

Portugal's forestry sector offers substantial investment opportunities, particularly in the context of renovating and reestablishing traditional forests. This long-term strategy involves enhancing sustainability, increasing CO2 capture, and restoring traditional wood species crucial for sustainable construction. The Portuguese forest landscape, predominantly comprising eucalyptus and maritime pine, can benefit from diversifying tree species to include more traditional varieties like cork oak and stone pine.

Investing in forestry not only supports environmental sustainability but also contributes to economic resilience through the production of high-value timber and non-timber forest products. Utilizing advanced scientific developments in forestry, landscape development, and climate change adaptation, investors can enhance forest management practices to improve biodiversity, increase carbon sequestration, and mitigate climate impacts.

4 | Conclusion

Portugal's agricultural and forestry sectors present a wealth of investment opportunities across their key subsectors. The country's favorable climate, strategic geographic location, and commitment to sustainable practices provide a solid foundation for growth and profitability. By investing in these areas, stakeholders can benefit from the strong global demand for Portuguese products, contribute to the sector's innovation and modernization, and support Portugal's transition towards a more resilient and environmentally conscious future. The integration of advanced forestry management and sustainable agriculture practices ensures long-term economic and environmental benefits, making Portugal a prime destination for investment in these vital sectors.