

AZORES

Mid-Atlantic masterpiece is Europe's very first port of call

Portugal's autonomous region of the Azores is a stunning volcanic archipelago that is protecting its natural resources while offering tourists a vacation with a difference

Comprising nine beautiful volcanic islands each brimming with their own unique character and charm, the Atlantic archipelago of the Azores operates with political autonomy, having its own policies and government distinct from that of Portugal around 1,000 miles to the east.

Around double that distance to the west is the US, a military power that long ago identified the Azores' strategic location as a real asset for its foreign logistics operations. Terceira Island has hosted the 65th Air Base Wing for several decades, serving as a transatlantic highway for US military aircraft heading to Europe and the Middle East, as well as allied nations.

An increasingly popular tourist destination as word spreads of its year-round temperate climate and virgin terrain that boasts eye-catching flora and fauna, the islands' flight connectivity is also improving steadily with travelers benefiting from a wider range of routes.

Frequent international flights operate to and from the largest island of São Miguel, with domestic transportation services providing fast and efficient links to the other eight islands of Santa Maria, Terceira, Graciosa, São Jorge, Pico, Faial, Flores and Corvo.

In addition to tourism, the region is striving to diversify its economy and has introduced some radical measures in recent years to attract international investors and businesses, including large cuts to tax rates on personal and family income, as well as lower corporate and sales taxes than those found in mainland Portugal.

Home to around a quarter of a million people, the islands continue to punch above their weight on a national and regional level. Local officials are striving to balance the Azores' natural assets with a sustainability drive that focuses on new technologies. Earlier this year, the Atlantic Spaceport Consortium (ASC) successfully launched an atmospheric rocket from Santa Maria to a wave of industry applause.

"Our aim is to foster an economy centered on transactions, wealth creation and tradable goods, encompassing both services and tangible products," explains José Manuel Bolieiro, Regional President of the Autonomous region of the Azores, who is now in his second term. "We may lack the robust industrial production capacity, but possess an economy capable of generating tradable goods, notably in the agri-food and maritime-food sectors.

"We also offer many services as a tourist destination, with our innovative economic growth strategy supported by reduced tax burdens for private investors across all sectors by using their own resources. This approach emphasizes the region's endogenous capacity. That was my strategic bet."

By acquiring vital and valuable know-how through joint ventures, investment funds and



With its rugged coastlines and many dormant volcanoes, the Azores is a natural paradise and adventure tourism success story



José Manuel Bolieiro
President of Azores

venture capital, the pro-business administration hopes to push the economy's development speed up several notches over the next few years. "Even in the midst of digital transformation, it's possible to generate wealth across all sectors, albeit in more intangible forms," Bolieiro adds. "The digital era enables us to be globally connected despite our island location."

According to the senior official, another key area of focus has been the development of a mobility strategy as each island features "its own micro-economy characterized by significant demographic and economic disparities."

"It became crucial to facilitate inter-island mobility by reducing the burden of excessive costs on families," he says. "To address this, I introduced the 'Azores Tariff': a fixed price of €60 for round-trip travel between any two islands."

This special tariff for island hoppers is proving very popular with local families and workers, but is not limited to just them. Tourists can now travel between any island of origin and destination for one clear, guaranteed price.

Huge potential just waiting to be tapped

Considering the archipelago's unusual landmass and geographical position, the region may appear small and isolated. However, when viewed within the context of spatial and maritime fields, the region has the potential to become a global benchmark for research, modernization and technological innovation.

"This is especially true in areas that remain largely unexplored today, notably in the field of the blue economy," Bolieiro adds. "This involves understanding the depths of the ocean, its rich biodiversity and biomass, as well as the poten-

tial mineral resources it holds. Such endeavors align with the Sustainable Development Goals (SDGs) outlined by the United Nations.

"In this way, we are establishing reference points for future human, plant and animal life, with the Azores serving as a laboratory for the future. Significant investments can be attracted to the region, particularly in scientific research, technological innovation, strategies for environmental sustainability, preservation of biological diversity and the exploration of untapped resources."

While the regional government aims to maximize the potential of each of its islands through economic diversification, officials have pledged this will not come at the expense of its natural resources. Indeed, the legal framework for the implementation of Marine Protected Areas (MPA) recently received final approval.

"Above all, the Azores should serve as a true laboratory for scientific, research and technological experiments," states Bolieiro. This approach will enable us to maintain our global competitiveness. The Azores should no longer remain invisible regarding their potential for the global future. Instead, they should become a point of reference for all who are willing to leverage our geostrategic value and intellectual, political and economic significance."

Establishing a clear path for sustainable development

Tourism, agriculture, fisheries and renewables are leading the archipelago's economic growth strategy and path to net-zero

With the regional government determined to protect the Azores' many natural wonders and cultural treasures from the dangers of overtourism — a plight that has impacted other popular island destinations like Iceland in the past decade — work to achieve a string of sustainability targets is progressing well.

Perhaps unsurprisingly, officials recognize that they currently lack the financial, scientific and technological resources to fully explore the Azores' expansive waters due to their ocean's vastness and complexity. However, with the help of foreign partners and investors, authorities are confident that the archipelago can play an increasingly important role in the growing blue economy, as well as in related areas such as renewables and associated carbon-reduction initiatives.

"The sea, being a carbon sink, plays a pivotal role in addressing climate change," states Bolieiro. "We possess an asset that could contribute significantly to global sustainability, even in a future market for carbon credits. This ensures fairness in sustaining human, plant and animal life on a planetary scale.

"To this end, I'm working towards establish-

ing a consortium strategy for research in the blue economy field. Our significance is now global, given the size of our sea, which rivals that of many nations. To illustrate, our waters rank as the world's 20th largest territorial sea and exclusive economic zone, and the 5th largest in Europe. We're no longer discussing nine remote and impoverished islands; rather, we're addressing an immense reservoir of untapped wealth with the potential to benefit humanity."

Energy transition now well underway

The senior government official is adamant that modern technological configurations align well with the generational sensitivity towards sustainability and energy transition. Here, the Azores can address the need to cool engines and data centers, he states confidently.

"Given our abundance of water resources, including saltwater and freshwater, alongside access to geothermal energy, we're in a privileged position," Bolieiro says. "We can significantly reduce energy expenses for cooling and latency treatment by utilizing renewable, non-polluting and inexhaustible energy sources.

"Our geothermal energy, while emitting some



Along with incredible scenery, the Azores boasts eye-catching architectural designs

carbon as a natural process, can be harnessed for intervention in this area. Additionally, we have other renewable energy sources such as wind, water and photovoltaic (solar).

"Although photovoltaics are more technologically advanced, wave energy is also a possibility. In addition, when establishing a data center, by combining tethering and emissions control for latency management we benefit from redundancies in energy supply."

Optimizing energy sector opportunities

While the Azores' impressive topography is a key factor behind its appeal as tourist destination with a difference, it is often an unwelcome obstacle in the planning and construction of vital services infrastructure and networks. One such example is in power generation and supply, with none of the nine islands able to pool electricity demand and generation as they are all self-sufficient.

Undersea cable connections are the preferred solution of power transmission for islands, but the Azores' challenging geographical location, powerful ocean currents and sheer depth of its waters are regarded as especially challenging. Indeed, attempts in previous decades to connect the islands' power grids failed to bear fruit, though new technologies have brought fresh hope and local energy and government bosses are working hard to find innovative yet practical solutions.

"We operate nine independent systems as all the islands are electrically isolated; we can't interconnect them by cables because there is currently no technology available at a convenient price," explains Paulo André, President of Electricidade dos Açores (EDA).

Majority-owned by the regional government, the power operator is at the forefront of efforts to boost electricity capacity and transmission. The firm is also likely to benefit from a chunk of the €132 million renewable energy investments planned for the islands over the next three years, with the company expecting to invest around €400 million over the same period.

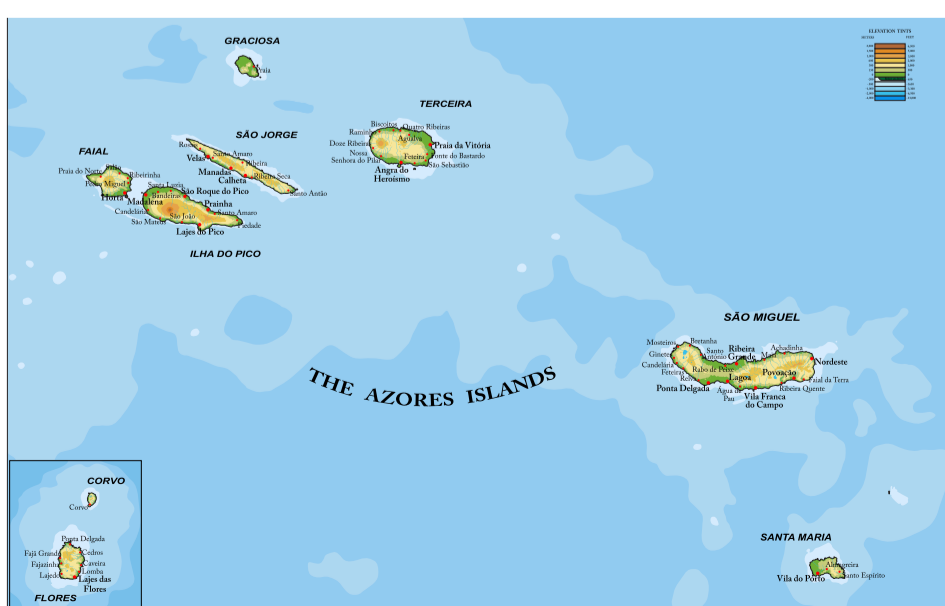
"The main investments in renewables are the storage facilities on every island and the increase of geothermal power stations," André adds. "We have two big projects in São Miguel, one of which will double capacity of one geothermal power station, as well as a lot of wind projects.

PAULO ANDRÉ
PRESIDENT, ELECTRICIDADE DOS AÇORES

"Many American firms are trying to invest in renewables in the Azores as we are a good test bed."

"EDA is also investing in solar energy and already has stations on two islands, as well as various solar solutions planned for others. We will invest in the electrical grids to maintain stability and resilience.

"Many American firms are trying to invest in renewables in the Azores as we are a good test bed because we can achieve bigger results with smaller investments. Some are involved in private projects in solar and storage on five islands. Historically, we have a strong relationship with US suppliers of equipment solutions."



Although appearing isolated, the Azores is actually blessed with superb connectivity

New Marine Park is ocean conservation global benchmark

The Azores Marine Park proudly positions the islands as a world leader in marine protection, achieving UN and EU targets set for 2030

After years of hard work, the recent approval of ground-breaking legislation designating 30% of the Azores' waters as a marine protected area network made international headlines and delighted marine conservations and environmental organizations across Europe and the world.

This October's historic decision safeguards almost a third of the sea surrounding the archipelago, covering 110,000 square miles. Half of the network is fully protected, meaning no extraction of natural resources can occur, with the other half highly protected. The creation of the marine sanctuary marks a significant step in global marine conservation and set a powerful precedent for negotiations at the recent 2024 UN Biodiversity Conference (CBD COP16).

"The Azores has long been known for its unique ocean nature and with this decision, we are driving the way forward to a productive, vibrant ocean," stated a proud Bolieiro after the regional assembly approved the plans. "The sea is an integral part of our collective identity, being vital socially, culturally and economically. We are committed to protecting and recovering our ocean to support a healthy blue economy."

"Our decision through a science-based and participatory process leading to the protection of 30% of our seas serves as an example that other regions must now follow to ensure the future health of the planet."

Officially known as the Marine Protected Areas Network (RAMPA), the historic decision creates a sanctuary for nature, such as sharks, fish, whales, deep-sea corals and unique hydrothermal vent ecosystems, resulting in a healthy ocean, which the blue economy and Azorean communities depend upon, he added.

"This [approval] is a role of leadership, power and responsibility in reiterating the global prestige of the autonomous region's decision-making capacity for its most important asset. We comprise water rather than terrain, but have influence in the maritime area and decision-making process with Europe and the world."

Aiding marine life for future generations

As well as the new Azores Marine Park establishing the region as a world leader in ocean conservation, it also hits the UN and EU targets set for 2030. In addition, with almost a million square kilometres of exclusive economic zone adjacent to the archipelago, the Azores is making a significant contribution to Portugal's bid to meet its international environmental targets for this decade and beyond.

The regional government will promote the restructuring of the sector, ensuring the sustainability of economic activities. In addition, officials have pledged to ensure guaranteed fair compensation for shipowners and fishers, and

promised to consolidate the commitment to sustainable practices across the sector.

"The Azores are taking the lead in deciding what is ours and our future, without being subject to the arbitrary decisions of others," emphasized Bolieiro. His administration has the "sensitivity and strategy" to implement a decision that "brings prestige to the Azores and autonomy", he noted, as it will protect "the sea, biodiversity and the quality of human, animal and plant life".

Dream to become a reality by 2030

The decree for the designation of RAMPA aims to ensure it arrives by 2030. It also covers its effective implementation and oversight by stipulating all plans and programs, including the revision of coastal marine protected areas, must be published by 2027.

In addition, the legislation provides an adaptive approach that allows new scientific evidence to be incorporated into each revision cycle in a move that aims to optimize their management and degree of success. Spearheaded by the regional government, with the support of valuable partners such as the University of the Azores and the Blue Azores program, the process of creating the new marine park was based on the best available scientific knowledge and saw a high level of participation from stakeholders and civil society.

Over the course of more than five years, scientists, non-governmental organizations (NGOs), public bodies and associations from the fishing and maritime-tourism sectors came together in a process of co-creation that sought solutions that managed to balance the conservation of marine ecosystems with the impact on economic activities.

JOSÉ MANUEL BOLIEIRO
PRESIDENT OF AZORES

"We are more sea than land, and have more influence in the maritime dimension."

According to Blue Azores — a pioneering partnership between the regional government, marine conservation experts and other local entities — marine protected areas are widely recognized as the most effective tool in the global effort to reverse biodiversity loss and build ocean resilience against climate change.

"The Azores leadership is inspiring, given that less than 3% of the world's oceans are fully or highly protected," Blue Azores said. "The Azores' decision comes at a crucial time as nations worldwide work to implement the Kunming-Montreal Global Biodiversity Framework, in which 196 countries agreed that pro-



While lacking in size, the Farol Ponta do Arnel lighthouse has plenty of personality



The quality and array of the Azores' marine resources are among the world's finest

tecting 30% of the world's lands and oceans by 2030 (30x30 target) is critical to the planet's future health. The legislation leads the way for the EU's Biodiversity Strategy for 2030 and advances global ocean protection goals."

Using resources as a living laboratory

In addition to its outstanding commitment to environmental conservation and sustainability, the Azores is seeking to understand how its water column — all the different features found in seawater at different depths — impacts biodiversity. It is regarded as a vital function for researching and investigating climate change, ocean warming and noise pollution. The Azores could be a laboratory for such studies.

"The water column helps us monitor activities like bomb testing or the launching of atomic missiles, which can affect the seabed," Bolieiro explains. "Given our central location in oceanic connections, we can gain insights into atomic submarine experiments and nuclear media."

"It involves experimenting with underwater vibrations at significant depths, which can be recorded with appropriate sensors. We could establish a global monitoring system to detect and regulate nuclear experiments conducted underwater or on land. Additionally, it would

enable us to observe and understand the behaviors of cetaceans at greater depths.

"We can utilize scientific knowledge to understand and track changes in the sounds produced by various marine mammals such as whales and dolphins," the region's leader notes. "This enables us to grasp the impacts of factors like ocean warming, pollution from ships, surface noise, vibrations, and human activities on marine life. Such understanding is essential for effective conservation efforts."

Given the Azores' geographical location, significant business and investment openings have been identified in the niche, but lucrative, space economy. Establishing a spaceport or space technology center in Santa Maria necessitates the ASC, Portugal and its counterparts have the capability for a competitive space strategy.

"Interestingly, broadcasting suborbital and orbital launches, which involve minimal interference with aeronautical movements, are conducted in Santa Maria since it operates more like a free zone in that sense," Bolieiro reveals.

"Also, the issue of orbital debris is increasing. So, there's a necessity for a future business strategy to address waste removal and bring it back to Earth. Our advantage lies in the environmental sustainability of space operations."

Energizing economic growth via renewables

Improving energy security through investment in renewable energy infrastructure underlines the Azores' commitment to sustainability, with power provider EDA spearheading efforts

According to the latest official data, the Azores currently generates about 40% of its annual electricity supply from renewables, with around two-thirds of that share sourced from geothermal energy and the balance provided by high-tech wind farms and hydroelectric stations.

While significant, the local administration is eager to reduce the islands' reliance on fossil fuels for the majority of its energy appetite. The archipelago is certainly not on its own when it comes to valuable help and financial support in achieving its energy goals. About 20% of the Azores' energy consumption goes into buildings and around 40% is used for transportation, notes the Clean Energy for EU Islands Secretariat — a European Commission initiative aimed at catalyzing the clean energy transition on islands scattered across the EU.

"The biggest challenge at the moment is the one that the Azores has always faced: how to make a small, isolated and archipelagic region prosperous and sustainable when the economies of scale which render most of the mainland solutions feasible are often not available?," states the EU entity, which was established in 2018 to aid over 2,200 inhabited islands in generating sustainable, cost-effective energy.

"The Clean Energy for EU Islands Secretariat will support the Azores in its efforts to push forward on its clean energy transition and economic development, all while preserving the region's long-held tradition of protecting their natural environment," it adds.

Key objectives include reducing energy costs and boosting renewables production; constructing energy storage facilities and demand response systems using new technologies; enhancing energy security, reducing dependence on imports; improving air quality, lowering greenhouse gas emissions and minimizing environmental impact; generating jobs and business openings for economic self-sufficiency.

Leading the charge in regional renewables capacity expansion and investment is the dedicated arm of power provider EDA: EDA Renováveis. The firm has promised to reach carbon neutrality by 2050 and invest in various renewable energy sources such as geothermal, wind and solar. "When we have more renewables, we start to have a lot more distributed production on the grids, and we need to have more resilient grids," explains Paulo André, President of EDA.

"We have a lot of projects on wind technology because some of our wind parks are more than 20 years old and we need to substitute the equipment for new ones. We have investments foreseen for Santa Maria, Flores, São Jorge, Terceira and Faial.

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"The expansion of the Pico Vermelho geothermal power plant demonstrates the region is at the forefront of the fight against climate change."

"Our main difficulty in increasing the renewables on the grid is that during the night when we have a low consumption period that can represent a 40% difference versus the day. If we can increase the consumption on the grid during the night, we can increase the share of renewables. It's also a good opportunity for us to increase our share in renewables and to lower our costs in fuel consumption."

Since the start of the current decade, EDA has spent substantial sums on increasing and revitalizing renewables supply and infrastructure, respectively. Several projects focused on geothermal energy have been carried out, while tenders and contracts for wind technologies have also been inked as part of the region's de-



The Azores is accelerating the use of clean energy via big investment in renewables

carbonization drive of the electricity sector.

One such success story was the recent award of a tender for the expansion of the old Pico Vermelho geothermal power plant on São Miguel. Described as a "decisive milestone on the path towards the energy transition in the Azores", the works will significantly increase the production of electricity from renewables.

"This project will reinforce our island region's leadership in the production of clean energy," commented André. "Representing a technical breakthrough, this project is also an essential step towards ensuring a greener, safer and more independent energy future for future generations. This is a moment that demonstrates that the region is at the forefront of the fight against climate change."

Major investment in wind farms grows

In addition to the many geothermal and solar energy projects, plenty of wind farm initiatives are also taking places on the nine islands, one of which took a large step forward this year with the delivery of several wind turbines to Corvo.

Representing a significant step towards energy independence and a commitment to green energy on one of the most remote points in western Europe — it took a month just to ship parts from the mainland — the project will improve electricity supply for several hundred permanent inhabitants and scores of tourists.

"The implementation of this wind infrastructure will reinforce the resilience of the island's electricity system, reducing the risk of

blackouts and providing greater stability and energy security for all citizens," noted the wind technology supplier, Norvento Enerxía.

"This breakthrough not only marks a milestone in Corvo's history, but also provides an inspiring example of how communities can adapt and thrive in harmony with the environment, fostering a more sustainable and prosperous future for generations to come."

Digitization and disruptive technologies are now being used in numerous industries for predictions of demand, load factors and resource allocation and their importance is growing. In addition to heavy investment in generation and distributions, EDA is embracing change at end user level through the regional roll-out of smart meters that is set to increase the amount and frequency of data gathering, meaning mobile solutions will come to the fore.

"With smart meters, we will start to have data from all our consumers with a 15-minute timestamp. That is a lot of data to acquire and to treat," André admits. "Our main concern is ensuring we prepare our systems to acquire all this data and for us to be ready to treat the data in advance."

"Nowadays, electricity production and distribution is not conducted in the same way it was in the past. We need to deal with a lot of information on all the electrical grids and we need to make decisions based on that information. We need to have the data available and treated in order for us to deliver good decisions and solutions every single day."