



WavEC
Offshore Renewables

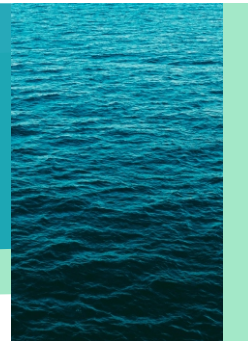
WavEC's Two Decades

The Journey to a Sustainable Future



Welcome to WavEC Offshore Renewables' 20th Anniversary Brochure

At WavEC, we are proud to celebrate two decades of pioneering innovation in the marine renewable energy sector. Our journey has been marked by persistent commitment, adaptability, and a dedicated pursuit of sustainable solutions.



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20 Years of Innovation and Sustainable Energy Leadership

In 2003, WavEC embarked on its pioneering journey driven by three core motivations:

1. Promoting wave energy as a novel industry in Portugal and beyond.

Over the years, our mission expanded to encompass offshore wind (since 2007) and floating solar PV (since 2018), all underpinned by providing strategic and technical support to companies, R&D organisations, public administration and government.

2. Supporting the European effort to the sector.

We have actively worked to strengthen the European marine energy sector. Our efforts are dedicated to driving progress towards a more sustainable future.

3. Nurturing the next generation of innovators.

In our mission, we foster talent and provide training opportunities for young minds to grow. This ensures that knowledge and expertise continue to thrive, shaping the future of marine renewable energy.

Over our remarkable 20-year journey, we have maintained a commitment to disseminating knowledge about offshore renewable energy, ensuring a broad understanding of the opportunities and challenges on the horizon.

WavEC's journey shows an ability to identify trends early, adapt to change, and shape industry and societal perceptions towards future possibilities of this sector.

**Join us on this exciting journey towards
a sustainable energy future.**

Reviving Waves, Fostering Innovation

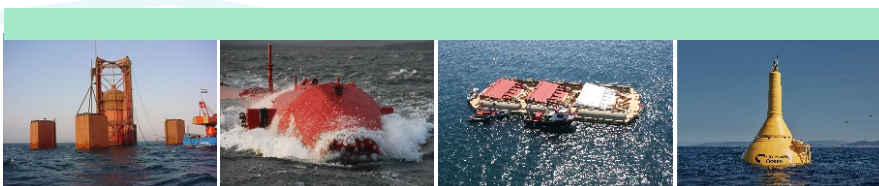


Pico Plant
(Decommissioned in 2018)

WavEC's journey began with wave energy, persevering through the challenges to rejuvenate the 400 kW Pico Pilot Plant in the Azores, originally built in the 90s. The extensive refurbishment efforts from 2005 to 2007 breathed new life into this plant, paving the way for its remarkable 10-year operation and invaluable insights gained from overcoming significant challenges in one of the harshest environments.

During this time, WavEC actively collaborated with over a dozen wave energy technology developers, such as AWS, Waveroller, Pelamis, Wedge and CorPower, just to name a few.

Our journey was marked by a dedication to innovation and pioneering technologies, a legacy that continues to this day.



AWS

Pelamis

Waveroller

CorPower Ocean

Shaping the Global Stage: WavEC's International Impact

During our journey, WavEC had an important role in the creation of the European Ocean Energy Association, now known as **Ocean Energy Europe**. As one of the five co-founders, we have been actively contributing as a member of the Board since its establishment in 2005.

We actively participate in the *OES-Environmental*, in the *International Council for the Exploration of the Sea (ICES) Working Group on MRE*, in the International Waters network of sea test sites, in the European Marine Board Expert Working Group on Marine Renewable Energy, and in the *Atlantic Strategy Task Force*.

Our commitment to supporting ocean energy on an international scale is further demonstrated through our continued role as the technical secretariat for the International Energy Agency's Technology Collaboration Programme on **Ocean Energy Systems (IEA-OES)**. WavEC has held this role almost since its inception, serving as the primary contact for this intergovernmental organization, overseeing communication, and facilitating collaboration among its 22 member countries from around the world and the European Commission.



**WavEC's dedication extends beyond borders,
shaping the global future of sustainable energy.**

**WavEC: Spearheading Communication
and Operational Management for IEA-OES**



Nurturing the Next Generation: WavEC's Commitment to Education

WavEC has always recognised the importance of training the next generation of researchers in the ever-evolving field of marine renewable energies. To this end, we took the lead in coordinating three prestigious European Marie Curie Innovative Training Networks: Wavetrain, Wavetrain2 and OceanNET.

In addition to these initiatives, we have joined hands with IST (*Technical University of Lisbon*) for an annual collaboration, offering specialised education in ocean energy and offshore wind within the EUREC Master on Renewable Energy. WavEC's commitment to educating and inspiring young researchers is a testament to our dedication to driving innovation and progress in the energy sector.

**At WavEC we invest in inspiring
and shaping young minds.**

WavEC Seminar
2022



Wavetrain Short Course
Pico Plant 2007

We regularly host internships at our offices, offering invaluable hands-on experience to aspiring professionals. We open our doors to students who seek practical training, conduct thesis research for their final degrees, and pursue master's degrees, shaping the next generation of experts.

Riding the Winds of Change: WavEC's Impact on Offshore Wind



WindFloat at Aguçadoura

In 2007, as the potential of floating wind began to emerge as an opportunity in Portugal, WavEC played an integral role in its early exploration, with WindFloat emerging as the chosen technology for this groundbreaking journey. The culmination of these collaborative efforts led to the testing of the WindFloat prototype in Aguçadoura, a project promoted by Principle Power, EDP, Repsol, Portugal Ventures, and A. Silva Matos from 2011 to 2016.

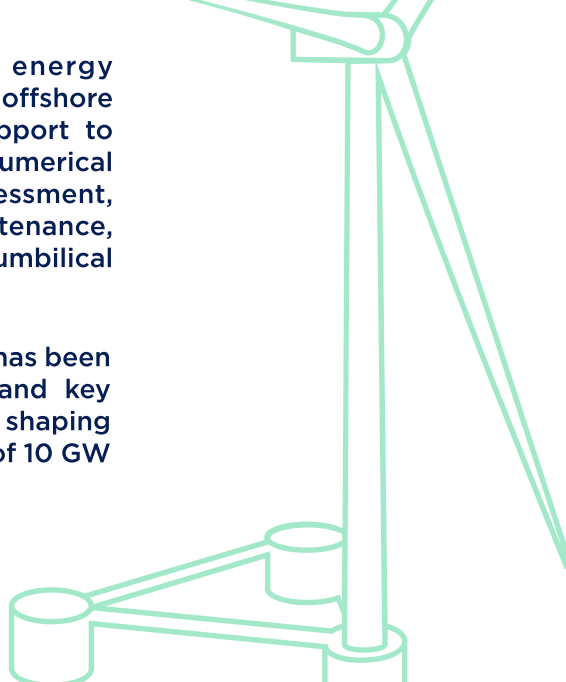
In 2019, a significant milestone was reached with the successful deployment of WindFloat Atlantic, the first floating wind farm in Viana do Castelo, by Ocean Winds, Repsol, and Principle Power.



Image of the WindFloat Atlantic Project © Principle Power / Ocean Winds

Our expertise, honed through years of wave energy innovation, seamlessly transitioned into the realm of offshore wind energy. WavEC has been lending crucial support to several pioneering projects, offering assistance in numerical modeling, environmental monitoring, impact assessment, consenting and permitting, operations and maintenance, logistics, techno-economic modeling, mooring and umbilical design, and more.

However, our impact transcends technology. WavEC has been actively engaging with policymakers, regulators, and key stakeholders. Our efforts have played a pivotal role in shaping the political actions that led to the ambitious target of 10 GW by 2030.



Navigating New Frontiers: WavEC's Expanding Horizons



Floating solar, EDP

Floating Solar PV

Continuing our successful trajectory, WavEC extended its efforts to floating solar PV in dams, teaming up with EDP and other partners and being involved in the first two floating solar PV projects in Portugal at Alto do Rabagão and Alqueva. This paved the way for WavEC's ongoing participation in cutting-edge floating solar projects.



Offshore Aquaculture

Offshore Aquaculture

Recognising the relevance of offshore aquaculture on the Blue Economy's future, WavEC became involved in the design of new offshore cages for Norwegian clients in 2016. This commitment resulted in the support of the introduction of salmon fish farming in Portugal in 2017 and in Morocco in the following year.

Green Hydrogen

WavEC's pioneering spirit also led us into the realm of hydrogen production and storage within offshore wind farms. The Beyond project, a collaboration with Technip FMC, EDP, and CEIIA, was born in 2020 to tackle the technical, economic, and market challenges in this groundbreaking field.

WavEC: Charting new horizons, embracing innovation, and shaping the future of the blue economy.



Digital Twin

More recently, WavEC has set its course towards the digitalization of the blue economy, welcoming a range of research projects. We are spearheading the development of Digital Twins within the context of floating offshore wind, including the Horizon Europe ILIAD project and the *Alliance for Energy Transition* project funded by the Recovery and Resilience Plan.

WavEC: Paving the Way for Test Sites and Technological Advancements

As WavEC continues its journey, our dedication is oriented towards creating the conditions for open-sea testing and demonstration infrastructures for wave energy and floating offshore wind in Portugal. We guide and support robust activities throughout the technology development process.

In a groundbreaking partnership with INESC TEC, WavEC secured shares of Companhia de Energia Oceânica, the owner of the Aguçadoura test site. This site is hosting CorPower technology in 2023, while other technologies are poised for testing from 2025 and beyond.

WavEC: A driving force for technological advancements and innovation in the energy sector.



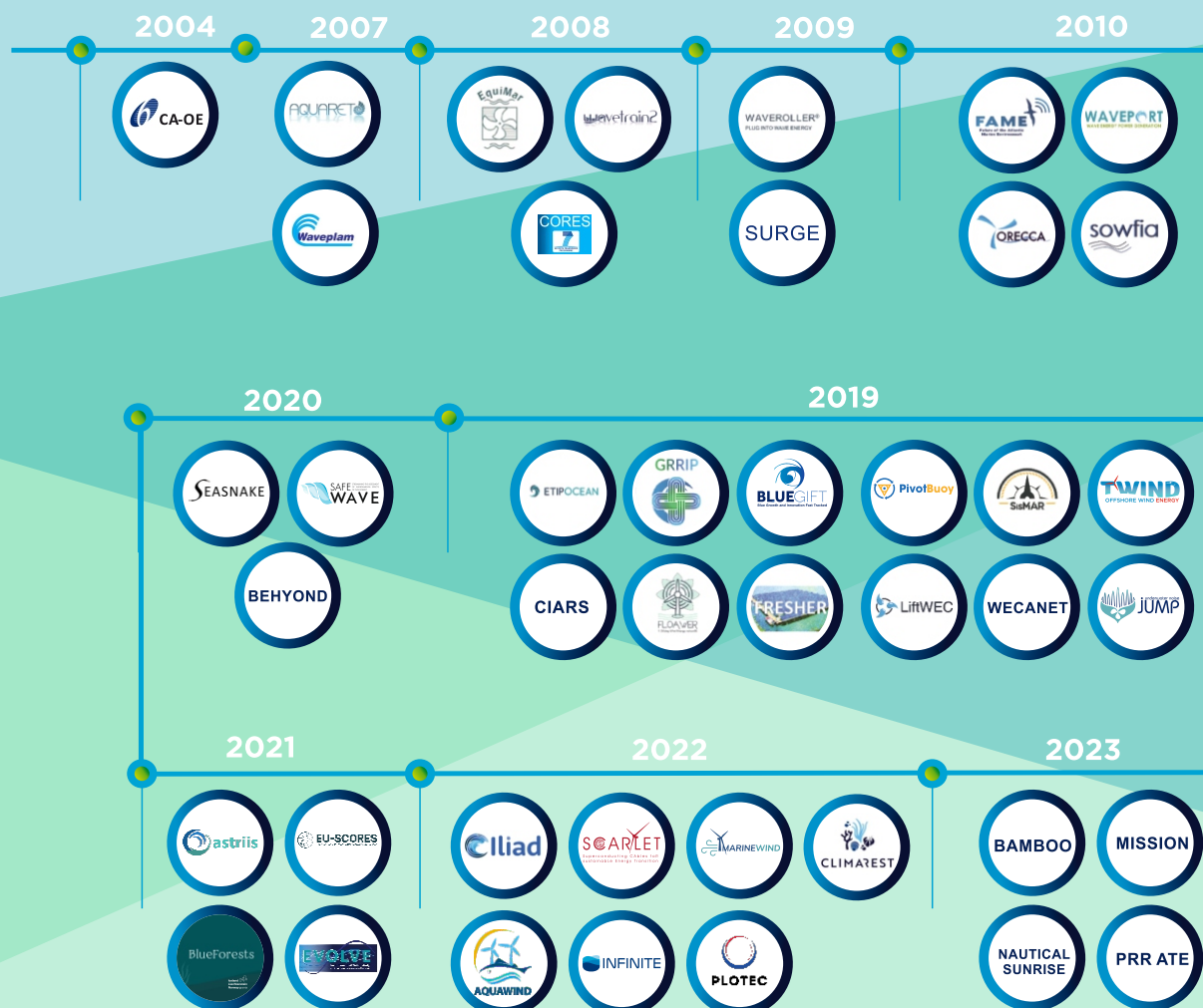
Our Journey in R&D and Innovation



Over the years, WavEC has consistently expanded its expertise, covering various competencies such as technological, environmental, and socio-economic aspects. This ongoing commitment is reflected in our extensive track record of active participation, particularly in EU projects, as we intensify our efforts in Research and Development (R&D) and continue to support the development of innovative products and services.

This commitment extends to the dissemination and communication of our findings and advancements. Our extensive portfolio of collaborative projects, both at the European and national levels, plays a crucial role in driving innovation, progress, and the effective communication of our work.

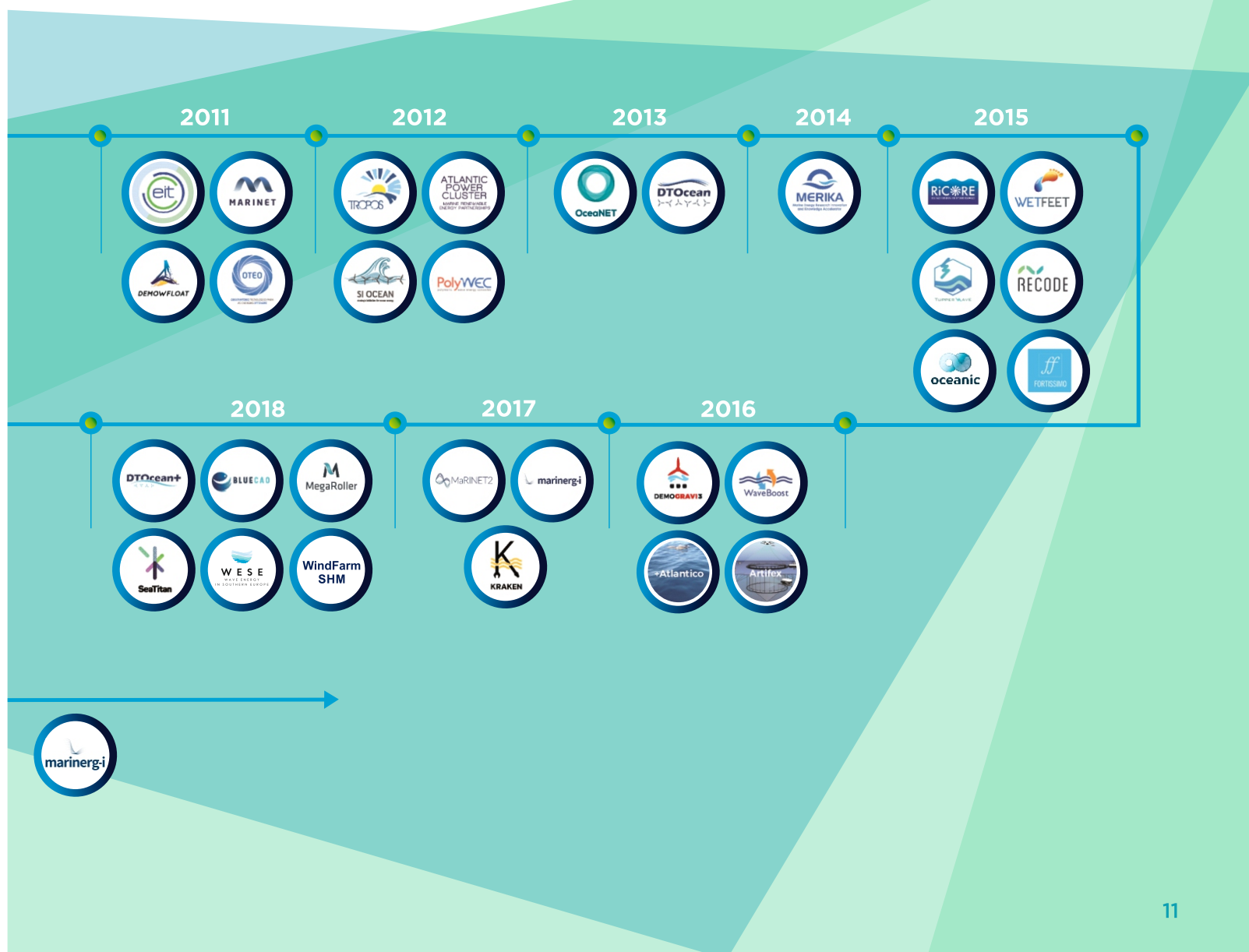
WavEC: Pioneering marine energy sector advancements through R&D and innovation



WavEC, a National Interface Center



Since 2017, WavEC has been recognised by the National Energy Agency (ANI) as a Technological Interface Centre (TIC). TICs are key entities in the national innovation system, serving as agents that leverage scientific and technological knowledge, promoting its transfer to companies.



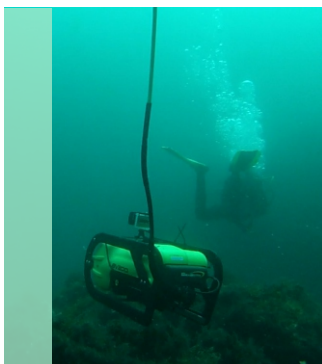
Our Services over Two Decades

Over the past two decades, WavEC has built an extensive network of industry relationships. Hosting events like the WavEC Annual Seminar has played a crucial role in this. These connections place us in a unique position to foster meaningful collaborations between our clients and public entities across the entire supply chain. We have significantly expanded our activities at open sea through intensified field campaigns, closely monitoring all prototype developments in Portugal.



X1Wind

Our commitment to innovation and pioneering technologies has been a cornerstone of our journey, and this legacy continues to shape our path forward, dedicated to expanding services for our valued clients over the years.

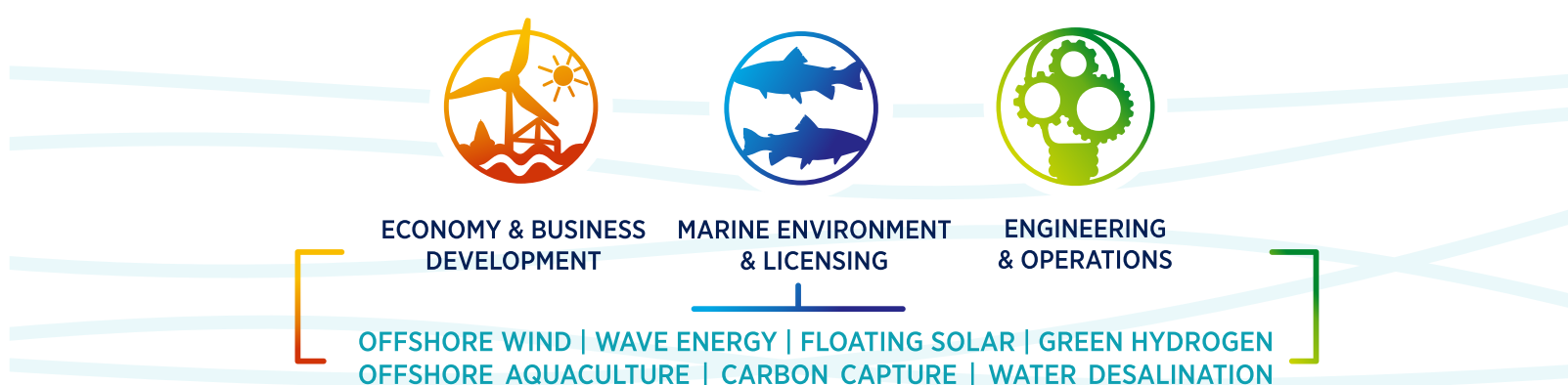


We have been developing a comprehensive suite of services, guiding clients through every phase of the marine renewable energy value chain – from licensing and permitting, to environmental impact monitoring and assessment, support for tendering processes, power performance assessment, O&M logistics, supply chain engagement, and system engineering.

We are also devoted to public engagement, actively communicating with local communities, articulating the details of innovative projects and their broader benefits.

Our Business Areas

Today, at WavEC, we stand at the forefront of innovation in the marine renewable energy. With two decades of pioneering expertise, we have cultivated three core business areas, offering comprehensive services that span the entire spectrum of marine renewable energy solutions.



Our Services

From cutting-edge research and development to tailored consultancy services, our commitment is to drive sustainable progress in the energy landscape. Explore our diverse portfolio of service offers, where expertise meets innovation.



Design support and review

- Moorings design and modelling
- Experimental testing in wave tanks
- Platform & turbine modelling



Site assessment

- Grid connection assessment
- Mapping of site attractiveness
- Metocean reports to support design



Permitting support

- Tendering support
- Stakeholder engagement
- Offshore client representation



Environmental and Social impact studies

- Environmental monitoring
- Life Cycle Assessment



Advanced O&M studies

- Weather window assessment
- OPEX forecasts



Logistic studies

- Port assessment and selection
- Vessel assessment and selection
- Third-party review of installation plans
- Storyboards
- Risk assessment



Supply chain analysis

- Market analysis
- Training and Capacity Building



Techno-economic modelling

- Financial assessment to guide investment decisions

WavEC: Pioneering a Bright Future

In its remarkable 20th year of operation, WavEC is gearing up to tackle the immense challenges and opportunities presented by Portugal's ambitious goal of 10 GW of offshore wind by 2030.

WavEC remains vibrant and active, driven by a passionate and highly capable team of young enthusiasts dedicated to achieving an affordable, secure, and sustainable energy transition.

Our journey over the past two decades has solidified our reputation as a very well-known and credible organisation, both in Portugal and on the global stage.



We boast an extensive network of over 200 partners and clients, cultivated through more than 60 R&D projects and 200 services, representing a global investment of over 500 million euros.

This success is an evidence of the quality and dedication of our staff and board members, both the present ones and the many that were with us along the years, as well as the trust placed in us by our partners, clients, and funding agencies.

WavEC's journey is a story of innovation, dedication, and lasting impact, and our commitment to a sustainable future remains stronger than ever.





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