



Energy Transition and Decarbonisation of the Port of Vigo: Integrating the Jules Verne Strategy and Atlantic Cooperation.



**IAPH AWARDS
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Climate and Energy

Introduction

With growing concern about the effects of climate change and the imperative need to reduce carbon emissions, the international community has intensified its efforts to develop technologies and strategies to drive the transition to a low-carbon economy.

The European Green Deal represents a comprehensive set of policy measures designed to guide the European Union towards a sustainable future, aligned with the overall goal of achieving climate neutrality by 2050. Among these initiatives is the introduction of the Just Transition Mechanism, aimed at providing financial and technical assistance to regions and sectors facing the greatest challenges in the transition to a low-carbon economy with the objective of leaving no one behind.

The European Union's strategy for a just transition is crucial for ports as they serve as vital hubs where various economic activities intersect within the maritime domain, directly influencing the environment and individual development through job creation, wealth generation, leisure opportunities, and overall well-being. Ports play a pivotal role as gateways between sea and land, connecting maritime and terrestrial services. As such, they can actively contribute to this transition by fostering sustainable growth in their hinterlands and promoting the development of port cities.

Through their strategic position and influence, ports can drive and facilitate changes in industries within their hinterlands. This includes spearheading the energy transition of ships by promoting technical and operational energy efficiency measures and advocating for the use of clean marine fuels. Ports can also facilitate energy transitions in port-maritime transport relationships by implementing initiatives like cold ironing and offering incentives such as green port fees. Furthermore, ports can lead by example in their own operations by investing in energy efficiency, renewable energy sources, and electrification, ultimately striving towards the establishment of Net Zero Emission Port Terminals. Additionally, ports serve as resilient infrastructure against the impacts of climate change, further highlighting their significance in fostering sustainable development and supporting the EU's objectives for a just transition.

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The Port of Vigo, recognizing the significant role that ports play as drivers of development in their influence areas and the need to incorporate a blue economy approach into port management, initiated the development and implementation of its blue growth strategy in 2016. This strategy, pioneering in Europe, aims to promote competitiveness, efficiency, and sustainability in all port-related activities through a participatory methodology involving various socio-economic units and local stakeholders in identifying priorities to address.

The strategy establishes four main objectives: to become a connected, inclusive, and innovative port, and primarily, to be a green port aligned with the European Green Deal. This entails full integration with the environmental and social surroundings and setting an example by reducing environmental impacts and achieving complete harmony with the environment.

Both the Port of Vigo's objective of being a green port and the projects focused on this area to contribute to a just transition, and the European Green Deal are based on two main strategic lines: the reduction of emissions and the compensation and mitigation of their impact.

To strengthen this contribution, the Port of Vigo, in its role as coordinator of Pillar I, aims to lead the decarbonisation strategy in the region. Through this initiative, efforts are directed towards enhancing the role of ports, in their contribution to climate neutrality, as hubs of the blue economy. Actions undertaken within the framework of Pillar I include workshops, seminars, and the generation of knowledge on new energy sources and the design of adapted vessel prototypes, in order to develop a roadmap for the just transition of the Atlantic ports.

In this context, the Julio Verne project of the Port of Vigo emerges as a strategic initiative aiming to capitalise on the potential of green hydrogen as a fundamental component of the strategy to achieve the European goal of climate neutrality by 2050. This project unfolds in two consecutive phases, each designed to progressively advance towards the full integration of green hydrogen in port operations and in the regional logistics chain.

PHASE 1: Julio Verne H2 Project

Promoted by the Port of Vigo as part of its blue economy strategy and with an investment of more than 6 million euros (financed with Next Generation funds), phase 1 of the Jules Verne project at the Port of Vigo marks the beginning of a significant transformation towards a more sustainable and cleaner future.

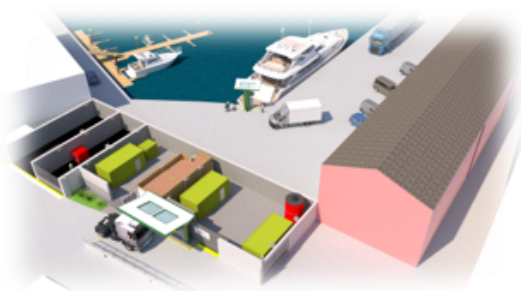
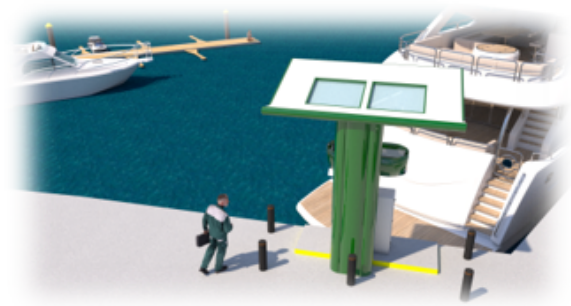
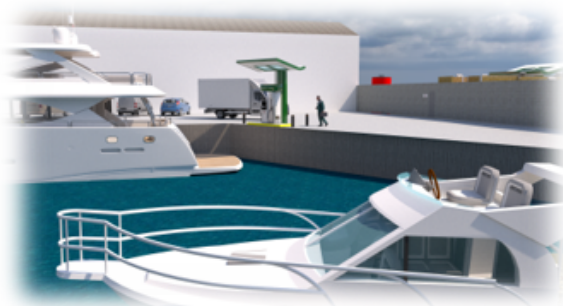
This first phase focuses on the development of the green hydrogen value chain. This strategic approach seeks to establish a solid infrastructure for the production, storage, and distribution of green hydrogen in and around the Port of Vigo.

One of the main goals of this phase is to promote the generation of quality employment in the region. The implementation of the project is expected to create new job opportunities in areas such as engineering, construction, operation and maintenance of the green hydrogen facilities. This initiative will not only contribute to the reduction of carbon emissions but will also have a positive impact on the local economy by generating employment and business opportunities.

Phase 1 of the Jules Verne project has an expected start date of June 2024, marking the beginning of the activities aimed at developing the necessary infrastructure for the production and distribution of green hydrogen in the Port of Vigo.

One of the key facilities to be developed in this phase is the installation of a truck and vessel dispensing point, a key infrastructure to facilitate transport and distribution and a crucial component of the green hydrogen value chain in the region.

Green hydrogen applications in this phase focus on two key sectors: marine and automotive, in addition to port operations and other industrial applications. Green hydrogen is expected to play an important role in the decarbonisation of these sectors, providing a clean and sustainable alternative to traditional fossil fuels. With initiatives focused on research, development and deployment of green hydrogen technologies, phase 1 of the Jules Verne project will lay the foundation for a cleaner and more sustainable economy in the region.



PHASE 2: Green H2 Hub Plisan Project

Phase 2 of the H2 strategy in the Port of Vigo represents a significant milestone in the energy transformation and decarbonisation of the region, with direct and indirect impacts that go beyond the mere generation of green energy.

In terms of employment, the operational phase of the project is expected to generate at least 250 direct permanent jobs, covering a wide range of roles and skills required for the management and maintenance of the renewable energy facilities and green hydrogen infrastructure. In addition, more than 575 indirect permanent jobs are expected, driven by the economic activity generated by the project in the supply chain and other related sectors.

In terms of renewable energy generation capacity, the following output is expected: 204 MW of wind power, 50 MW of photovoltaic power and 50 MW of biomass cogeneration. These clean energy sources will contribute significantly to reducing carbon emissions and moving towards climate neutrality.

The 170 MW electrolysis capacity will enable large-scale production of green hydrogen, with an estimated production of 10,451 metric tonnes per year. In addition, the production of up to 71,556 metric tons per year of oxygen, up to 37,700 metric tons per year of methanol (MeOH) and up to 40,100 metric tons per year of ammonia (NH₃) is expected.

The total investment for this phase of the project exceeds €800 million, underlining its scope and ambition. This investment will not only boost green energy infrastructure but will also have a significant impact on regional industry and technology.

It highlights the creation of a Green NH₃, MeOH and eSAF (sustainable aviation fuels) factory, as well as the implementation of a hydrogen pipeline between Plisan-Porriño-Vigo, a key infrastructure for hydrogen transport in the region.

The impact of the project extends beyond the port area, reaching key sectors in its hinterland such as shipbuilding, automotive and industry, boosting innovation and regional competitiveness.



Commissioning:
• 2028/2030

Direct and indirect employment:

- > 250 direct permanent jobs (operation)
- > 575 indirect permanent jobs

EERR, H2 & eFuels :

- 204 Mw Wind
- 50 Mw Photovoltaic
- 50 Mw Biomass Cogeneration
- 170 Mw Electrolysis
- H2: 10,451 mt/year
- O2: Up to 71,556 mt/year
- MeOH: up to 37,700 mt/year
- NH3: up to 40,100 tm/year

Investment:

- > €800 million

Industrial Footprint/Innovative Technology:

- Green NH3 / MeOH / eSAF factory
- Plisan-Porriño-Vigo Hydroproduct Germ.
- Impact on Naval Sector, Automotive, Industrial, EERR.

UNIVERGY RENOVABLES
HIDRÓGENO,SL (100%)

ENERGÍA RENOVABLE E
HIDRÓGENO VERDE PLISAN,SL



HUB PLISAN

Contribution to sustainability and the UN SDGs



The project contributes significantly to several UN Sustainable Development Goals (SDGs), in particular SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action). By reducing carbon emissions and promoting the use of renewable energies such as green hydrogen, the project contributes to mitigating climate change and moving towards a more sustainable and cleaner economy.



In addition, it contributes to SDG 17 by implementing partnerships between the different actors (governments, private sector and civil society) thanks to the engagement of the entire community of its hinterland through its blue growth strategy, as well as the Atlantic region through Pillar I of the Atlantic Action Plan, placing the 2030 Agenda at the heart of the policies and actions of all of them.







Original and innovative nature of the project

The project stands out for its pioneering approach and its integration of innovative technologies in the generation and use of green hydrogen. It is the first project in Galicia to contemplate the installation of a public access hydrogen station in a port, which makes it a benchmark both nationally and internationally. Moreover, its collaborative approach, with the participation of multiple companies and entities, guarantees the diversity of ideas and experiences, boosting the innovation and efficiency of the project.

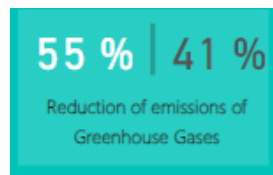
Impact assessment of Blue Growth Strategy and projects

In order to measure the impact of the Blue Growth Plan and its projects, a series of indicators were defined. These indicators allow quantifying the degree of compliance with objectives set during its execution. This is necessary to quantify the cumulative social, economic or environmental changes achieved. In addition, these indicators are aligned with the Blue Growth Objectives Port of Vigo 2022 and therefore with the Europe 2020 Strategy.

E X P E C T E D I M P A C T	INNOVATIVE PORT	Innovation is an essential concept of the Blue Growth Strategy and, therefore, of the Port of Vigo. In order to become an innovative port, we promote the development of more efficient technologies; we offer improved services to our users; we encourage an open innovation, by integrating private sector with research institutions, technological centers and universities.					STATUS OF IMPLEMENTATION
	EXPECTED IMPACT						
	ACTUAL MEASURE	40 % 50 %	40 % 25 %	40 31	30 24	15 10	€ 293.261.389 Total Budget
		Percentage of budget achieved	Private investment mobilized in Innovative Projects	Number of Innovation Projects Executed	Private-Public Innovation Collaborative Projects	Number of prototypes	
	GREEN PORT	In the Port of Vigo we work to become the green port of reference in the south Europe, through actions and projects enforced to recover zones where the industrial and urban activity has left his footprint; promoting the use of clean energy technologies; and implementing more environmental-friendly processes					€ 78.575.487 Approved Public Investment
EXPECTED IMPACT							
ACTUAL MEASURE	30 % 26 %	20 % 7,7 %	55 % 41 %	100 mil 66,8 mil	400 309,9	€ 25.924.446 Approved Private Investment	
	Reduction of energy consumption in port facilities	Clean self-generated energy	Reduction of emissions of Greenhouse Gases	Surface of seabed regenerated (Sq. Feet)	Tones of marine litter gathered		
CONNECTED PORT	A connected port is synonymous of competitiveness, reason why, in the Port of Vigo we work to digitalize the administrative processes and multiply the maritime lines; we support digital transformation and the use of ICT tools in communication.					€ 43.921.483 Grants	
EXPECTED IMPACT							
ACTUAL MEASURE	30 12	10 5	20 21	550 mil 407 mil	20 % 17 %	41 Projects in Progress	
	Digitized procedures	Number of improved operational and logistics processes	Number of new lines of maritime traffic	Port area created, freed up or applied to other uses	Tones traffic growth		
INCLUSIVE PORT	People are the center of an Inclusive Port, that is why from the Port of Vigo we bet on: the design of training programs to meet the needs of the current market; the integration of traditional sectors in the new concept of the Blue Economy; social innovation, favoring the interaction between all agents linked to the sea.					61 Total nº of Projects	
EXPECTED IMPACT							
ACTUAL MEASURE	14.000 14.062	3.000 2555	30 22	7 9	240 266	47 Actions	
	Number of direct jobs	Number of people trained	Number of social innovation actions	User satisfaction	Collaborations		

The definition of a monitoring system to measure the impact of the actions and projects developed on the proposed objectives provides a solid basis for the evaluation of the implementation of the Plan and the degree of achievement of the agreed commitments. As part of the indicators related to the objectives of becoming a Green Port and an Innovative Port, specific parameters have been included regarding the reduction of emissions (CO₂, SOX, NOX) and number of innovation projects to those that Julio Verne Project contributes.

In the case of the greenhouse gas emissions reduction indicator, the Port of Vigo committed to a 30% reduction in its emissions, achieving this target in 2022. Consequently, it has set a new goal to reduce emissions by 55% by the year 2027.



Vision and leadership deployed by the port's management

The Port Authority of Vigo has demonstrated strong leadership and a clear vision in the implementation of sustainability and decarbonisation strategies. Through the Blue Growth Vigo Plan, led and coordinated by the Port Authority, ambitious objectives have been set to promote competitiveness, efficiency and sustainability in all port activities. The creation of a shared governance structure, involving various local actors and stakeholders, ensures participatory and results-oriented management

The involved stakeholders participate actively through meetings and other ways of communication to propose improvements, projects, and initiatives to foster the Blue Growth Spirit and jointly achieve the established objectives.

The capitalization of the experience is realized through the internationalization of the Blue Growth strategy. The transfer and exchange of knowledge with other regions and entities favours continuous improvement and the possibility of establishing collaborations between them. So, internationalization is a key for the sustainability of the Blue Growth Strategy and it is carried out through collaboration with international institutions such as Unesco, FAO and the European Commission, which demonstrates the Port of Vigo's commitment to the dissemination and exchange of knowledge in the field of marine sustainability.

Cooperation with other ports and/or engagement of societal and commercial stakeholders

The project is part of the wider cooperation between ports and entities in the context of the European Commission's Atlantic Strategy. Through Pillar I of the Atlantic Strategy, Atlantic ports work together to promote a just and sustainable transition to climate neutrality, sharing knowledge, best practices and collaborating on joint projects.

In addition, the social and commercial commitment of the project's stakeholders is evident in the extensive involvement of companies, institutions and organisations in its development and implementation. More than 20 companies and organisations, including a large number of SMEs, have been directly involved in the Jules Verne project working group, showing a strong commitment to innovation and decarbonisation. The project will be developed by a consortium of companies, organizations and institutions with extensive experience in the management and development of similar complex technical projects, being participants: UNIVERGY, QUANTUM GROUP, ANFACO, SOLTEC INGENIEROS, NEUWALME, UNIVERSIDADE DE VIGO, GRUPO BOTAMAVI, UNVI, AISTER, ENERGYLAB, ACLUNAGA, CTAG, and the PORT AUTHORITY OF VIGO.

This collaboration ensures that the project responds to the real needs and challenges of the sector, while fostering innovation and sustainable economic growth.