Bilbao Port WIND HUB

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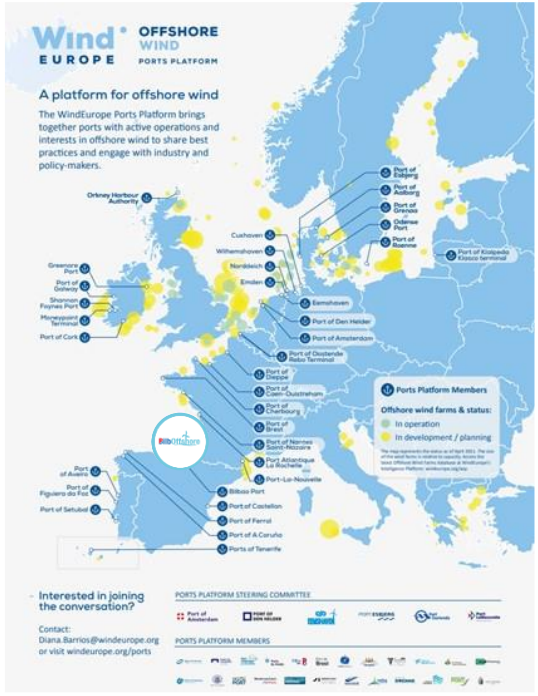
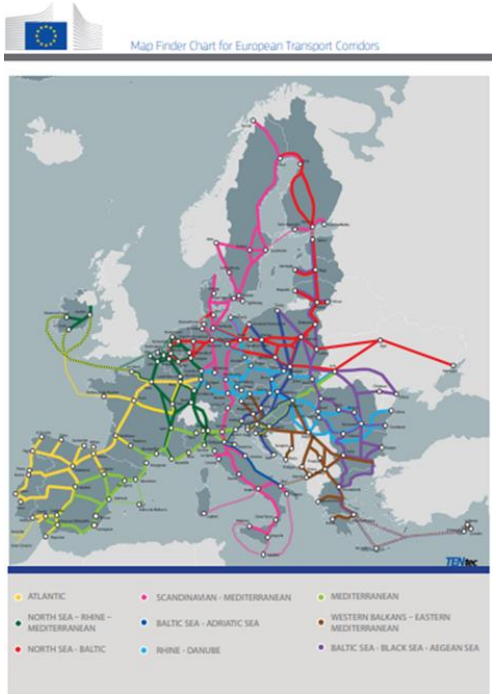
BilbaoPort WIND HUB is a basic infrastructure expansion strategic investment carried out by the Port Authority of Bilbao consisting in :

1. The construction of **Central Quay Phase 2 basic infrastructure adding 31 hectares** linked to:
   - offshore wind facilities and transportation activities.
   - low- and zero-emission multimodal transport solutions.
2. To make **this new infrastructure nature positive**:
   - circular economy plays an important role.
   - It includes synergetic elements based on renewable energy are included to meet our Fit for 55 goals.





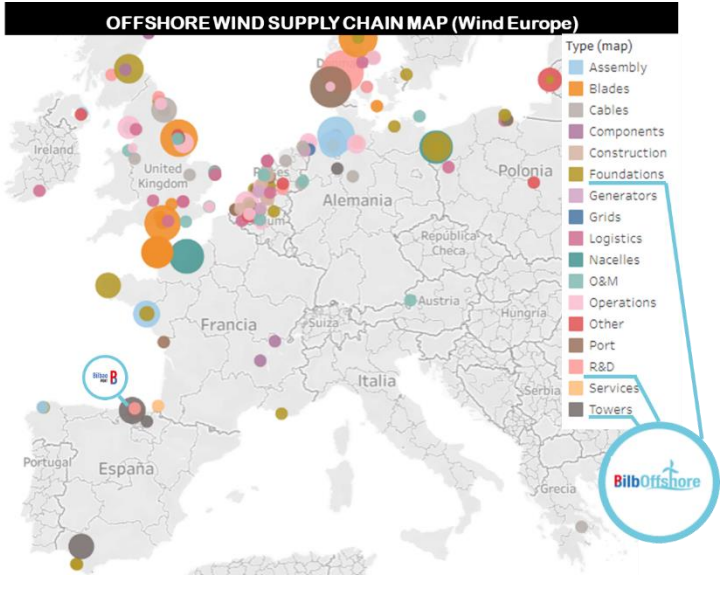
The European Parliament has approved (15/12/2023) the Report Building a Comprehensive European Port Strategy (2023/2059 (INI)- Committee on Transport and Tourism)

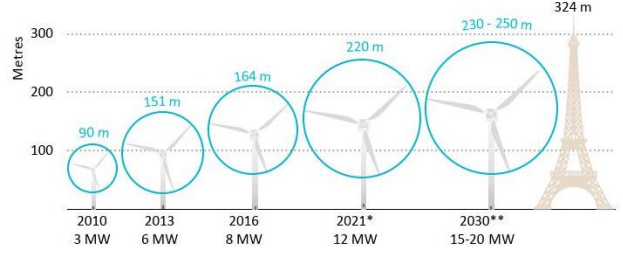
- Need for a European **harmonised and unified multiport strategy.**
- **New role** that **ports should play** in the **European energy transition vision.**

EU Offshore Wind Supply Chain – MULTIPORT Approach

Bilbao PORT WIND HUB

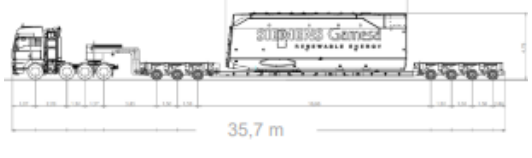
- Offshore wind energy is at the heart of a **(i) clean, (ii) affordable and (iii) resilient energy supply chain in Europe**.
- The Commission has set a **target** of at least **111GW of offshore wind by 2030**, with a view to reaching 450GW by 2050, from Europe's current installed capacity of 25GW.
- To achieve these objectives **the industry must triple in size before 2030** upscaling the EU manufacturing supply chain.
- **Ports play a critical role** (marshalling ports, manufacturing ports, operation and maintenance ports etc.)
- A **Multi Port approach is needed**, every **EU Wind Farm is an EU Cooperation project** (Beatrice Wind Farm in the UK (588 MW), 11 European and British Ports where involved to supply the different wind turbine components)





Road transport is not even an option

- Towers a base diameter of up to 10 metres
- Heights of over 130 metres.



Global Project: Bilbao Port *Fit for 55* by 2030

GREEN ENERGY COGENERATION HUB

- Wind Farm 12 MW(2006)
- Photovoltaic Plants 4 MW (2026)
- Wind Turbine 11 MW (2027 & 2028)
- Energy Storage (2027)
- OPS interconnection
- Control and Connection Centre (CMC)

ALTERNATIVE FUEL SERVICES

- LNG Refuelling Station (2022)
- H2, biofuels & e-fuels (2026)
- OPS (2026)
- OPS (2028)

INNOVATION HUB LIVING LAB

- Mini Wind Turbine Piloting
- Wave Power Piloting
- Smart Energy Management
- Biodiversity & Restoration
- Climate Change Resilience

Investment
71M€

Surface
+31 Hectares

Circular Economy
3,6 M m³

Green Energies
+11MVA

Into Service by
2027

Bilbao Port 2027

WITHOUT BilbaoPort WindHub PROJECT

WITH BilbaoPort WindHub PROJECT

- This new surface will allow the **expansion of the offshore wind industry and zero-emission multimodal solutions** from **405,000 m² (2023)** to **655,000 m² (2027)**.
- **At the same time we develop our renewable energy model towards energy self-sufficiency**

WIND HUB

1. **Onshore Wind**
2. **Offshore Wind (Towers and Monopiles)**
3. **Onshore/Offshore Wind Hub (Storage and Logistics)**
4. **Onshore/Offshore Operational Equipment and SpecialTransport**
5. **Offshore Wind XXL and Low-Zero Emission Multimodal Terminal (RO-RO, RO-PAX)**

GREEN ENERGY COGENERATION HUB:

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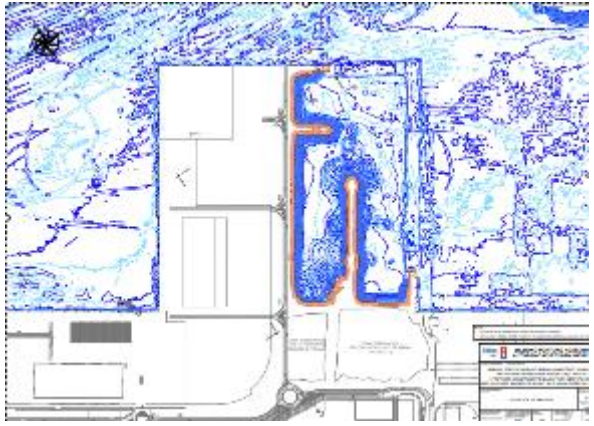
ALTERNATIVE FUEL SERVICES:

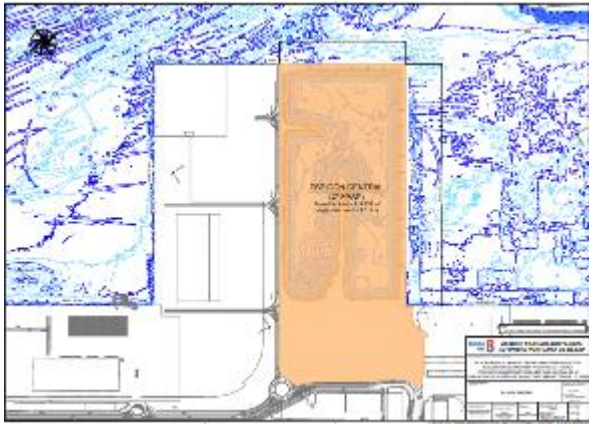
- **LNG Refuelling Station (2022)**
- **H2, biofuels & e-fuels (2026)**
- **OPS (2026)**
- **OPS (2028)**

Nature Positive Works: Infrastructure and Energy

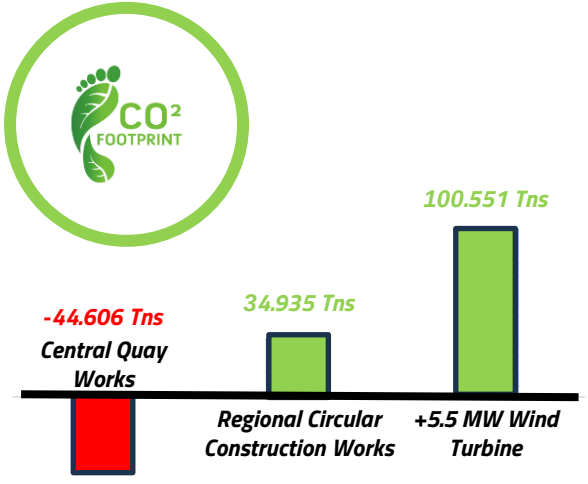


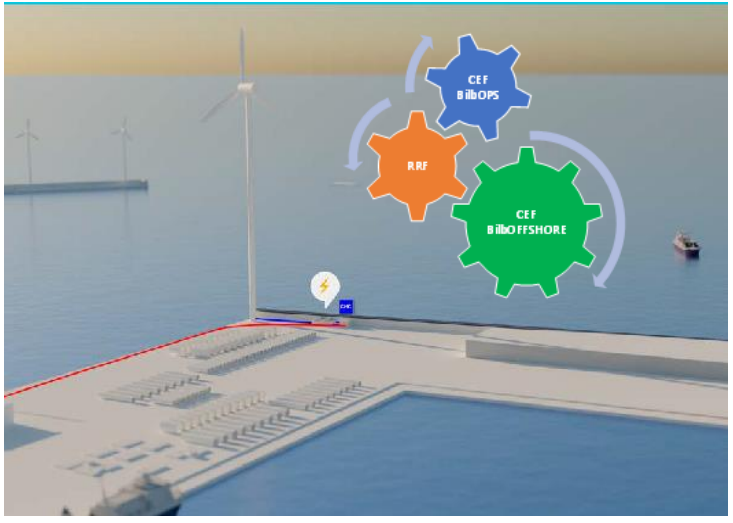
Central Quay Current situation

Quay Line Construction, 1.011m (18 caissons)

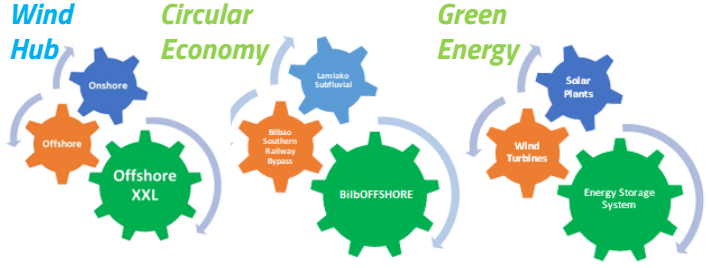


Esplanade Construction based in Circular Economy

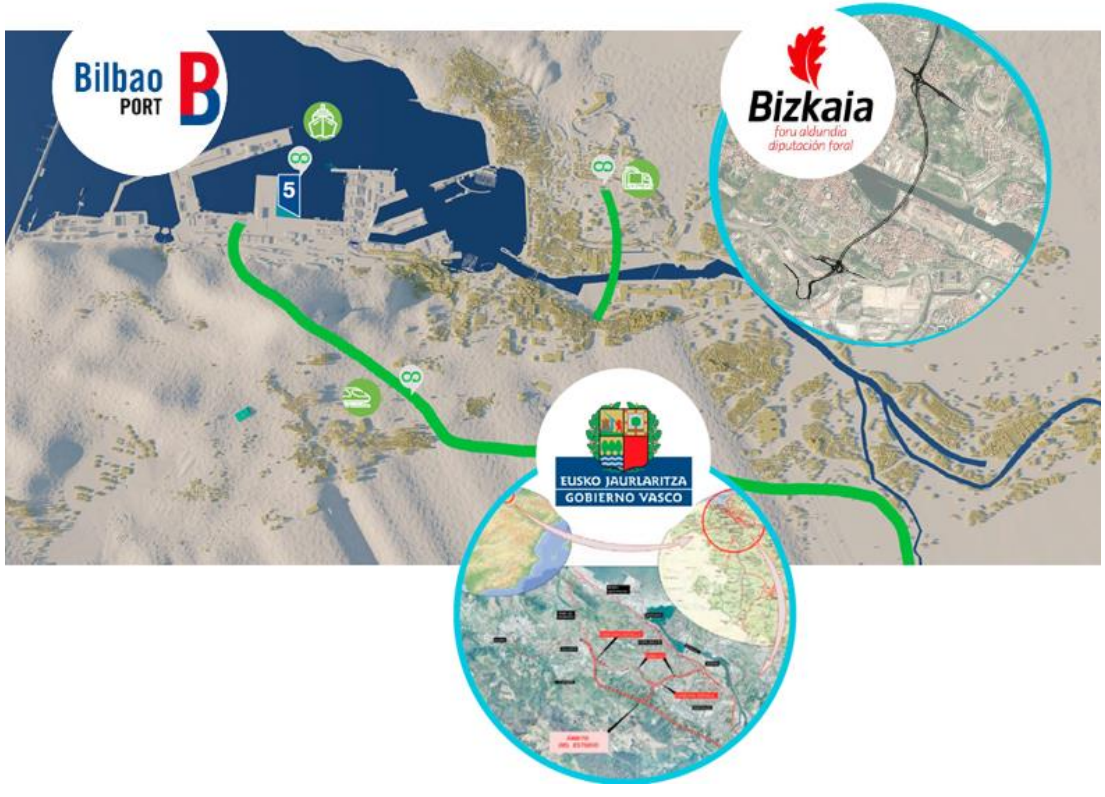




2 Wind Turbines (11 MW) Connected to BilbaoPort OPS network to guarantee the green source of the energy supplied to vessels.



Cooperation around Circular Economy

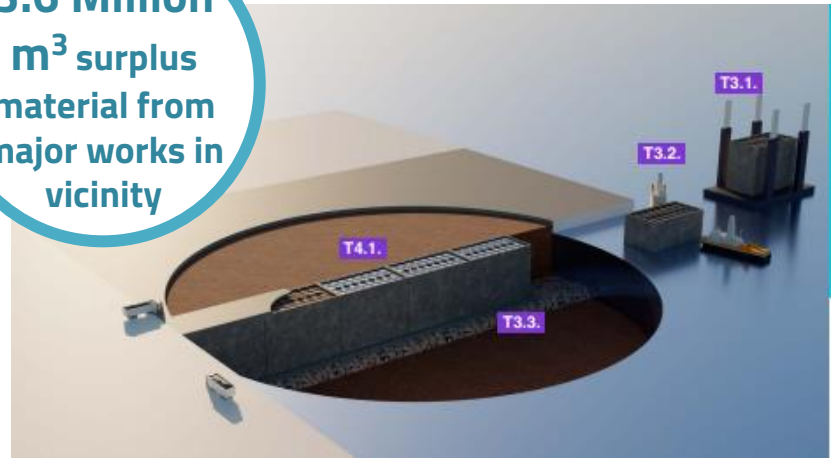


NATURE POSITIVE INFRASTRUCTURE

5 **Offshore Wind XXL and Low-Zero Emission Multimodal Terminal (RO-RO, RO-PAX)**

∞ **Circular Economy (2nd phase backfilled with excavation material)**

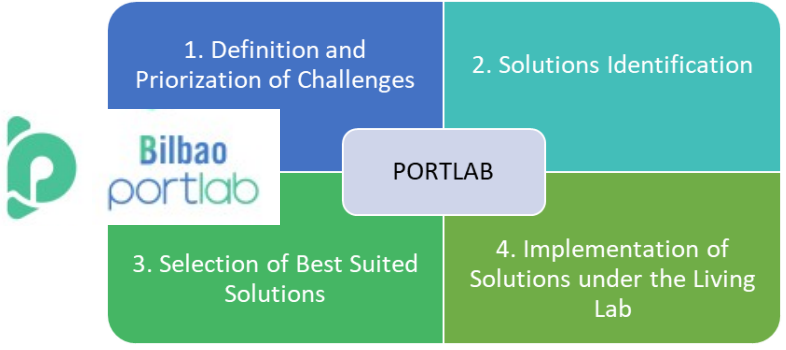
3.6 Million m^3 surplus material from major works in vicinity



The Central Quay will be refilled on **circular economy** basis using the surplus material from two parallel major construction projects in the vicinity of the port.

The aim is to **avoid dredging the seabed** to fill the quay, thus avoiding the impact on marine biodiversity. The **seabed sand bank may be needed in the future by the community** to replenish coastal beaches, as sea levels will rise in the future due to climate change.

Community Building & Innovation



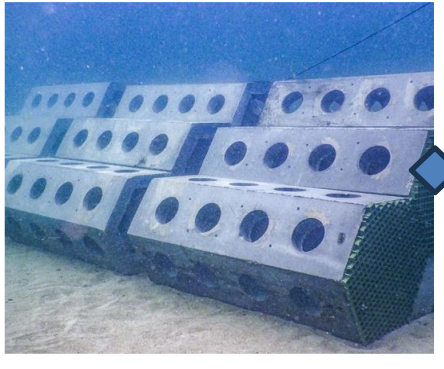
- **39** letters of support through out the wind cluster value chain, including green job suppliers as Universities as vocational training schools
- BilbaoPortlab: **open innovation ecosystem builder** - marine energies, biodiversity, restoration and resilience.
- Synergies with **Ports 4.0. start-up programme** (OPPE)

BilbaoPort Wind Hub will expand the Offshore Net Zero Industry at the port to another level bringing new opportunities for a **just energy transition** for the people living around the port. Soldarte programme is an example of working opportunities for 150 young people for the offshore industry. Unemployment rates at these communities around the port double the average of the Basque Country, bringing new opportunities for a just energy transition.

Somorrostro training centre

Port Biodiversity protection and restauration

- Developing different pilots to increase the resilience and biodiversity in the Port of Bilbao collaborating with Universities and startups**.**
- **The aim of piloting and measuring in different places in the port.**



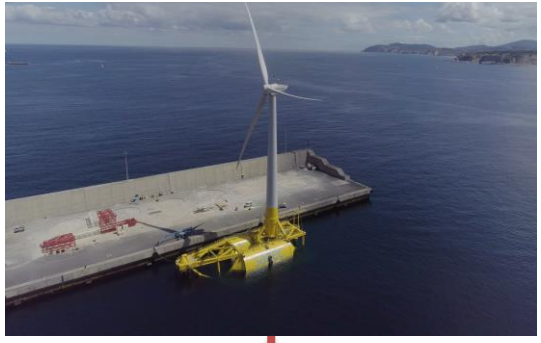
- **COASTALOCK from ECONCRETE**
- **SEACOND from LADICIM**
- **OCEAN ECOSTRUCTURES**
- **Nature-based solutions in a marsh**

Innovation based wind solutions

- Developing different innovation pilots to achieve the NetZERO goal in the Port of Bilbao collaborating with companies and startups**.**
- **The Port of Bilbao as a testbed for innovative technologies piloting and measuring in different places in the port.**

Clever wind

Demosath



- GEROA Project 3 floating generators using the same technology for up to 45MW

Bound4Blue

SDG based projects

Bilbao PORT WIND HUB

By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

Less contaminating technologies

By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

Innovative projects and new infrastructure

By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Vocational skills improved for nos contaminating companies

By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

On a less deleped part of the region

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Resilience and energy

By 2030, increase substantially the share of renewable energy in the global energy mix
By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

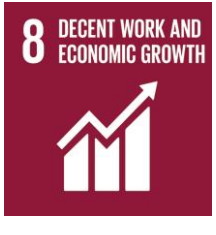
Renewable energy hub - 11MW

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Low zero emission multimodality

By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

Restauration and biodiversity



Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors

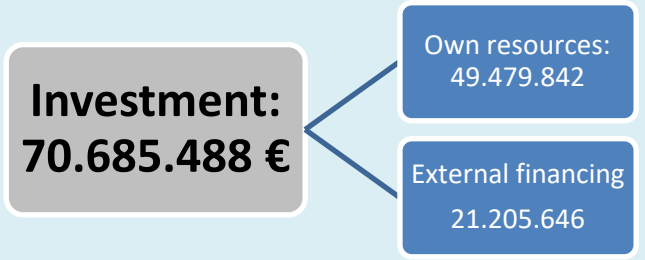
700 green jobs

By 2030, achieve the sustainable management and efficient use of natural resources

Circular economy

BilbaoPort WindHub Financial Structure

Financial Investment



Socio Economic Return on Investment

Socio Economic Value	
Internal Rate Return (EER (K))	15,40%
Net Present Value (NPV)	363.936.499 €
Project Discount Rate (PDR)	3,00%

BilbaoPort Wind Hub in a Nutshell

Offshore Wind
Port infrastructure
+31 hectares

Low-Zero Emission Multimodality
720 RO-RO Vessel calls by 2030

Green Jobs
700 people

Public Investment
70,6 M €

Power
Synergetic Renewable Energy Hub +11 MWp

Circular Economy
Minimising the environmental impact

EU Net Zero Industry
Offshore XXL
Capacity +1GW

EU multiport supply chain needs
Fulfilling 6,5%
of EU needs

Stakeholders commitment:
39 letters of support

Innovation
Biodiversity, Restoration, Resilience & Energy