



# BRETAGNE



## A STRATEGIC LOCATION

In the heart of Offshore Wind & Marine Energies Market

### BRETAGNE OCEAN PO'WER

/ Supported by

UNION EUROPÉENNE  
UNANIEZH EUROPA



L'Europe s'engage  
en Bretagne

Avec le Fonds européen  
de développement régional

**150 COMPANIES**

# to find your right partner

Marine Energy in Brittany is a sector with more than 150 companies working:

- in all MRE technologies
- and at all stages of MRE projects.

Brittany companies are already involved in many marine energy project in Europe, such as the Ailes Marines project in Bay of Saint-Brieuc. They are ready for other projects, including the call for tender for the South Brittany floating wind farm.

Find the right partner for your business: more than 150 companies and 26 research labs are referenced by skills in our online directory.



[www.bretagneoceanpower.fr/directory](http://www.bretagneoceanpower.fr/directory)

**3 TESTS SITES**

# to prove your concept

Open sea test sites are open to your projects, whether they are in the development or pre-commercialization phase. Specialists accompany you from the commissioning to the connection to the network and up to the tests. They host all kinds of marine energies and offshore wind technologies (tidal turbines, floating wind turbines, etc.).

If you need to perfect your technologies, you can count on the expertise of more than 150 companies and research centres dedicated to offshore wind and marine energy technologies in Brittany.

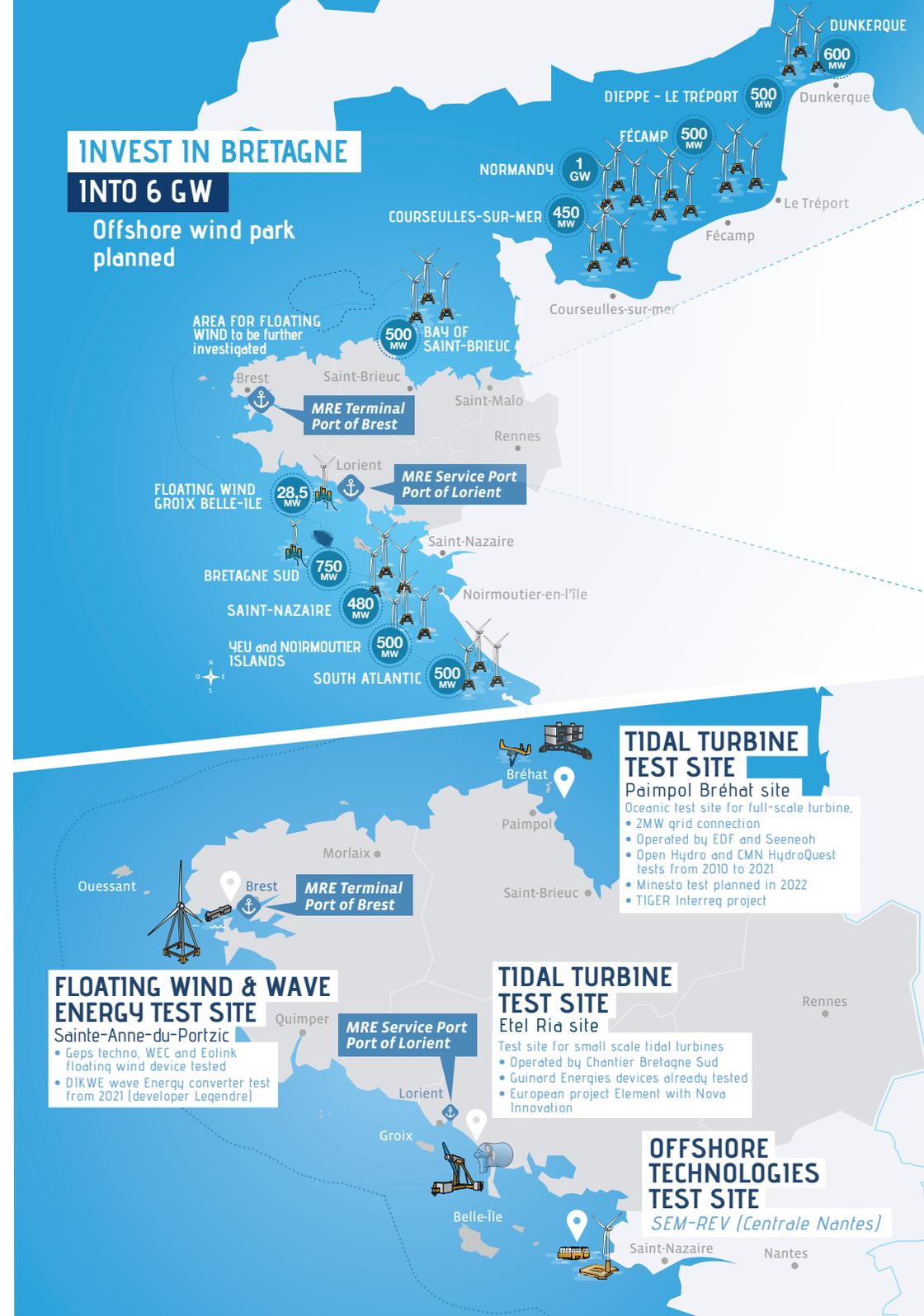
On Paimpol-Brehat test site, European Tiger Project is dedicated to demonstrate that tidal stream energy is a maturing industry, capable of achieving an accelerated cost reduction pathway.



**INVEST IN BRETAGNE**

**INTO 6 GW**

Offshore wind park planned



**TIDAL TURBINE TEST SITE**

**Paimpol Brehat site**  
 Oceanic test site for full-scale turbine.  
 • 2MW grid connection  
 • Operated by EDF and Seeneoh  
 • Open Hydro and CMN HydroQuest tests from 2010 to 2021  
 • Minesso test planned in 2022  
 • TIGER Interreg project

**FLOATING WIND & WAVE ENERGY TEST SITE**

**Sainte-Anne-du-Portzic**  
 • Geps techno, WEC and Eolink floating wind device tested  
 • DIKWE wave Energy converter test from 2021 (developer Legendre)

**TIDAL TURBINE TEST SITE**

**Etel Ria site**  
 Test site for small scale tidal turbines  
 • Operated by Chantier Bretagne Sud  
 • Guinard Energies devices already tested  
 • European project Element with Nova Innovation

**OFFSHORE TECHNOLOGIES TEST SITE**

**SEM-REV (Centrale Nantes)**



# DEDICATED PORT INFRASTRUCTURE specialised for more efficiency

## PORT OF BREST

A new terminal dedicated to large MRE projects:

- 40** ha OF INDUSTRIAL LOTS CONNECTED TO SEA AND TRANSPORT NETWORKS
- 10** t/m<sup>2</sup> FOR HEAVY LOADS (EQUIVALENT UNIFORMLY DISTRIBUTED LOAD) ON THE QUAY
- 400** LM OF DOCK WITH A HANDLING BERTH OF 100 m WIDTH
- LOCATED IN A PROTECTED ROADSTEAD WITH EASY ACCESS
- FREIGHT PORT AND LOGISTIC HUB FOR EUROPEAN SEAWAYS
- DEDICATED WORKSHOP OF 1375 M<sup>2</sup> WITH BRIDGE CRANE 50 TONS
- HEAVY LIFTING CRANES UP TO 200 TONS
- UNRESTRICTED ACCESS TO OPEN SEA & NO AIR DRAFT RESTRICTIONS
- 8** m ACCESS CHANNEL DEPTH: 8 m BELOW CD
- 1<sup>st</sup>** FRENCH PORT FOR SHIP REPAIR (3 DRY DOCKS)
- 12** m BERTH ACCESS: 12 m BELOW CD IN DEPTH

## PORT OF LORIENT

A logistic hub for installation and maintenance:

- SHeltered and ACCESSible BAy: UNRESTRICTED ACCESS TO OPEN SEA & NO AIR DRAFT RESTRICTIONS, EASY ACCESS 24/7, WATER HEIGHT OF 9M (+6M50 TIDAL RANGE)
- 2.5** ha 25 HA DEDICATED TO THE INSTALLATION STEP:
  - 800 LM OF QUAY
  - 13M CD DRAFT
  - RORO HANDLING
  - SUITABLE LIFTING EQUIPMENT INCLUDING A 30T CRANE AT 30M
- 1.5** ha MAINTENANCE BASE AND ASSOCIATED SERVICES:
  - 15 HA
  - 100 LM OF QUAY
  - 3M CD DRAFT
  - CREW FACILITIES
- SHIP REPAIR AREA WITH HEAVY LIFT CRANES UP TO 650 T AND 80 LM OF QUAY (8T/M<sup>2</sup>)
- 14 001** ISO CERTIFICATION

## OFF-GRID SOLUTIONS

# to become self-sufficient in energy

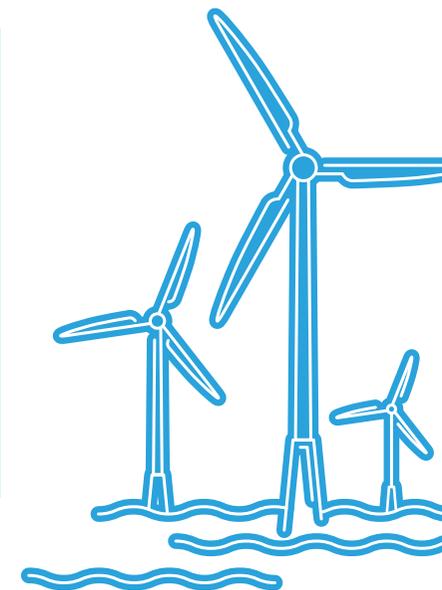
Ouessant Island is a full-size demonstrator that proposes technical solutions to make it autonomous and integrating renewable marine energies.

We operate on 3 levers:

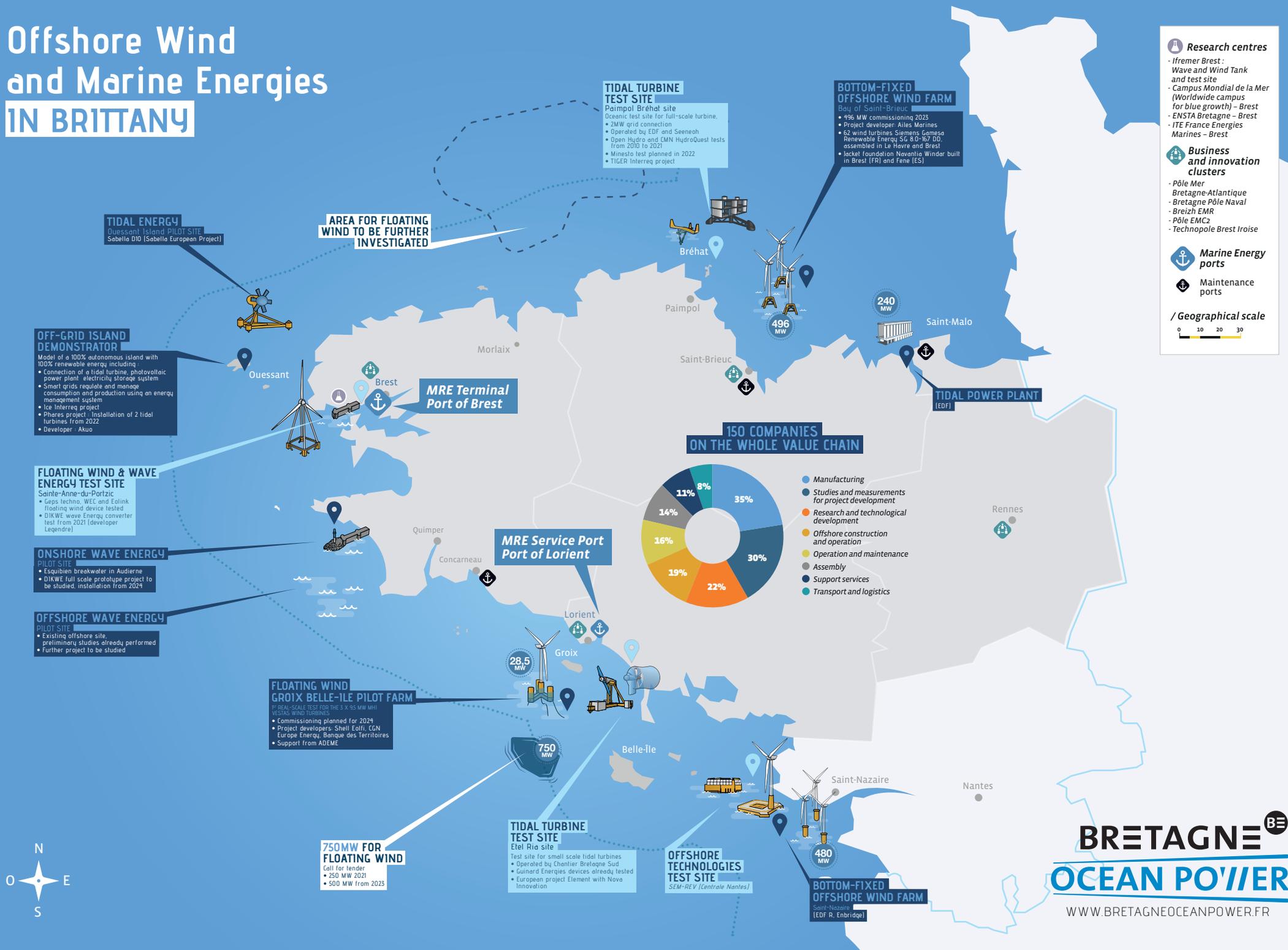
- Reduce and manage energy consumption
- Produce energy locally from sustainable sources
- Create and manage the local energy loop with a microgrid

This model can be extended to all territories that are isolated from a national electricity grid and wish to become autonomous and decarbonised.

Call us, we create the link with the companies who develop these solutions.



# Offshore Wind and Marine Energies IN BRITTANY



**TIDAL ENERGY**  
Ouessant Island PILOT SITE  
Sabella DID (Sabella European Project)

**AREA FOR FLOATING WIND TO BE FURTHER INVESTIGATED**

**TIDAL TURBINE TEST SITE**  
Paimpol Bréhat site  
Oceanic test site for full-scale turbine.  
• ZMW grid connection  
• Operated by EDF and Senech  
• Open Hydro and CMN HydroQuest tests from 2010 to 2021  
• Minesso test planned in 2022  
• TIGER Interreg project

**BOTTOM-FIXED OFFSHORE WIND FARM**  
Bay of Saint-Brieuc  
• 496 MW commissioning 2023  
• Project developer: Alies Marines  
• 62 wind turbines Siemens Gamesa Renewable Energy SG 8.0-167 DD, assembled in Le Havre and Brest  
• Jacket foundation Navantia Windar built in Brest (FR) and Fene (ES)

**OFF-GRID ISLAND DEMONSTRATOR**  
Model of a 100% autonomous island with 100% renewable energy including:  
• Connection of a tidal turbine, photovoltaic power plant, electricity storage system  
• Smart grids regulate and manage consumption and production using an energy management system  
• Ice Interreg project  
• Phares project - Installation of 2 tidal turbines from 2022  
• Developer: Akuo

**FLOATING WIND & WAVE ENERGY TEST SITE**  
Sainte-Anne-du-Portzic  
• Geps techno, WEC and Eolink  
• Floating wind device tested  
• DIKWE wave Energy converter test from 2021 (developer Legendre)

**ONSHORE WAVE ENERGY PILOT SITE**  
• Esquibien breakwater in Audierne  
• DIKWE full scale prototype project to be studied, installation from 2024

**OFFSHORE WAVE ENERGY PILOT SITE**  
• Existing offshore site, preliminary studies already performed  
• Further project to be studied

**FLOATING WIND GROIX BELLE-ÎLE PILOT FARM**  
PI REAL-SCALE TEST FOR THE 3 X 95 MW MH1 VESTAS WIND TURBINES  
• Commissioning planned for 2024  
• Project developers: Shell Eolif, CGN Europe Energy, Banque des Territoires  
• Support from ADEME

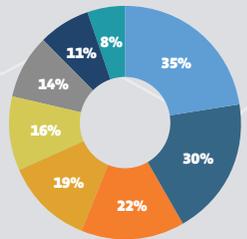
**750MW FOR FLOATING WIND**  
Call for tender  
• 250 MW 2023  
• 500 MW from 2025

**TIDAL TURBINE TEST SITE**  
Etel Rio site  
Test site for small scale tidal turbines  
• Operated by Chantier Bretagne Sud  
• Guinard Energies devices already tested  
• European project Element with Nova Innovation

**OFFSHORE TECHNOLOGIES TEST SITE**  
SEM-REV (Centrale Nantes)

**BOTTOM-FIXED OFFSHORE WIND FARM**  
Saint-Nazaire  
(EDF R, Enbridge)  
480 MW

**150 COMPANIES ON THE WHOLE VALUE CHAIN**



- Manufacturing
- Studies and measurements for project development
- Research and technological development
- Offshore construction and operation
- Operation and maintenance
- Assembly
- Support services
- Transport and logistics

**Research centres**

- Ifremer Brest : Wave and Wind Tank and test site
- Campus Mondial de la Mer (Worldwide campus for blue growth) - Brest
- ENSTA Bretagne - Brest
- ITE France Energies Marines - Brest

**Business and innovation clusters**

- Pôle Mer
- Bretagne-Atlantique
- Bretagne Pôle Naval
- Breizh EMR
- Pôle EMCs
- Technopole Brest Iroise

**Marine Energy ports**

- Maintenance ports

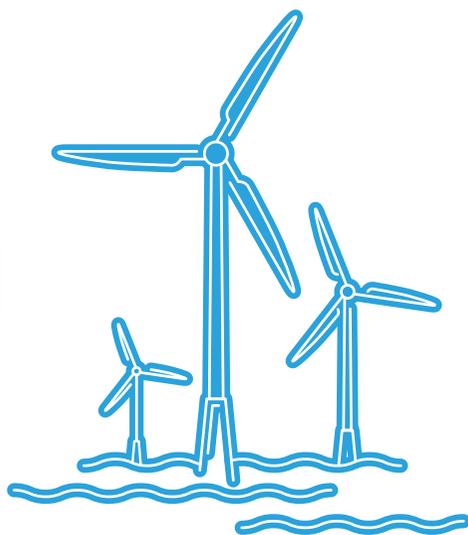
/ Geographical scale  
0 10 20 30

**BRETAGNE**  
**OCEAN POWER**

WWW.BRETAGNEOCEANPOWER.FR



Team up  
**HARNESS**  
**OCEAN ENERGY**



**BRETAGNE**<sup>BE</sup>  
**OCEAN POWER**



**BRETAGNE**<sup>BE</sup>  
COMMERCE  
INTERNATIONAL

**BRETAGNE**<sup>BE</sup>  
DÉVELOPPEMENT  
INNOVATION

**BREIZH**  
EMR



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/ Have a project? Contact us!

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