OBSERVATOIRE DES ÉNERGIES DE LA MER

Marine renewable energy: **INVESTMENT AND JOBS** are here

REPORT #6 SUMMARY OF RESULTS - 2022 **www.merenergies.fr**

EDITORIAL

WITH THE SUPPORT OF MAJOR INDUSTRY IN THE SECTOR AND THE ADEME, THE FRENCH MARITIME CLUSTER, IN PARTNERSHIP WITH THE SER, GICAN AND FEE, CONTINUES ITS ANALYSIS OF THE FRENCH OCEAN ENERGY SECTOR WITH ITS 5TH EDITION OF THE OBSERVATORY.

At the start of 2021, our survey respondents were planning to create 1,500 jobs within a year: they have more than kept their promise with more than 6,500 jobs in the sector! Factories are stepping up their activity and construction and installation at sea is in full swing. 4 wind farms are currently under construction and the regions hosting these sites are the main beneficiaries of the resulting jobs.

To stay on target, the French government and the sector have signed a pact to reach a target in 2050 of 40 GW installed by creating 20,000 jobs by 2035. This will only be achieved if the next Pluriannual Energy Program includes at least 2 GW of tenders per year in offshore wind and the first significant tenders in tidal power.

In just a few months, the environment has changed. In a more dangerous and unstable context, Europe and France's energy autonomy is now a major collective objective. This means simplified and more ambitious planning, but also prices and specifications that call for more local content in projects. As a sailor, I am thinking in particular of providers of marine works and services. Through their charters, regional clusters are pushing strongly in this direction.

The acceleration in floating wind energy, pilot farm projects for tidal power starting up again, and progress in R&D for wave energy are opening up new perspectives. The networking of offshore pilot sites within the Open-C Foundation, with new investment and pilot sites, will support this dynamic.
In general, the overall picture is positive, driving sustainable jobs, the maritime sector and the energy transition.

FRÉDÉRIC MONCANY DE SAINT-AIGNAN
President of the French Maritime Cluster

3 KEY FIGURES IN THE SECTOR

2,2 BN OUT OF THE 2.6 INVESTED IN 2021 WERE INVESTED BY OPERATOR DEVELOPERS

In 2 years, €3.5 billion have been invested, more than all previous investment in the sector.

1,3 billion in revenues for PROVIDERS AND SUPPLIERS IN THE VALUE CHAIN

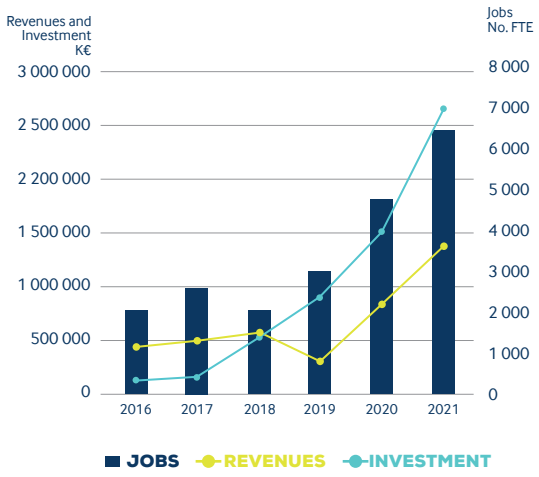
SMEs, medium-sized companies and major industrial companies have largely benefited from increased French projects with a 67% increase in revenues, representing 97% of the total industry revenues.

6 591 FTE

+36%
(+1732 FTE in 2021)

The number of direct jobs reported is continuing to grow. New jobs are created on the one hand by wind farm construction sites and on the other hand in long-term production plants. To reach the target of 20,000 jobs in 2035, just over 1,000 jobs need to be created per year: the sector is well on target.

The year 2021 began with work on the Courseulles-sur-Mer wind farm and the ramping up of activities on the other wind farms under construction, namely the installation of the first offshore foundations in Saint-Nazaire, the cabling and connection work on land in Fécamp, as well as the offshore work off Saint-Brieuc. These activities have generated a considerable increase in the number of jobs for and on these sites (+36%). An even greater increase (+82%) in investment by developers and project owners was recorded in 2021, in particular to finance the manufacture and installation of wind farm components. Wind farms under construction are generating significant investment that have a knock-on effect on revenues (+65%), confirming the importance of local content in projects. The production capacity reserved by large industrial units to supply French markets largely explains why export sales have not grown.



	Research and/ or training organisations	Developers Operators	Providers and/or suppliers in the value chain	Institutional stakeholders and port operators	TOTAL
Number of FTEs* *full-time equivalent jobs	**264** (+14%*)	**735** (+28%)	**5 530** (+39%)	**62** (+6%)	**6 591** (+36%)
2021 Revenues (k€)	**11 009** (=)	**705** (-92%)	**1 346 486** (+67%)	**24 900** (+286%)	**1 383 100** (+65%)
2021 Investment (k€)	**3 166** (-27%)	**2 223 788** (+81%)	**270 179** (+76%)	**68 520** (+4%)	**2 565 653** (+76%)
Respondents	**20** (-17%)	**17** (-15%)	**201** (-7%)	**27** (-13%)	**265** (-9%)

*% change over one year

THE MAIN COMPANIES INVOLVED IN CONSTRUCTION OF WIND FARM PROJECTS.

For each wind farm under construction, these are the companies awarded the main lots and the progress of works.

STATUS AS OF 31/12/2021

	SAINT-NAZAIRE		SAINT-BRIEUC		FÉCAMP		COURSEULLES-SUR-MER	
	Manufacturing	Installation	Manufacturing	Installation	Manufacturing	Installation	Manufacturing	Installation
Land station	Hitachi, Siemens et GE	Eiffage Energies	Hitachi et Siemens	SPIE	Hitachi et Siemens	Omexom	Siemens	Omexom
Land connection	Prysmian	Omexom et Eiffage	Nexans	Omexom	Prysmian	SPIE, Bouygues, SPAC	Prysmian	Sadertelec
Connection at sea	Prysmian	Prysmian	Nexans	Nexans	Prysmian	Prysmian	Prysmian	Prysmian
Substation at sea	Chantiers de l'Atlantique	DEME	Fabricom/ Smulders	Saipem	Chantiers de l'Atlantique	DEME	Chantiers de l'Atlantique	DEME
Foundations	Eiffage	DEME	Navantia	Van Oord	Bouygues TP			
Inter-turbine connection	Prysmian	LD Travocéan	Prysmian	Prysmian				
Wind turbines	GE Renewable Energy	Jan de Nul GE Renewable Energy	Siemens Gamesa		Siemens Gamesa		Siemens Gamesa	
Commissioning								

Completed In progress Not completed

PORT WORK has continued in connection with the construction of the wind farms, as in La Turballe and Fécamp, each of which now has an operational maintenance base for the wind farms in Saint-Nazaire and Fécamp. (The maintenance base in Caen-Ouistreham for the Courseulles-sur-Mer wind farm is currently under construction). Work is also continuing on industrial logistics, such as in Le Havre and Brest with work on the polder, or in Port-la-Nouvelle after the extension and construction of new dykes, to build a 250 m heavy-duty dock dredged to -11m with an initial adjoining 7ha platform planned to accommodate the two floating wind farm projects from 2022.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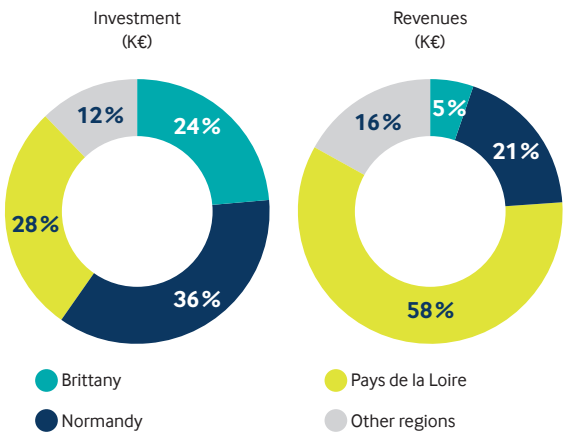
FLOATING WIND: BOOM IN INVESTMENT (194%) AND PROJECTS STARTED

➜Construction of 4 pilot farms: 1 in South Brittany and 3 in the Mediterranean
➜Launch of the South Brittany commercial tender
➜Public Debate in the Mediterranean

A VALUE CHAIN THAT BENEFITS FROM THE CONSTRUCTION OF FRENCH WIND FARMS

Until the wind farms start production, revenues are generated above all by actors in the value chain. Thus, 2/3 of the revenues of providers and suppliers in the value chain come from manufacturing activities, followed by construction and offshore operations.
Revenue distribution is primarily linked to the location of factories, which explains why the Pays de la Loire region represents 60% of these revenues, ahead of Normandy (20%). Similarly, in terms of technology, fixed-bottom wind power currently generates the most revenue (91%) ahead of floating wind (4%) which produces more (2%) than tidal power.

BREAKDOWN OF INVESTMENT AND REVENUES BY REGION



TIDAL ENERGY: TOWARDS MATURITY

A VALUE CHAIN
Factories for turbine manufacturers:
➜CMN (Cherbourg) pour Hydroquest
➜Relay workshop (Brest) for Sabella

Subcontractors:
➜Referencing of SMEs for Normandie Hydroliennes (Simec joint venture)
➜Many French suppliers such as CDK Technologies, Efinor, ENAG, FMGC, Chantier Bretagne Sud, Schneider Electric and others are already active in the sector.


© Hydroquest

PILOT PROJECTS:
NEPTHYD in Raz-Blanchard (12 MW): 4 x 3MW turbines (AR3000) led by Normandie Hydroliennes (alliance of the agency AD Normandie with the British turbine manufacturer, SIMEC Atlantis Energy, and EFINOR in Cherbourg)

FLOWATT in Raz-Blanchard (17.5 MW): commissioning planned for 2025, led by Hydroquest and Qair Marine. The construction of OceanQuest has generated 50 FTEs in CMN's Cherbourg factory.

Two Sabella projects: one off the island of Usshant, and the other in the Gulf of Morbihan, which will see the deployment of two tidal turbines (in January 2021, GE Renewable Energy will provide the innovations from Océade technology).

2021 KEY FIGURES

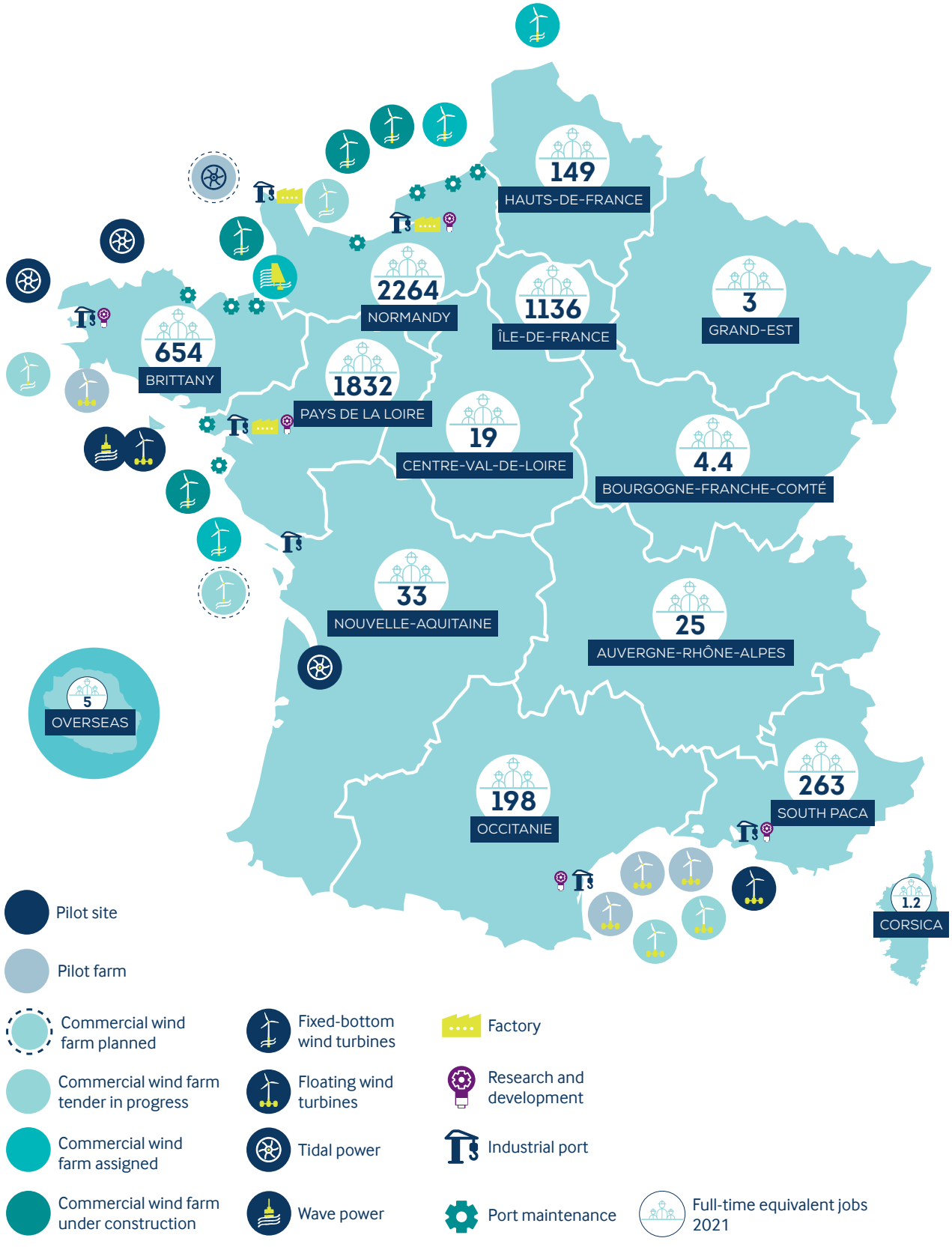
143 FTES total in the sector
€7.1 M revenues (+ 86%)
€3.9 M invested

A partnership foundation for pilot sites

French test sites have decided to join forces to form a partnership foundation called Open-C. It will enable better coordination between the Paimpol-Bréhat, Saint-Anne-du-Portzic, Semrev au Croizic and Seeneoh sites in Bordeaux, as well as the construction of Mistral off the coast of Fos-sur-Mer, in partnership with France Énergie Marine. Public and private backing will strengthen R&D at the pilot sites, an essential step in reducing costs and certifying technologies.

JOBS LINE UP!

NORMANDY TAKES THE LEAD IN JOB CREATION, AHEAD OF PAYS DE LA LOIRE WHERE GROWTH CONTINUES



In our last report, companies were planning to create 1,500 additional jobs in 2021: a forecast that was met, and even exceeded! Although France is just beginning to install wind turbines on its first commercial farm, the industry already employs more than 6,500 people, up 35% year on year. This year, Normandy has seen the most jobs in marine renewable energy, with 34%, ahead of Pays de la Loire, with 28% of the total. In Normandy, the GE Renewable Energy factory (LM Wind Power) in Cherbourg has been running at full capacity while the Siemens Gamesa renewables (SGRE) factory in Le Havre, inaugurated in spring 2022, has started hiring. Other jobs come from the construction sites of wind farms, specifically the foundations of the Fécamp wind farm. There has also been an increase in jobs in Brittany, South-PACA and Occitania, which are strengthening their industries often due to floating wind projects. Job creation is therefore based on the presence of a lasting industrial base (factories), a sector ecosystem and the wind farms being built off its coast.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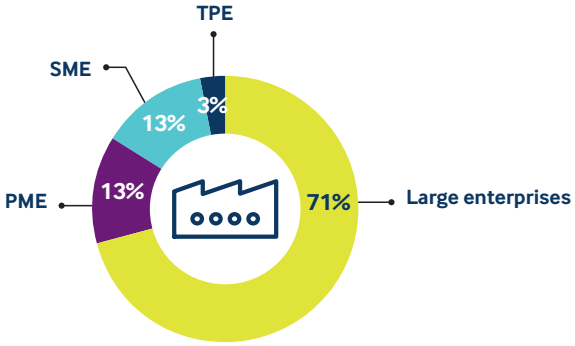
TIGHT JOBS MARKET IN A SECTOR THAT IS HIRING

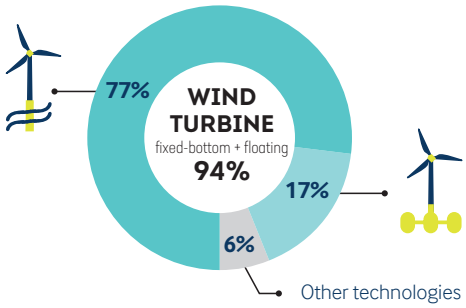
35% of the companies that answered the "value chain" questionnaire reported recruitment difficulties. Of the 49 different jobs listed, the top 10 are: welder, boilermaker, electrician, methods technician, pipe fitter, offshore wind turbine maintenance technician, mechatronics technician, quality specialist, electronics technician and painter. Engineers are also often cited in many specialties. The upcoming commissioning of wind farms will lead to the deployment of operation and maintenance activities and associated jobs: quality inspections, commissioning, maintenance, etc.
The regions have created "employment/training" working groups in MRE professions. Other initiatives exist: for example, the Training Center, opened in October 2021 in Le Havre for factory operators (a joint UIMM, AFPA, SGRE project) and mechanical fitters (UIMM, GE renewable), and training for maintenance technicians in partnership with the secondary schools in Fécamp and Loudéac as well as UIMM and SGRE, and at the IUT in Saint-Nazaire.

JOBS DRIVEN BY MAJOR WIND ENERGY COMPANIES

BREAKDOWN OF JOBS AT PROVIDERS AND SUPPLIERS IN THE VALUE CHAIN



BREAKDOWN OF JOBS BY TECHNOLOGY



A PACT FOR THE SECTOR AND FOR JOBS!

In the "Offshore Wind Energy Pact" signed with the Government, the industry - represented by the Renewable Energy Union, France Energie Eolienne and the Strategic Committee for New Energy Systems - has committed to creating 20,000 jobs in France by 2035 and "by 2035 to achieve up to 50% local content in project costs, at the time of commissioning, for each offshore wind project". The State is committed to achieving the target of 40 GW installed in 2050 with a minimum allocation rate of 2GW/year, which will be planned in the next PEP (pluriannual energy programme).

In addition and in order to promote the local economy in projects, the French clusters and groups of companies Aquitaine Blue Energies, Bretagne Ocean Power, Neopolia, Normandie Maritime and Wind'Occ, have signed a charter of commitment with the candidates in future calls for tenders for fixed-bottom and floating offshore wind power with the aim of including actors in the value chain (tier 1, 2 and below)

265 respondents: a figure slightly down (-7%) on 2021, particularly among providers and suppliers of the value chain.

AS EVERY YEAR, OUR RESPONDENTS ARE DIVIDED INTO 4 CATEGORIES BASED ON THEIR ROLE IN THE INDUSTRY:

201

217 IN 2020
205 IN 2019 **138** IN 2018

PROVIDERS AND/OR SUPPLIERS IN THE VALUE CHAIN

This slight decrease can be explained in part by a considerable number incoming and outgoing VSEs/SMEs linked to the past market and mobilization variability.

17

20 IN 2020
15 IN 2019
15 IN 2018

DEVELOPERS / OPERATORS OF PLANNED COMMERCIAL OR PILOT FARMS

Slight decrease due to changes in category or grouping of players; 17 developers is already almost complete

20

23 IN 2020
32 IN 2019
19 IN 2018

PUBLIC RESEARCH AND/OR TRAINING ORGANISATIONS

27

30 IN 2020
39 IN 2019
28 IN 2018

INSTITUTIONAL STAKEHOLDERS AND PORT OPERATORS

Relative stability in institutions and ports whose number is not likely to vary with the economic situation.

THE MARINE ENERGY OBSERVATORY aims at bringing together support for the marine renewable energy sector and helping to build a national consensus around the development of this sector. It was created by the French Maritime Cluster (CMF), working closely with the Syndicat des Énergies Renouvelables (SER), the Groupement des Industries de Construction et Activités Navales (GICAN) and France Energie Eolienne (FEE). Backed by ADEME (the French Environment and Energy Managemenyt Agency), it is accompanied by key players in the sector.

Answers were collected with the support of our partners as well as by regional actors (Clusters – Normandie Maritime, Bretagne Ocean Power, Neopolia, Aquitaine Blue Energie, Wind'Occ –, Development Agencies -Ad'Occ, Solutions&Co, BDI –, Pôles Mer, CCI Business) whom we would like to take this opportunity to thank.

Our data come from spontaneous responses to the online questionnaires and reminders (mainly targeted at new Tier 1 and Tier 2 providers). The published data represent around 90% of reality in the sector and include all the main contributors. All the data is checked and corrected for any obvious anomalies.

The Observatory is developed by C2Strategies and Bluesign and is led by Christophe Clergeau, Marc Lafosse and Etienne Pourcher.

You can download the full report at **www.merenergies.fr**

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Cluster Maritime Français
Cap sur la croissance bleue

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