

THE MARITIME ECONOMY

DEFENCE, INDUSTRY, RESEARCH: THE CORNERSTONES OF FINISTÈRE'S MARITIME ECONOMY

#1 | September 2026

OBSERVATORY | Analysis note



Credit: Alexandre Lamoureux - Tourisme Bretagne

42,064
maritime jobs
in Finistère in 2024



+0.1%
between 2019 and
2024, representing
33 additional jobs

Defence, shipbuilding and ship
repair, seafood products,
higher education and
maritime research
represent:

84% of all
jobs in Finistère's
maritime economy



2,833 marine
science research
publications produced
in Brest between 2023
and 2026

22st in the world

UBO in 14th place
in the Shanghai Ranking
for oceanography in 2025



€180 million
raised by innovative
maritime companies
since 2009

230 innovative
maritime companies
in 2026



165 patents filed
by innovative maritime
companies since 2010

300 jobs in
the field of maritime
drone technology



The maritime economy is a key pillar of Finistère's economic ecosystem, accounting for 42,064 jobs in 2024 – 11% of total employment – which is twice the regional average.

Four sectors account for the bulk of economic activities: defence (39% of jobs), shipbuilding and ship repair (22%), seafood products (17%) and research (6%).

Between 2019 and 2024, the trend remained stable, with a 0.1% increase in employment. Significant losses recorded in the seafood sector were offset by growth in the shipbuilding industry, driven by defence requirements. This trend mainly benefits the Brest area, while Cornouaille is experiencing a more pronounced decline.

The scientific ecosystem, which is highly effective thanks to partnerships between different organisations, fosters dynamic innovation. 230 innovative companies operate in the maritime sector. Since 2009, these companies have raised €180 million and filed 165 patents. In particular, the use of drones at sea and marine renewable energy offer opportunities in terms of jobs, innovation and the green transition.

Over 42,000 maritime jobs in Finistère

As of 31 December 2024, Finistère had 42,064 maritime jobs, accounting for 11% of total employment in the region: twice the regional average (5%).

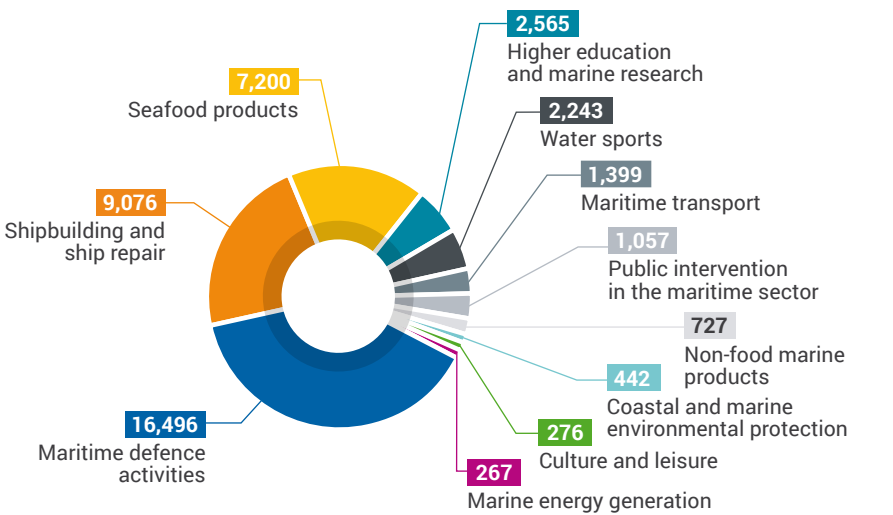
The Brest and Cornouaille areas account for nearly 90% of these jobs. Within this region, Brest métropole and the Crozon peninsula account for 72% of maritime jobs. This concentration is largely due to the significant share of defence-related activities. Indeed, the French Navy, the main player in this field, is the largest employer in the Brest area. In the Concarneau district, there are more than 2,000 maritime jobs, mainly in the shipbuilding and ship repair sectors and seafood industry.

The Morlaix area accounts for 10% of maritime jobs in Finistère. The Landivisiau area intermunicipality accounts for nearly half of these jobs (47%) due to the presence of the Landivisiau naval air base, which is the area's largest maritime employer and the second-largest across all sectors, behind Morlaix Hospital (with around 3,000 employees). In the Haut-Léon local authority area (33% of maritime jobs), the presence of Brittany Ferries accounts for the dominance of the maritime transport sector. Finally, the Morlaix local authority area accounts for 20% of maritime jobs in the Morlaix area.

In sectoral terms, the defence sector accounts for over 39% of maritime jobs in Finistère, representing around 16,500 posts.

Shipbuilding and ship repair account for over 22% of jobs, driven by major companies such as Thales, Naval Group, Ariane Group and Chantiers Piriou.

Figure 1 – Breakdown of jobs by maritime sector in Finistère in 2024



Source: Agences de développement et d'urbanisme & réseaux des CCI de Bretagne; Data processing by ADEUPa by ADEUPa

The seafood industry (17% of maritime jobs) is structured around the upstream sector, comprising more than 2000 fishers and aquaculturists, and the downstream sector, which concerns processing. The latter mainly comprises agri-food companies, including Conserverie Chancerelle in Douarnenez and Meralliance Armoric in Quimper.

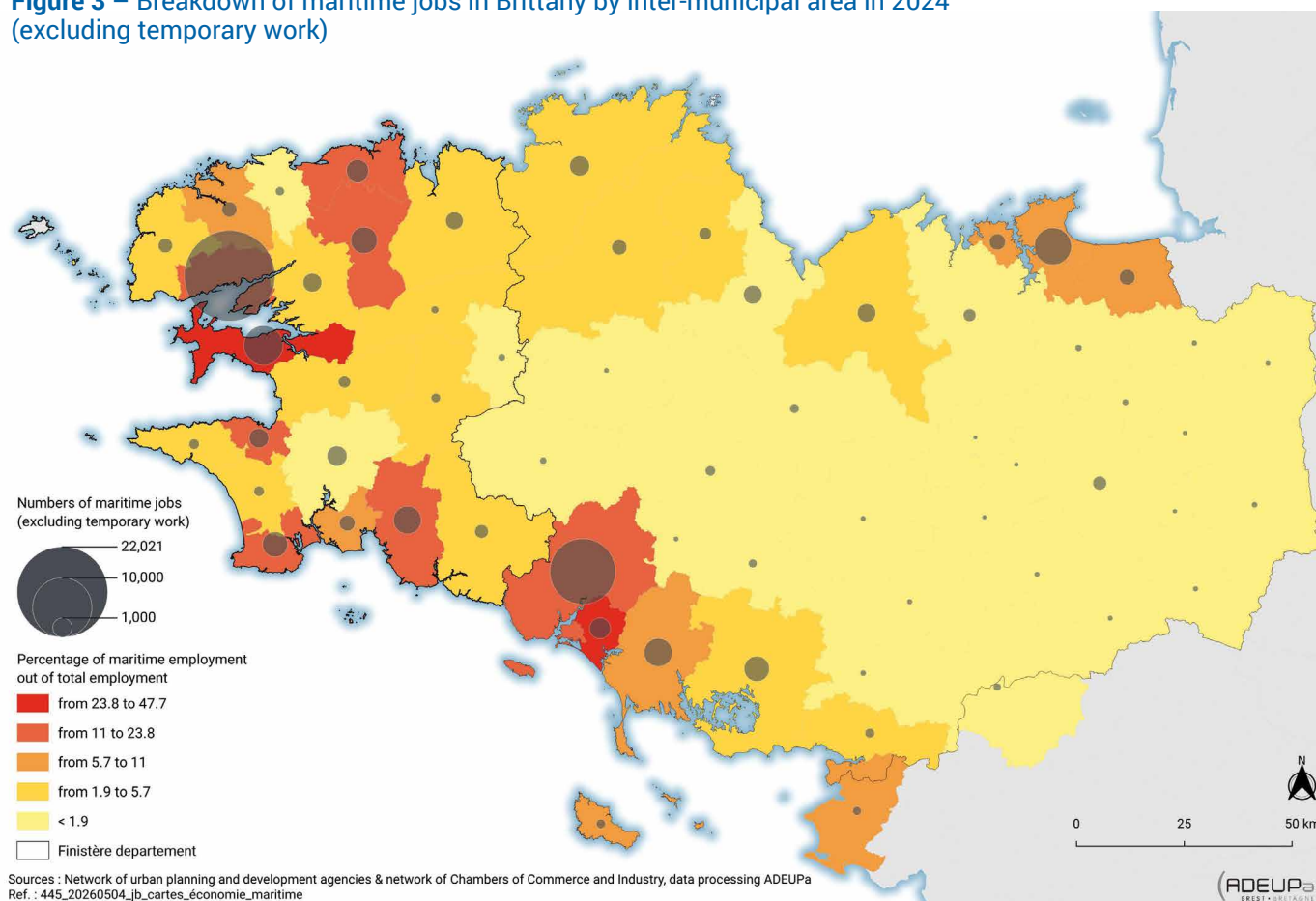
Higher education and marine research account for more than 2,500 jobs, representing 6% of maritime jobs, and help to shape the maritime economic fabric of Finistère. The Institut Français de Recherche

pour l'Exploitation de la Mer (IFREMER - French Research Institute for Exploitation of the Sea), a national institute which established its headquarters in Plouzané in 2018, is the largest employer with over 800 staff, to which can be added the workforce of Génavir (369 staff), which operates the vessels of the French ocean-going research fleet. Other major organisations include the Roscoff Biological Station, which is affiliated with Sorbonne University and the CNRS, and the IUEM, an internal school of the University of Western Brittany, based in Plouzané and involving the CNRS, IRD, IFREMER and the UBS.

Figure 2 – The main maritime employers in Finistère in 2024

Establishment, company or organisation	Area	Maritime sector	Number
Brest-Lorient Defence Base	Brest, Morlaix and Cornouaille areas	Maritime defence activities	16,478
Naval Group	Brest area	Shipbuilding and ship repair	3,300
Thales DMS France SAS	Brest area	Shipbuilding and ship repair	1,750
IFREMER	Brest area	Higher education and marine research	804
Brittany England Ireland – Brittany Ferries	Morlaix area	Maritime transport	613
Service hydrographique et océanographique de la marine (SHOM - Naval Hydrographic and Oceanographic Service)	Brest area	Public involvement	548
Conserverie Chancerelle	Cornouaille area	Seafood products	504
ENSTA	Brest area	Higher education and marine research	437
Chantier Piriou	Brest and Cornouaille areas	Shipbuilding and ship repair	444
Institut universitaire européen de la mer (IUEM - inc. UBO, CNRS, IRD)	Brest area	Higher education and marine research	414

Figure 3 – Breakdown of maritime jobs in Brittany by inter-municipal area in 2024 (excluding temporary work)



METHODS

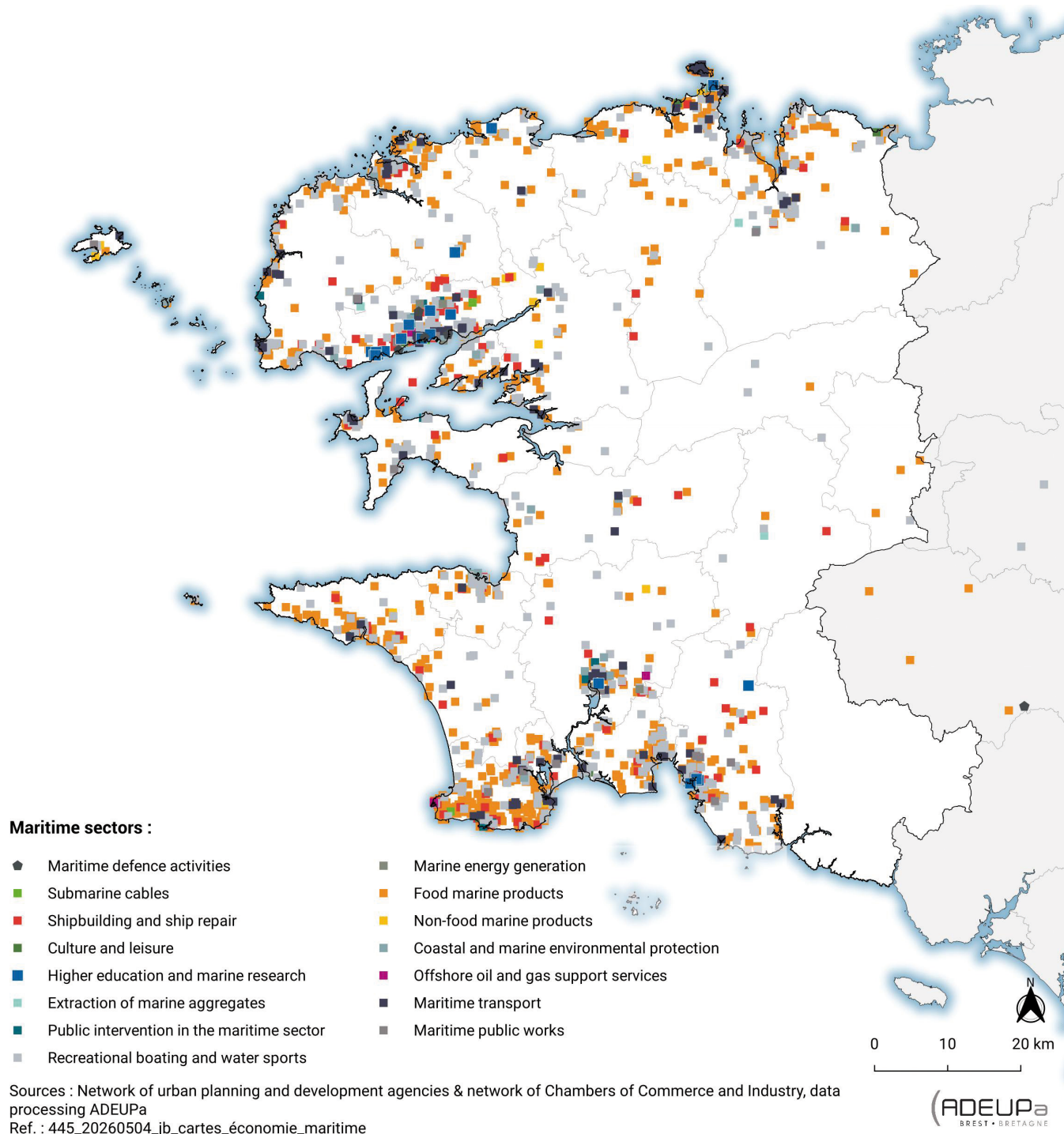
What do we mean by the maritime economy? If we ask ourselves the question: 'What economic activities could not exist without the sea?' It defines what is part of the maritime economy. Therefore, to be part of the maritime ecosystem, a company must need the sea for its business. This is, for example, the case for a company providing maritime freight transport. However, a company that uses the latter's services to export its products internationally would not be included. Furthermore, some educational institutions have a partial maritime focus, such as ENSTA, an engineering school and research institution. A large part of its activity is linked to the maritime sector, but it also operates in the automotive, energy, digital and aerospace sectors, among others. To decide on these partly maritime activities, a threshold was set. Only those establishments in which at least 25% of their activity depends on the maritime economy are included in the figures (based on expert opinion and/or a consultation with the establishment). This threshold was inspired by competition law, which defines the concept of economic dependence. ENSTA was selected because more than a quarter of its activities are related to the marine environment.



Credit: Seaowl

The context of intense geopolitical tensions and global rearmament explains the growth in employment in the shipbuilding and ship repair sector.

Figure 4 – Maritime sector organisations in Finistère by sector (2024 figures)



Trends in maritime employment in Finistère: a picture of two realities

Between 2019 and 2024, employment in the maritime sector remained broadly stable in Finistère (+0.1%, representing 33 additional jobs). This growth is significantly lower than the regional average, which stands at +2.8%. However, depending on the area analysed, the trends observed may vary significantly.

The main change concerns the seafood sector, which saw a sharp fall of more than 1,600 jobs over the period. This decline primarily touches the upstream part of the sector, with a loss of around 500 jobs in the fishing industry. Since 2020, French fishing effort has been gradually declining, driven by a combination of successive shocks (Brexit, fuel prices, the health crisis, etc.) and regulatory changes (the West Med multiannual fisheries plan, spatio-temporal closures, specific restrictions, etc.), alongside a reduction in fleet capacity.

These changes had a particularly significant impact on the Cornouaille area, which appears to be the area most affected by these job losses.

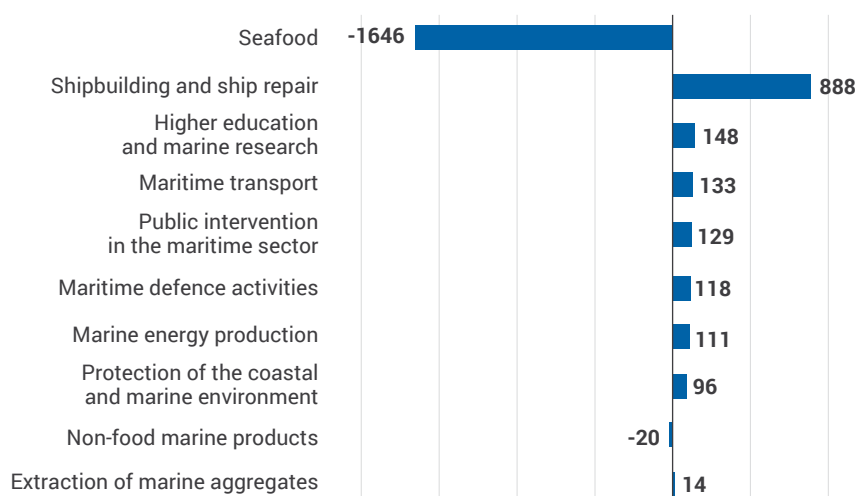
The context of intense geopolitical tensions and global rearmament explains the growth in employment in the shipbuilding and ship repair sector, with more than 800 jobs created. This development primarily benefits the Brest area, with the creation of nearly 650 jobs, but also the Cornouaille area, with 240 additional jobs. Between the two assessments, Brest's long-established companies in this sector have significantly increased their workforce (with 500 new jobs at Naval Group and 210 at Thales).

Although the growth has been more modest, the higher education and marine research sector has expanded slightly, with nearly 150 additional jobs created over the past five years. This growth is primarily attributable to Genavir, a research-support organisation operating the oceanographic fleet based in Plouzané. This increase has brought employment levels back to a figure similar to that seen in 2016.

The maritime transport sector has shown positive growth over the period. For example, we are seeing the emergence of innovative players, such as Grain de Sail Shipping, based in Morlaix, which is using carbon-free freight transport solutions.

Other sectors of the maritime economy are also showing positive trends, albeit on a more modest scale. This is the case with marine energy generation, where the growing involvement of industry and regional authorities is beginning to have an impact on employment. Conversely, non-food marine products have seen a slight decline. The slight fall in staff numbers at Lessonia in Saint-Thonan illustrates this trend.

Figure 5 – Key trends in maritime employment by sector in Finistère between 2019 and 2024 (excluding aquaculture)



Source: Network of development and town planning agencies and Chambers of Commerce and Industry (CCI) in Brittany, Dirm Namo, Agreste; Data processing by ADEUPa

While maritime employment is on the rise in the Brest area: a 3.9% increase, representing 1,105 additional jobs, thanks to the dynamism of the shipbuilding and ship repair sector, particularly in relation to defence, the trend is less favourable in the rest of the Finistère department. Thus, the Morlaix area and, to an even greater extent, the Cornouaille region experienced employment contractions of -2.1% and -11.8%, respectively. In the latter area, the maritime economy relies more heavily on the seafood sector, which has faced significant difficulties, as mentioned earlier.

Jobs are predominantly held by men, with fewer older workers

In Finistère, 71% of maritime jobs are held by men and only 29% by women, compared with 48% jobs held by women in the workforce as a whole. However, this rate remains higher than that seen in certain sectors such as construction (11% women) and is similar to those in manufacturing (31%) and agriculture (30%).

However, the feminisation of jobs varies among areas, reflecting local economic characteristics. The Brest area, for example, has 7% of women in the maritime workforce, putting it lower than the regional average of 29%. The strong presence of the defence sector, along with shipbuilding and ship repair activities, contributes to a higher proportion of male employment.

Conversely, the areas of Central-Western Brittany, Cornouaille and Morlaix have rates higher than the regional average. In the Morlaix area, the maritime economy is characterised by the presence of research and maritime transport, sectors in which women account for a slightly higher proportion of the workforce. In Central-Western Brittany and Cornouaille, the significant role played by the agri-food industry – particularly in relation to seafood, a sector with a high proportion of female workers – contributes to female employment rates that are significantly higher than the regional average.

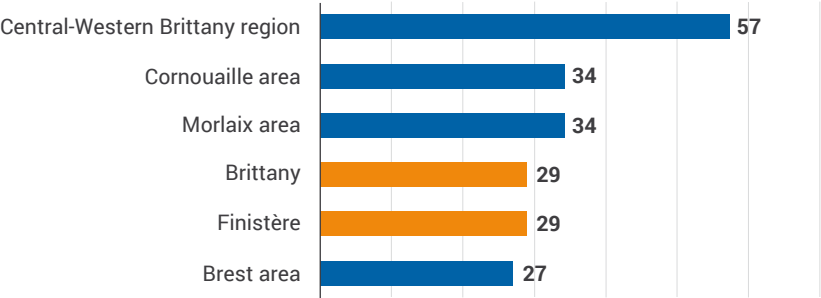
At departmental level, less than 4% of maritime jobs are held by workers aged over 59, compared with 6% across all sectors. Conversely, workers under the age of 30 account for 28% of jobs in the sector, compared with an average of 20% across the entire workforce. Consequently, the maritime sectors appear to be less affected by the issue of generational renewal than other sectors of the economy.

This is the case across all areas of Finistère, except Central-Western Brittany, as well as in the main maritime sectors. The defence sector is particularly characterised by a younger workforce, due to the specific operational requirements of the French Navy. The figures for shipbuilding and ship repair, on the other hand, may come as a surprise: fewer than 4% of jobs in these sectors are held by people aged over 60. This low proportion can be partly explained by the early retirement schemes available to employees who, during their working lives, were exposed to the risks associated with asbestos.

These overall trends mask significant disparities across different sectors. Stakeholders in the industrial sectors, faced with a need for manual labour, regularly report recruitment difficulties. A similar trend can be observed in certain specific occupations, such as that of fishers.

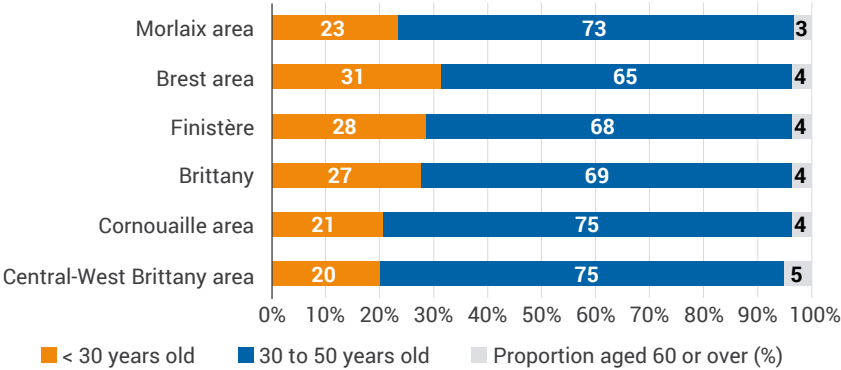
Several organisations have set themselves the task of promoting maritime careers and encouraging a more diverse range of profiles within the sector. The Campus National des Industries de la Mer (CINav - National Campus for Maritime Industries) supports industry stakeholders in the sector not only by making these careers more attractive, but also through training. Another organisation, La Touline, founded in 1989 at the height of the crisis in the fishing industry, works to promote maritime careers and lifelong vocational training. For its part, the Women's International Shipping and Trading Association (WISTA) France, the French branch of the international WISTA network, brings together women in leadership roles within the maritime sector to promote a greater representation of women in maritime professions.

Figure 6 – Proportion of women in maritime jobs by area of Finistère



Sources: Insee, Flores 2022, all-employee database 2022, self-employed database 2022, defence base administrative dataset; data processing by ADEUPa

Figure 7 – Breakdown of maritime jobs by age group and area of Finistère



Sources: Insee, Flores 2022, all-employee database 2022, self-employed database 2022, defence base administrative dataset; data processing by ADEUPa



Credit: Pierre-François Watras - Brest metropole

Research and innovation: an inseparable pair in the blue economy

A maritime region par excellence, Finistère benefits from an exceptional ecosystem in which scientific research and innovation reinforce one another. In an international context characterised by increased competition in marine sciences – driven particularly by China and new emerging centres – the Brittany research cluster continues to play a leading role. Brest and Roscoff continue to make a name for themselves thanks to the excellence of their research.

This academic strength is also a key driver of economic development. In sectors such as marine biotechnology, marine renewable energy, and naval and digital technologies, local businesses are turning knowledge into innovations that address today's major challenges: the energy transition, food security, decarbonising transport, ocean conservation and maritime safety.

With nearly 230 innovative maritime companies, more than 14,000 jobs, a dynamic network of start-ups, some of which have emerged from public research, and recognised capabilities in technology transfer, organisations in Finistère are reaffirming their role as a driving force behind French maritime innovation. Backed by world-class scientific infrastructure and key support measures, this ecosystem demonstrates the region's ability to make the sea a source of knowledge, a space for experimentation and a driver of value creation. The field of maritime drone technology, discussed later in this publication, illustrates these links between the worlds of research, education and industry.

Scientific research that maintains its standing faced with increased international competition

The international context of marine science research has been characterised by a number of changes in recent years (2023–2026). The rise in Chinese scientific output has accelerated (with China occupying four of the top five places worldwide). Indeed, this region is home to the only sites worldwide where scientific output is higher than in the previous period (2019–2022). At the same time, momentum has slowed in most marine research centres outside capital cities (Woods Hole, Kiel, Southampton, Hobart, Hamburg, Halifax, Plymouth, etc.). A paradigm shift is evident with the emergence of new leading centres, whose specialisation in marine sciences is becoming increasingly established: Xiamen, Trondheim, Exeter or Naples, but above all a group of regions that reveals a certain concentration in the south (Rio de Janeiro, Lisbon, Porto, Istanbul, etc.).

Against this backdrop, Brest is holding its own and maintaining its publication momentum (ranked 22nd in the world, ahead of Woods Hole, Trondheim and Southampton, among others), although the general slowdown in output (excluding sites in China and Istanbul) is also affecting this leading Breton centre. One possible explanation for this relative resilience could be the density of Brest's international network and its collaborative links with stakeholders in the emerging locations in the south mentioned above.

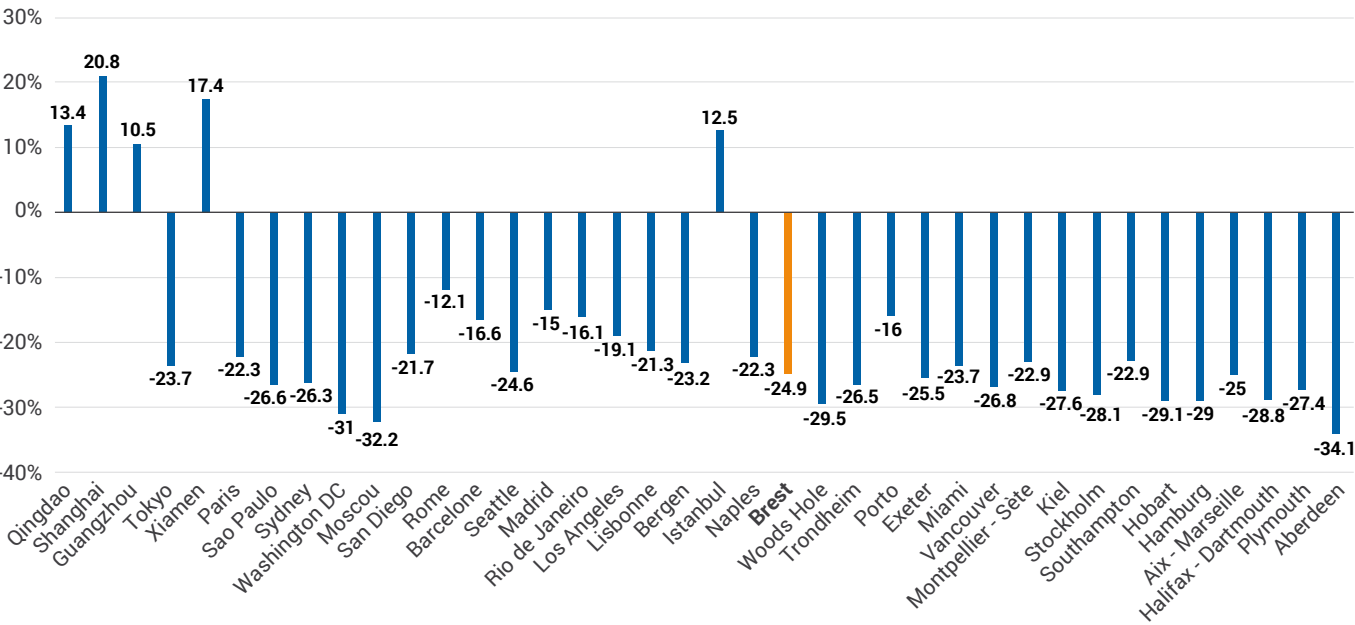
In terms of subject matter, recent marine scientific output is organised around four recurring fields: oceanography, marine biology, geosciences and environmental sciences. In the extreme west of Brittany (Brest and Roscoff), the key research areas continue to reflect the strongly academic nature of the research. We can also mention Brest's research output in the atmospheric sciences, ecology and certain engineering disciplines. Chinese publications are notable for their strong presence in engineering and materials science. The growth of the new sites is driven to a significant extent by engineering sciences (Istanbul), but also by biochemistry, ecology, and fisheries and food sciences and technologies, as well as zoology and the sciences of biodiversity and conservation (Rio de Janeiro, Porto).

UBO has also regained its position in the Shanghai Ranking for oceanography: 14th in 2025, 12th in 2024, following its 5th place in 2023, which was clearly attributable to the One Ocean Summit held in Brest in 2022. As regards individual performance, one can refer to the Stanford ranking, which lists the world's most cited scientists each year. For the year 2025, 33 researchers from the Brest area have been recognised, including 11 working in the field of marine sciences.



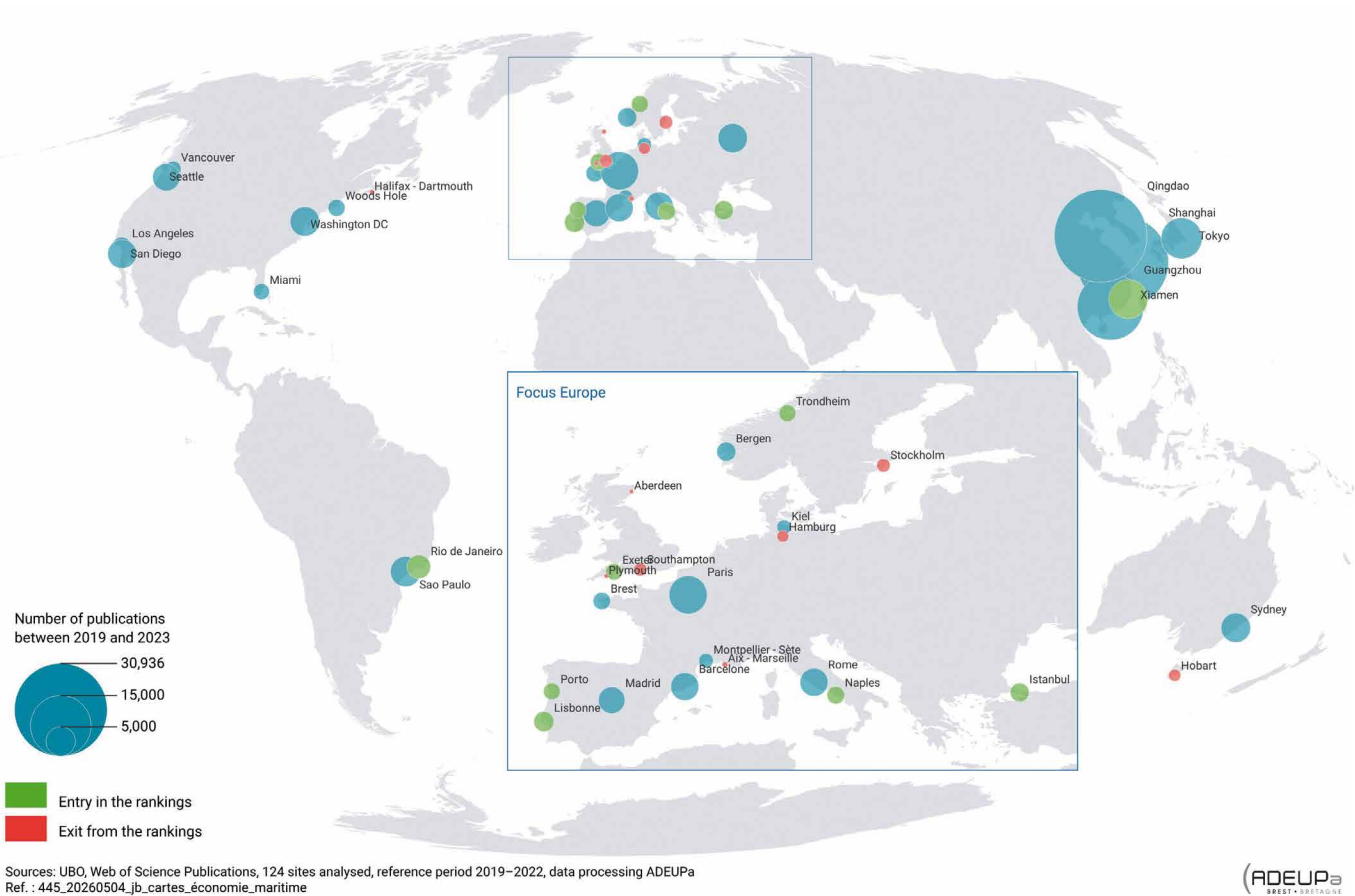
A maritime region par excellence,
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Figure 8 – Trends in publications from the world’s leading marine science institutions
 (growth in the number of Web of Science publications between the periods 2019–2022 and 2023–2026)



Source: UBO

Figure 9 – The top 30 institutions worldwide publishing in the marine sciences between 2023 and 2026



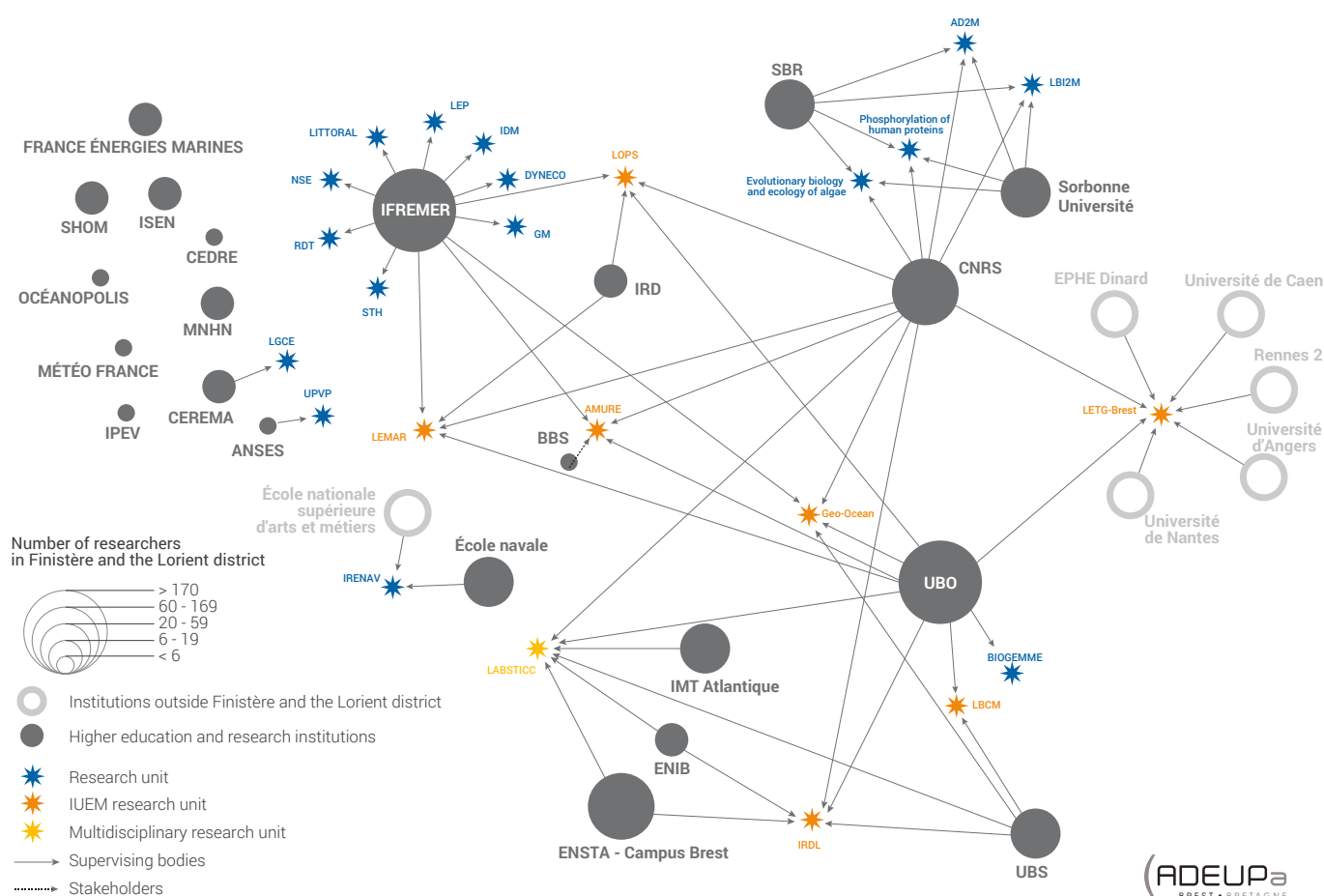


METHODS: ESTIMATING MARINE SCIENTIFIC OUTPUT

The survey of publications was carried out using a spatialised bibliometric approach based on the Web of Science database. Scientific publications from each geographical area were identified using a combination of two types of equations: one based on the names of research institutions and the other on research topics. This approach enables a cross-disciplinary approach to public research in marine science and technology and a better international comparability. This survey was carried out in 2026 and covered 124 sites worldwide, in accordance with the parameters described in: Charles K., Marine science and blue growth: Assessing the marine academic output of 123 cities and territories worldwide, Marine Policy, Volume 84, October 2017, Pages 119–129 (DOI: 10.1016/j.marpol.2017.07.016).

Charles K. & Charles E., "Quels rôles pour les activités de recherche scientifique dans une stratégie de développement territorial ? Les cas de Brest (France) et Bergen (Norvège)", Revue d'économie régionale & urbaine, 2020/3 (Mars), p. 409–436 (DOI: 10.3917/reru.203.0409).

Figure 10 – Research units in the field of marine and coastal studies



The maritime economy: a source of innovation in Finistère

For many businesses in Brittany, the marine environment has historically served as a laboratory and a source of ideas and projects to address economic, environmental and social challenges. Innovation can take various forms: product, service or usage innovation; process or organisational innovation; technological or social innovation; etc.

Four out of ten innovative companies active in 2026 are in the maritime sector.

The maritime economy for blue growth, at the heart of regional strategy

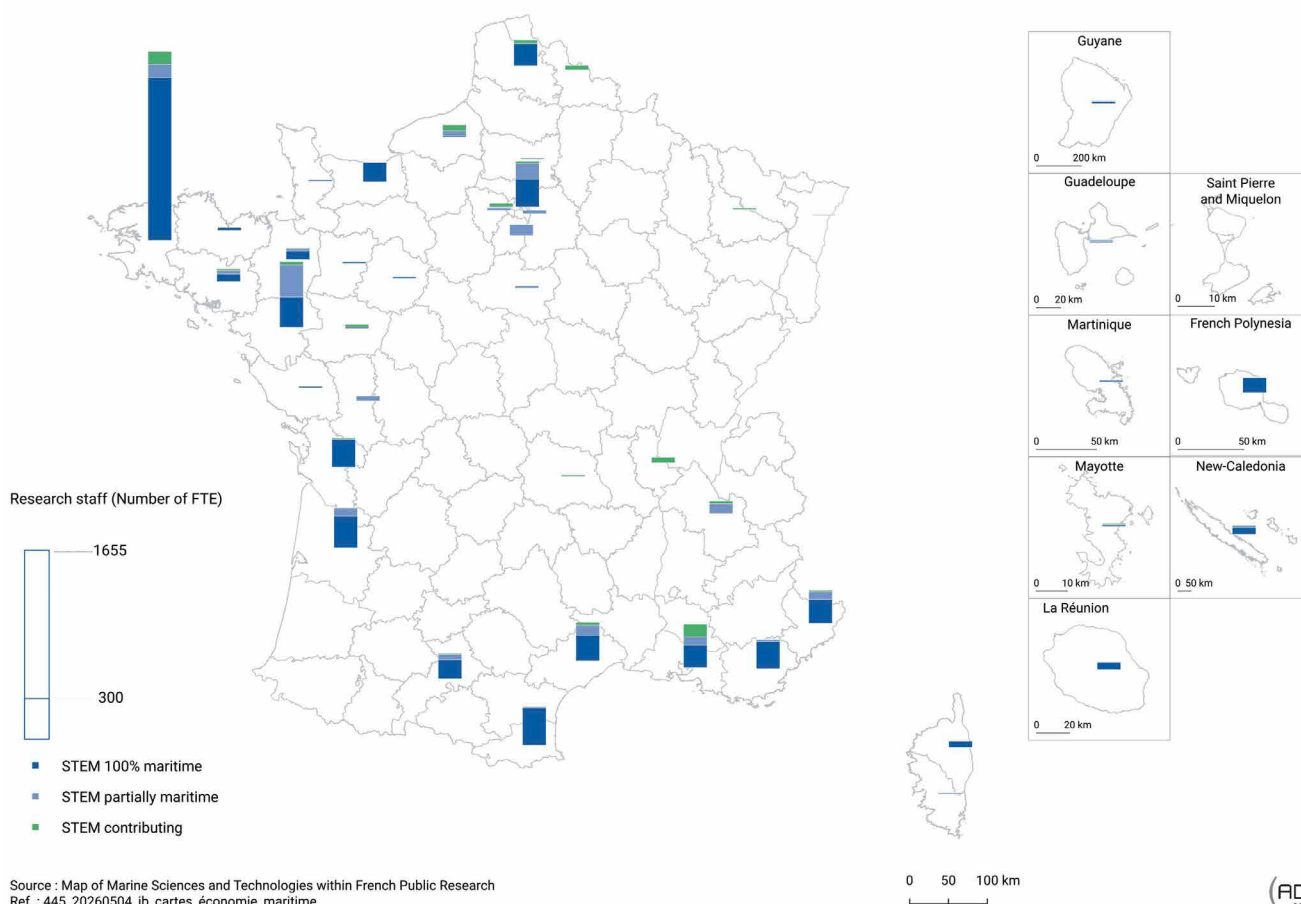
Brittany's regional research and innovation strategy 2021–2027 identifies the maritime economy as one of six strategic areas of innovation in which Brittany has outstanding strengths at the international level. Six thematic areas have been identified:

- Marine renewable energy;
- Marine bioresources and biotechnologies;
- Vessels of the future;
- Ports, logistics and maritime transport;
- Maritime safety;
- Environment, ocean health and coastal management.

Although Brittany is not the only region in France that has marine resources and can draw on them as a source of innovation, it is able to capitalise on its exceptional potential through the diversity of its maritime activities, its scientific research and development capabilities, and its commitment to cooperation.

As well as being of regional significance, the maritime economy is inextricably linked to the strategy and planning documents of local authorities in Finistère. One example is the strategy of Brest métropole, placing the maritime sector at the heart of its economic development strategy by building on a wide range of traditional activities such as defence and maritime transport, as well as sectors with high growth potential (drones, space, marine energy, etc.). The Pays des Abers intermunicipality, which is situated near Europe's largest seaweed bed and is home to two industrial seaweed processing companies, has naturally focused its efforts on preserving this resource and supporting the entire sector. Marine biomass, from a biotechnology perspective, is also a shared focus for, notably, the Morlaix and Haut-Léon local authorities.

Figure 11 – Number of marine science and technology researchers by department in 2020



230 innovative maritime businesses in Finistère

Four out of ten innovative businesses operating in Finistère in 2026 belong to the maritime sector. They develop products, processes, technologies or services based on the use of marine resources or for applications relating to the coast and the oceans. They develop products, processes, technologies or services based on the use of marine resources or for applications linked to the coast and the oceans. These projects help to create solutions in response to environmental and social challenges (e.g. decarbonising maritime transport, food and energy independence, and adapting to climate change).

These 230 innovative maritime companies employed 14,070 staff at the end of 2025. Apart from a few major employers such as Thales, Naval Group and Brittany Ferries, the majority are small or medium-sized companies. They may be part of groups with domestic or even international capital (JRS Marine Products, Gilbert, Exail, Sercel, Thai Union, etc.).

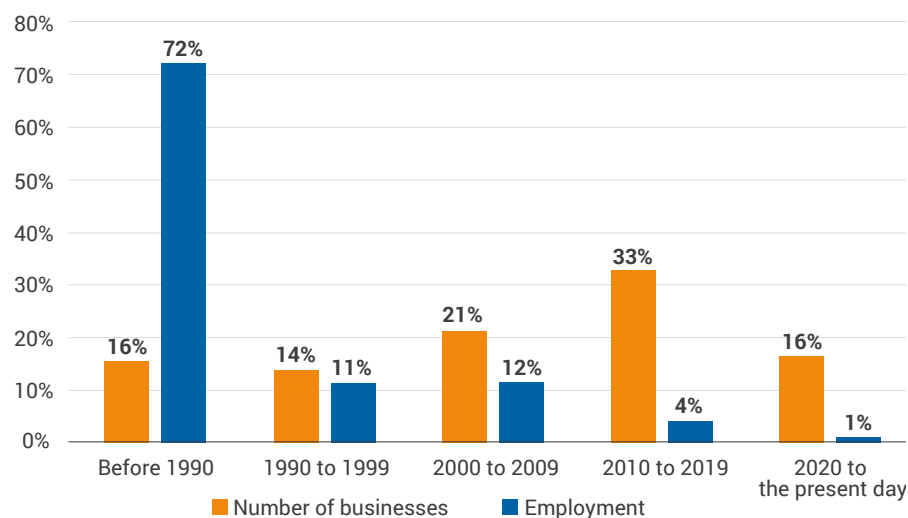
Indeed, some start-ups created in Finistère have been bought out at some point during their lifetime. For example, Quiet Oceans, based in Plouzané and specialising in the assessment of the impact of ocean noise, was acquired by CLS in 2024; the Brest-based engineering consultancy Actris, which specialises in electronics and embedded systems, was acquired by the German group Aeromarine Engineering in 2025; Mappem Geophysics, based in Saint-Renan and specialising in marine and subsea geophysical surveys and services, joined the Seavorian Group in 2025.

455 jobs in start-ups less than 15 years old

Half of these innovative maritime businesses were set up since 2010, which highlights the relative youth of the local business ecosystem. Among the most recent start-ups are ventures as diverse as Venturix in Landévennec (floating wind turbines), Maari in Roscoff (aquaculture), 52 Hertz in Brest (underwater communication), Fairscope in Saint-Martin-des-Champs (underwater imaging), BladeSense (wind power) in La Forêt-Fouesnant and Armen Initiative (a shipyard) in Audierne.

However, in terms of employment, it comes as no surprise that it is the companies historically established in the region that employ the vast majority of the workforce contributing to maritime innovation. In total, innovative maritime companies established since 2010 employ 710 staff in western Brittany. Some of these companies have more than 15 employees, such as Entech in Quimper (energy), Foil and Co in Pencren (manufacture of composite parts for water sports), France Énergies Marines in Plouzané, Quiet Ocean in Plouzané and Ino-Rope in Concarneau (marine ropes and fittings).

Figure 12 – Distribution of innovative maritime businesses in Finistère, by number and number of jobs in 2025, according to the period when they were established*



Source: ADEUPa

* Note: 12% of the innovative companies were established before 1990 and account for 75% of the jobs identified.

Strong service-sector orientation among start-ups

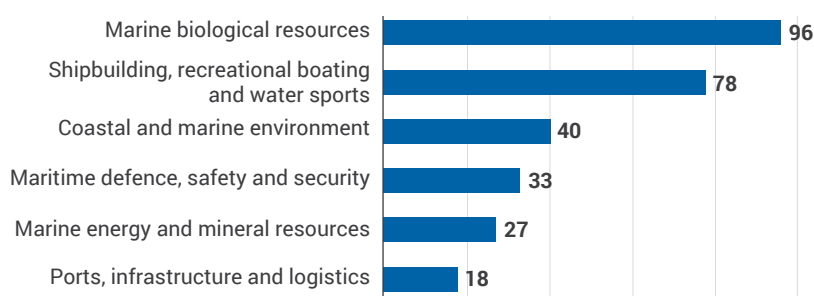
50% of innovative maritime businesses are involved in manufacturing, either in the fisheries and aquaculture sector or in industry (seafood processing, cosmetics manufacture, metalworking, electronic component and circuit board manufacture, shipbuilding and ship repair, etc.). They employ eight out of ten employees. In other cases, these are service companies, particularly those involved in engineering, consultancy and digital services. The vast majority of businesses established in the last 15 years are service-oriented.

Maritime innovation often lies at the intersection of different sectors, such as the maritime sector and healthcare, maritime and digital technology, the maritime and space, and the maritime and food.

The coming years will offer opportunities for innovation and value creation across a wide range of areas, such as:

- Maritime defence and security, given the geostrategic challenges and the strategic functions that have historically been based in western Brittany;
- Marine biological resources, which help to meet food needs and diversify the raw materials used in the health, materials and cosmetics sectors, etc.;
- Marine energy. Although progress has been slowed by delays in the roll-out of offshore wind farms, the region can rely on a number of factors: the presence in Plouzané of France Énergies Marines, a national institute for energy transition dedicated to research and innovation in the field of offshore wind power; land available on the Brest polder to accommodate industrial activities; projects such as the wind farm in Morlaix Bay, etc.

Figure 13 – Areas of focus for innovative maritime businesses in Finistère in 2025



Source: ADEUPa - Some companies may be counted in more than one category

26 innovative companies born from public research

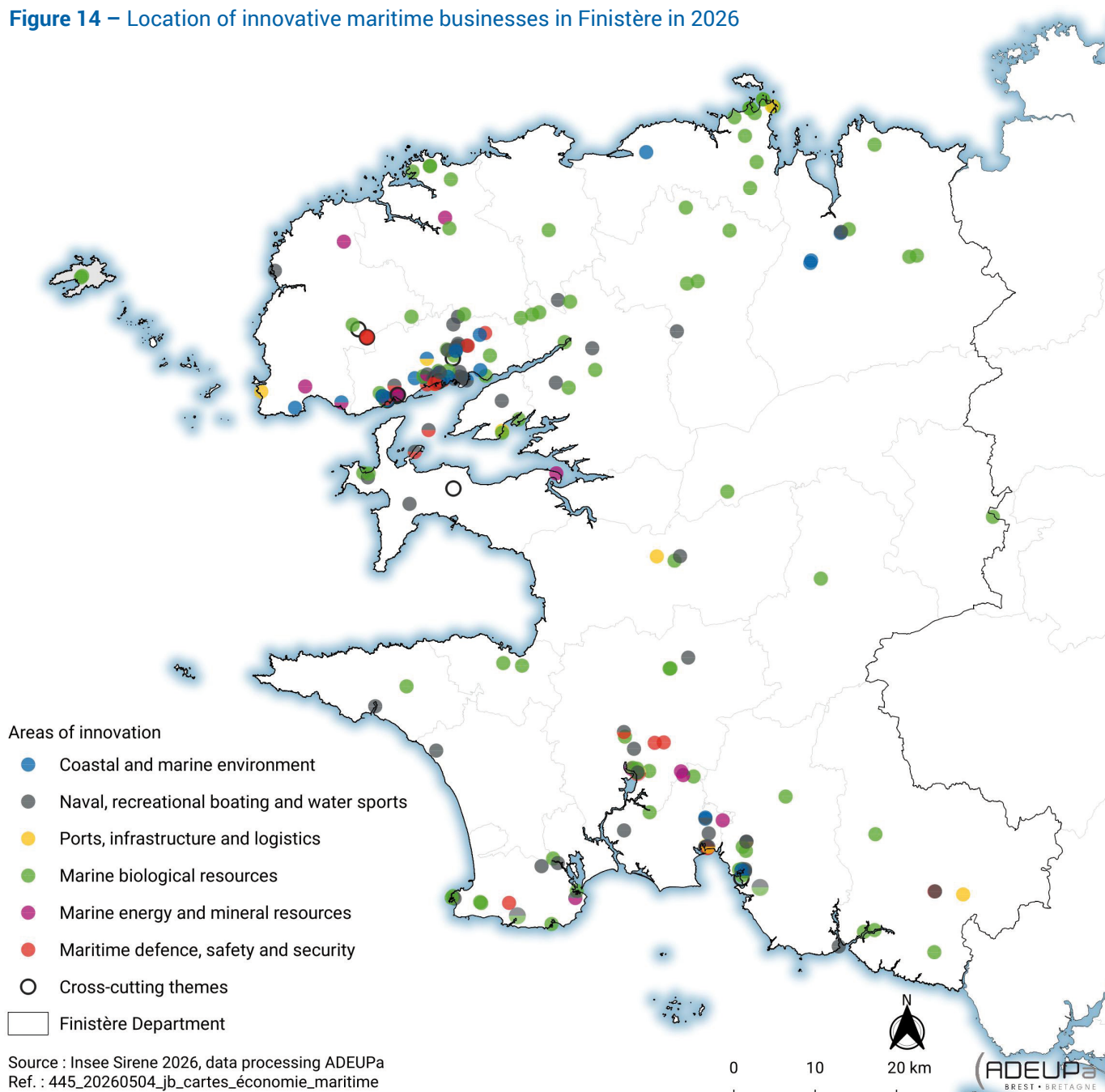
Locally, there are multiple links with the research sector, with organisations such as the CNRS, IFREMER, UBO, IMT Atlantique (an engineering school), ENSTA (École Nationale Supérieure de Techniques Avancées - national higher school of advanced techniques) and the École Navale, among others; but also with other universities such as Caen, Nantes, Rennes and the Sorbonne.

In the Morlaix area, companies that have emerged from public research include those active in the biotechnology sector, such as Hemarina, Perha Pharmaceuticals, Seabelife and Aberactives. Their activities rely particularly on value-creation based on research carried out by the CNRS and Sorbonne University.

In the Brest area, we find a diversity of examples: ocean observation, e.g. with E-Odyn or Hyghtech-Imaging; marine energy with Eolink; aquaculture with France Haliotis; vessels of the future with Bluefins; and other areas such as marine environmental analysis with Mappem Geophysics.

Although they do not stem directly from public research, some companies work in collaboration with research laboratories. For example, the Cornouailles start-up Bladesense, which works closely with both Irenav (the research institute of the École Navale), and the research laboratory affiliated with the CNRS and Centrale Nantes that specialises in hydrodynamics, energy and the atmospheric environment.

Figure 14 – Location of innovative maritime businesses in Finistère in 2026



METHODS: IDENTIFYING INNOVATIVE ENTERPRISES

To assess the innovative nature of companies' activities, several sources of information were cross-referenced: patents; innovation funding; fundraising; winners of innovation competitions; support from organisations such as technology parks, incubators, accelerators, Satt Ouest Valorisation, competitiveness clusters, etc.; partners in industrial chairs and joint laboratories.

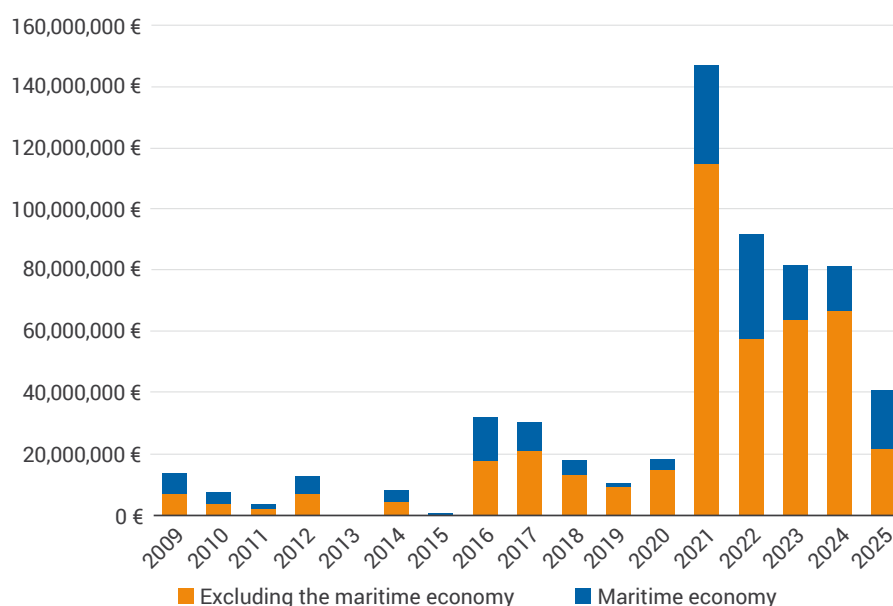
Innovative maritime companies have significant capital requirements

Since 2009, nearly €180 million in funding has been raised by maritime innovation companies based in Finistère, representing over 40% of the total funding raised across all sectors. The prominence of the maritime economy in the growth of start-ups can be explained by the diversity of use cases, their economic potential and the significant funding requirements for research, development and subsequent industrial scaling. Companies in the Morlaix area have, for example, established a strong culture of marine biotechnology over the years, driven by academic spin-offs from the Roscoff Biological Station. All the funds raised within the specified scope (€52 million) are linked to the exploitation of marine resources.

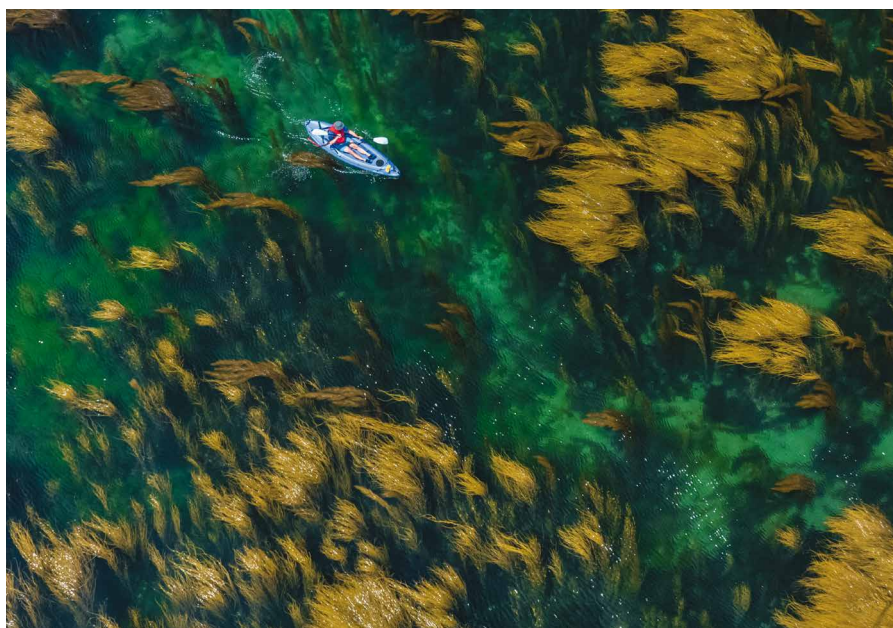
The Cornouaille area is home to companies specialising in marine energy, such as Entech SE, which has raised tens of millions of euros to develop its energy generation, storage and conversion solutions, particularly for offshore wind farms. The region has also attracted significant investment in shipbuilding. Long-established players such as the Piriou and Enag shipyards continue to innovate in new propulsion systems, both wind-powered and electric, for local shipowners such as Grain de Sail and Towt (established in Douarnenez). The marine biotechnology companies Polaris and Algolesko, which are firmly established in the markets for marine-sourced omega-3s and seaweed processing, are stepping up their expansion to break into international markets.

Reflecting its highly diversified maritime economy, Brest métropole and basin have benefited from funding across a wide range of sectors, such as marine renewable energy (which requires significant investment) as well as the development of space technologies, enhanced underwater communication, maritime transport decarbonisation, and maritime uncrewed systems (drones).

Figure 15 – Annual volume of funds raised by companies in Finistère, including those involved in innovative maritime activities (in €)



Source: ADEUPa



Credit: Thibault Poiriel - Comité Régional du Tourisme de Bretagne

Maritime innovations protected by patents

Since 2010, 165 maritime-related patents have been filed by stakeholders in Finistère, representing just over one in six (17%) of all patents across all sectors. The Brest métropole area accounts for just under half of these patents (40%), well ahead of the districts of Quimper (16%), Landerneau-Daoulas (9%) and Morlaix (8%), which are the other main sources of patents in Finistère.

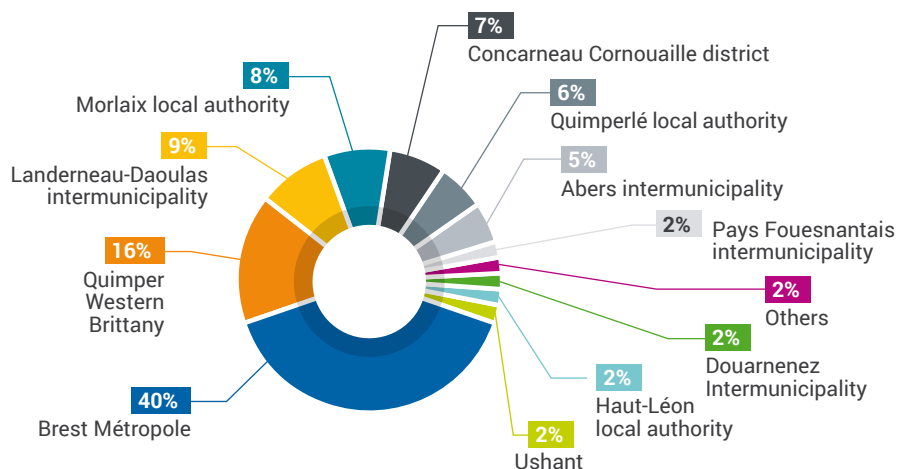
The prominence of Brest métropole can be attributed to the involvement of academic and research bodies in the overall effort. IFREMER, ENSTA, UBO and ISEN Ouest (Institut Supérieur de l'Électronique et du Numérique - higher institute for electronics and digital training) account for half of the intellectual property protection initiatives undertaken by organisations in Brest. They cover a wide range of topics, such as the development of payloads and embedded components for submarines and other marine vehicles; sail-powered transport solutions; and the utilisation of marine biomass. Private sector organisations cover a wide range of fields, such as the development of technologies for marine renewable energy, the use of spatial data and imagery for maritime applications, the development of electronic components (sensors, antennas, etc.) for the shipbuilding industry, energy self-sufficiency for ships, underwater acoustic communications, and the use of marine biomass in the cosmetics and healthcare sectors.

Marine resources are a prolific source of patents. Finistère is home to numerous companies (Yslab, Polymar, Lessonia, Technature, Jymsea, Agrimer, etc.) which account for 40% of the patents filed in the maritime sector. Certain sectors are of interest from an intellectual property perspective due to their technical and technological nature, such as marine renewable energy, the shipbuilding industry, food industry, space applications, and recreational boating and watersports.

An ecosystem conducive to maritime innovation

Regardless of a company's age or sector, entrepreneurs can draw on a network of organisations whose mission is to foster and support innovation. As mentioned earlier, it is worth reiterating the importance of the academic research organisations active in the maritime sector: IFREMER, which has its headquarters in Plouzané; UBO; IUEM; the CNRS; Sorbonne University; Roscoff Biological Station; and higher education institutions such as IMT Atlantique, ENSTA, ENSSAT (École Nationale Supérieure des Sciences Appliquées et de Technologie - National Higher School of Applied Sciences and Technology), etc. This research community regularly collaborates,

Figure 16 – Breakdown of marine-related patent applications since 2010 by inter-municipal area in Finistère



Source: INPI; Data processing by ADEUPa

as illustrated by the IUEM, which hosts researchers from UBO, IFREMER and CNRS. Certain organisations and initiatives focus specifically on supporting maritime innovation: the Mer Bretagne Atlantique cluster, Orion innovation cluster, and Blue Box PUI, all of which are based at the Brest-Iroise technology park; the Institut Carnot Mers, located at IFREMER's headquarters; the Blue Valley project in Morlaix; etc. While we are unable to present them in full, here are some short introductions to some of the key players and tools that contribute to the unique support services available in western Brittany:

- **The Blue Box pôle universitaire d'innovation (PUI - University Innovation Hub).** PUIs have emerged recently in France as part of a national call for projects, funded by the France 2030 investment plan. The initial observation was simple: France has a very high standard of fundamental research, but sometimes struggles to turn these discoveries into patents, industrial technologies or start-ups. Stakeholders in Brest seized this opportunity and joined forces to propose a project aimed at accelerating innovation and technology transfer in the maritime sector. Of the 29 PUI centres currently operating in France, the Blue Box PUI is the only one dedicated to a specific theme: Ocean Tech. Having received official accreditation in 2023, its funding runs until the end of 2027.

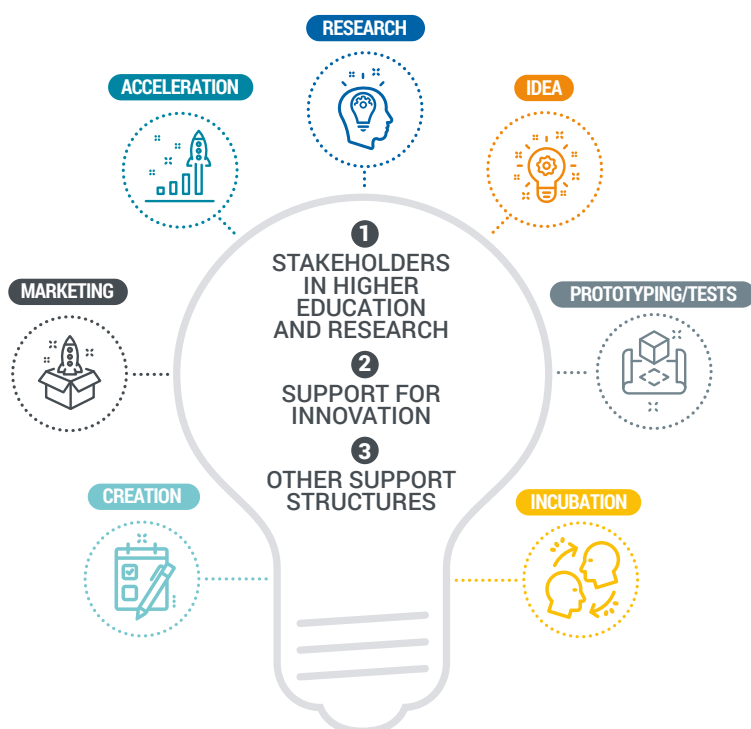
- **The Blue Valley®** project has been led since 2019 by the Morlaix area local authority and its member inter-municipal cooperation bodies (EPCIs), with the support of the Region and FEAMPA. It is both a regional economic development project and a brand, whose aim is to support the development of the blue bioeconomy, which already represents more than 20 businesses and around 400 jobs in the Morlaix area: a rise of more than 8% in the workforce since 2019.

The objectives are to foster engagement within the community of stakeholders, to inspire an entrepreneurial spirit, to support entrepreneurs throughout their journey, to stimulate innovation and technology transfer across different sectors, and to contribute to the organisation's international profile. This initiative is run in conjunction with the activities undertaken by all innovation stakeholders in Brittany.

- **IFREMER's Carnot Institute, known as Institut MERS** (Marine Engineering Research for sustainable, safe and smart Seas), was awarded the Carnot label in 2020. The 'Carnot' label is awarded to public research organisations that are strongly committed to collaborative research with businesses. Its primary mission is to act as a single point of contact for organisations seeking to innovate in the maritime sector (e.g. overcoming technological bottlenecks, testing materials, designing new prototypes). One of the institute's strengths lies in the access it provides to very high-quality testing facilities: the wave tank, offshore test platforms, hyperbaric chambers for testing the resistance of submarines or robots to the extreme pressures of the deep sea, etc.

Since 2010,
165 patents have
been filed relating
to the maritime
sector.

AN ECOSYSTEM THAT FOSTERS MARITIME INNOVATION



- 1 Stakeholders in higher education and research:** IFREMER, CNRS, Sorbonne University, Roscoff Biological Station, UBO, IUEM, IRD, ENSTA, ENIB, ISEN Ouest, IMT Atlantique, École Navale.
- 2 Support for innovation:** technology parks (Brest-Iroise and Quimper-Cornouaille technology parks), Morlaix innovation cluster, competitiveness clusters (Mer Bretagne Atlantique, Image et Réseaux, Valorail, ID4 Mobility), and Orion innovation cluster.
- 3 Other support organisations:** BPI, Village by CA, Campus mondial de la mer, Cluster algues Bretagne, France cyber maritime, Pôle formation UIMM Bretagne, Campus des métiers et des qualifications des industries de la mer, CINav.



Credit: Pays de Morlaix - Station Biologique de Roscoff

Finistère leads the way in maritime drone deployment

What is maritime drone deployment?

The use of drones in maritime areas is becoming increasingly indispensable. Whether they are aerial (unmanned aerial vehicles or UAVs), surface-based (unmanned surface vessels or USVs), underwater (autonomous underwater vehicles or AUVs), remotely operated (remotely operated vehicles or ROVs), or of different shapes and sizes, they cover a wide range of technologies, operational environments and fields of application, for both civilian and military purposes. Whatever their field of operation, the aim is to go beyond the limits of human intervention and to reduce the risks associated with carrying out missions.

Certain sectors, such as the offshore oil industry, have been using maritime drones for several decades to carry out environmental surveys, while others – such as seabed management, the maintenance of marine renewable energy (MRE) and other infrastructure, and the monitoring of illicit trafficking – are gradually beginning to adopt their use. The development of the sector gives rise to related activities such as maintaining equipment in operational condition, improving testing capabilities, and training specialists and experts in the field. These outlooks enhance the potential employment and skills capacity that Finistère could concentrate locally within its ecosystems in the future.

Finistère is one of the main hubs for maritime drone technology in France.

An economic sector providing 300 jobs

Finistère is one of the main hubs for the use of drones at sea in France. Of the 150 public and private stakeholders identified within the sector, more than a third are based in Brittany. The department, with the Brest metropolitan area leading the way, is home to around twenty companies specialising in maritime drone technology, which employ nearly 300 staff. The rest of the regional activity is mainly centred around Lorient and Vannes, where companies such as Seaber, RTSYS, Arkeocean and NKE Group collaborate with the Brest ecosystem while remaining direct competitors in the industrial sector. The Lannion area also shows real synergies with Brest, not only because Exail operates at both sites, but also because its focus is more on aerial solutions.



Thales stands out as the leading player in this sector. With around 150 employees working in the field of maritime drone technology, accounting for half of the jobs in the department. This industrial group was one of the pioneers in the design of the first acoustic devices, through collaborative projects carried out with local and national stakeholders. More recently, Thales has been awarded contracts for European projects and the Franco-British 'Maritime Mine Counter Measures' (MMCM) programme, establishing it as a leading systems integrator in Europe and strengthening its position in the field of mine warfare.

With 130 jobs in Brest, Exail is the other major player in the sector. It contributes to the development of acoustic positioning systems (GAPS - Global Acoustic Positioning System - and its beacons, inertial navigation systems) and navigation systems for the AUVs and ROVs developed at the site. The other part of the business involves the development of mission planning software and sonar image processing software for contact recognition using artificial intelligence.

The industrial ecosystem relies more broadly on other players such as Sercel Underwater Acoustics, which designs and manufactures acoustic equipment in small batches for exploration of the seabed. Others supply prototypes in small batches. Hexa-H (8 jobs, Brest) and Aéromaritime Engineering develop sensors for use on drones. The Nexeya Group provides services and equipment to the French Navy and defence contractors. Other companies cater to needs relating to drone mechanics, such as Florian Madec Composites, which designs drone structures using composite materials, tested in its own hyperbaric chamber, which simulates an environment equivalent to a depth of 6,000 metres. Meunier Lifting Equipment designs 'Launch and Recovery System' (LARS) equipment that enables mother ships to launch or recover drones without human intervention. In a different line, the company H2X Ecosystems aims to launch hydrogen-powered maritime drone solutions from the port of Brest, with a view to decarbonising maritime activities.

Research excellence closely intertwined with the market

Comprising around a hundred researchers, the local research community offers remarkable strengths across all aspects of drone technology. It has developed quite unique expertise in their design and continuous improvement (navigation functions, reliability, security, payloads). Labsticc covers the entire value chain, while others are more specialised, such as IRDL, which focuses on energy efficiency and material robustness, or Irenav, which focuses on new propulsion systems. These technological advances benefit a much wider ecosystem of research organisations, which rely on drones to carry out their missions, such as IFREMER and SHOM.

The link between research and the market is part of the sector's core identity, as demonstrated by the numerous collaborations that have led to the emergence of innovative solutions. In this capacity, ENSTA acts as an intermediary between the academic world and the business sector, through joint laboratories such as SENI (systèmes embarqués navals intelligents - 'intelligent naval embedded systems') or within the Cormorant scientific interest group, one of whose aims is to improve the reliability and security of underwater robots by enhancing the performance of the on-board sensors used for automatic identification

Training programmes closely tailored to the sector's needs

Although still in its infancy, the region's training provision has already been meeting the needs of manufacturers in the sector for over 15 years. ENSTA is one of the pioneering institutions. It launched its robotics programme in 2009, which was further refined in 2018 to focus on the issue of autonomy. The school jointly offers, in partnership with ENIB, UBO and IMT Atlantique, a work-study programme specialising in embedded systems, as well as a Master's degree in computer science, whose 'Interactive, Intelligent and Autonomous Systems' specialisation provides students with a foundation of skills in the areas of complex systems and autonomous robotics. At the same time, in 2025, the Brest-Morlaix University Institute of Technology (IUT) launched a pioneering professional bachelor's degree – the only one of its kind in France – dedicated to the maintenance and remote operation of underwater robots (ROVs).

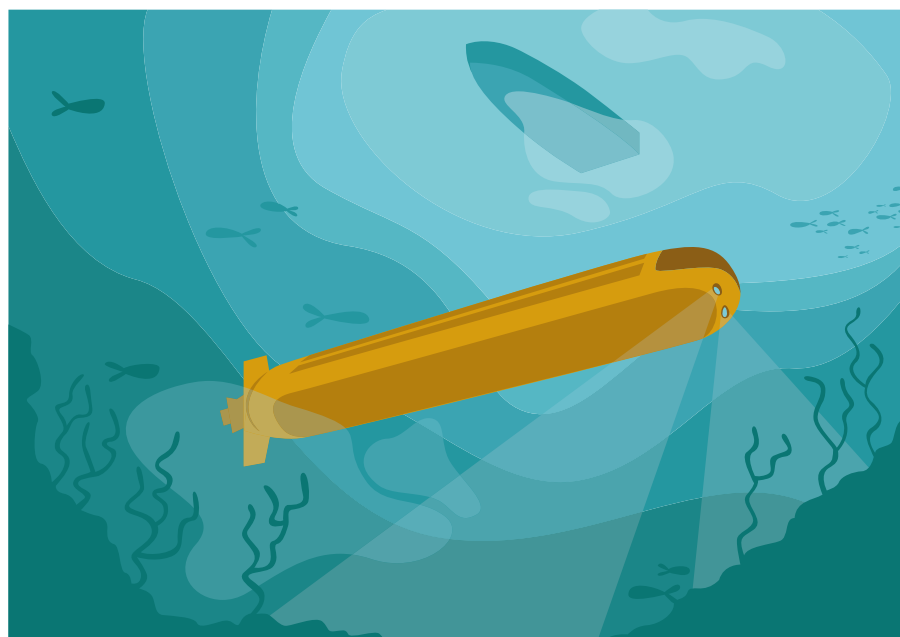
This academic momentum is reinforced by stakeholders in the field. The Celadon association offers short, operational training courses and practical experience at sea, specifically supporting students through real-world testing. At European level, the SeaAhead project – led by the Campus des métiers et des qualifications des industries de la mer (campus for trades and qualifications in maritime industries) and Pôle Mer Bretagne Atlantique – aims to create centres of professional excellence using simulation and immersive technologies to tailor skills to the sector's requirements.

A wealth of infrastructure and testing facilities, both onshore and at sea

Finistère stands out as a leading centre for testing these new maritime technologies. On land, IFREMER has state-of-the-art facilities, starting with its wave tank, the deepest in Europe. It enables many manufacturers to carry out structural behavioural studies on offshore installations (offshore wind turbines, submarine cables, etc.). IFREMER also has hyperbaric chambers to simulate the underwater environment and its effects on the durability of materials. SHOM, which specialises in the calibration of on-board sensors, is set to expand its test tank as part of its €18 million investment plan for the future, giving it a level of precision unrivalled in France. Through its Masmeca platform, ENSTA offers a wide range of facilities for testing, measurement, observation and prototyping, covering a broad spectrum of scales (from the microscopic to full-scale prototypes). The organisation has invested in a new test facility offering unique capabilities for the detection, tracking and coordination of aerial, surface and underwater drones.

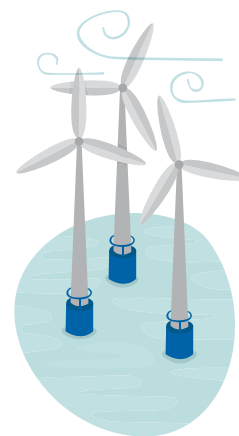
In Brest roadstead, Celadon provides a range of services (experiments, drone deployment, obtaining permits) to the entire ecosystem to facilitate testing. It also deploys instruments in the Bay of Douarnenez, an area that offers more varied sea conditions than Brest roadstead and which is less prone to conflicts of use.

IFREMER also benefits from direct sea access in the Sainte-Anne du Portzic cove, hosting an instrumented platform dedicated to marine renewable energy trials, among other applications. The French Navy also has its own testing capabilities, comprising drone platforms, tools and systems for tracking trajectories, managed by the Directorate-General for Naval Armaments (Direction générale de l'armement techniques navales DGA-TN) from Lanvéoc.



The link between research and the market is embedded in the sector's core identity.

The marine renewable energy sector: challenges and benefits for the maritime economy



A strategic driver for the regional energy transition

Against a backdrop of rapid energy transition and supply pressures, Brittany stands out for its structural energy dependence. Partly because of its location on a peninsula at the end of the grid, the region generates only a limited proportion of the electricity it consumes and imports nearly two-thirds of its requirements. In this context, the development of marine renewable energy (MRE) is a key strategic driver, both for securing energy supplies and for reducing dependence on fossil fuels.

Regional and national strategic priorities converge towards a scaling up of these technologies. The Schéma régional d'aménagement, de développement durable et d'égalité des territoires (SRADDET - Regional Plan for Spatial Planning, Sustainable Development and Territorial Equality) thus sets ambitious targets aimed at ensuring that, by 2050, all of Brittany's energy consumption will be met by local and renewable sources, with offshore wind power playing a key role. At national level, the energy plan also provides for a massive expansion of maritime capacity, offering increased visibility to sector stakeholders.

Western Brittany: a key region for the development of marine renewable energy

Western Brittany occupies a strategic position in this rollout, owing to its geographical, industrial, and port-related characteristics.

The natural conditions are favourable for the development of offshore wind power, particularly floating wind farms, as well as for testing emerging technologies such as tidal power. Several key structural projects illustrate this momentum: the Saint-Brieuc Bay wind farm—currently accounting for nearly 40 jobs, offering a production capacity of 496 MW, and commissioned in May 2024—alongside ongoing projects in

south Brittany and the Bay of Morlaix, with significant capacities envisaged, reaching up to 1.2 GW¹ for the latter. These projects are part of a strategy of gradual ramp-up.

Port infrastructure plays a crucial role in this process. The port of Brest, with its polder dedicated to marine renewable energy, is now a major centre for the assembly and logistics of offshore wind turbine structures, while Lorient is establishing itself in complementary sectors such as mooring systems. These investments are helping to establish western Brittany as the industrial hub for marine renewable energy in France.

1. A gigawatt (GW) is a unit of measurement for electrical power equal to 1,000 megawatts. This substantial amount of energy is enough to power around 750,000 households at the same time.

An emerging economic sector that creates value

Beyond energy-related issues, the marine renewable energy sector represents a driver of economic development for western Brittany and, more broadly, for the regional maritime economy.

Brittany is now home to a network of around 200 companies involved in the sector, covering the entire value chain, from design to the maintenance of facilities². The development of floating wind power, in particular, opens up new opportunities for local stakeholders by drawing on a wide range of expertise (shipbuilding, engineering, materials and logistics).

In 2024, the French marine renewable energy sector accounted for more than 8,000 jobs and several billion euros of investment³. At a local level, each wind farm brings lasting benefits, notably through the creation of long-term maintenance facilities and the associated jobs. The economic benefits also extend to port operations and industrial subcontracting. For the time being, the local results are still modest and do not yet represent a significant number of jobs. A study carried out by the agency Bretagne Next estimates that Brittany could have between 5,000 and 10,000 jobs in the floating wind power sector by 2040 and generate more than 13 billion euros in cumulative added value.

To support the development of this sector, the ecosystem in western Brittany can draw on the presence of France Énergies Marines. Recognised nationally and even internationally, this institute employs more than 90 staff in France, 50 of whom are based in Plouzané. Its mission is to support the rollout of this new industrial sector by delivering technological, environmental and societal knowledge and solutions.

This gradual development is accompanied by significant public support, notably through investment in port infrastructure and support for businesses. The aim is to consolidate a competitive regional industrial ecosystem capable of reaping the economic benefits of the maritime energy transition.

2. Source: Network of urban planning and development agencies & network of Chambers of Commerce and Industry of Brittany.

3. Source: Bretagne Next.

Challenges of territorial integration and social acceptability

The deployment of MREs takes place within a highly contested maritime space, raising significant territorial integration challenges and even giving rise to conflicts of use.

The issue of concurrent activities, particularly fishing, is a key concern. Interactions between activities vary depending on the technologies involved and the different phases of project development (construction, operation) and require in-depth dialogue between the stakeholders. Maintaining continuous dialogue with relevant stakeholders and regularly conducting objective analyses tailored to the specific issues raised are key to ensuring sustainable coexistence.

From an environmental perspective, marine renewable energy helps to improve scientific understanding of marine environments. Indeed, when such projects are identified, the procedures involve carrying out environmental impact assessments. Consequently, our understanding of marine ecosystems has increased with the deployment of these offshore wind farms. Feedback has even highlighted positive effects on biodiversity (reef effect). However, there are still areas of concern, particularly regarding long-term impacts and ecological balance.

Finally, issues relating to the landscape and social acceptance remain significant. They require greater efforts in consultation and mediation, which are essential to the success of the projects.

Challenges to be overcome to strengthen the sector

Despite its potential, the marine renewable energy sector in western Brittany faces a number of fundamental challenges. Project development lead times remain lengthy, owing to complex regulatory procedures and governance that continues to be largely centralised at State level.

Added to this are visibility issues for manufacturers, who need a regular project schedule to safeguard their substantial investments. Furthermore, following the publication of the tenth call for proposals, the issue of the purchase of the energy generated was raised. The government's target of moving towards an average tariff of less than 100 euros per megawatt-hour calls into question the economic viability of certain industrial investments.

Reliance on certain international supply chains raises questions about industrial sovereignty. Furthermore, the development of the sector requires greater coordination between the different levels of stakeholders (central government, region, local authorities and businesses). Finally, project planning and the integration of projects into local areas need to be further strengthened in order to address issues of public acceptance.

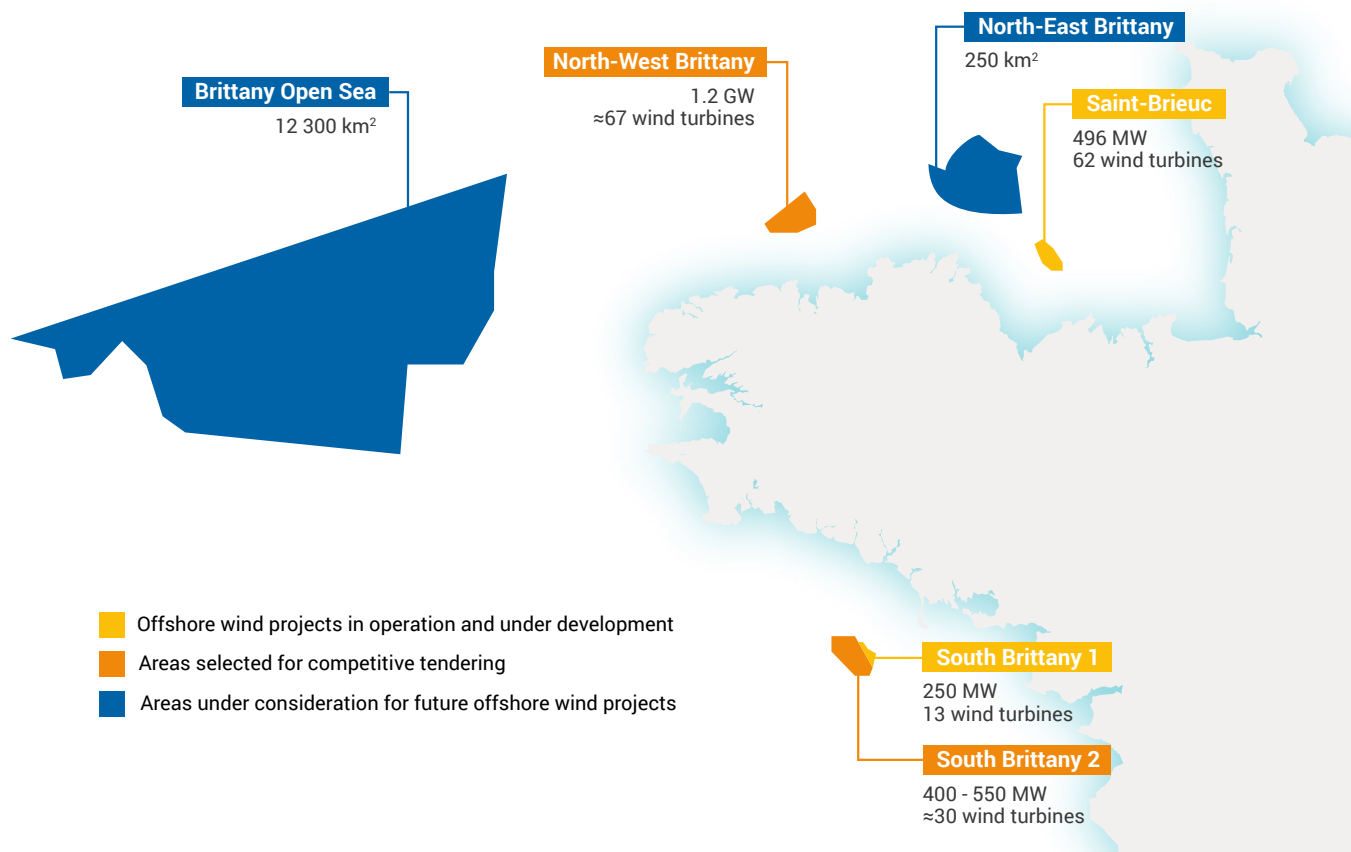
As regards the port of Brest, significant investment totalling more than 250 million euros has been committed to accommodate and support the development of the sector. This funding, which was predominantly public, was mostly provided by the Brittany Region. Temporary construction sites, set up to carry out projects in Brittany, have been hosted at the MRE terminal, such as the offshore wind farms of Saint-Brieuc, Noirmoutier and Dieppe. Indeed, the manufacture of 'jackets' (the foundations of wind turbines) requires a certain degree of geographical proximity to the sites where the wind farms will be built. This catchment area may extend as far as the south of the United Kingdom.

The construction of a wind farm usually generates between two and four years of activity. For example, the Spanish consortium Navantia-Windar was the first to set up operations on the Brest polder to help manufacture part of the foundations for the Saint-Brieuc wind farm, before leaving the site once the project was completed.

Today, the development of floating wind power is the new priority for marine renewable energy. These larger-scale infrastructure projects require further investment to upgrade the terminal, estimated at around an additional 250 million euros. This new investment phase would make it possible to accommodate these construction and assembly operations, which are regarded as pivotal to strengthening energy independence.

Furthermore, a key challenge lies in the ability to attract businesses to this terminal on a long-term basis. With this in mind, plans to set up a submarine cable factory are currently being considered. Such a project could create around 300 long-term jobs and attract nearly 400 million euros in private investment. Given its central location, the port of Brest can stand out from the rest.

Figure 17 – Offshore wind farm projects in Brittany





Credit: Benjamin Leterrier - CNRS - Pays de Morlaix

To find out more

With ADEUPa



Observatoire de l'économie maritime en Bretagne n°3: [Observatoire de l'économie maritime en Bretagne n°3 | ADEUPa Brest](#)



La filière dronisation maritime dans Brest métropole: [La filière dronisation maritime dans Brest métropole | ADEUPa Brest](#)



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L'Ouest breton face à la transition énergétique - Note d'analyse n°4: [L'Ouest breton face à la transition énergétique | ADEUPa Brest](#)

And elsewhere

- Étude d'impact socio-économique de l'éolien flottant en Bretagne: [Éolien flottant: jusqu'à 11 400 emplois en Bretagne d'ici 2050 - Next](#)
- L'économie maritime emploie 374 600 salariés en 2023: <https://www.insee.fr/fr/statistiques/9022577#consult>

THE OBSERVATORIES | ECONOMY OF FINISTÈRE

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