

ECONOMY | BREST BASIN

# THE MARITIME ECONOMY IN BREST BASIN

#3 | May 2024

OBSERVATORY | Analysis note



Credit: Franck Bettermin

In Finistère :  
**43,777**  
 maritime jobs  
 in 2022  
**+4.1 %**  
 between 2019 and 2022, i.e.  
**1,700** additional jobs



Top employer :  
 Ministry of Armed Forces with  
**18,283**  
 emplois,  
**+1 074** jobs in three years



**Rising :**  
 defence, shipbuilding  
 and repair, culture  
 and leisure, nautical  
 industries

**Falling :**  
 seafood products

More than  
**1,300 km**  
 of coastline to be planned in the Brest  
 and Morlaix area SCoTs (territorial  
 consistency plans) to preserve  
 the coastline and certain human  
 activities

In the Brest area :  
**29,853**  
 maritime jobs  
 in 2022  
**+6.4 %**  
 between 2019 and 2022, i.e.  
**1 800** additional jobs



**1 300**  
 estimated jobs in  
 the algae sector in  
 Finistère in 2022



Brest roadstead :  
**180 km<sup>2</sup>**  
 where environmental and economic  
 stakes coexist



Brest-Roscoff :  
**15<sup>e</sup> place**  
 place in the world  
 in terms of marine  
 research publications



LUBO : **5<sup>th</sup> place**  
 place in the Shanghai ranking  
 in the oceanography category  
 in 2023,  
**+6** places in a year

## The maritime sector dynamism, opportunities and challenges

On 31 December 2022, more than 2,720 businesses and other establishments were registered in Finistère, representing 43,777 jobs. In three years, we can estimate that 1,700 additional maritime jobs have been created, representing an increase of 4.1%. In the public sector, defence-related activities alone accounted for 1,000 new jobs. In the private sector, shipbuilding and ship repair activities are also growing. Conversely, the seafood products sector appears to be in difficulty, with employment falling by 3%.

In the Brest area, Brittany's foremost maritime basin, employment has also risen, in contrast to the previous period. The estimated 29,853 maritime jobs in the Brest area represent 17% of maritime employment in Brittany as a whole, whereas they account for 5% of regional employment. The French Navy is the largest employer in the local area across all sectors, with more than 16,700 jobs.

Marine and maritime research is another specificity of the pointe de Bretagne area. A number of actors, such as Ifremer, IUEM and Roscoff Biological Station, contribute to the national and international visibility of the area through their work and numerous scientific partnerships. The number of publications by marine science researchers means international visibility is high, as demonstrated by a ranking at 15<sup>th</sup> in the world. The UBO was also ranked 5<sup>th</sup> in the Shanghai ranking in 2023 for oceanography.

Maritime applications are numerous and varied. For example, algae are exploited by stakeholders in the agricultural and agri-food sector (animal nutrition) as well as in cosmetics and human health sectors. The 'Cluster algues', a body responsible for coordinating this sector, has recently been extended to the regional level to boost its development.

Against this backdrop of greater exploitation of marine resources, challenges are arising concerning water quality and improved management of coastal land use.

# What is the maritime economy?

If the sea no longer existed, what economic activities would become impossible? This dystopian question could provide us with a definition of the maritime economy. So, if a company is to be taken into account in the maritime ecosystem, it must use the sea for its activity. This would be the case, for example, for a maritime freight transport company. Conversely, a food company that uses the services of this freight company to export its products internationally would not be affected.

Some economic entities are only partially maritime, however. For example, the ENSTA Bretagne engineering school, a research and higher education establishment, carries out a large part of its activity in connection with the maritime sector, but also with the automotive, energy, digital and aerospace sectors. A threshold was defined in order to decide on such cases. Only establishments in which at least 25% of the activity depends on the

maritime economy are counted (according to expert opinion and/or by asking the establishment). This threshold was inspired by the law of competition, which defines the notion of economic dependence. ENSTA Bretagne was included because more than a quarter of its activities are related to the marine environment.

These various principles were drawn up with the network of development and town planning agencies and the network of chambers of commerce and industry on behalf of the Brittany Region. Using this method, which is shared at regional level, the aim is to track the development of maritime jobs over time within the different sectors identified.

Given the wide range of subjects and issues in this field, the Observatory is designed to be open and partnership-oriented. That's why, since the first issue (of the Observatory report),

a wide range of players have been able to take advantage of the opportunity to highlight a theme or strategic issue. Some topics covered in previous issues include the regional impact of projects accredited by the Pôle Mer Bretagne Atlantique cluster, the potential of marine renewable energies, the concentration of strategic activities in the port of Brest, maritime research, and the fisheries and aquaculture sector. This third issue tackles other issues such as water quality in the Brest roadstead and the challenges of coastal planning<sup>1</sup>.

<sup>1</sup> To find out more, consult the 'observatory of the maritime economy in Brittany' report n° 2 (in French): <https://adeupa-brest.fr/nos-publications/observatoire-de-leconomie-maritime-en-bretagne-ndeg2>

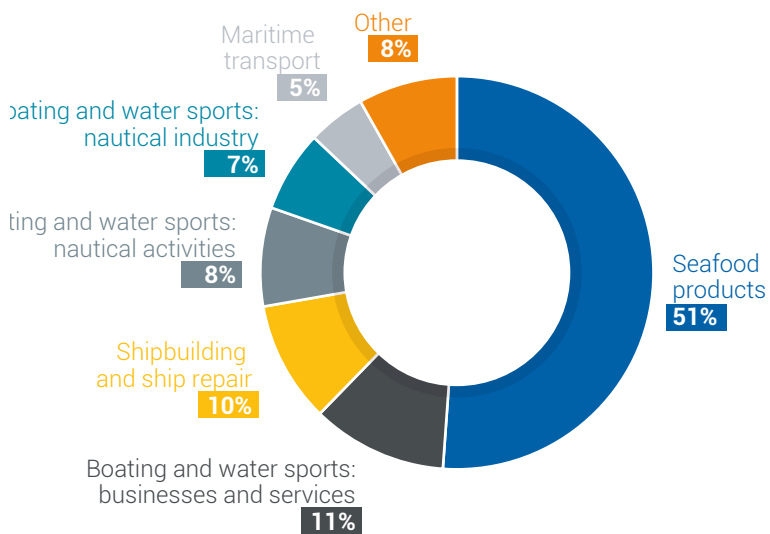
# Growth in maritime employment across the Campus Mondial de la Mer

## 2,720 business and other establishments in the maritime economy in 2022

On 31 December 2022, there were 2,720 establishments in the maritime economy of Finistère. Of these, 96% belong to the private sphere. In spatial terms, almost 48% of the establishments listed are located in the Cornouaille area, 33% in the Brest area, 14% in the Morlaix area and 4% in the part of the Lorient area situated in Finistère. The remainder are located in the Finistère part of Central-West Brittany or on Ushant island.

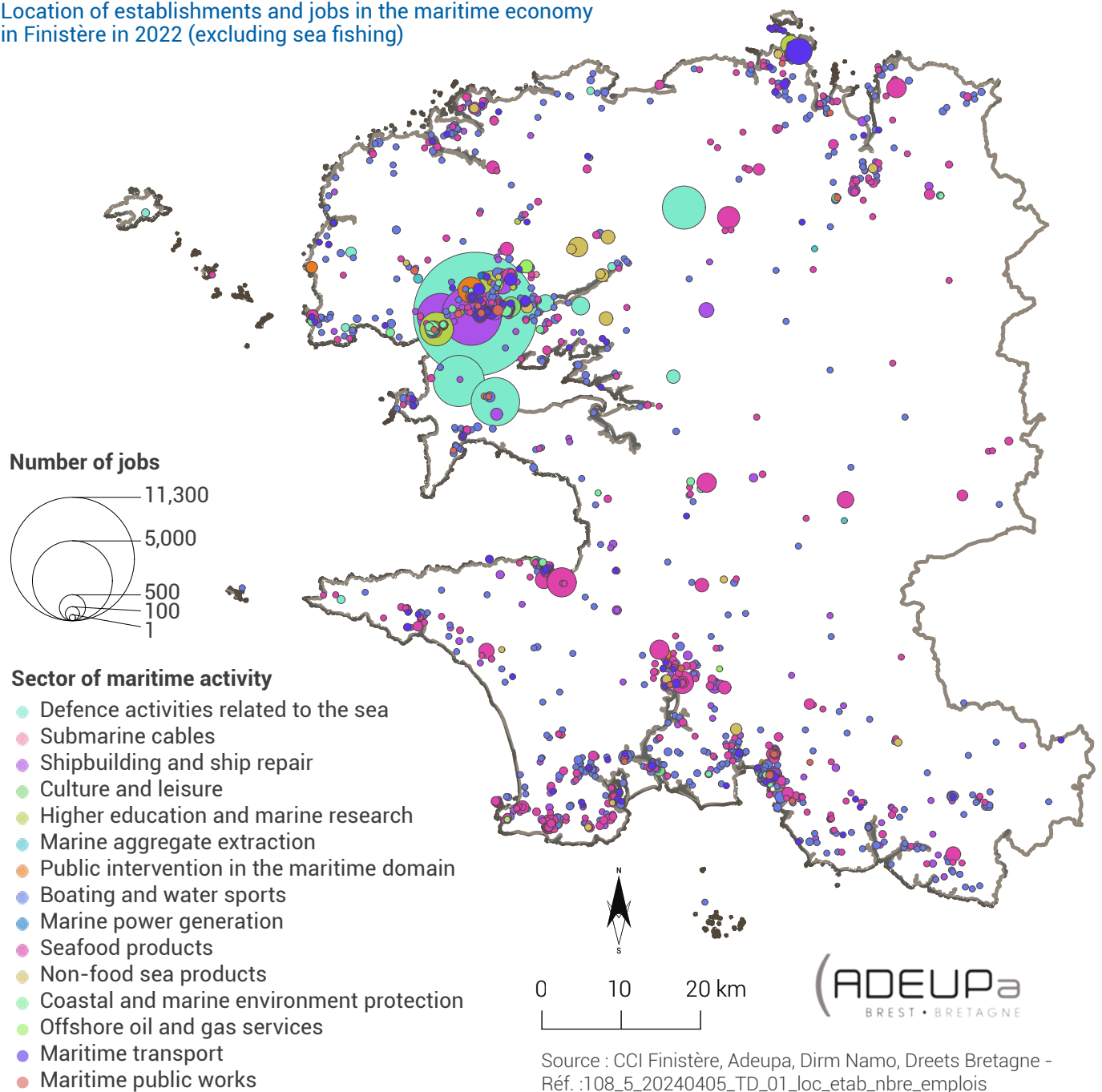
Half (1,391 establishments) belong to the 'seafood products' sector, of which more than 50% are primarily involved in sea fishing. The four sectors related to boating and water sports (nautical industry, businesses and services, nautical activities and marinas) account for 27% of establishments in the maritime sector (or 731). Finally, 'shipbuilding and ship repair' accounts for 10% of the total (271 establishments).

Distribution of maritime establishments in Finistère by sector in 2022



Source: CCI Finistère, ADEUPa, treatment ADEUPa

## Location of establishments and jobs in the maritime economy in Finistère in 2022 (excluding sea fishing)



### CAMPUS MONDIAL DE LA MER, FRANCE'S FOREMOST COMMUNITY OF EXPERTS DEDICATED TO THE STUDY AND ECONOMIC DEVELOPMENT OF MARINE RESOURCES

Campus Mondial de la Mer has a twofold mission:

1. Encouraging the integration of research and business, with the aim of creating more value: a better understanding of the ocean, more business start-ups, more innovative projects and, therefore, more maritime jobs. To achieve this, the Technopôle Brest-Iroise team, which coordinates Campus Mondial de la Mer, is building networks among stakeholders in the Finistère area.
2. Highlighting the expertise of stakeholders in its community in France and abroad in order to build bridges with other maritime areas. This is being done by the organisation of events on an international scale, such as Sea Tech Week®.

The campus is a network of stakeholders whose actions are helping to make Brest and Brittany a key global centre for marine science and technology. This community of stakeholders contributes to a better understanding of the ocean and the development of a sustainable blue economy.

## 43,777 maritime jobs in Finistère in 2022

On 31 December 2022, 43,777 maritime jobs were recorded in Finistère, representing 12% of total employment in the département<sup>2</sup>. The Brest area, with 29,893 jobs, accounts for 68% of maritime jobs in Finistère, the Cornouaille area for 20% with 8,835 jobs, and the Morlaix area for 10% with 4,482 jobs.

## Defence, the leading employer in the maritime economy

Of the maritime jobs in Finistère, 47% are in the public sector, mainly due to the strong presence of the French Navy. Thus, the main area in terms of maritime jobs is sea-related defence activities, with 17,374 jobs, or more than 39% of the total. Other major sectors in Finistère's maritime economy are the seafood sector, which accounts for 8,871 jobs (20% of the total), and shipbuilding and ship repair sector, which accounts for 8,630 jobs (19% of the total).

The boating and water sports sector as a whole (nautical industry, businesses and services, nautical activities and marinas) ranks fourth, with 2,306 jobs (5% of the total).

## The top six maritime employers in 2022

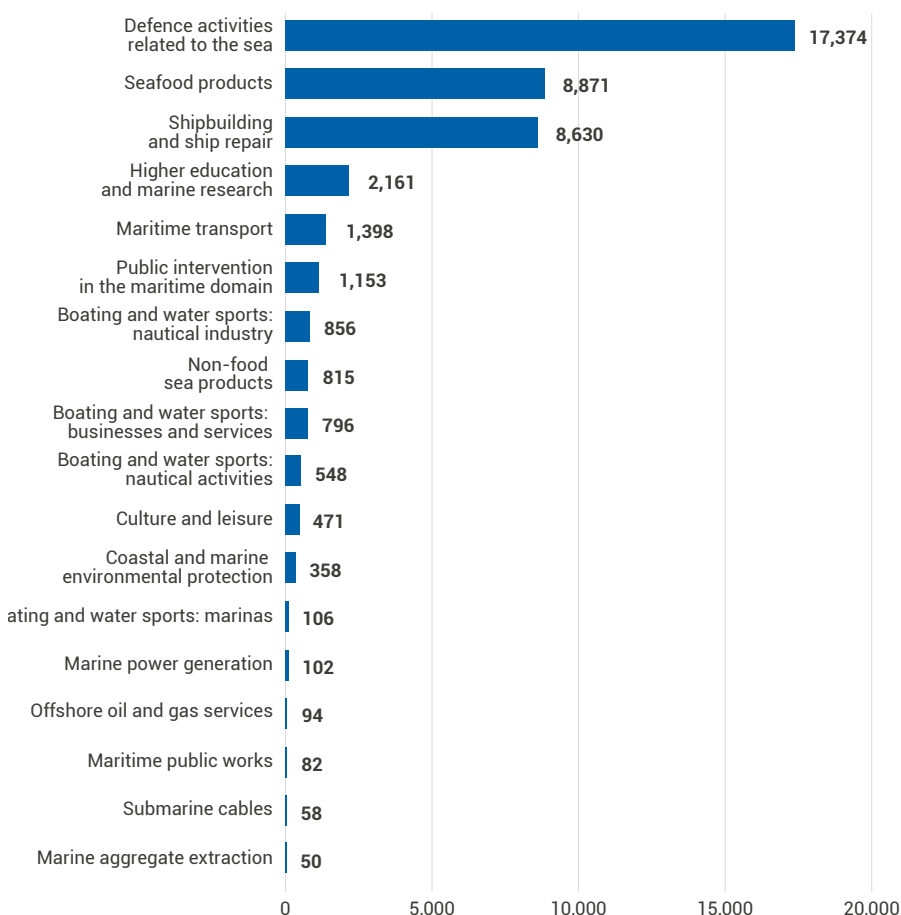
- Ministry of Armed Forces: 18,283 jobs in Brest, Crozon, Lanvéoc and Landivisiau (sea-related defence activities, research and higher education for ENSTA, and public sector work for the SHOM) in Brest, Crozon, Lanvéoc and Landivisiau
- Naval Group: 3,140 jobs (shipbuilding and ship repair) in Brest and Guipavas
- Thales: 1,700 jobs (shipbuilding and ship repair) in Brest
- Ifremer: 896 jobs (higher education and marine research) in Plouzané
- Conserverie Chancerelle: 653 jobs (seafood products) in Douarnenez
- Brittany Ferries: 505 jobs (maritime transport) in Roscoff

## Distribution of maritime jobs by geographical area

Geographical areas	Maritime jobs in 2022	Finistère's share of maritime employment	Change between 2019 and 2022 (%)
Brest area	29,893	68	6.4
Cornouaille area	8,835	20	-2.3
Morlaix area	4,481	10	2.9
Lorient area*	336	0.8	9.4
Central-West Brittany area*	223	0.5	-7.5
Ushant	9	0.0	-61.3
<b>Finistère</b>	<b>43,777</b>	<b>100.0</b>	<b>4.1</b>

\*Finistère part, Source: CCI Finistère, ADEUPa, Dirm Nam, Dreets Bretagne, treatment ADEUPa

## Number of jobs in the maritime economy in Finistère in 2022 by sector



Source: CCI Finistère, ADEUPa, Dirm Nam, Pôle emploi, treatment ADEUPa

<sup>2</sup> 359,812 jobs in total with a workplace in Finistère. Source: Insee, RP 2020.

## Growth in private and public maritime employment between 2019 and 2022

Between 2019 and 2022, the workforce in the maritime sector grew by 4.1%, representing approximately 1,700 additional jobs.

### A rise of almost 1,200 jobs in the public sector

The public sector grew by 1,189 jobs, including 1,074 in 'defence activities related to the sea' alone. This was due to the relocation of staff from the Ministry of Armed Forces to the Finistère sites of the Brest-Lorient defence base.

### Areas of growth in the private sector

The private sector is also growing, with 529 additional jobs in three years. The 'shipbuilding and ship repair' sector recorded the second highest growth, with 583 additional jobs in three years (+7%), thanks in particular to the dynamism of Naval Group (+354 jobs) and Thales (+162 jobs). The 'culture and leisure' (+124 jobs, i.e. +35.7%), 'nautical industry' (+120 jobs, i.e. +16%) and 'non-food sea products' (+99 jobs, i.e. +13.8%) sectors also grew significantly. This last area has been driven by the exploitation of marine algae. The number of employees at some companies that use algae in their production process has risen sharply: Lessonia in Saint-Thonan, which develops cosmetic products (+51 jobs), Ter'Mer Appro consult in La Forest-Landerneau, which supplies fresh and dried seaweed and produces seaweed-based fertilisers and natural extracts for cosmetics (+21 jobs), and Laboratoire Cosmarine in Saint-Divy, also in cosmetics (+11 jobs).

### Private sector areas with falling employment

In some areas of the maritime sector, job numbers are falling. The 'seafood products' sector saw the biggest drop in volume (-271 jobs, or -3%). In this sector, 68% of jobs are in the agri-food industry, for retail and wholesale commerce.

The number of people working in marine fisheries and aquaculture fell from 2,680 in 2019 to 2,319 in 2022<sup>3</sup>, a reduction of 361 jobs (-13.5%). The Cornouaille area suffered most from the difficulties in this field, with 390 fewer jobs over the period, followed by the Brest area (-46 jobs). Only the Morlaix area saw its number of employees increase (+203 jobs). While the post-Brexit fleet exit plan partly explains these decreases, the rise in energy costs (specifically fuel prices) has added a new level of economic difficulty for the fishing industry.

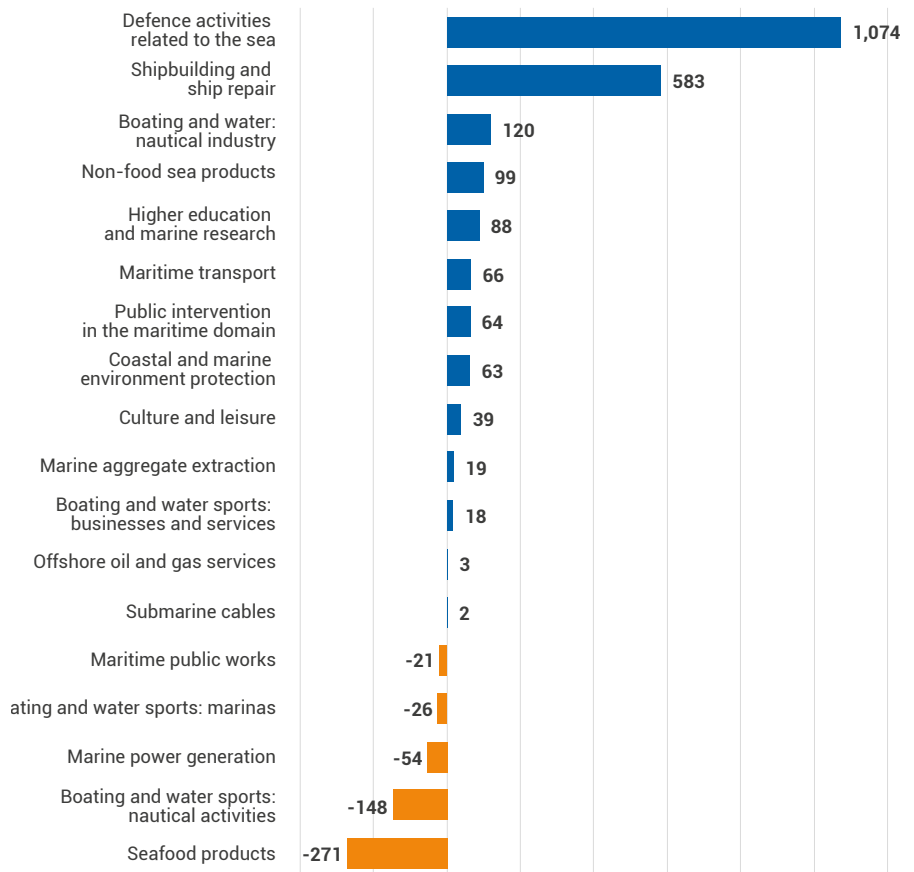
<sup>3</sup> Source: Dirm Nammo.

Health restrictions during the pandemic had a major impact on the 'nautical activities' sector, covering water sports, which saw its number of jobs fall significantly. Also of note is the takeover of the management of the Belle Étoile

sailing ship by the Saint-Malo company Étoile Marine Croisière from the Léo-Lagrange club in Camaret-sur-Mer<sup>4</sup> (-80 jobs).

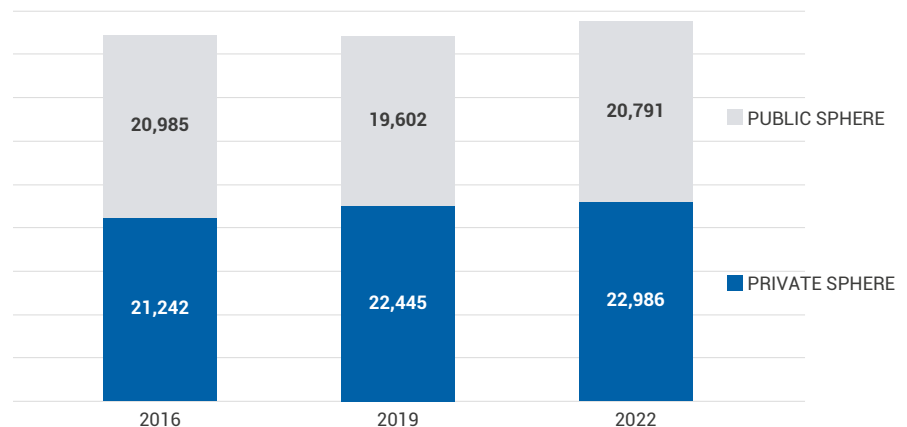
<sup>4</sup> Ouest France, 16/05/2021

## Evolution of employment in Finistère's maritime economy by sector between 2019 and 2022



Source: CCI Finistère, ADEUPa, Dirm Nammo, Dreets Bretagne, treatment ADEUPa

## Estimated maritime jobs in Finistère



Source: CCI Finistère, ADEUPa, Dirm Nammo, Dreets Bretagne, treatment ADEUPa

# Brest area, Finistère's leading area of maritime employment

## Close to 30,000 maritime jobs in the Brest area in 2022

In 2022, 29,893 maritime jobs were recorded in the Brest area, i.e. 17% of the total number of jobs in the area<sup>5</sup>. A higher rate than in Finistère (12%). While the Brest area accounted for two-thirds of Finistère's maritime employment, it represented only one-third of the total number of establishments in the sector. Nearly 80% of the workforce were concentrated in the Brest metropolitan area and 14% on the Crozon-Aulne maritime peninsula.

<sup>5</sup> A total of 173,035 jobs with a workplace in the Brest area. Source: Insee, RP 2020.

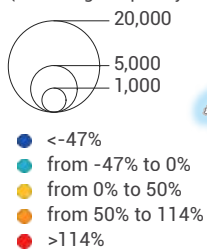
More than half worked in the sector of sea-related defence activities, i.e. 15,811 jobs under the Ministry of Armed Forces. Shipbuilding and ship repair accounted for 6,838 jobs (23% of the total), while higher education and marine research accounted for 2,067 jobs (6% of the total). In these three sectors, the Brest area accounts for 91%, 79% and 89%, respectively, of the totals for Finistère. Conversely, its level of employment is lower in the 'seafood products' (16%) and 'nautical industry' (23%) sectors.

## An increase of almost 1,800 jobs between 2019 and 2022

The number of people working in the maritime sector rose by 6.4% in the Brest area, growing by almost 1,800 between 2019 and 2022. This rate is higher than the average for the département (4.1%). This increase was driven by the public sector, particularly the workforce at the Brest-Lorient defence base, which gained 1,067 jobs in three years (+7%), mainly due to the relocation of military personnel from sites outside the area. Shipbuilding and ship repair generated 379 additional jobs over the period (+5.9%), thanks in particular to the strong

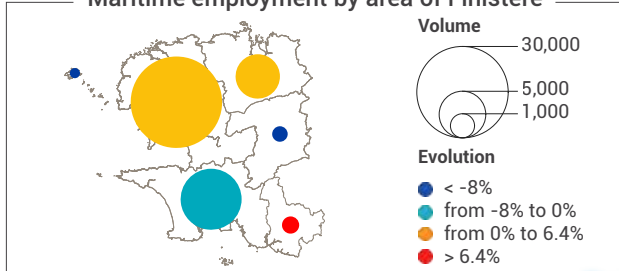
## Evolutions in employment in the maritime economy of the Brest area between 2016 and 2019 by municipalite

**Volume and evolution**  
(excluding temporary workers, fishers and aquaculturists)

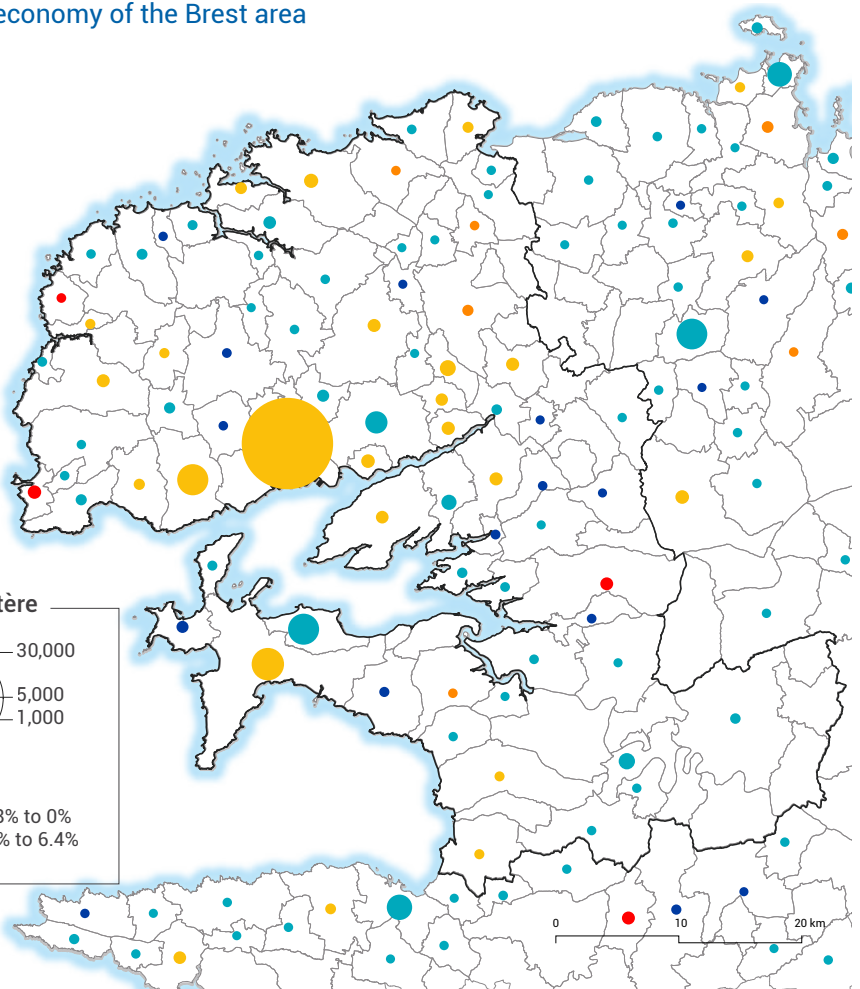


218 maritime temporary workers, down 19%  
529 fishers and aquaculturists, in stable evolution

**Maritime employment by area of Finistère**



(ADEUPa  
BREST • BRETAGNE



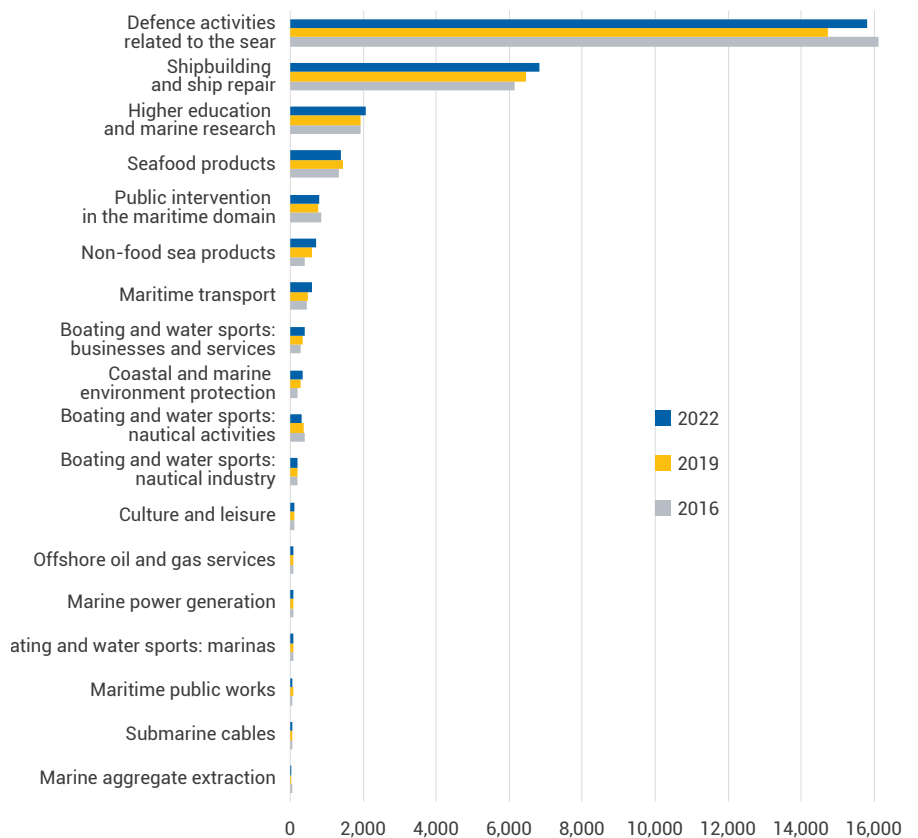
health of the defence industry and its subcontractors mentioned above (see page 6).

Three other areas increased by more than a hundred jobs:

- Maritime transport (+126 jobs, +23%), with the Manuport dock material handling company in Brest and the creation of the Société portuaire Brest Bretagne in 2020;
- Higher education and marine research (+105 jobs, +5.9%) included significant increases for Ifremer, as well as for Geneva, the company in Plouzané that manages its research vessels;
- Non-food sea products (+104 jobs, +17.6%), with algae processing companies in particular continuing to grow.

Five areas showed a reduction in job numbers between 2019 and 2022. This was particularly the case for nautical activities, which suffered from the drop in the number of people practicing these activities during the pandemic (-71 jobs), and for seafood products (-46 jobs), which essentially suffered from the drop in the number of fishers over the period (-54 jobs).

### Distribution of maritime jobs by sector between 2016 and 2022 in the Brest area



Source: CCI Finistère, ADEUPa, Dirm Namu, Dreets, treatment ADEUPa



Credit: Franck Bétermín - Brest métropole

## The top 10 maritime employers in the Brest area

Establishments	Maritime sector	Location	Numbers on 31/12/2022	Employment trend 2019-2022	Employment trend 2016-2022
Brest-Lorient defence base	Defence activities related to the sea	21 municipalities	16,720	6%	982
Naval Group	Shipbuilding and ship repair	3 municipalities	3,140	13%	354
Thales	Shipbuilding and ship repair	Brest	1,700	11%	162
Ifremer	Higher education and marine research	2 municipalities	880	6%	51
Genavir	Higher education and marine research	Plouzané	376	67%	151
Institut Universitaire Européen de la Mer (UBO – CNRS – IRD)	Education and marine research	Plouzané	318	not available	not available
Lessonia	Non-food sea products	Saint-Thonan	220	26%	51
Moulin de la Marche	Seafood products	Châteaulin	242	-2%	-6
Fouré Lagadec	Shipbuilding and ship repair	Brest	180	221%	124
Océanopolis (Brest'aim)	Culture and leisure	Brest	99	0%	0

## THE €413 BILLION LOI DE PROGRAMMATION MILITAIRE (LPM) [FRENCH MILITARY PLANNING LAW] FOR 2024-2030: PROSPECTS FOR THE BREST-LORIENT DEFENCE BASE

2024 is the launch year for the 2024-2030 military planning law. More than 400 billion euros will be invested to meet 4 main challenges:

- Strengthening the foundations of defence;
- Adapting military tools to meet changing security threats;
- Anticipating technological advances;
- Expanding human and social aspects.

For its first year of implementation, the forecast budget will be increased by €3.3 billion, bringing the total budget for the Defence mission to €47.2 billion (excluding pensions) by 2024.

For the French Navy, this law provides for the start of work on a new-generation aircraft carrier (PANG) and the construction of third-generation nuclear-powered ballistic missile submarines (SNLE), which should be put into service over the next decade. While the construction of these vessels is planned for Saint-Nazaire and Cherbourg respectively, other industrial areas will benefit from the knock-on effects, particularly in the field of combat systems.

In addition, some technological challenges have been identified as part of the LPM. One of the key areas is control of the seabed. This includes, for example, the design and purchase of underwater drones capable of operating at depths of up to 6,000 metres, and the renewal of the French Navy's hydro-oceanographic component. Cyber defence and space are also areas that have been strengthened by this law.

In 2025, the port of Brest should receive a defence and intervention frigate. The economic benefits of the Brest-Lorient defence base, estimated at €2.2 billion per year in 2019, are therefore expected to increase in the coming years.

To find out more: <https://adeupa-brest.fr/nos-publications/impact-economique-de-la-defense-sur-le-territoire-de-la-base-de-defense-de-brest-0>



# An algae business cluster in Brittany

Brittany has a powerful ecosystem of innovative companies using algae as a raw material, and hence a source of value creation (biomaterials, proteins, etc.). Research and higher education establishments such as the Roscoff biological station, Université de Bretagne Occidentale and Ifremer are located in this region. Their expertise and skills in the field of algae are recognised worldwide.

The aim of the Brittany algae business cluster is to make the region an area of excellence and a leader in the economic development of the algae sector. It is an alliance that brings together a wide range of stakeholders: companies, research and educational establishments, financial institutions, local authorities, etc. The 'Cluster Algues Bretagne' association was created in April 2023 as a continuation of the 'Cluster Algues Pays de Brest' (2018-2021), driven by the desire of businesses in this sector to work together.

## An estimated 1,300 jobs in the algae sector in Finistère

In 2022, 116 establishments, based in Finistère, were identified as being involved in the algae sector, providing 1,331 jobs. In less than 6 years, Lessonia has established itself as the leading employer in the sector, with 220 jobs (76 in 2016). This company develops cosmetic products for numerous brands, but has also expanded into the animal nutrition market. This business sector still employs 70 people today. Technature, with 160 jobs spread over two sites (in Le Relecq-Kerhuon and Dirinon), is the second largest employer in the sector. OTB Cosmétique comes third with 95 jobs.

As far as research is concerned, we should mention the Roscoff biological station. Of the

248 jobs at the station, 58 men and women are working exclusively on algae research. IUEM (Institut Universitaire Européen de la Mer), a marine science research and training centre jointly run by UBO, CNRS and IRD, has 318 permanent jobs (172 UBO, 108 CNRS and 38 IRD). The institute also has a 23-strong research team with expertise in algae.

Thanks to the collaboration between the regions and the companies created as part of the Brittany algae business cluster, and the synergies and partnerships that have been established, the development of these economic stakeholders and the associated jobs will be monitored closely.

To find out more: <https://adeupa-brest.fr/nos-publications/poids-socio-economique-de-la-filiere-algues-en-pays-de-brest>



Credit: Thierry Joyeux - Océanopolis

# First-class scientific research in Brittany, strengthening its position

In the field of marine science research, the pointe de Finistère is home in particular to the national headquarters and largest research centre of Ifremer<sup>6</sup>, UBO<sup>7</sup>, which, through IUEM<sup>8</sup>, has 7 research units entirely dedicated to the sea, as well as the largest of Sorbonne Université's three marine stations, located in Roscoff.

Marine research is extremely diverse, covering a multitude of fields. It encompasses a wide range of research related to the oceans, seas and coastal zones, all of which have unique ecosystems. In any case, a number of scientific disciplines are represented here, including marine biology, underwater geology, marine meteorology, marine pollution, marine resource management, maritime technologies (such as drones and sonar) and marine renewable energies. Brest and Roscoff, by the large number of scientists working in different research units and establishments, boast a world-class level of scientific production.

Over the period 2019-2022, Brest maintained its overall ranking in terms of the volume of publications in marine research, occupying 18<sup>th</sup> place. Brest-Roscoff held 15<sup>th</sup> place.

6 Institut Français de Recherche pour l'Exploitation de la Mer [French national institute for ocean science and technology].

7 Université de Bretagne Occidentale [University of Western Brittany].

8 Institut Universitaire Européen de la Mer [European Institute for Marine Studies].

A sign of this international influence is that Brest, through UBO, climbed to 5<sup>th</sup> place in the Shanghai rankings in the oceanography category, gaining six places in one year. By reaching this level, UBO is only surpassed by the University of California (San Diego), University of Washington, Ocean University of China and Sorbonne Université.

Over the last ten years or so, Brest has confirmed its role as a major player in scientific production. With an average annual growth rate of 4.3% in the number of publications, the Brest site is performing better than other comparable areas, i.e. other marine research cities that are not capital cities (Kiel, Bergen, Hobart, Southampton, San Diego, Hamburg, Plymouth, Woods Hole, etc.). In this respect, Brest is ranked 12<sup>th</sup><sup>9</sup>.

The excellence of marine research in Finistère is also illustrated by its success in calls for

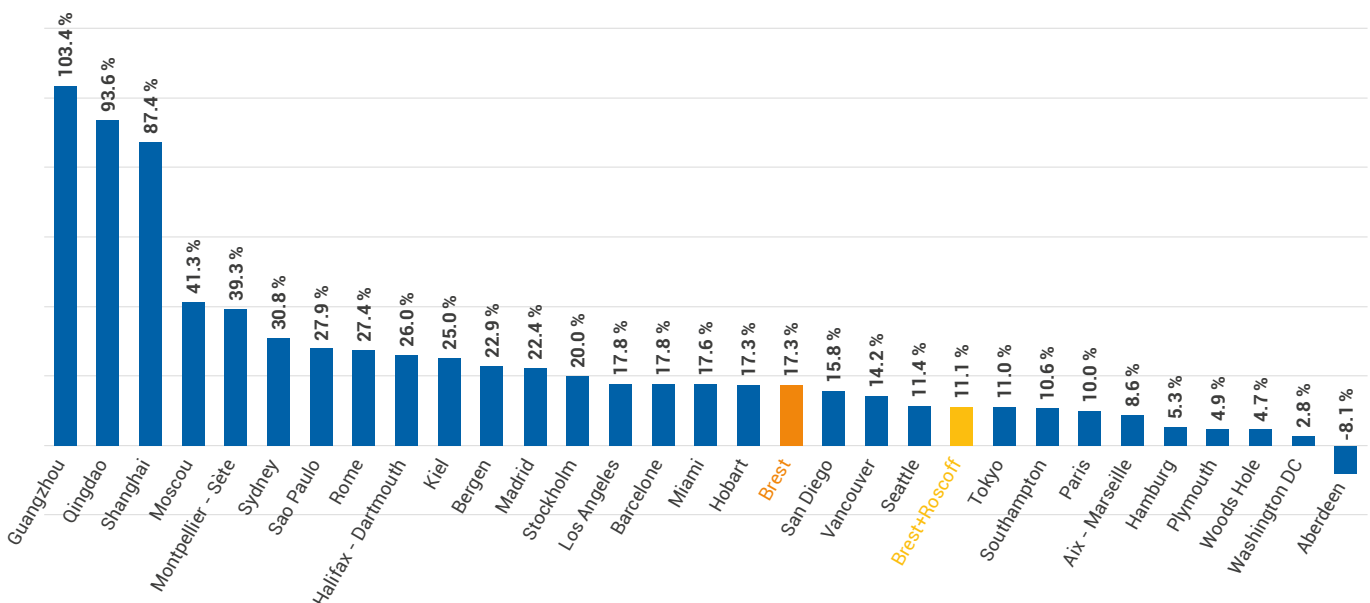
projects from the ERC (European Research Council), one of the most prestigious recognitions of the quality of research on a European scale. Marine research in Brest has had no fewer than six projects funded by the ERC over the last seven years. Two projects fundings were successfully obtained in 2023; one by Géraldine Le Roux, lecturer at UBO, deals with the impact of marine and space debris on indigenous art; and the other by Mark van Zuilen, research director at CNRS carrying out his research at the IUEM, deals with the role of silica in the emergence of life on Earth. The earlier projects were obtained by Bertrand Chapron (Ifremer), Marc-André Gutscher (CNRS), Peter Sutherland (Ifremer) and Stefan Lalonde (CNRS), four researchers assigned to joint research units hosted by the IUEM. During the same period, two ERC projects were awarded to researchers at the Roscoff Biological Station: Frédérique Le Roux (Ifremer) and Bénédicte Charrier (CNRS), bringing to 8 the number of ERC awards obtained over seven years in Finistère.

9 Bibliometric study carried out according to the parameters described in:

- Charles K., Marine science and blue growth: Assessing the marine academic production of 123 cities and territories worldwide, Marine Policy, Volume 84, October 2017, Pages 119-129 (DOI: 10.1016/j.marpol.2017.07.016).

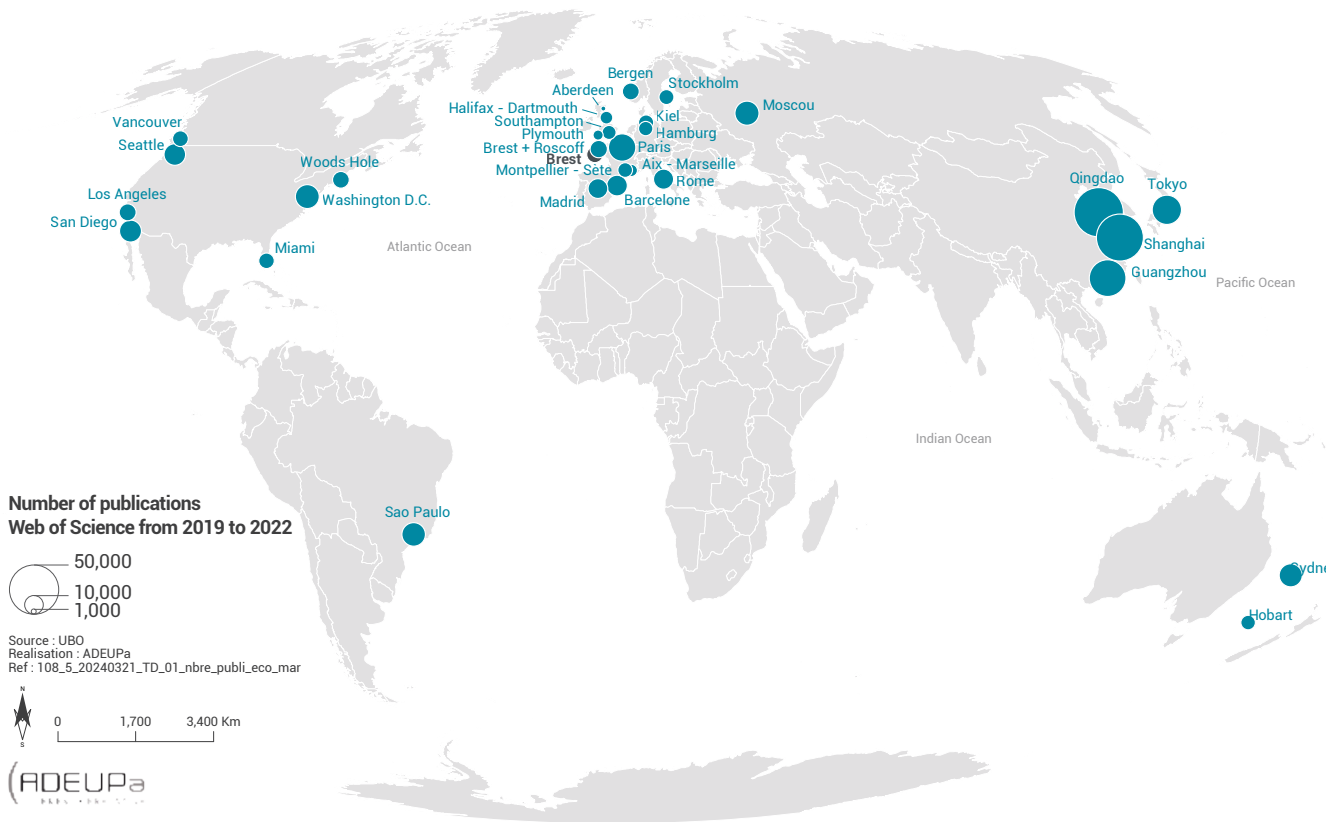
- Charles K. & Charles E., Quels rôles pour les activités de recherche scientifique dans une stratégie de développement territorial? Les cas de Brest (France) et Bergen (Norvège), Revue d'Économie Régionale & Urbaine, 2020/3 (Mars), p. 409-436 (DOI: 10.3917/ru.203.0409).

## Trends in publications by the world's leading marine science sites (average annual growth rate in the number of publications on Web of Science, 2019-2022)



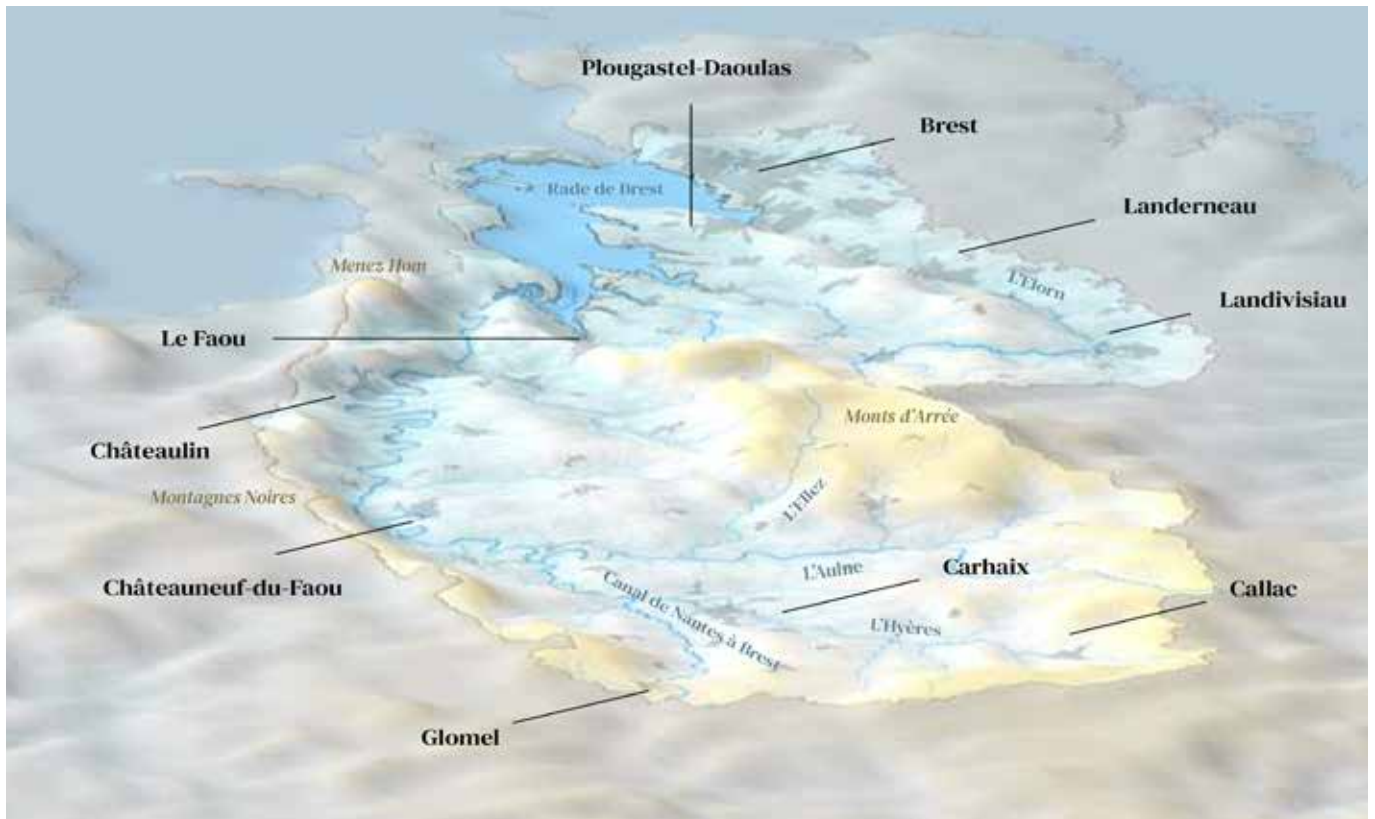
Source: UBO

## Main worldwide sites publishing in marine sciences between 2019 and 2022



Credit: Damien Goret - Brest métropole

# The TerraRade initiative to improve the ecological status of Brest roadstead



Credit: TerraRade

## Brest roadstead, a site under pressure

With its 180 km<sup>2</sup>, the roadstead is an emblematic maritime area in Brest basin. Renowned for its biodiversity, it is also home to a large number of economic activities and issues that depend on and/or have an impact on the quality of its water. For several years now, the scientific community and socio-economic stakeholders in the roadstead (fishermen and shellfish farmers) have been making some similar and worrying observations. Alerted by these local stakeholders, in July 2018, the Prefect of Finistère referred the matter to the chairpersons of the local water commissions of the SAGEs<sup>10</sup> for the Éloarn and Aulne rivers to voice the hope for a “common work programme with the stakeholders, in terms of coordination, knowledge and concrete actions to be undertaken”. The challenge was to get

<sup>10</sup> Schéma d'Aménagement et de Gestion de l'Eau [Water planning and management scheme].

organised in order to set up a management tool tailored to the area, enabling it to be effective both in the maritime domain and in the associated catchment areas (15 times larger than the roadstead itself). This was the genesis of the TerraRade programme. The area concerned was defined on the basis of the joint areas covered by the two SAGEs: 128 municipalities, which together make up a consistent hydrographic area with regard to the receiving environment, i.e. Brest roadstead. This approach is supported by three organisations: Brest métropole, Syndicat de bassin de l'Éloarn (SBE) and Établissement public d'aménagement et de gestion du bassin versant de l'Aulne (Epaga).

## The first challenge: sharing findings

Brest roadstead has already been the subject of a great deal of environmental research and analysis. This work was instrumental in drawing up the 1<sup>st</sup> contrat de baie [bay contract] (1998-2007), the main measures of which focused on bringing wastewater treatment facilities up to standard, and the 2<sup>nd</sup> contrat de rade [roadstead contract] (launched in 2018) called TerraRade. The launch of the first TerraRade actions is scheduled for 2024.

In 2021, the TerraRade coordination unit has commissioned Labocéa, a public laboratory, to make a new environmental assessment. Carried out with the support of a scientific committee and co-constructed with the stakeholders during participatory workshops, it enabled a common assessment of the pressures facing the roadstead. The final document, validated in March 2023, laid the foundations for the action programme.



Credit: Damien Goret - Brest métropole

## Shared responsibilities in a complex system

Carrying out this analysis enabled us to objectively assess the nature of the human pressures and their impact on uses of the roadstead. The diversity of stakeholders and uses (professional, domestic and recreational) in the area complicates the management of the water and aquatic environments.

Their interaction and interdependence, from upstream in the catchment areas to the roadstead itself, make it essential to find a balance between the different economic and ecological functions, which can only be achieved within a framework of upstream-downstream co-operation.

The analyses also reveal the heterogeneity of the roadstead in the face of specific, and sometimes cumulative, pressures. In practical terms, estuaries are directly impacted by inputs from catchment areas via rivers. The bottoms of bays, particularly in the south of the roadstead, are made more vulnerable by the hydrodynamic characteristics (muddy environments with lower renewal of water masses). The coastal fringe, for its part, is more exposed to sanitation problems, as it cannot benefit from the self-purifying effect of watercourses. Further out to sea, the consequences of dredging on the maerl beds are proving to be significant.

This spatial heterogeneity is superimposed on temporal heterogeneity. Some pressures are occasional (overflows in wet weather or accidental pollution) while others are chronic. The effects are more or less long-term and can be cumulative or synergistic.

Finally, in addition to local pressures, the roadstead is also influenced by the effects of climate change. Rising water temperatures, changes in rainfall patterns and river discharges, and rising sea levels influence the environment and the living world in parallel with local human impacts.

This interweaving of economic issues, on land and in the roadstead, and the complexity of the ecological functioning of such an area are all factors requiring consideration in the development and monitoring of the TerraRade project.

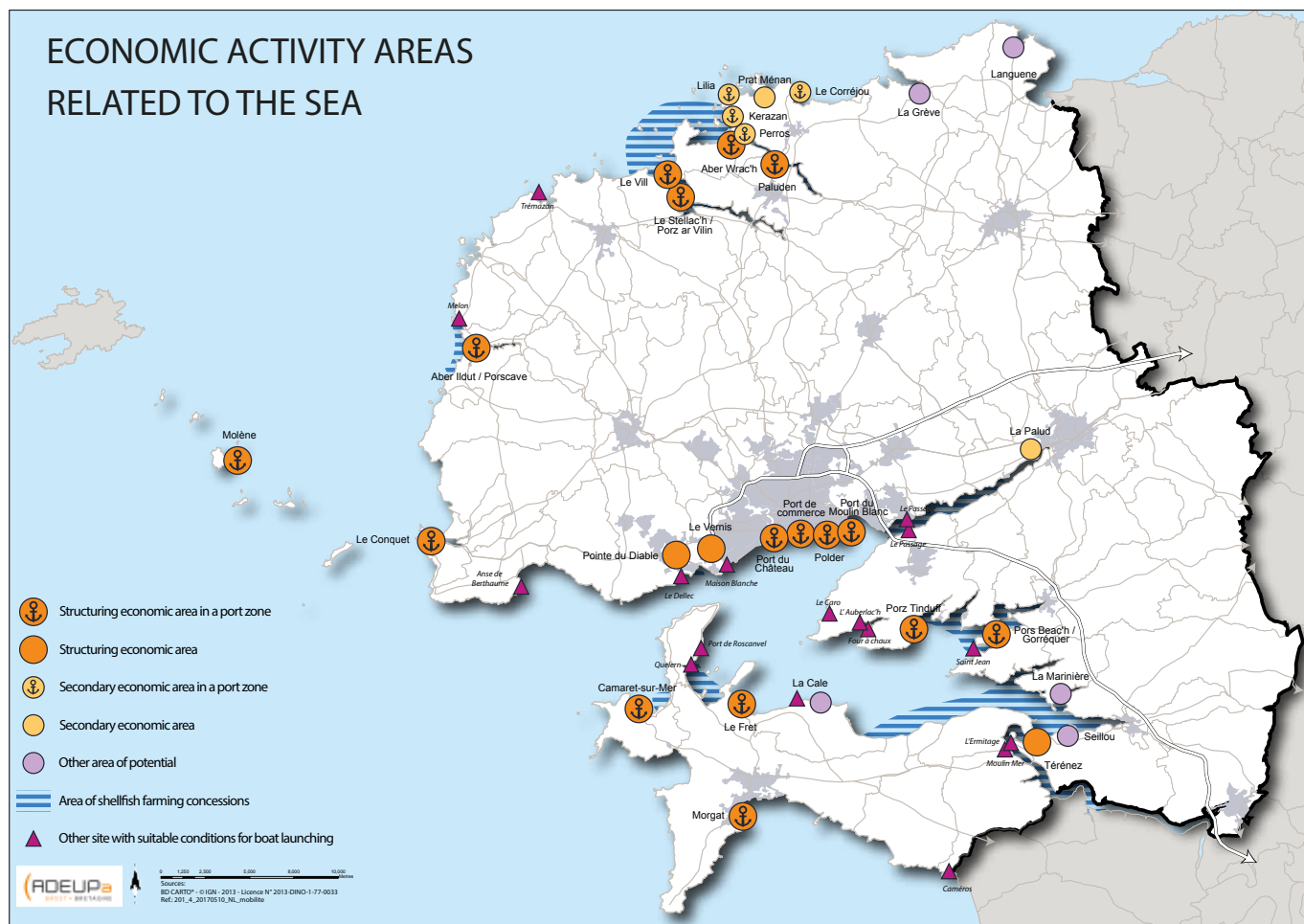
## Practical, joint actions for environmental restoration

To restore water quality and biodiversity in Brest roadstead, and thus support the sustainability of uses, particularly economic ones, the stakeholders have identified a number of actions that will be implemented up to 2030. Here are some examples:

- Planning the development of hedged farmland to reduce the transfer of materials and pollutants to the roadstead, support the protection of existing woodland and launch a study into the development of a wood-energy industry;
- Organising the 'Assises de l'agroécologie' (Agroecology Conferences) to give impetus to practices favourable to agricultural production that also improve soil and soil functions;
- Improving the equipment of the dry docks in the commercial port, drawing in particular on the expertise of the French Navy;
- Better equipping the roadstead with efficient careening facilities;
- Experimenting with dive fishing to develop a new sector;
- Restoring the flat oyster (Rehpar project)<sup>11</sup>.

<sup>11</sup>. To find out more: <https://bassin-elom.fr/terraderade/>

# Maritime spatial planning: towards a greater involvement of local areas



Local authorities are being asked to play an increasing role in the sustainable management of coastal zones, where natural and human dynamics interact in complex ways. The State retains its historic and sovereign prerogative over maritime space, but the diversity of issues and sea-land interactions have led the legislator to ask local authorities drawing up SCoTs (Schémas de Cohérence Territoriale: territorial consistency plans) to define guidelines to harmonise uses as effectively as possible. The loi climat et résilience (2021) (climate and resilience act) and 'SCoT modernisation' order (2020) will require a number of issues to be taken into account in the SCoT plans currently being revised or drafted, so as to better prepare for coastal risks posed by climate change in urban planning documents.

The parts concerning the maritime sector have several objectives that can be summarised in 4 main themes:

- The definition of so-called 'coherent' spaces with a relatively homogenous occupation, vocation and use of coastal and marine areas, in order to propose appropriate guidelines seeking to ensure good cohabitation between the various activities present and environmental issues at stake;
- The integration of areas at sea that represent major environmental challenges, in the same way as special areas on land under the coastal law;
- Identifying and anticipating the need to develop or adapt port facilities and infrastructures or facilities linked to maritime

activities (shellfish farming, yachting, water sports, etc.);

- Anticipating and adapting coastal planning (economic, residential, facilities and infrastructure) to climate change and its repercussions in terms of natural and technological risks (in particular the hazards of erosion and marine submersion).

The general principle adopted by the strategic development project (PAS of the Brest area SCoT, currently under revision), in a context of a great scarcity of economically viable maritime land and competition for this land with other uses in the town (particularly residential), is to preserve the economic vocation of adapted areas close to the shore. Areas that allow or already have access to the sea (for

aquaculture, marine biotechnologies, centres for boating and water sports, shipyards, fishing on foot and at sea, etc.) are especially targeted by this strategy. This challenge of supporting the different sectors of the maritime economy through the adoption of town planning rules and provisions that facilitate this is accompanied by two other complementary and inseparable objectives:

- The desire to preserve natural sites and the rich and specific biodiversity of coastal and marine environments;
- The preservation and adaptation of the sites identified on the map opposite, both in terms of the development projects required for economic activities and of the need to anticipate coastal risks in the context of climate change.

## Example of the integration of maritime spatial planning into the Brest area SCoT<sup>12</sup>

The main principles of the PAS will then be included in the DOO<sup>13</sup> (the regulatory section of the SCoT, which is compulsory for the local urbanism plan for the inter-municipality or 'PLUI'). This will define the guidelines for balancing environmental and climate issues with economic, residential and tourist activities and uses. In other words:

- Purposes of the different sectors in the maritime space;
- Compatibility between the different uses of these sectors;
- Resulting consequences for the use of the diverse parts of the coastline linked to this space;
- Guidelines for marine aquaculture and leisure activities;
- Coastal access and shared use, particularly in the context of the development of renewable marine energy sources.

Given the high concentration of stakes in coastal areas, consultation and participation of local stakeholders and citizens are

12. Document currently under revision.

13. Document d'Orientations d'Objectifs [objectives and guidelines document].

key elements in coastal planning as part of an urban planning document. It is essential to involve all stakeholders in drawing up the strategic guidelines to ensure that everyone's interests and concerns are properly taken into account and to foster the social acceptability of planning and development projects. The framework and context for the planning and management of coastal and marine areas is particularly complex, especially in terms of governance and the powers of each stakeholder, particularly the State. It is therefore very important to understand that, while the position of the local area's elected representatives is expressed through the SCoT, reflecting local policy for the development and management of these areas, it will always be the role of the State to ensure the practical regulation of the maritime aspect. Through the expression of its sovereign powers over the public maritime domain and strategic infrastructures and activities linked to national defence, it is indeed the State that, by integrating and taking into account this local project, remains the principal manager of this area.

For the Brest and Morlaix areas, the discussions will be based on the sea and coast commissions of the FEAMPA<sup>14</sup> programmes and will integrate stakeholders from the boating and water sports sector. The objective is to arrive at common, validated principles by 2025.

14. Fonds européen pour les affaires maritimes, la pêche et l'aquaculture [European Fund for Maritime Affairs, Fisheries and Aquaculture].

### To find out more

#### ADEUPa documents (in French)



Read the observatory report on the maritime economy in Brittany: <https://adeupa-brest.fr/nos-publications/observatoire-de-leconomie-maritime-en-bretagne-ndeg2>



The latest study on the economic impact of the Brest-Lorient defence base (in French: <https://adeupa-brest.fr/nos-publications/impact-economique-de-la-defense-sur-le-territoire-de-la-base-de-defense-de-brest-0>)



A study of the socio-economic importance of the algal industry in the Brest area (in French): <https://adeupa-brest.fr/nos-publications/poids-socio-economique-de-la-filiere-algues-en-pays-de-brest>



Observatory of the maritime economy in the Brest basin n°1: <https://adeupa-brest.fr/nos-publications/leconomie-maritime-du-bassin-de-brest>



Observatory of the maritime economy in the Brest region n°2: <https://adeupa-brest.fr/nos-publications/leconomie-maritime-de-la-region-brestoise>

#### Other documents

- Charles K., Marine science and blue growth: Assessing the marine academic production 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 (March), p. 409-436 (DOI: 10.3917/reru.203.0409).
- A full environmental assessment made by Labocéa (in French): <https://bas-sin-elorn.fr/terrarde/>

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