



**FPCUP ACTION 2021-2-33:  
COPERNICUS FOR MARINE SPATIAL PLANNING  
AND EU DIRECTIVES**

**1st Reporting Process//SGA#20/WP21  
Country report for Spain**

- Task 1. Review of the official implementation of EU marine Directives
- Task 2. Data gaps analysis in the implementation of EU Directives
- Task 3. Identification on how to use Copernicus Data in the implementation of EU

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## BACKGROUND

Marine sectors face several challenges regarding management and sustainability. It is becoming evident that these challenges are even more noticeable during the implementation of specific policies and strategies, particularly those related to marine data and information availability in the context of certain European Directives.

The Copernicus program is dedicated to deliver global data in a reliable and sustainable way. Numerous nations encounter difficulties in ensuring sustainable growth in specific industries, and the Framework Partnership Agreement for Copernicus User Uptake (FPCUP) focuses on harnessing Copernicus data for different maritime sectors within the framework of some EU Directives implementation.

The FPCUP aims at a better integration of Copernicus data in the European regulatory framework by increasing the number of users and applications derived from Copernicus through different actions. This report relates to Action 2021-2-33: *Copernicus for Marine Spatial Planning and EU Directives* that pursues "to promote the use of Copernicus data in the implementation of the EU Marine Spatial Planning Directive (Directive 2014/89/EU; MSP) and EU Marine Strategy Framework Directive (Directive 2008/56/EC; MSFD), while contributing to the standardization of methodologies in the implementation process".

This objective will be achieved through 3 specific objectives:

1. To examine the implementation of EU Directives by Member States using as pilot sites Spain, Portugal, Estonia, Cyprus, and France, and to identify data gaps.
2. To analyse how Copernicus satellite data products can improve those data gaps.
3. To use Copernicus data services in the implementation of EU marine Directives.

To address these objectives within Action 2021-2-33, the following duties should be carried out:

- In **Task 1** (*Review of the official implementation of EU marine Directives*) is dedicated to carry out a review of the application of the two EU marine Directives in each country.
- **Task 2** (*Data gaps in the implementation of EU marine Directives*) is dedicated to identify data gaps and needs within the maritime sectors that are actively engaged in the implementation of the EU marine Directives mentioned earlier.
- In **Task 3** (*Identification on how to use Copernicus Data in the implementation of EU marine Directives*) the requirements of the Marine

**BACKGROUND**

Directives and the data gaps detected in Task 2 will be contrasted with the benefits and opportunities offered by Copernicus data services. As a final result, a jointly standardized set of protocols leading to the implementation of improved methodologies for use in national reporting will be compiled.

- In **Task 4** (*Copernicus data to generate high spatial information for the implementation process*) Copernicus spatial data will be analysed and processed to generate spatial maps related to specific maritime activities and uses required by the national authorities and stakeholders.

# TASK 1. REVIEW OF THE OFFICIAL IMPLEMENTATION OF EU MARINE DIRECTIVES

## 1. Introduction to Task 1

At the European level, there are three main directives related to the protection and management of water and marine resources in the European Union, the Directives 2000/60/EC, 2008/56/EC, and 2014/89/EU. Below is a summary of each of them:

- a) **Water Framework Directive (WFD):** The EU Water Framework Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. It aims to prevent and reduce pollution, promote sustainable water use, protect and improve the aquatic environment and mitigate the effects of floods and droughts. The overall objective is to achieve good environmental status for all waters. Member States are therefore requested to draw up so-called river basin management plans based on natural geographical river basins, as well as specific programs of measures to achieve the objectives.
- b) **The Marine Strategy Framework Directive (MSFD):** The Marine Strategy Framework Directive (MSFD) is the environmental pillar of the EU's Integrated Maritime Policy (IMP), which was set up with a view to enhancing the sustainable development of its maritime economy while better protecting its marine environment. The objective of the MSFD was to reach 'good environmental status' (GES) of the EU's marine waters by 2020, to continue its protection and preservation, and to prevent subsequent deterioration. It establishes European marine regions (the Baltic Sea, the North-east Atlantic Ocean, the Mediterranean Sea and the Black Sea) and sub-regions within the geographical boundaries of the existing Regional Sea Conventions. In order to achieve GES by 2020, Member States had to develop ecosystem-based strategies for their marine waters, to be reviewed every six years. A regulation on Integrated Coastal Zone Management, moreover, defines the principles of sound coastal planning and management to be taken into account by Member States.

The Commission adopted a report on the first implementation cycle of the Marine Strategy Framework Directive in June 2020. The new EU biodiversity strategy for 2030 (adopted in May 2020) aims to further strengthen the protection of marine ecosystems, including through the expansion of protected areas and the establishment of strictly protected areas for habitats and fish stocks recovery.

**Directive on Maritime Spatial Planning (MSP):** Maritime spatial planning contributes to the effective management of marine activities and the sustainable use of marine and coastal resources, by creating a framework for consistent, transparent, sustainable and evidence-based decision-making. In order to achieve its objectives, this Directive lay down obligations to establish a maritime planning process, resulting in a maritime spatial plan or plans; such a planning process take into account land-sea interactions and promote cooperation among Member States. According to the EU MSP Directive, Member States are free to design and determine the format and content of their maritime spatial plans, including the institutional arrangements and the allocation of maritime activities.

In summary, these three directives focus on the protection and sustainable management of water and marine resources in the EU. The Water Framework Directive addresses the management of inland waters, the Marine Strategy Framework Directive focuses on the protection of the marine environment, and the Directive on Maritime Spatial Planning deals with the planning of maritime space for efficient and sustainable use of maritime activities. Together, these directives seek to ensure the conservation of aquatic ecosystems, water quality, and sustainable use of marine resources.

## 2. Marine Strategy Framework Directive in Cyprus

### 2.1. BACKGROUND

The marine environment is a precious heritage that must be protected, preserved and, where feasible, restored in order to maintain biodiversity, ecosystem functioning and to ensure clean, healthy and productive seas. The marine ecosystem is threatened by various pressures, notably pollution, eutrophication, overfishing, introduction of exotic species, climate change and other human related activities.

For this reason, in the July 2008, the Marine Strategy Framework Directive (2008/56/EC) (MSFD) entered into force. The Directive establishes a legal framework for the protection and management of European seas and ensures their long-term sustainable use. To help EU countries achieve a good environmental status (GES), the directive sets out 11 illustrative qualitative descriptors (table 1.).

To this end, EU member states are obliged to develop a strategy for their marine waters by implementing appropriate measures and monitoring programs to protect, conserve and monitor the marine environment, preventing degradation

or, if possible, restoring marine ecosystems in areas where it has been adversely affected.

To protect and conserve the marine environment and ecosystem functioning, Member States should also establish Marine Protected Areas (MPAs), within the framework of the program of measures of MSFD, in order to achieve and maintain GES. This is also in line with the Habitats Directive (92/43/EEC) and other Regional and International Conventions.

**Table 1. Eleven MSFD Descriptors for defining good environmental status**

Descriptor	How is GES defined?
1- Biodiversity	The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
2- Non-indigenous species	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.
3- Commercial fish and shellfish	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.
4- Food webs	All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
5- Eutrophication	Human-induced eutrophication is minimized, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.
6- Sea-floor integrity	Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
7- Hydrographical conditions	Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
8- Contaminants	Contaminants are at a level not giving rise to pollution effects.
9- Contaminants in seafood	Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.



Descriptor	How is GES defined?
10- Marine litter	Properties and quantities of marine litter do not cause harm to the coastal and marine environment.
11- Energy including underwater noise	Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

## 2.2. CYPRUS LEGISLATION (Law No.18(I)/2011)

The Marine Strategy Law of 2011 (No.18(I)/2011) transposed the Marine Strategy Framework Directive (MSFD) into the national legislation of Cyprus.

### 2.2.1. Objective

The purpose of this Law is to take the necessary measures to achieve or maintain the good environmental status of the marine environment by the year 2020.

To achieve this goal, a maritime strategy was developed and was implemented, which:

- a) Ensures the protection and conservation of the marine environment, prevent its degradation or, if possible, restore marine ecosystems in areas where they have been adversely affected;
- b) Prevents and reduce deposits in the marine environment, with the aim of phasing out pollution, as defined in Article 2, to ensure that there are no significant impacts or risks to marine biodiversity, marine ecosystems, human health or the legitimate uses of the sea.

### 2.2.2. Application Area

The marine waters of the Republic of Cyprus, as these were defined to the Marine Strategy Law of 2011 (National Law N.18(I) 2011), which transposed the MSFD, includes waters, the seabed and subsoil on the seaward side of the baseline from which the extent of territorial waters (12 nautical miles) is measured, as this is defined in the Territorial Sea Law 45 of 1964, extending to the outmost reach of the Exclusive Economic Zone of the Republic of Cyprus, as this is defined in the Exclusive Economic Zone Law 64(I) of 2004 and the UNCLOS Ratification Law 203 of 1988.

In 2004, the Republic of Cyprus, proclaimed, by Law No. 64 (I) 2004, its Exclusive Economic Zone («EEZ»), outer limit of which does not extend beyond 200 nautical miles from the baselines from which the breadth of its territorial sea is measured. In accordance with the United Nations Convention of the Law of the Sea (UNCLOS 1982), and the relevant customary international law, the

delimitation between the EEZ/continental shelf of the Republic of Cyprus and the EEZ/continental shelf of other neighbouring coastal States, is affected by an agreement on the basis of the median-line principle. Accordingly, the Republic of Cyprus has so far concluded Agreements on the delimitation of its EEZ/continental shelf with the Arab Republic of Egypt (in force), the Republic of Lebanon (ratification pending) and the State of Israel (in force), on the basis of the median-line principle.

In those parts of Cyprus' maritime boundaries where no delimitation Agreements have been signed and until such Agreements are signed, the Republic of Cyprus considers as the outer limit of its EEZ/continental shelf, the median-line which is measured from the baselines from which the breadth of their territorial sea is measured. The marine waters of the Republic of Cyprus include also the coastal waters as this has been defined under Law 13(I) of 2004, which transposed the Water Framework Directive.

#### 2.2.3. Competent Authority

According to the same law, the Department of Fisheries and Marine Research (DFMR) is the competent authority for the implementation of the MSFD, and it participates in all the activities for the implementation of the MSFD at the EU level (committees, working groups, etc.).

### 2.3. THE IMPLEMENTATION OF THE MSFD IN CYPRUS

The Department of Fisheries and Marine Research (DFMR) which is the Competent Authority for the implementation of the MSFD in Cyprus participated in activities for the implementation of the MSFD at European level, including meetings of the Marine Directors, the Marine Strategy Coordination Group, the Working Group on the Exchange of Data, Information and Knowledge (WG DIKE) and the Working Group on Good Environmental Status (WG GES). Additionally, for the achievement of good environmental status, the DFMR has prepared, with the support of consultant services (through public tender process), the reports required by Articles 8, 9 & 10 of the MSFD as follows:

#### 2.3.1. 1st Period: 2012 - 2018

##### **A. Phase 1 - DFMR implemented the first phase concerning MSFD Articles 8, 9 and 10 in 2011-2012**

The Initial Assessment of the Marine Environment of Cyprus in accordance with the basic features and characteristics, taking into account anthropogenic pressures and impacts. The Initial Assessment of the Marine Environment includes the following:

- Analysis of the current environmental status of marine waters based on the physical, chemical and biological functions,
- Analysis of the predominant pressures and impacts of the marine environment,
- Economic and social analysis of sea water usage and the cost of degradation of the marine environment.

In this context, the initial assessment describes and evaluates the status of marine waters of Cyprus based on the data and information in accordance to the Table 1 of Annex III of the MSFD. This includes information on the predominant habitat type, the ecological importance of the species found in Cyprus marine waters and the physicochemical characteristics of the waters and the seabed. The marine environment is influenced by various pressures and impacts which are analysed in accordance to Table 2 of Annex III of the Directive. These pressures and impacts are associated with human activities and thereof associated with physical loss, marine pollution and interaction with hydrological processes. The initial assessment of the marine environment also covers the economic and social prospects of the maritime sectors, while maintaining the relationship between economic sectors and the pressures and impacts as listed in Table 2 of Annex III of the MSFD.

### **B. Phase 2 - The Determination of Good Environmental Status**

The definition of good Environmental Status of the Marine Environment of Cyprus, based on the characteristics set out in Annex I of the MSFD and in Decision (2010/477/EU) concerning the criteria and methodological standards for GES. Good Environmental Status is defined as: "the environmental status of marine waters where these waters provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations". GES is determined at the level of the marine region or subregion according to Article 4, based on qualitative descriptors in Annex I. To achieve the objective of GES, there is a need to apply an ecosystem approach to management of human activities.

### **C. Phase 3 - Establishing Environmental Targets and Associated Indicators in order to achieve GES.**

### **D. Phase 4 – Establishment of monitoring program**

It should be noted that after the European Commission evaluation of the Initial Assessment report, the determination of GES report and related targets and associated indicators report, based on Article 12 of the MSFD, the DFMR has,

- i. Revised the above reports, which are summarized in the new report «Revision of Reports prepared in 2012 for the implementation of Articles 8,9 and 10 of the Marine Strategy Framework Directive (2008/56 / EC).
- ii. Establish a monitoring program (Report on the Monitoring Programmes of Cyprus in the Framework of the Implementation of the Marine Strategy Framework Directive (2008/56 / EC) for the ongoing assessment of the environmental situation and environmental objectives.

### **E. Phase 5 – Program of Measures**

A program of measures was developed with the assistance of consultation services (through public tender process), and other Governmental Departments. The Program of Measures was submitted in August 2016, according to the implementation of article 11 and article 13 of the MSFD.

On 31 July 2018, the Commission adopted its report assessing these programs, identifying whether they constitute an appropriate framework within the requirements of the Marine Strategy Framework Directive and whether they address the pressures that the EU seas and oceans are facing. The Commission concluded that concerning Cyprus, not all pressures are covered properly by the measures. The Commission therefore provides recommendations to Member States to guide them in accordance with Article 16 of the Directive.

#### 2.3.2. 2nd Period: 2018 - 2024

In regards the 2nd period, the Department of Fisheries and Marine Research has prepared a new report for the implementation of the MSFD in Cyprus. What is more, the approval of the Council of Ministers is need in order to submit it to the European Commission. The year 2024, they will submit an assessment and a report on the monitoring programs of the marine strategy as well as a report for Good Environmental Status.

### **3. Maritime Spatial Planning Directive in Cyprus**

#### **3.1. BACKGROUND**

Maritime Spatial Planning (MSP) is one of the cross-cutting tools of the Integrated Maritime Policy (IMP) and contributes to the sustainable development of marine zones and coastal areas. In other words, Maritime Spatial Planning (MPS) is a process to address the increasing demand for maritime space from traditional and emerging sectors while preserving the proper functioning of marine ecosystems. MSP represents a move from traditional single sector planning to a more integrated approach to the planning of the sea. The key feature of MSP is its functional character i.e., integration of various sectors, societal needs, values and goals.

The MSP Directive was adopted in 2014 and establishes a framework for MSP, “aimed at promoting the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources”. The EU MSP Directive allows the Member States to free to design and determine the format and content of their maritime spatial plans, including the institutional arrangements and the allocation of maritime activities. The outcome of MSP can also take the form of different non-binding visions, strategies, planning concepts, guidelines and governance principles related to the use of sea space.

Concluding, Europe's marine environment is under increasing anthropogenic pressure. Responding to concerns about the capacity of sector-specific policies to manage such pressures, the European Union adopted two directives: the Marine Strategy Framework Directive (MSFD) (2008) and Maritime Spatial Planning Directive (2014). In other words, the MSPD aims at the sustainable growth of maritime and coastal economies and the sustainable use of marine and coastal resources, while the MSP is the process adopted by MSs in order to analyse and regulate the spatial and temporal distribution of human activities in the marine environment to attain ecological, economic, and social objectives.

### 3.2. CYPRUS LEGISLATION (Law 144(I)/2017)

<b>Basic facts on Marine Waters in Cyprus</b>		
Cyprus' internal waters (to the baseline) and territorial sea, out to 12 nautical miles (as defined by UNCLOS) cover approximately 13,968 km <sup>2</sup> .	Cyprus Exclusive Economic Zone (as defined by UNCLOS) is about 98,240 km <sup>2</sup> .	The Republic of Cyprus concluded bilateral agreements concerning the delimitation of the EEZ with Egypt (2003), Lebanon (2007) and Israel (2010), based on the internationally accepted principle of the median line/equidistance and in accordance with the UNCLOS.

The Maritime Spatial Planning and Other Related Matters Law of 2017 (Law 144(I)/2017), which transposed the MSP Directive 2014/89/EU, was approved by the House of Representatives in October 2017. It was published in the Official Gazette of the Republic on 13.10.2017.

The Law 144(I)/2017 has been amended by the Maritime Spatial Planning and Other Related Matters (Amended) Law of 2021 (Law 34(I)/2021). The Law 34(I)/2021 was approved by the House of Representatives in March 2021 and published in the Official Gazette of the Republic on 23 March 2021.

The Policy Statement (PS) on MSP is the strategic framework for MSP and the Maritime Spatial Plan. It sets the vision, priorities, goals (economic, social, cultural and environmental) and strategic guidelines of the State, taking into account the need for sustainable growth. The Policy Statement on MSP was finalized by the MSP Committee after a public consultation and was adopted by the Council of Ministers on 21 December 2021. What is more, the PS takes into account the existing economic, social, environmental and cultural dimension of marine waters, as well as the Development Plans implemented in coastal areas of Cyprus (according to the Town and Spatial Planning Law) and the Strategy and Action Plan for the Integrated Coastal Zone Management. As a result, land-sea interactions are taken into account and the coherence of the MSP with the respective institutional procedures related to the integrated coastal areas management is promoted

#### 3.2.1. Objective

The establishment of a framework for the maritime spatial planning aiming at promoting the sustainable growth of the Republic's maritime economy, the

sustainable growth in its marine waters and the sustainable use of its marine resources.

### 3.2.2. Application Area

The Maritime Spatial Plan, as defined in the Law, applies in the maritime waters of Cyprus and includes uses or activities that take place:

1. In the territorial sea,
2. In the contiguous zone in relation to antiquities, in accordance with the provisions of the Bordering Zone Law and of the Antiquities Law,
3. In the Exclusive Economic Zone or on the continental shelf of the Republic of Cyprus

The Maritime Spatial Plan does not apply to the following areas:

<b>Restrictions</b>	
Coastal Area	Sea Waters
Natura 2000 network areas	Marine areas of the Natura 2000 network
Important Species and Habitants	Important marine habitats and marine habitats protected species
Beach protection zone	Prohibition and regulation areas for fishing activities
Coasts and protected natural areas and the landscape/geotopes	Marine shooting fields
Territorial Ancient Monuments	Military material drop-off areas
Existing urban planning regime	Material deposit areas dredging
Danger zones (Seveso Directive)	Marine antiquities
Land-sea interactions/ existing structures	
Seismic hazard zones	

### 3.2.3. Competent Authority

The MSP Law (2017), as amended, defines the responsibilities and the role of various institutions involved in MSP implementation, and establishes the Shipping Deputy Minister to the President as the competent authority. It clarifies the development and approval of MSP Plan and sets the provisions for approval of MSP Projects. In addition to defining the competent authorities, it establishes an MSP Committee involving 15 members (from different ministries, departments and services of the Government) which oversees the preparation

of the Maritime Spatial Plan. As far as MSP is concerned, this Committee has replaced the Working Group on MSP and ICZM, created in 2013, which however remains in place for issues dealing with integrated coastal zone management.

Also, at the national level, the inter-ministerial Committee has the overall responsibility for formulating environmental policy. Environmental policy is coordinated by the Ministry of Agriculture, Rural Development and Environment (MARDE), with the exception of land-use and spatial planning which is the responsibility of the Ministry of the Interior.

At the regional scale, spatial plans are developed at three levels, namely the Island Plan, the Local Plans and the Area Schemes. The coastal zone is not a unified planning area. Therefore, there is no separate institutional or land-use planning framework specifically pertaining to the coastal areas. Coastal land-use zones form part of several development plans applying to different local administrative areas. Moreover, there is no single legal or functional planning definition of the coastal zone or the coastal area.

### 3.3. THE IMPLEMENTATION OF THE MSP IN CYPRUS

The following are the phases for the implementation of MSP Directive:

1. DATA COLLECTION
2. ANALYSIS OF EXISTING AND FUTURE CONDITIONS
3. PUBLIC CONSULTATION
4. DETERMINATION OF CONDITIONS AND OBJECTIVES (POLICY STATEMENT)
5. DEVELOPMENT OF DRAFT MS PLAN
6. PUBLIC CONSULTATION ON MS PLAN
7. REVISION OF DRAFT
8. FINAL STRATEGIC ENVIRONMENTAL ASSESSMENT STUDY & PUBLIC CONSULTATION
9. FINAL VERSION OF MSP
10. APPROVAL BY COUNCIL OF MINISTERS
11. IMPLEMENTATION OF PLAN
12. MONITORING & EVALUATION OF PLAN

Cyprus prepared and undertook public consultation on a draft Strategy for Integrated Maritime Policy in late 2013. The Strategy entitled: "Strategy of Cyprus for a National Integrated Maritime Policy - Vision: Sustainable Use and Development of the Seas of Cyprus" was approved by the Council of Ministers in August 2014. In that context, MSP, ICZM and MSFD were all mentioned as horizontal tools for achieving the goals of the Strategy. The work on Integrated Maritime Policy is being led by the Ministry of Transport, Communications and



Works (Department of Merchant Shipping) that chairs the Coordination Group on IMP. The group has developed a draft IMP Integrated Action Plan that has been submitted to the IMP Inter-ministerial Committee for approval and then to the Council of Ministers for final approval.

The preparatory work on MSP was delegated, by a decision of the Council of Ministers to the Ministry of Transport, Communications and Works (Department of Merchant Shipping) in July 2012. Moreover, the National MSP Law established the MSP Committee for the preparation of the draft maritime spatial planning of Cyprus. In 2015, the Ministry of Transport, Communications and Works (Department of Merchant Shipping), coordinated the Interreg IV project THAL-CHOR project, that aimed at developing MSP methodology and its pilot implementation for the preparation of marine spatial plans in selected areas of Cyprus and Greece, through cooperation among the two countries. Those general objectives are pursued in the second project THAL-CHOR 2. A final draft of the National Policy Statement for Maritime Spatial Planning in line with the relevant provisions of the Law 144(I)/2017, as amended, has been prepared by the National MSP Committee.

The Policy Statement for MSP identifies the main priorities, goals and strategic guidelines for the marine waters aiming towards sustainable growth. It will be the guiding framework for strategies, policies, objectives and priorities that will govern the preparation of the National Marine Spatial Plan.

An official and wider public consultation according to the Maritime Spatial Planning (Public Consultation) Regulations of 2021 (P.I. 133/2021) with the relevant stakeholders and the public was initiated on 14 May 2021. This public consultation on the draft of the National Policy Statement for MSP was completed on 14 July 2021 and the final draft (based on the results of the public consultation) of the Policy Statement was agreed/approved by the MSP Committee on 24 September 2021. The Policy Statement on MSP was finalized by the MSP Committee after a public consultation and was adopted by the Council of Ministers on 21 December 2021.

**Finally, yet importantly, the official approval of the Ministry of Environment is needed for the Maritime Spatial Plan before the submission and eventually the adoption from the Council of Ministers.**

**For the implementation** of both the Vision for the marine waters of Cyprus and the aforementioned Strategic Guidelines and Strategic Goals which are specialized based on the components of sustainable growth, Specific Goals per development sector are identified, for the implementation of which the competent government Services already have ongoing strategies, policies and programs or actions:

- Fisheries and Aquaculture
- Energy
- Maritime and Coastal Tourism
- Shipping - Ports

**The Maritime Spatial Plan will be monitored** through indicators that will be defined based on planned activities. The system of spatial markers will be determined in detail by the Maritime Spatial Plan Committee and within 3 years since the adoption of the Plan.

**The evaluation** of the implementation of the MSP will be done every 5 years. Furthermore, the results of the evaluation will be taken into account in the future revision and updating of the MSP.

Finally, in order to achieve the goal of maintaining “Good Environmental Status of Seawaters”, the indicators set out by the Maritime Strategy Law will be systematically monitored and evaluated.

#### **4. Preliminary gaps detected**

1. The interaction of agencies to provide data and knowledge, from one agency to another, is very important and unfortunately absent. Most likely this is due to procedures and bureaucracy.
2. Operators are not interested in being trained. They want ready results, only.
3. The lack of human and economic resources together with lack of collaboration among the involved agencies threaten the assessment and implementation of the directives.

A successful application of MSP to resolve conflicts depends on the level of stakeholder involvement, data availability and the existing knowledge base.

## TASK 2. DATA GAPS ANALYSIS IN THE IMPLEMENTATION OF EU MARINE DIRECTIVES

### 5. Introduction to Task 2

Data gaps have been analysed through a consultation with practitioners, stakeholders and relevant administrations in the context of the Marine Strategy Framework Directive or the Marine Spatial Planning Directive.

This technical report presents the results of the survey conducted among Spanish stakeholders to fulfil Task 2. Additionally, it provides initial insights for Task 3, examining how the identified data gaps among Spanish stakeholders could potentially be addressed using Copernicus data. Moreover, it also provides preliminary results for Task 4, exploring services of higher interest required by the different marine sectors. The **objectives of the survey** are:

- To identify the current needs and gaps of Spanish stakeholders to better understand their current usage of Copernicus data, across different marine sectors, in the implementation of both EU Marine Directives (Task 2 and Task 3).
- To identify the Copernicus services of higher interest for the marine sectors involved in the implementation process (Task 4).

### 6. Methodology

The survey was compiled from contributions, by the different action partners, and a final English version with 34 questions was agreed upon (Annex I). It should be noted that this action is being coordinated with other actions, part of Working Group Oceans, namely, Action 2021-2-42 (Copernicus uptake for the maritime sector) and Action 2021-2-47 (Coastal coordination of user needs and methodologies), and, therefore, the survey included questions that contributed to all three actions, to improve efficiency and avoid stakeholder fatigue. The final survey was then translated to the different languages of the participating countries for dissemination. Survey questions were organised in the following sections:

- GENERAL INFORMATION (Q.1)
- MARINE SECTORS (Q2-Q13)
- MARINE SECTOR & MSP GAPS (Q14-Q16)
- EU MARINE DIRECTIVES (Q17-Q23)
- MARINE STRATEGY FRAMEWORK DIRECTIVE GAPS (Q24-Q27)
- COPERNICUS (Q28- Q34)

The identification of stakeholders and dissemination of the survey was done independently by each partner leveraging contacts, partners, previous email campaigns, social media outreach, as well as personalised invitations to encourage participation. The objective was to gather diverse perspectives, maximise participation and enrich the outcome of the project.

For the Cypriot survey, the survey was disseminated to a total of 20 contacts across the country. The stakeholders have been identified from the list of contacts by various departments, targeting academia, private, as well as public sector and have been contacted via mass emails, as well as individual emails for reminders etc. The list of contacts has been derived from previous projects related to the marine sector.

## 7. Results for Cyprus

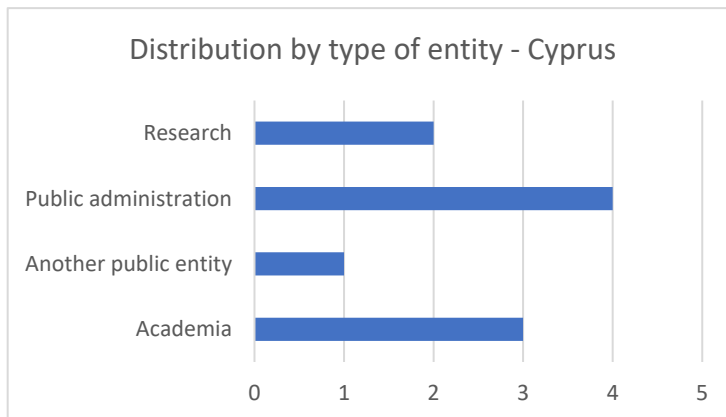
### 7.1. General overview of stakeholder's profile for the maritime sector in Cyprus

The survey for Cyprus received a total number of 11 responses. In general terms, most of entities stated to be included within the Mediterranean Sea marine region (11),

*The profile of the stakeholders that responded to the survey is shown in Figure 7-1.*

*Distribution by area of activity - Cyprus*

Figure 7-1



Area of activity	Nº
Marine	9
Coastal	8
Inland	4
<b>TOTAL</b>	<b>21</b>

*Distribution by area of activity - Cyprus*

Area of activity	Nº
Marine	9
Coastal	8
Inland	4
<b>TOTAL</b>	<b>21</b>

*Figure 7-1. Stakeholder's profile by type of entity and by area of activity for Cyprus.*

The overall **relation of stakeholders to the various sectors** was evaluated with a multiple answer question, so that respondents could select more than one sector of their interests or involvement ( Figure 7-2).

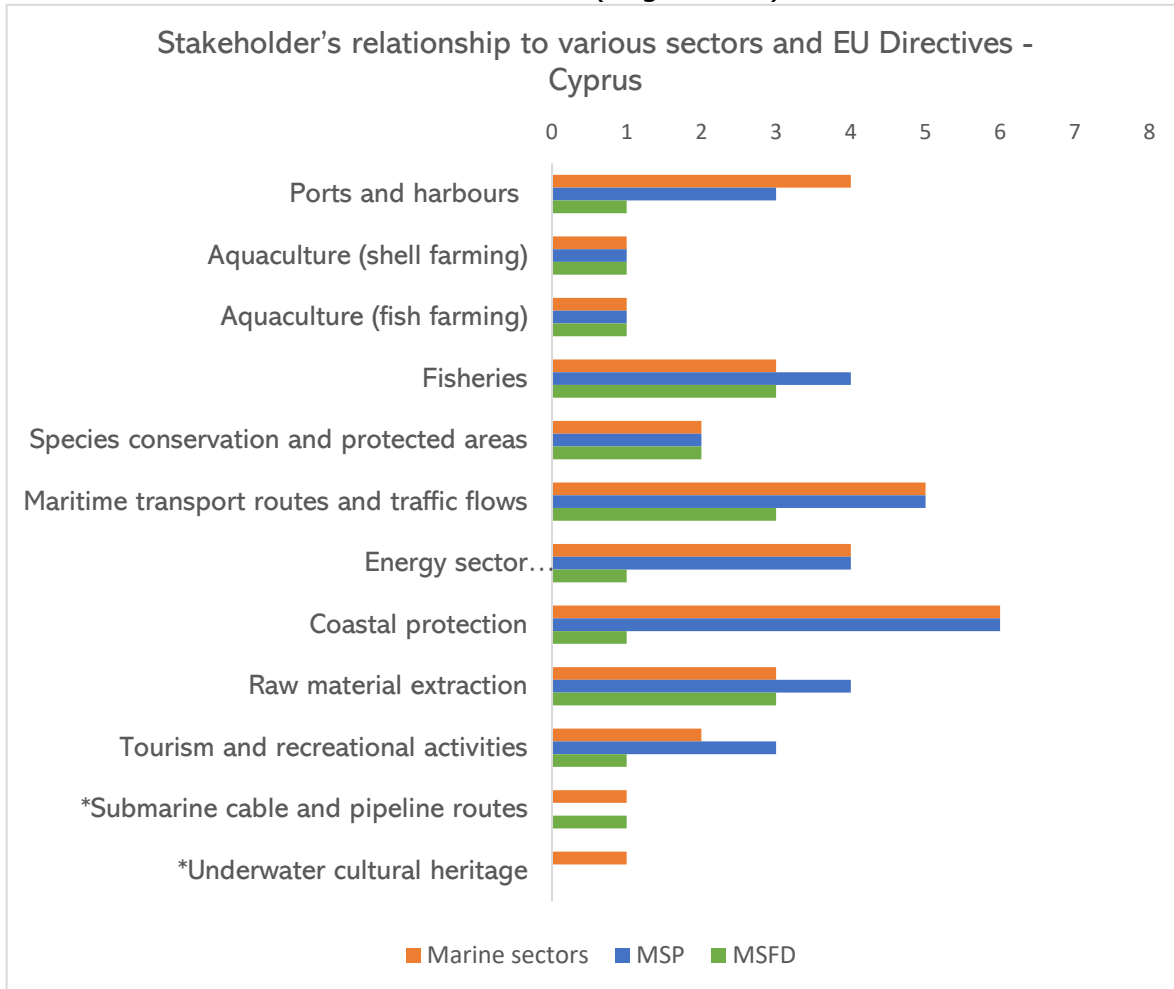


Figure 7-2. Stakeholder's relationship to various sectors and EU Directives implementation

The overall **relation of stakeholders to the EU Directives implementation** was evaluated with a multiple answer question, so that respondents could select more than one Directive of involvement.

Regarding the stakeholder's profile involved in implementation of the **EU Marine Spatial Planning Directive (MSP)** in Cyprus,

Regarding the stakeholder's profile involved in implementation of the **EU Marine Strategy Framework Directive (MSFD)** in Cyprus,

## 7.2. Stakeholder’s services of interest in the implementation process of EU Directives in Cyprus

The overall **services of interest to the various sectors** were evaluated with a multiple answer question, so that respondents could rate services by order of interest (Figure 7-3).

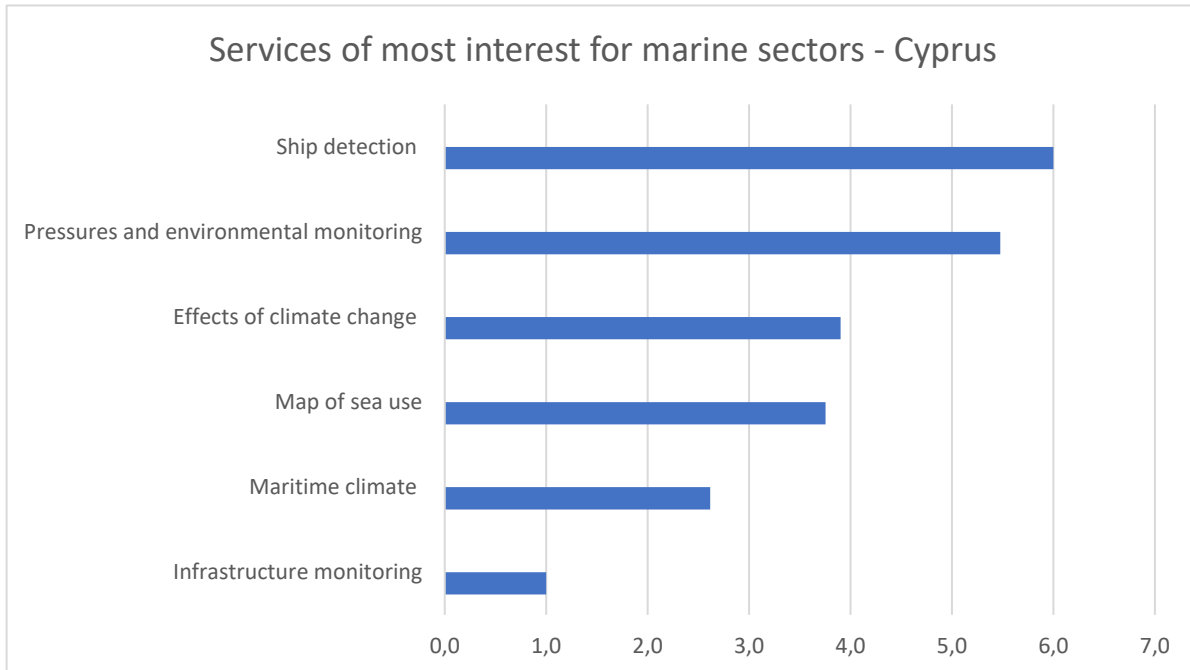


Figure 7-3. Stakeholder’s services of most interest among all sectors

Figure 7-4 shows a detailed analysis of the services of interest for each of the marine sectors listed in Figure 7-2.

3 stakeholders selected **“Ports and harbours”** as a sector of their involvement in Cyprus. “Pollution and environmental monitoring” service emerged as the most interesting service for these stakeholders, followed by far by the “Ship detection” service. “Infrastructure monitoring”, then “Effects of climate change” and finally “Maritime climate” received the lowest level of interest.

Just 1 stakeholder selected **“Aquaculture (shell farming)”** as a sector of their involvement in Cyprus. “Oceanographic data: waves, tides, temperature (e.g., for Operational and maintenance activities)” and then “Ship detection” emerged as the most interesting services for these stakeholders. “Pollution and environmental monitoring (e.g., oil spills, microbiological contamination, chemical contamination, biotoxins)”, “Effects of climate change (e.g., extreme events, marine heatwaves)” and “Marine water quality data (e.g., anoxic events, acidification, chlorophyll concentration, jellyfish presence)” as well as

“Oceanographic data: waves, tides, temperature (e.g., for Operational and maintenance activities)” received the lowest level of interest accordingly.

1 stakeholder selected **“Aquaculture (fish farming)”** as a sector of their involvement in Cyprus. “Oceanographic data: waves, tides, temperature” emerged as the most interesting service for these stakeholders, followed by far by “Marine water quality data, “Ship detection” and “Pollution and environmental monitoring”, “Effects of climate change” and “Infrastructure monitoring (e.g. cages)”. “Selection of suitable site locations and species” received the lowest level of interest.

3 stakeholders selected **“Fisheries”** as a sector of their involvement in Cyprus. “Ship detection” emerged as the most interesting service for these stakeholders, followed by far by “Maritime climate”. “Pollution and environmental monitoring” followed and “Map of sea use” received the lowest level of interest.

2 stakeholders selected **“Species conservation and protected areas”** as a sector of their involvement in Cyprus. “Pressures” and then “Environmental monitoring” emerged as the most interesting service for these stakeholders, followed by far by “Effects of climate change” and “Habitat distribution area and trends” and “Species distribution area and trends”. “Map of sea use (e.g. presence of conflicting human activities)” received the lowest level of interest.

5 stakeholders selected **“Maritime transport routes and traffic flows”** as a sector of their involvement in Cyprus. “Ship detection” emerged as the most interesting service for these stakeholders, followed by far by “Pollution and environmental monitoring”. “Sea ice covered area” received the lowest level of interest.

3 stakeholders selected **“Energy sector (hydrocarbons and renewable energies)”** as a sector of their involvement in Cyprus. “Environmental monitoring”, “Effects of climate change (e.g. sea-level rise, extreme events)” and “Energy production surveying” emerged as the most interesting services for these stakeholders. “Selection of suitable renewable energy locations (wind, waves, currents)” and “Bottom geologic maps” received the lowest level of interest.

6 stakeholders selected **“Coastal protection”** as a sector of their involvement in Cyprus. “Effects of climate change (e.g. sea-level rise, extreme events)” emerged as the most interesting service for these stakeholders, then “Monitoring and prevention of coastal erosion”. “Characterisation of emerged coastal areas” received the lowest level of interest.

2 stakeholders selected **“Raw material extraction”** as a sector of their involvement in Cyprus. “Pollution and environmental monitoring” emerged as



the most interesting service for these stakeholders, followed by "Ship detection". "Map of sea use" received the lowest level of interest.

2 stakeholders selected "**Tourism and recreational activities**" as a sector of their involvement in Cyprus. "Pollution and environmental monitoring" emerged as the most interesting service for these stakeholders, followed by "Ship detection (e.g., monitoring vessel activity)". "Effects of climate change" and "Map of sea use" received the lowest level of interest.

6 entities selected "**Other**" sectors of their interests or involvement in Cyprus: from CUT (3 stakeholders), ERATOSTHENES Centre of Excellence, Cyprus Marine and Maritime Institute and from the Department of fishers and Marine Research. Most of them (4) selected "Scientific research" sector as its area of work. "Underwater cultural heritage" sector and "exploration, exploitation and extraction/ submarine cable and pipeline routes" was selected by 2 of the stakeholders.

TASK2

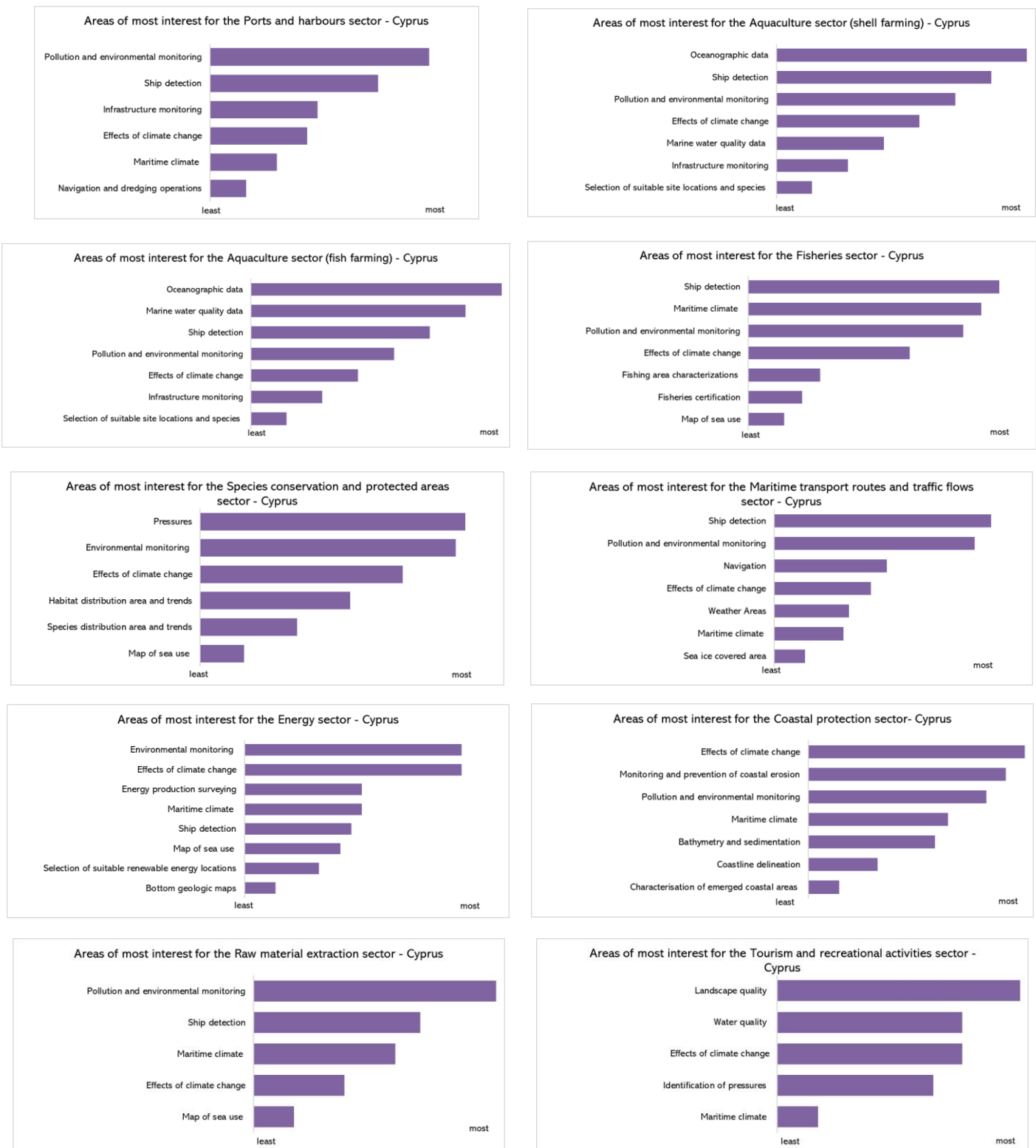


Figure 7-4. Detail of services of most interest for the overall sector in Cyprus

### 7.3. Data gaps and needs in the implementation process of EU Directives in Cyprus

#### 7.3.1. Stakeholders involved in EU Marine Spatial Planning Directive implementation

##### 7.3.1.1. Problems encountered when working with the data available

Regarding general data usage, most of Cypriot stakeholders involved in Marine Spatial Planning Directive implementation (2), when asked about the most common problems encountered when working with data (Figure 7-5), mentioned the challenges associated with mostly unsuitable resolution and incomplete spatial distribution, followed by data reliability and then data format as well as incomplete temporal distribution, and in the lower level problem encountered we find the heterogeneous data collection methodologies as well as heterogeneous sources.

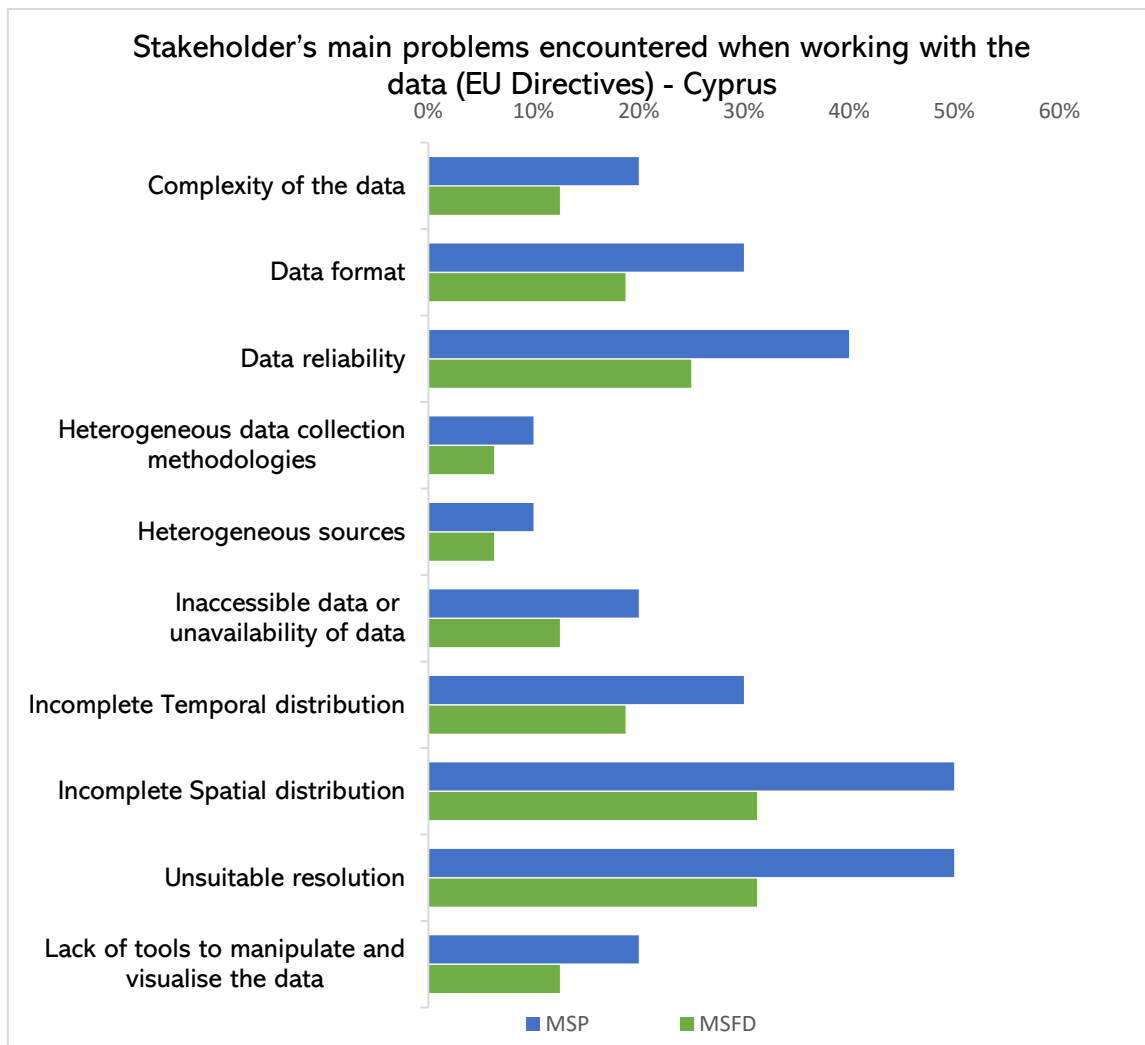


Figure 7-5. Stakeholder's main problems encountered when working with the data available in the implementation process of EU Directives in Cyprus

7.3.1.2. Needs regarding temporal extent of the data

Most of Cypriot stakeholders involved in Marine Spatial Planning Directive implementation (9), when asked about their needs regarding temporal extent of the data (Figure 7-5), expressed a clear higher need for long term historical data series (years) as well as long term projections (months). In the lower ranking we have the real time or near real time (hours), and short-term forecast (day-week) for MSFD.

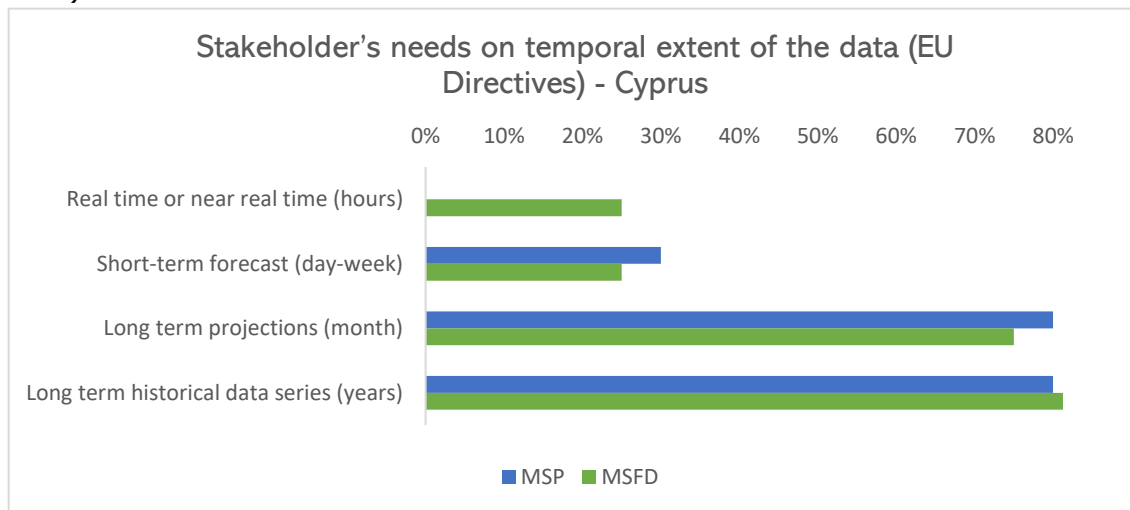


Figure 7-6. Stakeholder's needs on temporal extent of the data in the implementation process of EU Directives in Cyprus

7.3.1.3. Needs regarding spatial resolution of the data of the data

Most of Cypriot stakeholders involved in Marine Spatial Planning Directive implementation (10), when asked about their needs regarding spatial resolution of data (Figure 7-5), expressed, by far, the need for MEDIUM (5-30m) followed by low (>250-1 km) and lastly ranked the reduced (>1 km) and low (>250-1 km) for MSP and reduced (>1 km) and very high (<1m) for MSFD.

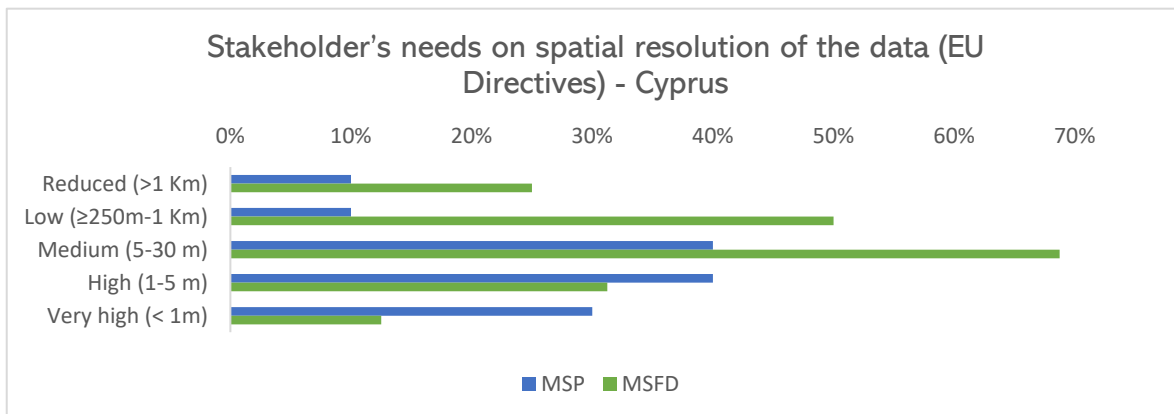


Figure 7-7. Stakeholder's needs on spatial resolution of the data in the implementation process of EU Directives in Cyprus

### 7.3.2. Stakeholders involved in EU Marine Strategy Framework Directive implementation

#### 7.3.2.1. *Knowledge gaps encountered when working with the descriptors*

Cypriot stakeholders involved in Marine Strategy Framework Directive implementation (11), when asked about the most common problems encountered when implementing COMMISSION DECISION (EU) 2017/84, mentioned that.

#### 7.3.2.2. *Problems encountered when working with the data available*

Regarding general data usage, most of Cypriot stakeholders involved in Marine Strategy Framework Directive implementation, when asked about the most common problems encountered when working with data (Figure 7-5), mentioned the challenges associated with

#### 7.3.2.3. *Needs regarding temporal extent of the data*

Most of Cypriot stakeholders involved in Marine Strategy Framework Directive implementation, when asked about their needs regarding temporal extent of the data (Figure 7-5), expressed a clear higher need for

#### 7.3.2.4. *Needs regarding spatial resolution of the data of the data*

Most of Cypriot stakeholders involved in Marine Strategy Framework Directive implementation, when asked about their needs regarding spatial resolution of data (Figure 7-5), expressed, by far, the need for

### 7.3.3. Marine sectors affected by EU Marine Directives implementation

#### 7.3.3.1. *Problems encountered when working with the data available*

Regarding general data usage, when analysed marine sectors in Cyprus (Figure 7-8), most stakeholders, when asked about the most common problems encountered when working with data, mentioned the challenges associated with

Figure 7-8 shows a detailed analysis of the stakeholder's main problems encountered when working with the data available for each of the marine sectors listed in Figure 7-2.

Regarding data usage in "**Ports and harbours**" sector, stakeholders stated that the most common challenges encountered when working with data are related with Inaccessible data or unavailability of data (5%), Incomplete spatial (4%) and temporal (2%) distribution of the datasets, Unsuitable resolution (4%) and, Heterogeneous sources (4%). Least problematic seemed to be the lack of tools to manipulate and visualise the data (5%) and data reliability (7%).

Regarding data usage in "**Aquaculture**" sector, stakeholders stated that the most common challenges encountered when working with data are related with

Inaccessible data or unavailability of data (5%), Heterogeneous data collection methodologies (2%), and Incomplete Spatial distribution (2%). None of the stakeholders encountered problems with Data format.

Regarding data usage in "**Fisheries**" sector, stakeholders stated that the most common challenges encountered when working with data are related with Complexity of data (4%) and Spatial (2%) distribution, Complexity of the data (4%) and Heterogeneous sources (4%). Least problematic seemed to be the Lack of tools to manipulate and visualise the data (4%).

Regarding data usage in "**Species conservation and protected areas**" sector, stakeholders stated that the most common challenges encountered when working with data are related with Data format (2%) distribution, Inaccessible data or unavailability of data (4%) and Data reliability (2%). They also encountered difficulties with Complexity of the data (4%) and Incomplete Spatial distribution (2%).

Regarding data usage in "**Energy sector**", stakeholders stated that the main challenge encountered when working with data is related with Inaccessible data or unavailability of data (7%). They also encountered difficulties with the Complexity of the data (5%), Heterogeneous data collection methodologies (5%) and Incomplete Spatial (5%) and Temporal (2%) distribution.

Regarding data usage in "**Coastal protection**" sector, stakeholders stated that the most common challenges encountered when working with data are related with Inaccessible data or unavailability of data (9%) and, Incomplete Spatial (4%) and temporal distribution (2%). Least problematic seemed to the Lack of tools to manipulate and visualise the data (5%).

Regarding data usage in "**Raw material extraction**" sector, all stakeholders stated that the main challenge encountered when working with data is related with Inaccessible data or unavailability of data (4%) and, Incomplete Spatial (4%) and temporal distribution (2%). Least problematic seemed to the Lack of tools to manipulate and visualise the data (4%).

Regarding data usage in "**Tourism and recreational activities**" sector, stakeholders stated that the most common challenges encountered when working with data are related with Inaccessible data or unavailability of data (4%) and, Complexity of the data (4%) and Spatial distribution (2%). They also encountered difficulties with Complexity of the data and Heterogeneous sources (2%). Least problematic seemed to be Incomplete Temporal (0%).

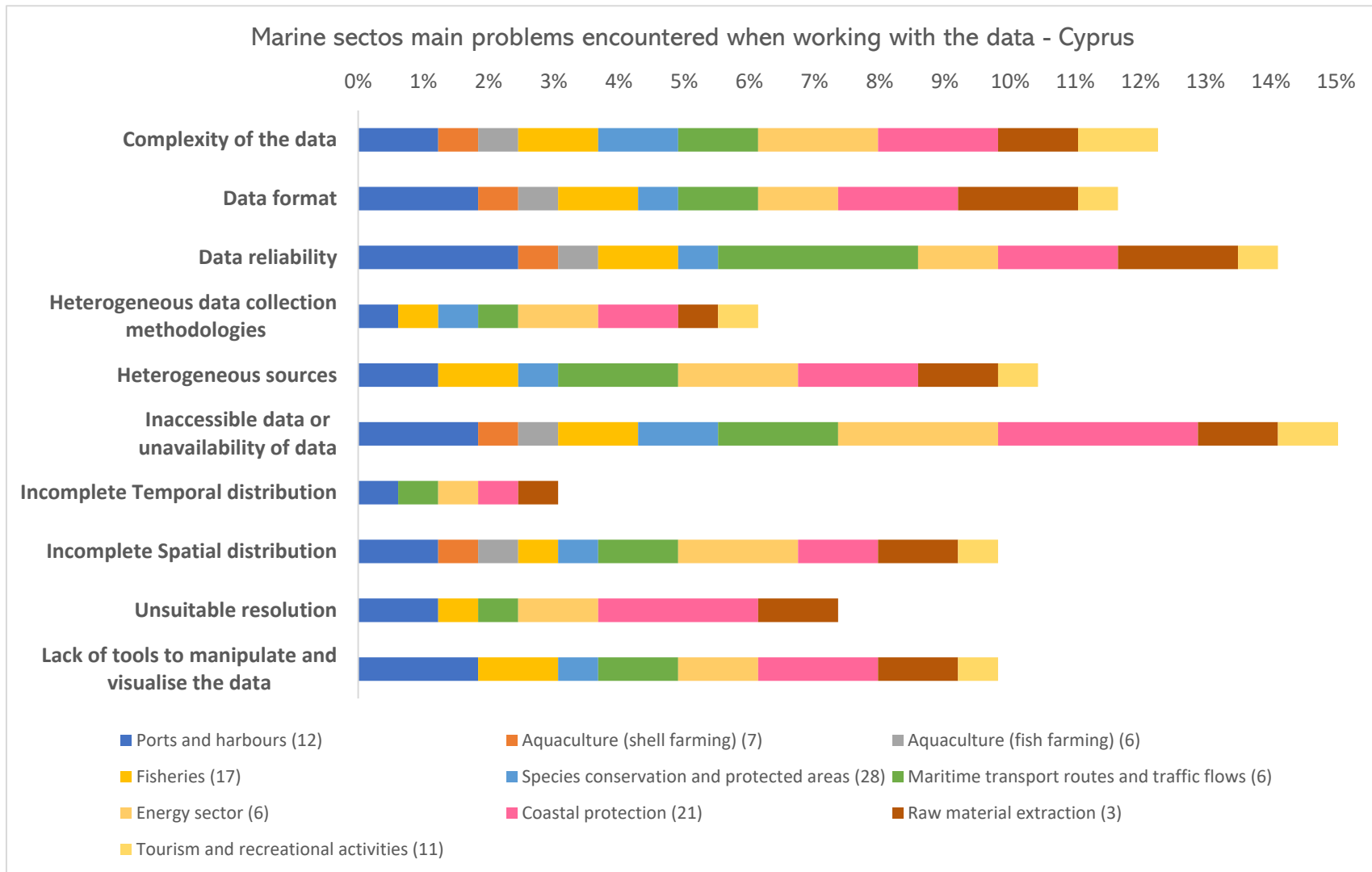


Figure 7-8. Marine sectors main problems encountered when working with the data available in Cyprus

Regarding data usage in **“Submarine cable and pipeline routes”** sector, all stakeholders stated that the main challenge encountered when working with data is related with Inaccessible data or unavailability of data and, Unsuitable resolution. None of the stakeholders encountered problems with Data format or the Lack of tools to manipulate and visualise the data.

Regarding data usage in **“Underwater cultural heritage”** sector, all stakeholders stated that the main challenge encountered when working with data is related with Data reliability, Heterogeneous data collection methodologies, Heterogeneous sources, Inaccessible data or unavailability of data and, Incomplete Spatial distribution and Unsuitable resolution.

*7.3.3.2. Needs regarding temporal extent and spatial resolution of the data*

In terms of the temporal extent of data, when analysed marine sectors in Cyprus, the results obtained are the ones shown in Figure 7-9.

In terms of the spatial resolution of data, when analysed marine sectors in Cyprus, the results obtained are the ones shown in Figure 7-9.



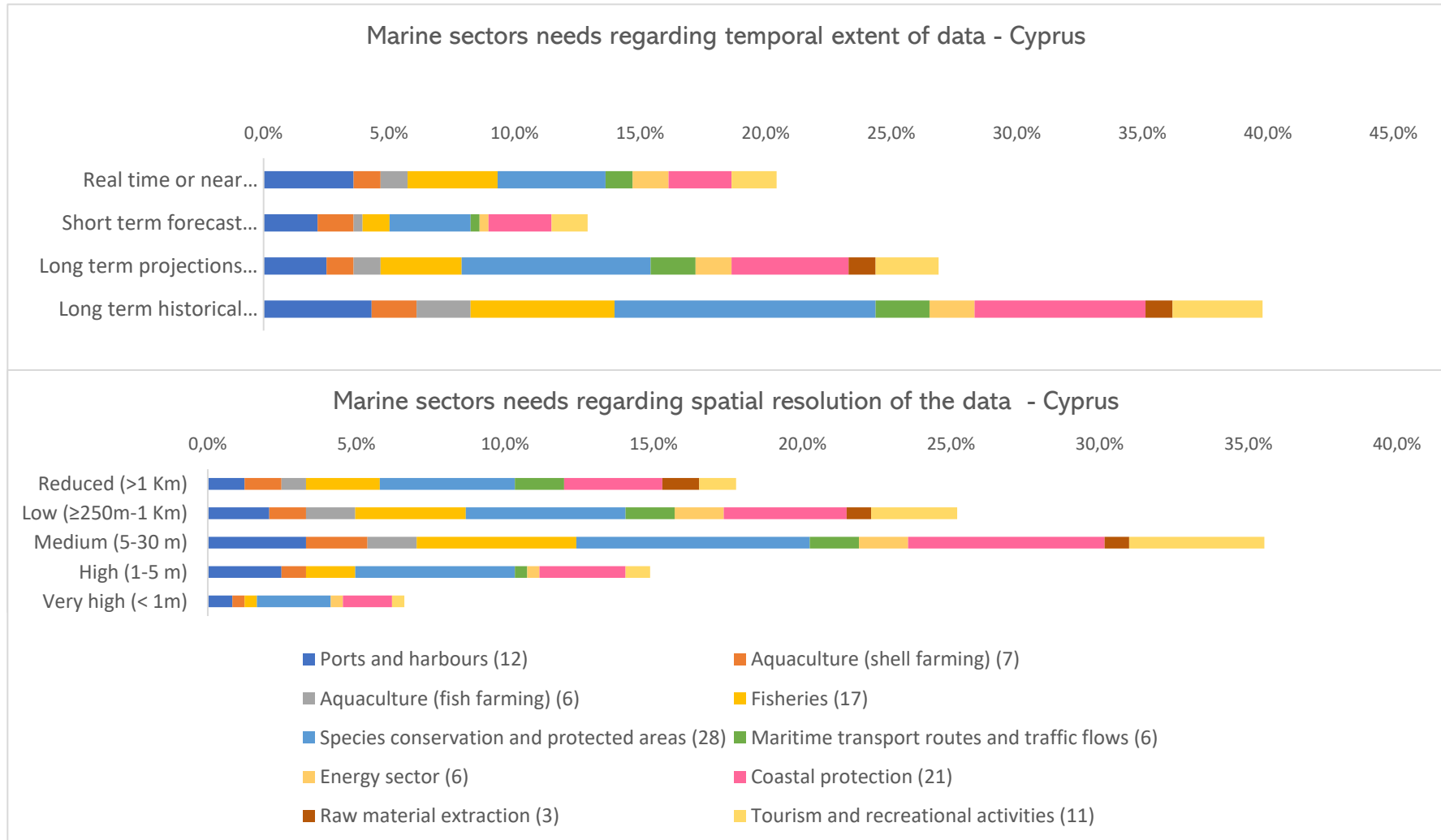


Figure 7-9. Marine sectors needs regarding temporal extent of data and spatial resolution of the data in Cyprus

#### 7.4. Copernicus usage in the implementation process of EU Directives in Cyprus

The following analysis focuses on the part of the survey aimed to understand the general issues, awareness and data usage related with Copernicus products of those marine sectors and stakeholders involved in the implementation process of the two EU Directives in Cyprus.

Within the questions collected in the general information section, stakeholders were asked what **type of Copernicus user** they considered themselves to be. For Cypriot stakeholders the majority of them stated to be “End users”. Only 4 affirmed to be service providers.

Regarding **stakeholder’s awareness of the Copernicus program**, results for Cyprus are shown in Figure 7-10.

Stakeholders' awareness of Copernicus program - Cyprus

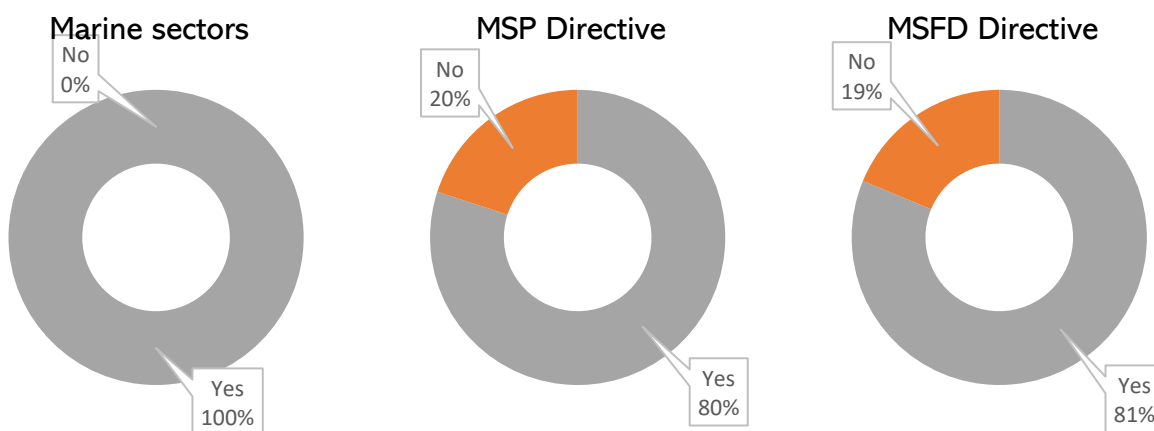


Figure 7-10. Stakeholders' awareness of the Copernicus program in Cyprus across marine sectors and EU Directives in Cyprus

For the stakeholders that mentioned being aware of the program it was further questioned their **usage of Copernicus Data**. Results for Cyprus are shown in Figure 7-11.

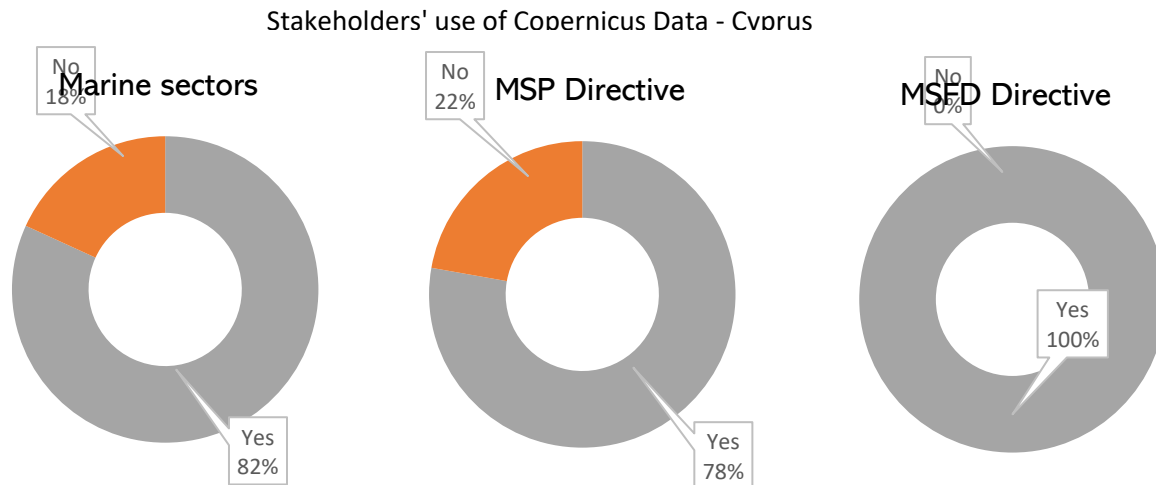


Figure 7-11. Stakeholders' use of Copernicus Data across marine sectors and EU Directives in Cyprus

For the stakeholders that **declared using Copernicus data**, one open-ended question (Q.30ii) was asked to get further information to know what was stakeholders' purpose for using Copernicus data. In summary, Cypriot stakeholders highlighted the importance of Science, production of different kinds of maps, as well as distribution mapping. Also, management of marine areas and Spatio-temporal analysis, supporting/complementing observations and results.

Detailed summary to the question Q30ii is reported in the Annex III.

### 7.5. Copernicus needs in the implementation process of EU Directives in Cyprus

The following analysis focuses on the main challenges encountered by stakeholders involved in the implementation process of the two EU Directives in Cyprus regarding usage of Copernicus products. The survey analyses, on the one hand, the difficulties and needs in terms of Copernicus tool usage and data access. On the other hand, it examines space solutions and data analysis tools used to work with Copernicus data.

### 7.5.1. Data analysis and visualisation tools

Regarding needs related with tools for **data transformations** for the implementation process in Cyprus of the two Directives, stakeholders were asked about most-used data tools for Copernicus data analysis and visualisation (Figure 7-12).

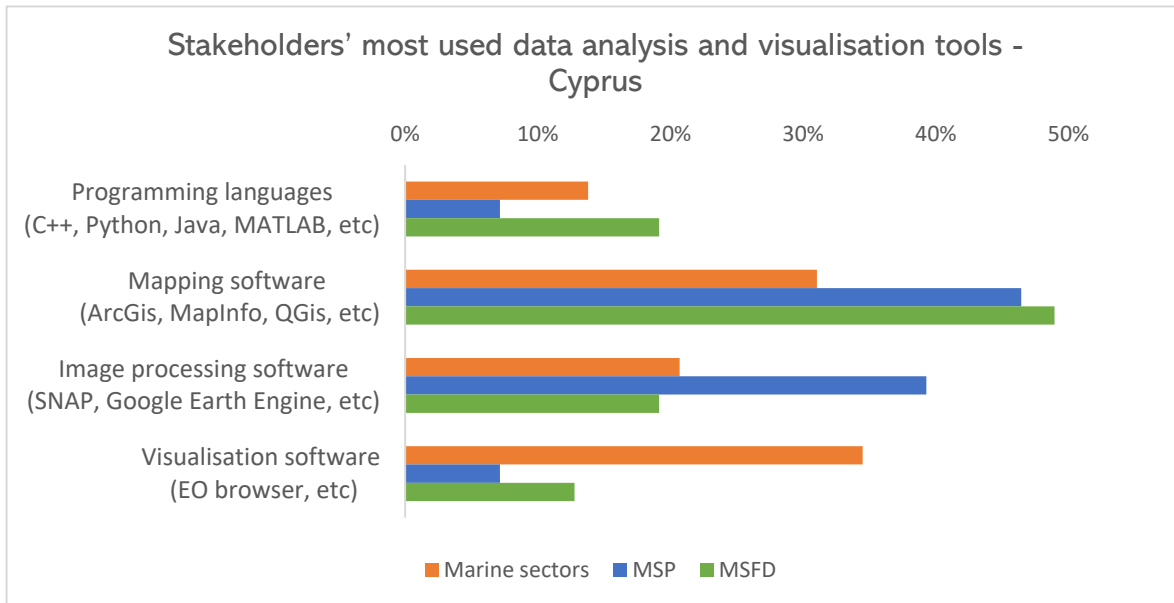


Figure 7-12. Stakeholders' most used data analysis and visualisation tools at all marine sectors in Cyprus

### 7.5.2. Space solutions relevant to the maritime domain

One open-ended question (Q.33) was asked to get further information on stakeholders' relevant space solutions for the maritime domain. In summary, Cypriot stakeholders highlighted the importance of data needs for specific purposes, data integration and unified databases and finally real-time data and visualization.

Detailed summary to the question Q33 is reported in the Annex III.

### 7.5.3. Data needs besides Copernicus data

One more open-ended question (Q.32) was asked to get further information on stakeholders' needs besides Copernicus data. In summary, Cypriot stakeholders highlighted the need for none of the stakeholders responded.

#### 7.5.4. Suggestions for Copernicus improvement

Another open-ended question (Q.30vi) was asked to get further information on how users think that Copernicus data can be improved. In summary, Cypriot stakeholders’ suggestions focus on better spatial resolution.

Detailed summary to the question Q30 is reported in the Annex III.

Where as to the question if do stakeholders use data from Copernicus (Q.30) again 9 out of 11 stakeholders where familiar of Copernicus data, and only 2 stakeholders weren’t using it.

<b>CYPRUS GLOBAL</b>	<b>Yes</b>	<b>No</b>	
<b>Marine sectors</b>	9	2	<b>11</b>
	81.82%	18.18%	

*Stakeholders' use of Copernicus Data - Cyprus*

By section where the answer to Q30 was yes, the stakeholders had to identify how periodically they are using Copernicus Data. Most of the stakeholders with a 67% using it every year, were 33% is using it every week and the rest 22% is using it every month.

<b>Stakeholders’ periodical use of Copernicus Data - Cyprus</b>	
<b>every week</b>	33%
<b>every month</b>	22%
<b>every year</b>	67%

*Stakeholders’ periodical use of Copernicus Data - Cyprus*

## 8. Conclusions for Task 2

The survey for Cyprus received a total number of 11 responses. In general terms, most of entities stated have been included within different marine regions. The profile of the stakeholders that responded to the survey have been shown in the early stages of this report (Figure 7-1).

Regarding general data usage, most of Cypriot stakeholders involved in Marine Spatial Planning Directive implementation (11), when asked about the most common problems encountered when working with data (Figure 7-5), mentioned the challenges associated with mostly unsuitable resolution and incomplete spatial distribution, followed by data reliability and then data format as well as incomplete temporal distribution, and in the lower level problem encountered we find the heterogeneous data collection methodologies as well as heterogeneous sources.

COPERNICUS data could easily provide a real added value in supporting the implementation of this legislation like the Marine Strategy Framework Directive (MSFD) and Marine Spatial Planning directives (MSP) that aims at protecting more effectively the marine environment across Europe, could be used as a test case.

## TASK 3. IDENTIFICATION ON HOW TO USE COPERNICUS DATA IN THE IMPLEMENTATION OF EU

According to the report (Q28) all 11 stakeholders were aware of Copernicus Program.

CYPRUS GLOBAL	Yes	No	
Marine sectors	11	0	<b>11</b>
	100.00%	0.00%	

Figure 5-1. Stakeholders' awareness of Copernicus program – Cyprus

According to the report (Q29) 9 out of 11 stakeholders were familiar of Copernicus data, and only 2 stakeholders weren't.

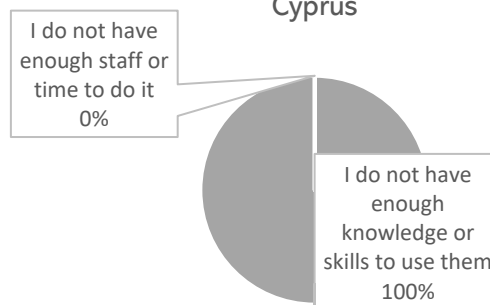
CYPRUS GLOBAL	Yes	No	
Marine sectors	9	2	<b>11</b>
	81.82%	18.18%	

Figure 5-2. Stakeholders' familiarity with Copernicus Data vs Services - Cyprus

Generally, Copernicus is to fulfil implementation of MSP and MSFD to those needed, as there is a big interest for the programme and as showed above, it is needed a further improvement to be made in order to fulfil the needs those using it. As it is stated that 50% of Cypriot stakeholder's when asked mention that they do not have enough knowledge or skills to use them.

Figure 5-3. Stakeholders' reasons for not using Copernicus Data - Cyprus

### Stakeholders' reasons for not using Copernicus Data - Cyprus



### Preliminary Gaps

1. The interaction of agencies to provide data and knowledge, from one agency to another, is very important and unfortunately absent. Most likely this is due to procedures and bureaucracy.
2. Operators are not interested in being trained. They want ready results, only.
3. 3. The lack of human and economic resources together with lack of collaboration among the involved agencies threaten the assessment and implementation of the directives.
4. 4. A successful application of MSP to resolve conflicts depends on the level of stakeholder involvement, data availability and the existing knowledge base.

### Requirements of the Marine Directives and the data gaps detected will be contrasted with the benefits and opportunities offered by Copernicus data services

In the first phase of task 3, there has been the first insight with the collaboration of public authorities (from all the participant countries including Cyprus), stakeholders and the private sector (aquaculture companies, renewable energy entities). Copernicus Marine products can be used from the stakeholders in order to generate assessment products to address MSFD and MSP questions in relation to hydrographic conditions, water quality and eutrophication, biodiversity and food webs. They use Physics reanalysis products, Ocean Colour Chlorophyll concentration, Biogeochemistry reanalysis and Mean Sea Level Anomalies.

Furthermore, it is important to mention that due to task 3 for the 2nd phase which will be initiated during the following months and it will include conclusions from working groups meetings organised in Actions 2021-2-42 and 2021-2-47.

Lastly in the 3rd phase will compile results from the 2 previous phases.



## ANNEXES

### Annex I: Survey questions

#### Survey on the use of Copernicus data for the Marine sector

The marine sector faces several challenges regarding management and sustainability. It is becoming evident that the challenges linked to marine data and information availability will become even more important during the implementation of certain policies and strategies. Users from different marine sectors can use Copernicus data to extract information to determine the environmental status of coastal waters, to support sustainable development or growth in certain maritime areas and activities.

Under this context, the Framework Partnership Agreement on Copernicus User Uptake (FPCUP) aims at a better integration of Copernicus data in the European regulatory framework by increasing the number of users and applications derived from Copernicus through 3 different actions:

- Action A2021-2-33 pursues "to promote the use of Copernicus data in the implementation of the EU Marine Spatial Planning Directive (Directive 2014/89/EU; MSP) and EU Marine Strategy Framework Directive (Directive 2008/56/EC; MSFD),
- Action A2021-2-42 pursues "to promote the use of Copernicus data across the maritime sector, focusing on Ports and Harbours, Aquaculture and Fisheries",
- Action A2021-2-47 pursues "to define the roadmap to guide the future evolution of Copernicus products to fulfil the needs of users in coastal areas".

The aim of this survey is to identify the current needs and gaps of the stakeholders to better understand the current usage of Copernicus data across different sectors:

- implementation of the two Directives (Action 33),
- marine sector, focusing on Ports and Harbours, Aquaculture and Fisheries (Action 42),
- national coastal users (Action 47).

By participating in this survey, you will have the opportunity to join future Copernicus training events that will be organised in the scope of the FPCUP project.

For this survey, please consider the following definitions and policies:

"[Copernicus](#) program" is the Earth Observation program of the European Union.

"Copernicus satellite data" are the data from Sentinel satellite missions (Sentinel 1, 2, 3, 5P and 6), as well as data from satellite missions of other space agencies and commercial providers, called Contributing Missions.

"Copernicus service products" are the products provided by the 6 Copernicus Services (Land, Marine, Atmosphere, Climate Change, Emergency, Security), that use satellite and in situ data as inputs.

"[EU Marine Strategy Framework Directive](#) (Directive 2008/56/EC)". This Directive establishes a framework within which Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment.

"[Commission Decision \(EU\) 2017/848](#)" laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment.

"[EU Marine Spatial Planning Directive](#) (Directive 2014/89/EU)". This Directive establishes a framework for maritime spatial planning aimed at promoting the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources.

"[Water Framework Directive](#) (Directive 2000/60/EC)". This Directive requires EU Member States to achieve good status in all bodies of surface water and groundwater by 2027.

"[Habitats Directive](#) (Directive 92/43/EEC)". This Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species.

**Survey**

**(in bold below was for internal reading)**

1. General information
  - a. Entity
  - b. Department
  - c. Contact name:
  - d. Email:
  - e. Job position:
  - f. City:
  - g. Country:
  - h. Type of Entity
    - i. Academia
    - ii. Research
    - iii. Public administration
    - iv. Another public entity
    - v. Private sector
    - vi. Non-Governmental Organization (NGO)
    - vii. Other (please specify)
  - i. What is your area of activity? (**Multiple choices allowed**)
    - i. Inland
    - ii. Coastal
    - iii. Marine
  - j. In terms of Copernicus Data, do you consider yourself a:
    - i. End-user
    - ii. Service provider
2. Which of these marine sectors are you related with? (**Multiple choices allowed**)
  - a. Ports and harbours
  - b. Aquaculture (shell farming)
  - c. Aquaculture (fish farming)
  - d. Fisheries
  - e. Species conservation and protected areas
  - f. Maritime transport routes and traffic flows
  - g. Energy sector (hydrocarbons and renewable energies)
  - h. Coastal protection
  - i. Raw material extraction
  - j. Tourism and recreational activities
  - k. Other
3. (**If chosen "Ports and harbours" in Q2**) For the "Ports and harbours" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest) (**bold means it is a common option between marine sectors**)
  - a. **Maritime climate (e.g., for Operational and maintenance activities)**
  - b. **Ship detection (e.g., monitoring vessel activity)**
  - c. **Pollution and environmental monitoring (e.g., oil spills, water quality, air quality)**
  - d. **Effects of climate change (e.g., sea-level rise, extreme events)**
  - e. Infrastructure monitoring (e.g., containers, piers)
  - f. Navigation and dredging operations (e.g., bathymetric mapping, sediment dynamics)
  - g. Others (specify)
4. (**If chosen "Aquaculture (shell farming)" in Q2**) For the "Aquaculture" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
  - a. **Oceanographic data: waves, tides (e.g., for Operational and maintenance activities)**
  - b. **Ship detection (e.g., monitoring illegal activity)**

- c. **Pollution and environmental monitoring (e.g., oil spills, microbiological contamination, chemical contamination, biotoxins)**
  - d. **Effects of climate change (e.g., extreme events, marine heatwaves)**
  - e. **Marine water quality data (e.g., anoxic events, acidification, chlorophyll concentration, jellyfish presence)**
  - f. Infrastructure monitoring (e.g., cages)
  - g. Selection of suitable site locations and species (e.g., temperature, salinity, etc)
  - h. Others (specify)
5. **(If chosen "Aquaculture (fish farming)" in Q2)** For the "Aquaculture" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Oceanographic data: waves, tides (e.g., for Operational and maintenance activities)**
  - b. **Marine water quality data: anoxic events, acidification, chlorophyll concentration, jellyfish presence**
  - c. **Ship detection (e.g., monitoring illegal activity)**
  - d. **Pollution and environmental monitoring (e.g., oil spills, microbiological contamination, chemical contamination, biotoxins)**
  - e. **Effects of climate change (e.g., extreme events, marine heatwaves)**
  - f. Infrastructure monitoring (e.g., cages)
  - g. Selection of suitable site locations and species (e.g., water temperature, salinity, etc)
  - h. Others (specify)
6. **(If chosen "Fisheries" in Q2)** For the "Fisheries" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Maritime climate (e.g., for Operational and maintenance activities)**
  - b. **Ship detection (e.g., monitoring illegal activity)**
  - c. **Pollution and environmental monitoring (e.g., oil spills, water quality)**
  - d. **Effects of climate change (e.g., extreme events, marine heatwaves)**
  - e. Fishing area characterizations (e.g., areas of higher productivity)
  - f. Fisheries certification
  - g. Map of sea use (e.g., presence of conflicting human activities)
  - h. Others (specify)
7. **(If chosen "Species conservation and protected areas" in Q2)** For the "Species conservation and protected areas" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Pressures (e.g., pollution, spills, maritime activities...etc)**
  - b. **Environmental monitoring (e.g., water quality, ecological status)**
  - c. **Effects of climate change (e.g., sea-level rise, extreme events)**
  - d. Habitat distribution area and trends
  - e. Species distribution area and trends
  - f. Map of sea use (e.g., presence of conflicting human activities)
  - g. Others (specify)
8. **(If chosen "Maritime transport routes and traffic flows" in Q2)** For the "Maritime transport routes and traffic flows" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Maritime climate (e.g., for Operational and maintenance activities)**
  - b. **Ship detection (e.g., monitoring vessel activity and flows)**
  - c. **Pollution and environmental monitoring (e.g., oil spills, water quality)**
  - d. **Effects of climate change (e.g., new routes, extreme events)**
  - e. Weather services
  - f. Navigation (e.g., Bathymetry, Sediment dynamics monitoring, etc.)
  - g. Others (specify)

9. **(If chosen "Energy sector" in Q2)** For the "Energy sector" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Maritime climate (e.g., for Operational and maintenance activities)**
  - b. **Ship detection (e.g., monitoring vessel activity)**
  - c. **Environmental monitoring (e.g., oil spills, water quality)**
  - d. **Effects of climate change (e.g., sea-level rise, extreme events)**
  - e. Selection of suitable renewable energy locations (wind, waves, currents)
  - f. Bottom geologic maps
  - g. Energy production surveying
  - h. Map of sea use (e.g., presence of conflicting human activities)
  - i. Others (specify)
10. **(If chosen "Coastal protection" in Q2)** For the "Coastal protection" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Maritime climate (e.g., winds, waves and current forecasts)**
  - b. **Pollution and environmental monitoring (e.g., eutrophication, water quality)**
  - c. **Effects of climate change (e.g., sea-level rise, extreme events)**
  - d. Monitoring and prevention of coastal erosion
  - e. Bathymetry and sedimentation
  - f. Coastline detection
  - g. Characterisation of emerged coastal areas (e.g., sediment dimension, inland extension of the beach, presence of dunes)
  - h. Others (specify)
11. **(If chosen "Raw material extraction" in Q2)** For the "Raw material extraction" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Maritime climate (e.g., for Operational and maintenance activities)**
  - b. **Ship detection (e.g., monitoring vessel activity)**
  - c. **Pollution and environmental monitoring (e.g., oil spills, water quality)**
  - d. **Effects of climate change (e.g., sea-level rise, extreme events)**
  - e. Map of sea use (e.g., presence of conflicting human activities)
  - f. Others (specify)
12. **(If chosen "Tourism and recreational activities" in Q2)** For the "Tourism and recreational activities" sector, which services are of higher interest to you? (Rank by order of interest, with 1 being the highest interest)
- a. **Maritime climate (e.g., for weather)**
  - b. **Effects of climate change (e.g., sea-level rise, extreme events)**
  - c. Water quality (e.g., preserving human health in bathing waters)
  - d. Identification of pressures (e.g., land use, presence of urban wastewaters or industrial waters discharges)
  - e. Landscape quality (e.g., absence of infrastructures, presence of nature-based solutions)
  - f. Others (specify)
13. **(If chosen "Other" in Q2)** For "Other" sectors, select one of the lists below and describe which services are of higher interest to you.
- a. Military
  - b. Exploration, exploitation, and extraction
  - c. Scientific research
  - d. Underwater cultural heritage
  - e. Submarine cable and pipeline routes

Concerning the sectors mentioned above, we will analyse the challenges you have encountered when searching/working for data related with them.

14. Within the framework of your current activities, what problems do you encounter when working with the data available to you? **(Multiple choices allowed)**
- a. Complexity of the data

- b. Data format
  - c. Data reliability
  - d. Heterogeneous data collection methodologies
  - e. Heterogeneous sources
  - f. Inaccessible data or unavailability of data
  - g. Incomplete Temporal distribution
  - h. Incomplete Spatial distribution
  - i. Unsuitable resolution
  - j. Lack of tools to manipulate the data.
  - k. Other, please specify.
15. Within the framework of your current activities, what temporal extent of the data would you need? **(Multiple choices allowed)**
- a. Real time or near real time (h)
  - b. Short term forecast (day-week)
  - c. Long term projections (month)
  - d. Long term historical data series (years)
16. Within the framework of your current activities, what spatial resolution of the data would you need? **(Multiple choices allowed)**
- a. Reduced (>1Km)
  - b. Low ( $\geq 250$  m-1Km)
  - c. Medium (5-30 m)
  - d. High (1-5 m)
  - e. Very high (< 1 m)
17. Have you participated in the implementation of these Directives in your Country? **(Multiple choices allowed)**
- a. EU Marine Strategy Framework Directive (Directive 2008/56/EC; MSFD)
  - b. EU Marine Spatial Planning Directive (Directive 2014/89/EU; MSP)
18. **(If yes in Q17.b)**
- a. In what period? **(Multiple choices allowed)**
    - i. 2012-2018
    - ii. 2018-2024
  - b. In what phase of MSP? **(Multiple choices allowed)**
    - i. Establishment of management objectives
    - ii. Diagnosis of the current situation
    - iii. Land-sea interactions
    - iv. Maritime spatial plans
19. In what period? **(Multiple choices allowed)**
- a. 2012-2018
  - b. 2018-2024
20. In what phase of MSFD? **(Multiple choices allowed)**
- a. initial assessment
  - b. determination of good environmental status
  - c. establishment of environmental targets and associated indicators
  - d. monitoring programme
  - e. programme of measures
21. What Marine Region do you belong to?
- a. Baltic Sea
  - b. North-east Atlantic Ocean
  - c. Mediterranean Sea
  - d. Black Sea
22. What subdivisions (if exist) of the Marine region do you belong to? **(Each country please specify yours)**

- a. North-Atlantic
- b. Sud-Atlantic
- c. ...
- d. ...
- e. ...

23. Following the classification in COMMISSION DECISION (EU) 2017/848, which of the following descriptors and Criteria elements are you related with? (**Multiple choices allowed**)

- 1. Biodiversity
  - Species groups (specify which):
    - birds,
    - mammals,
    - reptiles,
    - fish
    - cephalopods
  - Pelagic habitats (specify which)
  - Benthic habitats (specify which)
  - Ecosystems, including food webs (specify which)
- 2. non-indigenous species
- 3. Commercial fish species
- 4. Food webs
  - Ecosystems, including food webs (specify which)
- 5. Eutrophication
- 6. Sea floor
  - Benthic habitats (specify which)
- 7. Hydrographical conditions
- 8. Contaminants and effects
- 9. Contaminants in seafood
- 10. Marine litter
- 11. Introduction of energy (including underwater noise)

Concerning the descriptors/criteria mentioned above, we will analyse the challenges you have encountered when searching/working for data related with them.

24. What are the main knowledge gaps descriptors you encountered when working with the descriptor/criteria specified above? (**Multiple choices allowed**)

- a. Abundance
- b. Biomass
- c. Concentration
- d. Duration
- e. Genetics
- f. Pressures and impacts
- g. Spatial cover/ extent
- h. Spatial distribution
- i. Temporal distribution
- j. Other, please specify.

25. Within the framework of your current activities, what problems do you encounter when working with the data available to you? (**Multiple choices allowed**)

- a. Complexity of the data
- b. Data format
- c. Data reliability
- d. Heterogeneous data collection methodologies
- e. Heterogeneous sources
- f. Inaccessible data or unavailability of data
- g. Incomplete Temporal distribution
- h. Incomplete Spatial distribution
- i. Unsuitable resolution

- j. Lack of tools to manipulate the data.
  - k. Other, please specify.
26. Within the framework of your current activities, what temporal extent of the data would you need?  
**(Multiple choices allowed)**
- a. Real time or near real time (h)
  - b. Short term forecast (day-week)
  - c. Long term projections (month)
  - d. Long term historical data series (years)
27. Within the framework of your current activities, what spatial resolution of the data would you need?  
**(Multiple choices allowed)**
- a. Reduced (>1 Km)
  - b. Low ( $\geq 250$  m - 1 Km)
  - c. Medium (5-30 m)
  - d. High (1-5 m)
  - e. Very high (< 1 m)
28. Have you ever heard before about the Copernicus program?
- a. Yes
  - b. No
29. **(If yes in Q28)** Are you familiar with the different definitions of "Copernicus Satellite Data" and "Copernicus Service Products".
- a. Yes
  - b. No
- 30. (If yes in Q28 go to a; If no in Q28 go to b)** Do you use data from Copernicus?
- a. If Yes
    - i. How often?
      - 1. every week
      - 2. every month
      - 3. every year
    - ii. For what purpose (i.e., use case)? (Please specify)
    - iii. What kind of Copernicus data do you use?
      - 1. In situ data
      - 2. Satellite-derived products
      - 3. Modelled-derived products.
    - iv. Do you consider yourself as a basic, intermediate, or advanced Copernicus data user?
      - 1. Basic
      - 2. Intermediate
      - 3. Advance
    - v. What is your level of satisfaction with Copernicus? (Set from 1(low) to 5 (very high))
      - 1. 1
      - 2. 2
      - 3. 3
      - 4. 4
      - 5. 5
    - vi. How can Copernicus data be improved (e.g., new products, different spatial/temporal resolutions, improved access)? (Please specify)
  - b. If No, why?
    - i. I do not have enough knowledge or skills to use them.
    - ii. I do not have enough staff or time to do it.
    - iii. Not relevant for me
    - iv. Other

31. Within the framework of your current activities, do you use most: (**multiple choices allowed**)
- a. Programming languages (C++, Python, Java, MATLAB, etc)
  - b. Mapping software (ArcGIS, MapInfo, Qis, etc)
  - c. Image processing software (SNAP, Google Earth Engine, etc)
  - d. Visualisation software (EO browser, etc)
  - e. I do not use any.
32. Besides Copernicus data, what kind of data or services would you need? (Please specify)
33. From your entity's perspective, which space solutions (e.g., products, providers) are relevant to the maritime domain, that you are familiar with/have you heard of? (Please specify)
34. Would you be interested to attend a workshop presenting the different tools and services offered by Copernicus?
- a. Yes
  - b. No



**Annex II: Survey results for Cyprus**

ERATOSTHENES Centre of Excellence (1 replies)
Cyprus Marine and Maritime Institute (2 replies)
Shipping Deputy Ministry (3 replies)
CUT (3 replies)
Department of fishers and Marine Research (1 reply)
Cyprus Ports Authority (1 reply)
<b>TOTAL: 11</b>

### Annex III: open-ended questions summary replies

#### Purposes for using Copernicus data (Q.30ii)

- Science
- Production of suitability maps, conflict maps, and species distribution mapping.
- Management of marine protected areas and marine species.
- Spatio-temporal analysis of ocean variables.
- Supporting and complementing other observations and model results.
- Production of suitability maps, conflict maps, and species distribution mapping.

#### Suggestions for Copernicus improvement (Q.30vi)

- Better spatial resolution: There is a desire for better spatial and spectral resolution in various aspects, including coastal processes, global products, estuarine areas, and areas of particular oceanographic interest. This applies to both images and numerical models.

#### Data needs besides Copernicus data (Q.32)

- No response

#### Space solutions relevant to the maritime domain (Q.33)

- Data needs for specific purposes: need for data on aquaculture facilities, bathymetry, stock status of commercial and recreational species, catch reporting, bathymetry, orthophotographs, LIDAR mapping, distribution and conservation of marine habitats and species, beach monitoring, and port water quality data, detailed coastal mapping, updated wind data, accurate fishing activity data, species distribution data, statistical and economic data, climate services, and maritime traffic data.
- Data integration and unified databases: The need for unified databases with access to integrated MPA (Marine Protected Area) delimitation and marine environmental information is expressed. The INFOMAR tool, collaboration between MITECO and CEDEX, is mentioned as a useful tool for integrating marine environment information from different sources
- Real-time data and visualization: There is a mention of the need for tools that process data and facilitate real-time visualization of pollutants, spills, plastics, air and water quality. High-resolution visible images and satellite imagery are also highlighted.