D28 – Italy: Analysis of national geoportal

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1   Introduction

1.1   Aim of the deliverable

The deliverable D.28 "*Italy: Analysis of national geoportal*" is included inside the MSPMED work package 3 "*Data use and sharing*" and, specifically, in the task 3.2 "*Data use and sharing in Italy*". This task aims to support the effective implementation of the Italian MSP-related data and information sharing facilities including the maintenance and upgrade of the collected datasets. The task is organised into two sub-activities.

D.28 describes the efforts related to the first activity (3.2.1) "*Consolidation of the national Geoportal for MSP, in connection with existing data infrastructures*" and should contain, as per the description in the project Grant agreement, a "Detailed analysis about the existing and the expected features of the Italian national geoportal, including practical suggestions for its evolution".

The following sections are organised as follows: after a short introduction on the Italian national MSP portal, chapter 2 introduces its main functionalities, what services are available and how users are currently able to access them; chapter 3 describes the content of the portal, in relation with elements and geospatial layers relevant for the MSP process; chapter 4 summarises possible improvements to the system and collaboration with on-going international initiatives to facilitate cross-border harmonization and technological and semantic interoperability.

1.2   SID

The "SID (Portale integrato per la pianificazione del demanio e dello spazio marittimo - *Integrated portal for state property and maritime spatial planning*) il Portale del Mare" is the reference information base and the tool for sharing and interchanging data related to the management of the maritime state property entrusted to MIMS (Ministero delle Infrastrutture e della Mobilità Sostenibili - *Ministry for Sustainable Infrastructure and Mobility*).

The SID was an already existing portal, developed and managed by the National Operational Center of the SID; although originally used for the prevailing needs of the Ministry and its peripheral structures as a support to the management of maritime state property, it has progressively expanded its scope of application, thanks to an articulated set of regulatory and administrative tools. Currently, additional sets of information and functionalities have been added to the system to include geospatial data and services specifically related to the implementation of the MSP Directive.

In collaboration with other Ministries, Regional Authorities and research institutions, data supporting the creation of the 15 Priority Maps described in the national plan have been collected, added in the SID and made available through the graphical interface of the SID and interoperable services.

2 Functionalities of the portal

2.1 Overview of the main functionalities

The homepage of the Portal, once logged in (SPID, CIE, or CNS required[1]), shows (see Figure 2.1) the geographical base of Google Maps with an overview of the Italian State.
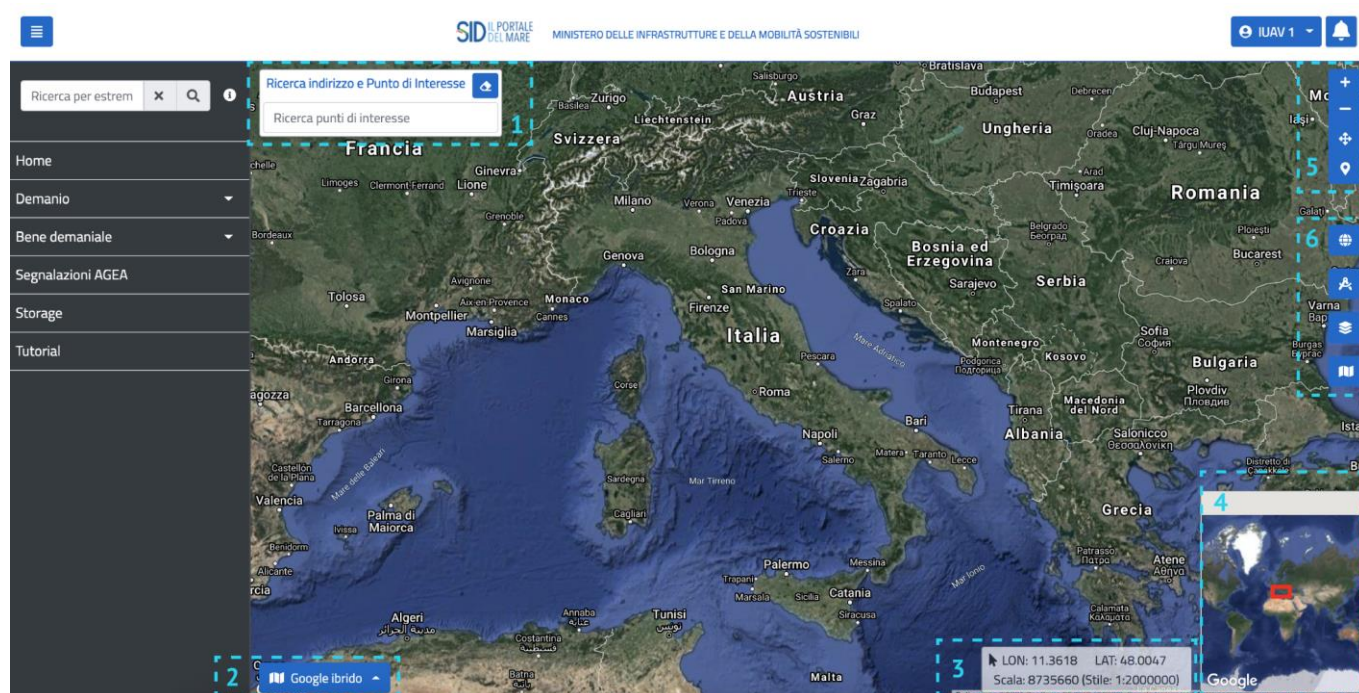

Figure 2.1: SID homepage. Overlapping dashed and numbered boxes identify specific functionalities and are explained throughout the text.

On the top left [#1] of the map, there is the possibility of carrying out a quick search that allows you to write an address or a specific location.

At the bottom left [#2], there is a pop-up window that allows you to change the display style of the map by choosing between Google hybrid, Google terrestrial, Google satellite, Google streets, None (white base), and OpenStreetMap. This last type of visualization is the only one that enables you to identify the boundaries of territorial waters (12nm from the coastline).

By moving the cursor on the map, the geographical coordinates (latitude and longitude) are automatically updated in the box [#3] on the bottom right. The geographical scale of visualization is also shown inside the same box.

Next to the box, you can find the map navigator [#4]. The scale is much smaller and a red rectangle coincides with the display of the main map.

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[1] -SPID: From February 28, 2021, all Public Administration sites are accessible through this mode of accreditation, in implementation of the Simplification Decree, converted into Law 120/2020.
- CIE: Electronic Identity Card
- CNS: National Services Card.

On the right side, there is a set of tools that allow you to interact with the map. From top to bottom, the portal offers two groups of possible information. The first group [#5] consists of basic tools, such as Increase Zoom and Decrease Zoom, Full-Screen mode, and Locate Me, to identify the user's current location.

The second group [#6], on the other hand, groups more detailed, technical, and interrogation tools. With the tool *Trasforma coordinate*, it is possible to change the reference system, input, and output, choosing between WPS 3857, GaussBoaga (East Zone) 3004, GaussBoaga (West Zone) 3003, WGS 84, UTM 32, UTM 33, and ETRF 89. Below is a section (*Tool di disegno*) that contains several tools for drawing: you can insert a point, a line, a polygon, and a circle. Once one of these functions has been added to the map, a coordinate panel automatically opens and it is possible to save the geometry, point, linear, or areal in the reference system by assigning a name. The last drawing tool is the measurement tool, which allows you to calculate—linearly in km, or areally in km^2—a chosen portion of the territory. This last function does not allow saving the results.

The next tool (*Scelta rappresentazione*) is the core of the Portal. It shows the choices for representation, as well as the complete catalog of all the data made available by the respective Italian Ministries and Authorities.

Figure 2.2. Tool *Scelta rappresentazione*, allowing to select and visualise all available data on the map
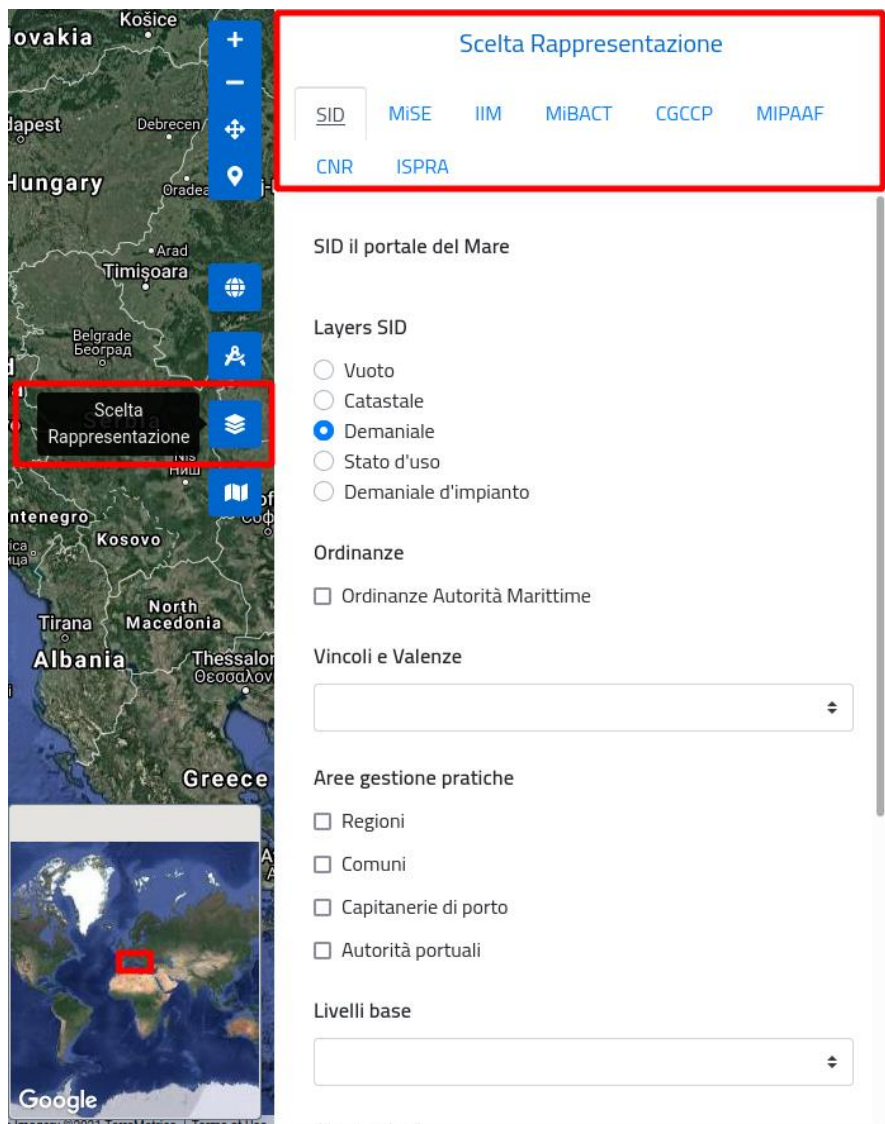
There are eight sections:
1. SID: containing data and functionalities not specifically focused on MSP
2. MISE (Ministry of Economic Development): hydrocarbon spatialized areas
3. IIM (Hydrographic Institute of the Navy): concerning maritime geographical boundaries
4. MIBACT (Ministry of Culture): landscape and cultural heritage along the coast and submerged
5. CGCCP (General Command of the Corps of the Port Authorities): data about the intensity of maritime traffic
6. MIPAAF (Ministry of Agriculture and Forestry): fisheries and aquaculture data
7. CNR (National Research Council): research sites
8. ISPRA (Superior Institute for Environmental Protection and Research): section concerns the information levels on natural and environmental areas.
The detail of this information is explained in the paragraph Data structure/organization.
Within each section it is possible to consult this information and once the required data has been selected, clicked on confirm, it will be visualised on the main map.

Depending on the request, in some cases it is possible, by clicking on the area of interest, to query the information contained in the attributed table associated with the layer.

Figure 2.3. SID, demanial layer and how to interact with the map
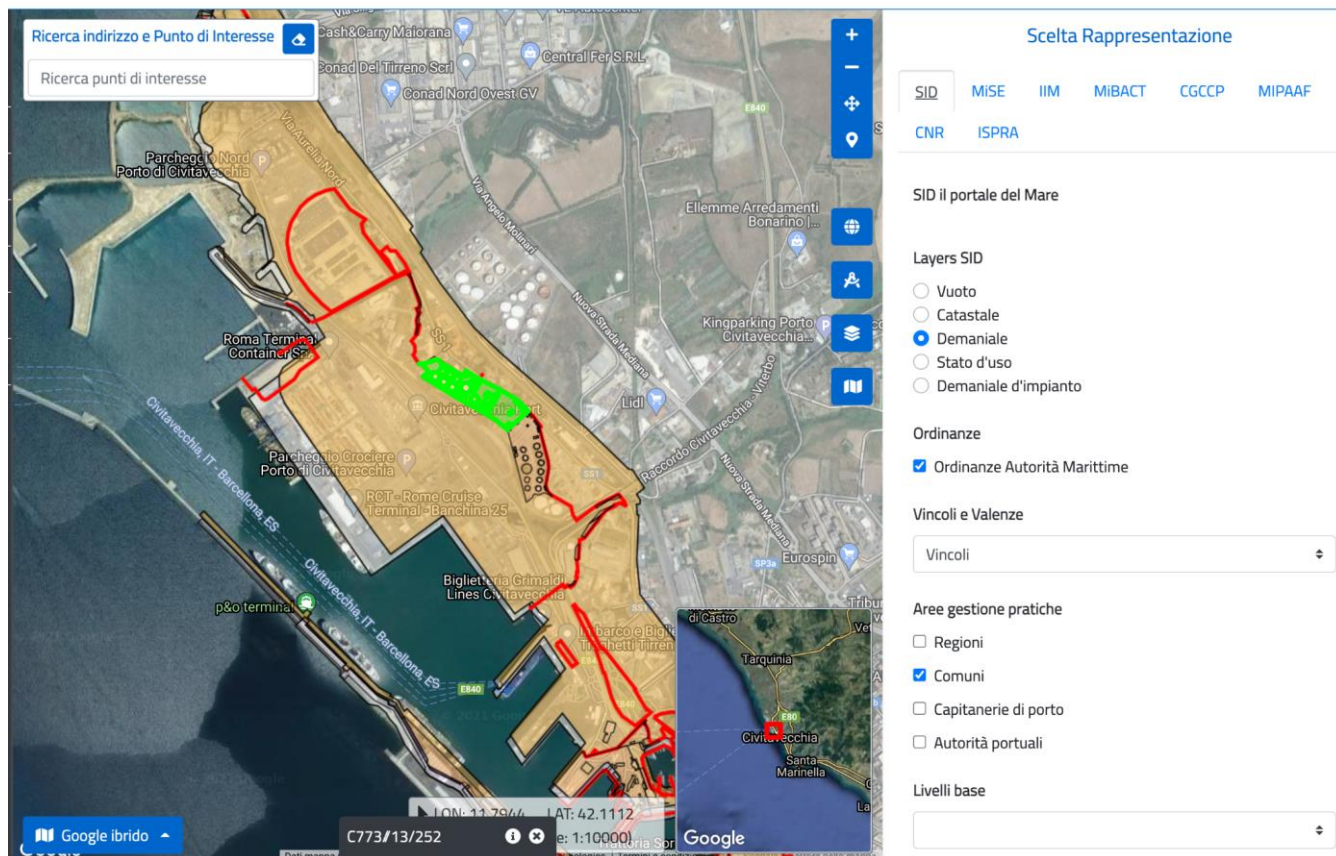

Figure 2.4. More information about a spatialized area of interest.

Where the representation does not allow the query it is possible through the tool below "legend" to interpret its content.

Figure 2.4. Legend tool
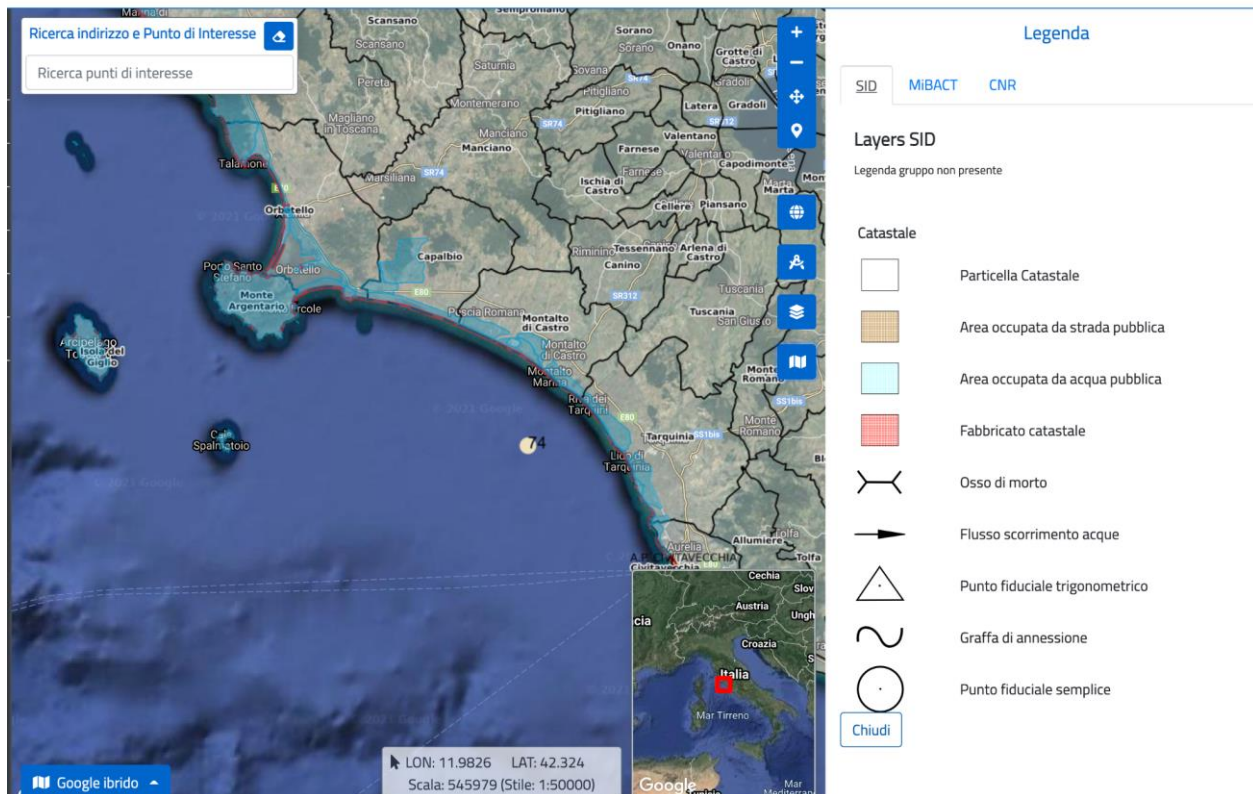
2.2   Interoperable services

The different information sources described in the previous paragraph can be viewed and queried simultaneously, thus allowing for a more careful understanding of the identification of possible synergies or conflicts of maritime spaces between the different uses and activities.

However, some limitations make the interoperability between sections less functional: some of these are related to the services used to make the data available by the different sources, while others derive directly from the organization of contents in the SID.

Regarding the services, all layers are provided through standard interoperable services; nonetheless, while several information layers are provided through WFS (Web Feature Service), allowing the access to both the geometry and attributes of individual features, for others only WMS (Web Map Service) is used, thus limiting the querying detailed information and reuse of geometries.

Concerning some advanced functionalities of the SID, it should be pointed out that the display on the map and the priority of bringing one information to the foreground over another is statically linked to the order of the sections present within the "Choice of representation".

In the case we want to visualize at the same time the information on fishing effort, section MIPAAF, (Figure 2.3) and the information related to the areas under concession for the cultivation of hydrocarbons, section MISE (Figure 2.4), the first hinders the visualization of the second. There is no possibility to choose which information to display on top of the other.

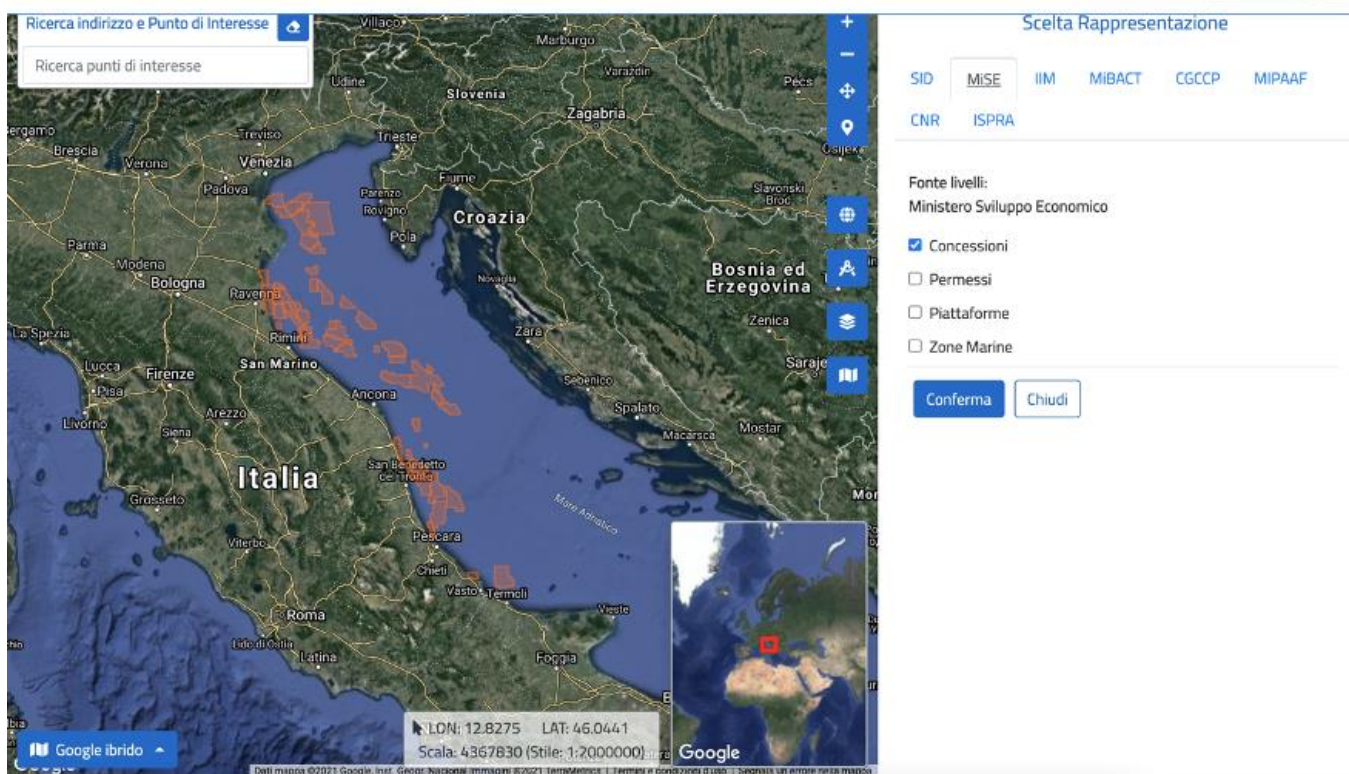Figure 2.3: Fishing effort map, MIPAAF

Figure 2.4: Concession areas for the cultivation of hydrocarbons, MISE

2.3 Data accessibility

As mentioned in paragraph 2.1, login is required to access and consult the SID portal, using three methods:

- SPID: From February 28, 2021, all Public Administration sites are accessible through this mode of accreditation, in implementation of the Simplification Decree, converted into Law 120/2020.
- CIE: Electronic Identity Card.
- CNS: National Services Card.

If you do not have one of these three modes, accessibility to the portal is denied and does not allow you to use the services described in paragraph 2.1 and 2.2.

It has also to be underlined that, currently, only authorised users are allowed to see, on the tool *Scelta Rappresentazione* (see Figure 2.2), the tabs containing MSP-related data; general registered users can only see the "SID" tab and consequently cannot visualise the geospatial layers used for the preparation of the MSP plan.

2.4 Discussion

To summarise the functionality of the portal, following as written previously, there are strengths and weaknesses.

Starting from strengths, the portal has reached an important amount of information. The current state is useful enough to rebuild a good state of art (considering different typology of information necessary to make a marine plan) based on environmental and anthropogenic information. However the display of the maps isn't effective when the aim is seeing, simultaneously, two or more layers .

The weaknesses are mainly in the interoperable services, due by different services used to make the data available by the different sources, and in the accessibility of layers, currently limited only to some authorised users.

3 Content of the portal

3.1 Data structure/organization

As described in the paragraph 2.1, MSP-related geospatial information in the SID is accessible through a dedicated tool (*Scelta rappresentazione*, figure 2.2), structuring the content in 8 sub-panels: SID, MISE, IIM, MiBACT, CGCCP, MIPAAF, CNR, ISPRA; each panel contains data provided by a specific Ministry or Institution, allowing the grouping of information per responsible authority.

In the following, we analyse the content of the SID in relation to the 8 different panels and in relation to the need to create the 15 priority maps. Starting from what has already been mentioned

in the previous chapters, we add information on the type of geometry used for the data, highlighting the possibility of updating and aligning with data from other sources.
The following tables describe the information levels present in the portal, divided by data provider; the levels highlighted in yellow have been used and included for the preparation of the essential maps.

Within the SID panel, there are a series of layers relating to the functionality of the portal already previously described. Some of these layers were used for the creation of the priority maps: in particular the layer on administrative boundaries (*Comuni*) was used in map 1 (see Table 3.1) and some information derived from the "Port Authority Ordinances" layer was used to create the map 9.

SID PORTAL		
Group	**SubGroup**	**Layer**
SID	**Layer SID**	Vuoto
		Catastale
		Demaniale
		Stato d'uso
		Demaniale d'impianto
	Ordinances	Ordinanze Autorità Marittime
	Practice management areas	Regioni
		Comuni
		Capitanerie di porto
		Autorità portuali
	Occupations	Occupazioni ed Innovazioni Abusive
		Occupazioni da Accertare
	Dividends	Dividendi d'impianto
	Reserves	Riserve

The data made available by the MISE (Ministry of Economic Development), in particular the areas under concession for the cultivation of hydrocarbons, research permits, platforms and marine

areas, were fundamental for the preparation of map 3 on the theme "Energy". In addition to these layers, a direct interaction with the MISE was necessary to insert updated information on the authorized marine wind farms on the map. This information will need to be aligned with the SID.

SID PORTAL		
Group	**SubGroup**	**Layer**
MiSE	**Ministry of Economic Development**	Concessioni
		Permessi
		Piattaforme
		Zone Marine

The Hydrographic Institute of the Navy (Istituto Idrografico Militare - IIM) provided basic information layers relating to the maritime limits, the ecological protection zones and the areas of national military exercises. For the creation of map 1 some levels related to the marine boundaries (highlighted in yellow) were used, together with the Ecological Protection Zone level.

SID PORTAL		
Group	**SubGroup**	**Layer**
IIM	**Maritime Limits**	Acque Interne A
		Acque Territoriali 250K
		Confini Marittimi Concordati 250K
		Livelli Batimetrici
		Livelli Piattaforma Continentale 250K
		Linea di Costa
		Linee di Base Dritte 250K
		Shoreline Construction Enc A
		Shoreline Construction Enc L
	Specific areas	Zona di Protezione Ecologica
		Zone di Esercitazioni Militari Nazionali

Within the section MiBACT (now MIC, Ministry of Culture) it is possible to identify the landscape constraints present along the Italian coasts (spatialized polygons) and the archaeological assets (punctual elements), on land and submerged, surveyed by the Archeomar project launched by the General Directorate since 2004. Both information levels do not present any further queryable information.

For the preparation of the map relating to cultural heritage (map 9), the information residing within the SID proved to be incomplete both in terms of geographic extension and in terms of the information associated with the geometries. Therefore it was necessary to integrate it with new levels that will have to be updated into the SID.

SID PORTAL		
Group	**SubGroup**	**Layer**
MiBACT	**Landscape Constraints**	Vincolo paes0157-32N
		Vincoli
		Archeomar

The data provided by the General Command of the Corps of the Port Authorities has the EMSA (European Maritime Safety Agency) as their source of information and concern tanker, merchant, passenger, and fishing vessel traffic and were used for the drafting of the map 5. The information provided by the layer relating to the power line networks (source: Terna) that crosses Italian waters were useful for completing the map on the topic of Energy.

SID PORTAL		
Group	**SubGroup**	**Layer**
CGCCP	**Intensity of maritime traffic source EMSA**	Tutto il traffico
		Petroliere
		Mercantile
		Pesca
		Passeggeri
		Altro
	Power lines from TERNA source	Elettrodotti TERNA

Map number 5, which provides information on fishing, is based exclusively on the information contained in the layers provided by MIPAAF (Ministry of Agriculture and Forestry) and describes the intensity of fishing effort related to GSA (Geographical Subarea) 9, 10, 11, 16, 17, 18, 19 recorded in the time period 2006-2018 on the traffic of vessels > 12 meters and ZTB areas (Biological Protection Areas), the Adriatic and Mediterranean Marine Areas that identify FRAs (Fisheries Restricted Areas).

SID PORTAL		
Group	**SubGroup**	**Layer**
MIPAAF	**Fishing effort intensity source MIPAAF**	GSA9
		GSA10
		GSA11
		GSA16
		GSA17
		GSA18
		GSA19
	Protection areas	ZTB
	Marine areas	Aree Adriatico
		Aree Mediterraneo

The information related to scientific research sites provided by the National Research Council (CNR) is the only layer used for map 11.

SID PORTAL		
Group	**SubGroup**	**Layer**
CNR	**Areas / sites with permanent (or semi-permanent) installations for research and experimentation source CNR**	siti

The information on natural and environmental areas, provided by ISPRA (Italian Institute for Environmental Protection and Research) was used to draw up the map on protected areas (number 8) and on water contamination (number 14).

SID PORTAL		
Group	**SubGroup**	**Layer**
ISPRA	source ISPRA	Area Marina Capo Milazzo
		Area Marina Capo Testa - Punta Falcone
		Registro 2018CDDA
		Estensione habitat di interesse conservazionistico
		Estensione specie di interesse conservazionistico
		Linea di Costa 2006
		Siti di Natura 2000 (SIC e ZPS)
		Siti di Natura 2000 (SIC)
		Siti di Natura 2000 (ZPS)
		Siti di Natura 2000 (SIC e ZPS) 2018
		Parco Nazionale Isola di Pantelleria
		Aree umide Tutelate
		Delimitazione distretti idrografici
		Santuario dei mammiferi marini
		Stato chimico e ecologico (Fiumi)

3.2 Discussion

As described in the previous section, the information contained in the SID, even if already extensive and representing a multiplicity of authoritative sources, is not yet including all relevant information useful to create the 15 essential maps contained in the Italian national plan.

During the activities undertaken for the preparation of the national plan, additional collection of information was necessary in order to identify the information necessary to describe the current

status of natural and anthropogenic features represented in the maps. This has lead to a misalignment between the information visible in the SID and the information actually used for the drafting of the national MSP plan.

During the next phases of the project, some activities should be set up to realign the layers present in SID and the layers actually used in the essential maps so that users entering the SID can access the most up-to-date information describing the status of the MSP in Italy.

4 Supporting the MSP process

4.1 TEG participation

The MSP Directive (2014/89/EU) introduces an obligation to develop MSP plans that are coherent and coordinated across the marine regions (Art. 11, comma 1). In order to facilitate this harmonization, several regional initiatives have emerged in recent years in order to develop shared approaches and common data models, to make plans comparable with each other and to enable a consistent pan-European publication and updating process.

Starting from April 2020, the European Commission has decided to set up a working group (Technical Expert Group on MSP data - TEG-MSP) to coordinate all previous regional initiatives and produce a single document of guidelines and recommendations for European member states. The working group is a joint initiative between DG MARE and EASME in support of the activities of the Member States Expert Group on Maritime Spatial Planning (MSEG).

In February 2021, the TEG-MSP produced a document (*Proposal for making harmonized MSP plan data available across Europe*) that identifies three appropriate and available data models and recommends that Member States make their plan outputs available not only through their official portals (which have legal value), but also through the EMODnet Human Activities portal (https://www.emodnet-humanactivities.eu/), where a tool has recently been implemented to incorporate, visualize and consult plan outputs (particularly geographic layers and maps) using a common graphical representation. Following the proposed recommendations, several states have already moved or are planning to move in this direction for their plans.

CNR-ISMAR, IUAV and CORILA have nominated internal experts to directly participate in MSP-TEG activities in coordination with the national MSP process and with the MSP-MED project activities.

4.2 Supporting the Italian MSP process

At the same time, within the specific context of the Italian MSP process, a set of activities have been carried out by the italian MSP-MED partners (CNR-ISMAR, IUAV and CORILA) to integrate and improve the SID geoportal and to ensure the compatibility of the Italian MSP outputs with the EMODnet data model:

1. consolidating the data model for the National Plan, aimed at describing and containing all the geographical elements (i.e. areas, sub-areas and planning units) that make up the Italian National Plan, including the descriptive elements associated with the different geographical entities (e.g. characterization of permitted uses) following the formulations and taxonomies adopted and in coherence with the Plan documents. A prototype of such

a model has been realized for internal purposes by the italian MSP-MED partners and has been finalized with the support of the Italian competent authority.

2. supporting the national competent authority (Centro Operativo Nazionale del S.I.D - CONSID) for extending the SID Geoportal in order to publish the plan outputs, to guarantee consultation (e.g. navigation and query of the geographical layers) and download of the data themselves through interoperable user interfaces and services. The access through the SID will also be the official version (legally binding version) as required by the directive and the Italian transposition.

3. designing a tool to convert the italian MSP data model to the EMODnet MSP data model (this activity is part of the task 3.2.2). This tool will support the automatic conversion of the Italian data structure, as well as the mapping/translation of the fields represented through the controlled vocabularies (e.g. classification of anthropogenic uses).

4.3 Italian MSP data model

The simplified Italian MSP data model (flat) consists of the following datasets represented in geopackage (or Shapefile) format:

- Areas: polygonal layer representing the 3 plan areas
- Subareas: polygonal layer representing the sub-areas
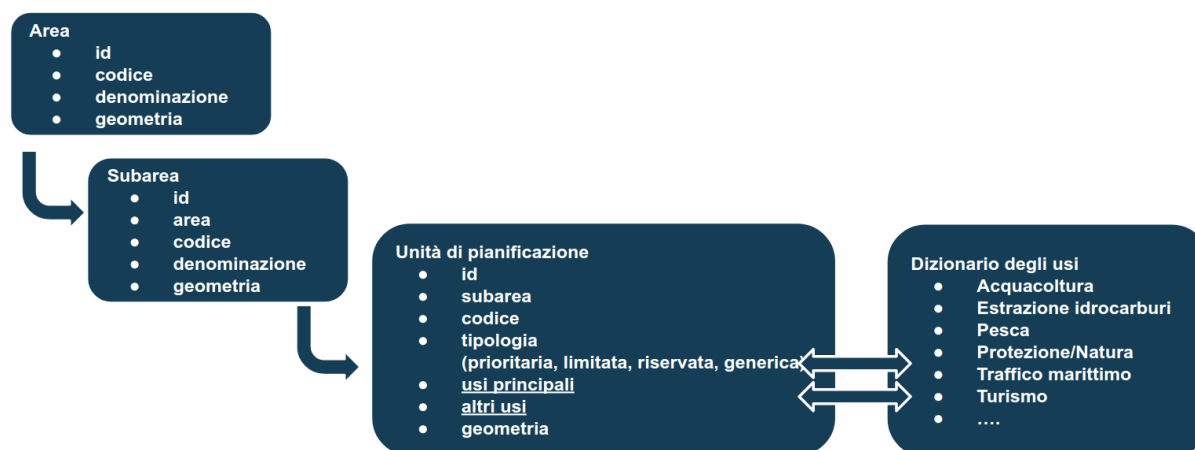- Planning Units: polygonal layer with the planning units

Fig. 4.1: Italian MSP data model. English translation: area=area, subarea=subarea, unità di pianificazione=planning unit, dizionario degli usi=controlled vocabulary for the activities/uses.

The following table presents the codes used to uniquely characterize the different human activities and a possible correspondence with the EMODnet and HILUCS MSP classifications.

Tab 4.1: Human activities classification within italian MSP data model and linkage to EMODnet and HILUCS MSP classifications.

code	use_ita	EMODnet	HILUCS MSP

100	Pesca	Fishing areas	
	Pesca commerciale		Professional fishing
	Pesca artigianale		Professional fishing
	Pesca ricreativa		Recreational fisheries
200	Trasporto marittimo e portualità	Maritime Traffic flows, Ports	
	Trasporto merci		Marine traffic lane
	Trasporto passeggeri		Marine traffic lane
300	Protezione ambiente e risorse naturali	Nature Protection Conservation	Marine protected area
400	Energia		
	Estrazione idrocarburi	Raw material extraction	Mining and quarrying
	Energie rinnovabili	Ocean Energy Facilities	Renewable Energy Production
	Cavi e condutture	Cables, Pipelines	Submarine cables Oil line distribution Gas line distribution
		Wind Farms	Wind energy facilities
500	Prelievo di sabbie relitte	Raw material extraction	Mining and quarrying
600	Difesa	Military areas	Military area
700	Turismo costiero e marittimo	Tourism and recreation	
	Turismo balneare		Beaches
	Turismo esperienziale (e.g. ecoturismo, pesca-turismo, diving,..)		Marine tourism
	Turismo nautico		
800	Infrastrutture (usi industriali legati ad attività portuali)		

900	Telecomunicazioni	Cables	Submarine cables
1000	Paesaggio e patrimonio culturale		Cultural entertainment and recreational services
	Paesaggio costiero		
	Patrimonio culturale sottomarino	Cultural heritage	Underwater cultural heritage / wreck
1100	Immersione a mare di sedimenti dragati		Offshore (other than oil) discharge location
1200	Difesa costiera		
1300	Sicurezza della navigazione, sicurezza marittima e sorveglianza		
1400	Ricerca e innovazione	Scientific research	Professional technical and scientific services
1500	Acquacoltura	Aquaculture	Aquaculture

Four main different types (typology field) of planning units are allowed:
- G - Generic: Areas in which all uses tend to be permitted, with specific and reciprocal regulation mechanisms defined or to be defined in the context of national and international standards or sector plans, in order to guarantee safety, reduce and control environmental impacts and favor coexistence between uses.
- P - Priority: Areas for which the Plan provides indications of priority of use and development, also indicating the other uses to be guaranteed or allowed through mutual regulations and with the identified priority use.
- L - Limited: Areas for which a prevalent use is indicated, with other uses that may be present, with or without specific limitations, if and to the extent compatible with the prevalent use.
- R - Reserved: Areas reserved for a specific use. Other uses are permitted exclusively for the needs of reserved use or subject to exceptions and concessions by the person responsible or manager of the reserved use.

4.4 Publication through the SID Geoportal
On the basis of the datasets described above, it is proposed to publish, through the SID, the following new layers:
- Layer 1 - MSP Areas: delimitation of the 3 Areas that make up the Italian plan (see Fig. 4.2).

- Layer 2 - Planning Units: portrayal of the dataset "Planning Units" using the "type" field (see Fig. 4.3).
- Layer 3 - Reserved, Limited, Priority Uses: alternative portrayal of the dataset "Planning Units" based on the reserved, limited, priority uses present in each planning unit (see Fig. 4.4).

It is also proposed, for each of the uses present (e.g. Aquaculture, Fisheries, Energy), the preparation of many new layers in order to allow users of the portal SID to view all planning units in which a particular use is allowed (distinguishing between "Reserved, limited, priority" and "other use") (see Fig. 4.5).

Please note that the sample maps shown below are to be considered indicative, as the final assignment of uses to planning units are being finalized by the Italian competent authority.
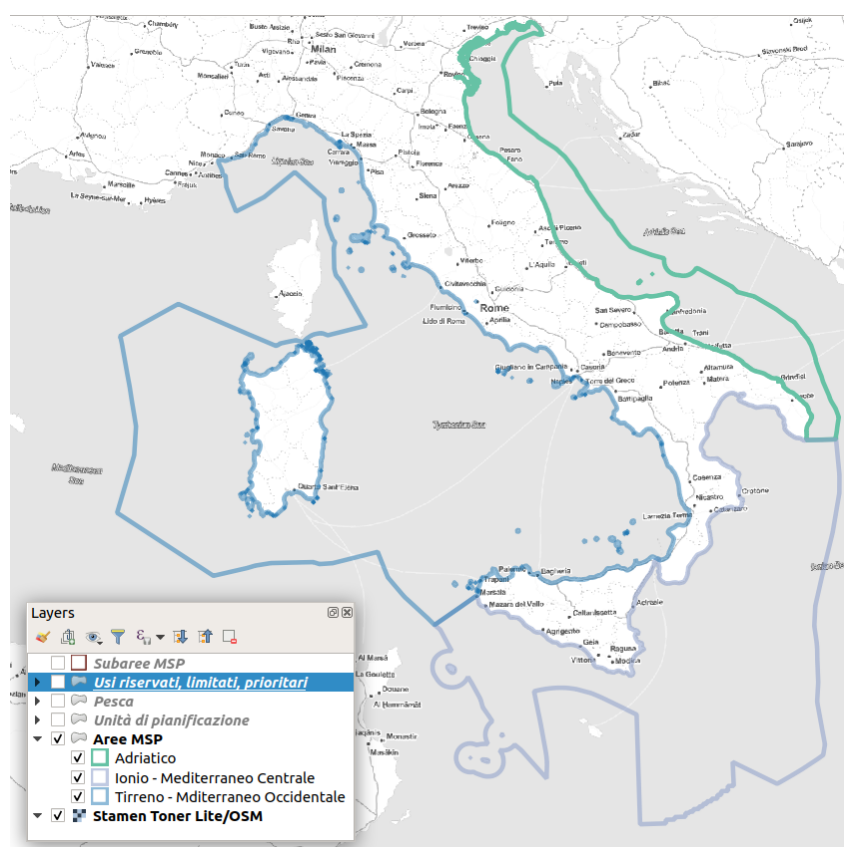

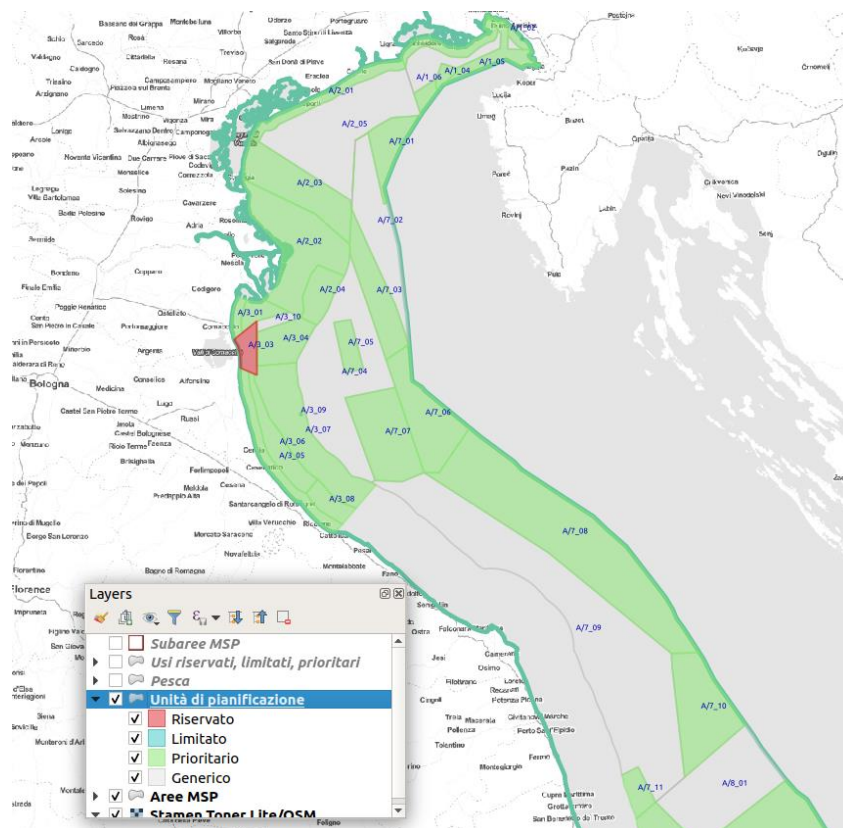Fig. 4.2: Italian MSP Areas. Adriatic, Ionian and Central Mediterranean, Tyrrenian and Eastern Mediterranean.

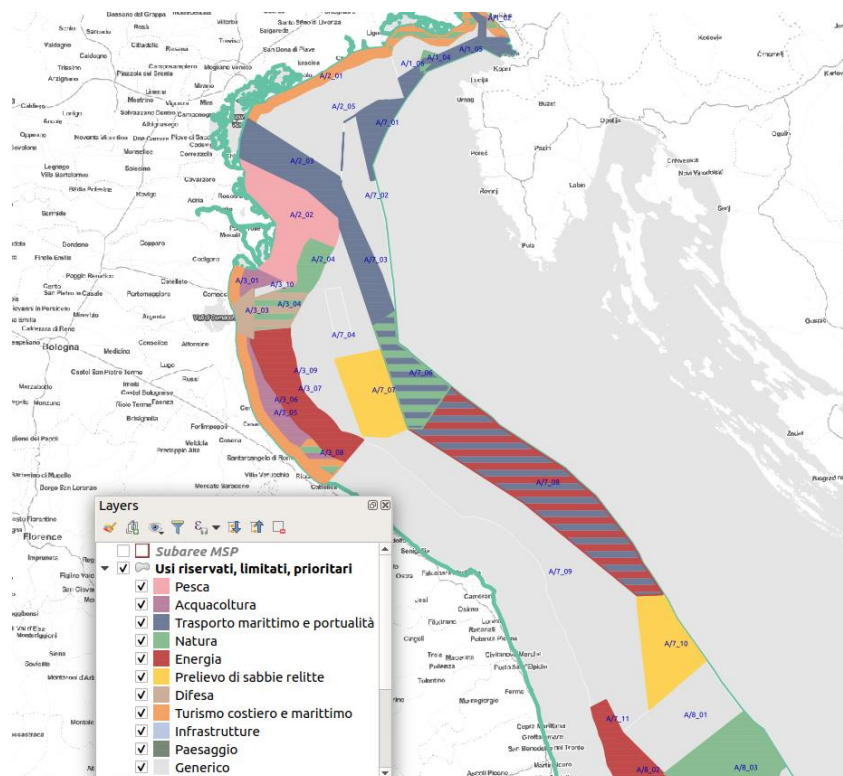Fig. 4.3: planning unitis: reserved, restricted, priority, generic.
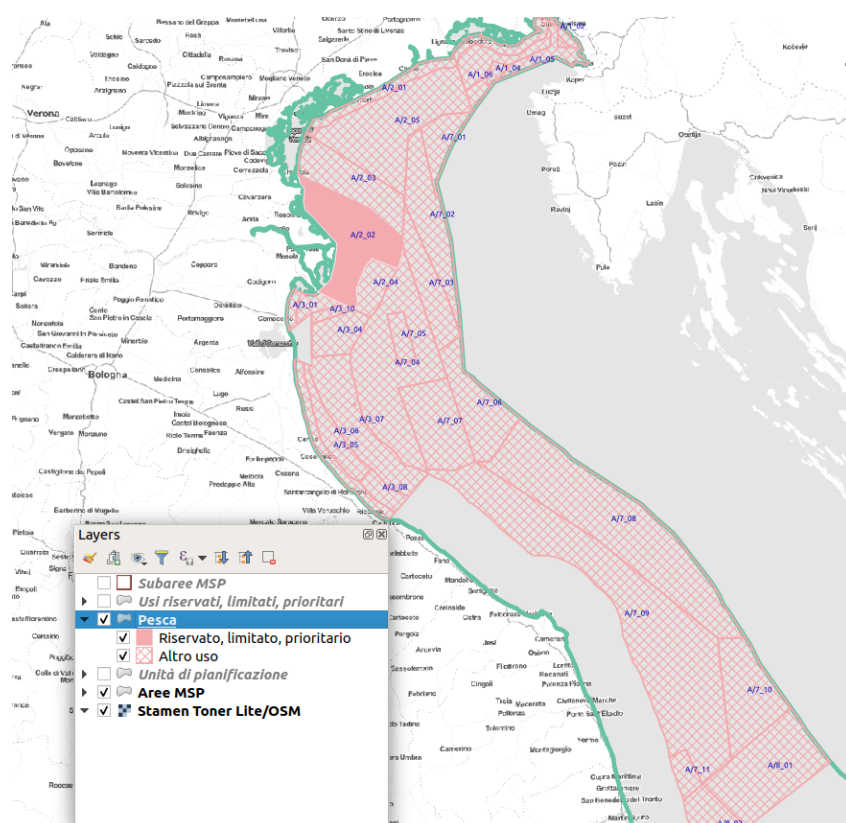

Fig. 4.4: main uses

Fig. 4.5: Example of additional layer for the single use "Pesca (Fishing)".

4.5 Discussion

The combination of the participation of CNR-ISMAR, IUAV and CORILA to the TEG-MSP, the collaboration with the competent authority in the national MSP process and the activities included in the Task 3.2 of the MSP-MED project have, all together, allowed both the scientific and institutional partners to follow and directly contribute to the European discussions related to standardization and harmonization of data describing the output of national MSP plans. Currently, the Italian MSP data model is in the process to be integrated in the SID geoportal and updated so that, in the future, the geospatial representation of the MSP plan will be accessible both from the official national portal and the European EMODnet Human Activities portal.

5 Conclusions

The SID - *Il Portale del Mare*, is an already active and rich portal, used for various official procedures related to the management of the maritime state property. During the process for the drafting of the Italian national MSP plan, it has been enriched with new data and functionalities, which have been fundamental for the activities of the Technical Committee working on the plan implementation.

The analysis of current functionalities and data content has highlighted a few possible improvements that might be considered to be implemented in the future to increase accessibility, usability and interoperability of the SID contents.

Considering the functionalities related to interaction with layers and the map (see section 2.1), the current data structure (organised by data source institution) and the separate tabs to access it don't allow a flexible representation of layers and their repositioning based on user visualization priorities. Some readjustment of the table of contents in the GUI might improve the user experience and help in customising how users can interact with and organise information in the portal.

It has been already mentioned (section 2.2) that the SID geoportal provides some interoperable services (WMS and WFS) for visualising and accessing geospatial layers; however, metadata information on data accessed is very essential and should be enriched to allow users to fully understand the meaning, origin, fitness for purpose of information. To these purposes, an additional standard service for metadata (OGC-CSW, Content Service for the Web) might be activated, allowing a full spectrum of geospatial interoperable services to provide standard access to MSP relevant information.

Regarding the accessibility of information, currently, only a few authorised users are allowed to visualise MSP-related data, while general registered users can only see the "SID" tab and consequently cannot visualise the geospatial layers used for the preparation of the MSP plan (see section 2.3). SID managers are already considering extending the access to additional authorities (e.g. local administration), scientific community and the general public, so as to guarantee an open access to a wide range of users.

Section 3.2 describes another shortcoming of the current situation related to the organization of data, namely the fact that the SID doesn't contain all the data used for the preparation of the plan: an update has to be implemented so that all the datasets used for the cartographic production of the priority maps attached to the Italian MSP plan can be visualised and possibly accessed through the SID interface.

Finally, various possible improvements are related with the management and publication of the geospatial outputs of the plan (areas, sub-areas and planning units): the simplified Italian MSP data model (section 4.3) is available to be applied in the SID to manage and represent all the MSP plan-related areas in a practical and standard way. This implementation, together with the development of a specific tool for transformation into the EMODnet model, will make available the output of the Italian plan also at the European level in a common format.

Additional elements can be simply mentioned and might be considered in further discussion and implementation phases to include in the SID other functionalities and interoperability components dealing with:

- development of advanced filtering functionalities by type of use;
- development of interoperable search, display and download services, as well as specifications on data models, fully compatible with the INSPIRE Directive 2007/2/EC[2];
- formal assignment of a common standard open licence in accordance with Directive 2019/1024 on open data and re-use of public sector information[3].

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[2] http://data.europa.eu/eli/dir/2007/2/oj

[3] http://data.europa.eu/eli/dir/2019/1024/oj