mspmed

D.26 - MSP knowledge catalogue implementation

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ACKNOWLEDGEMENT

The work described in this report was supported by the European Maritime and Fisheries Fund of the European Union- through the Grant Agreement number 887390 - MSPMED - EMFF-MSP-2019, corresponding to the Call for proposal Call EMFF-MSP-2019 (Maritime Spatial Planning) Topic: EMFF-MSP-2019 Type of action: EMFF-AG for Projects on Maritime Spatial Planning (MSP).

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Project Full Title	**Towards the operational implementation of MSP in our common Mediterranean Sea**
Project Acronym	**MSP-MED**
Gant Agreement Nr.	**887390**
Project Website	**https://mspmed.eu**

Deliverable Nr.	**D26**
Status (Final/Draft/Revised)	**Draft**
Work Package	**WP3 - Data use and sharing**
Task Number	**3.1 Building and sharing a common knowledge catalogue**
Responsible Institute	**CNR. IUAV, CORILA**
Author/s	**Alessandro Sarretta, Stefano Menegon, Amedeo Fadini, Andrea Rosina, Denis Maragno**
Recommended Citation	
Dissemination Level (Public/Partnership)	**Public**

Document History			
Version	**Date**	**Modification Introduced**	
		Modification Reason	**Modified by**
1	25/10/2022	Final version	**Alessandro Sarretta, Stefano Menegon, Amedeo Fadini, Andrea Rosina, Denis Maragno**

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1 Introduction

The overall objective of the MSPMED project is to facilitate the Maritime Spatial Planning (MSP) Directive's processes in the Member States (MS) facing the Mediterranean Sea, by supporting the establishment of coherent and coordinated maritime spatial plans across the Mediterranean Region, in line with the MSP Directive objectives.

The article 10 of the MSP Directive requires to make use of the best available data and organise the sharing of information necessary for the maritime spatial plans by using relevant mechanisms and tools. This is fundamental for the setting up of national plans but also for supporting coherence and coordination across marine regions.

For these reasons, in the MSPMED project an entire work package—WP3 Data use and sharing—is dedicated to improving and facilitating the sharing of data and information among Member States at the Mediterranean level.

1.1 Work Package 3 - Data use and sharing

The main objective of WP3 is making use of the best available data and organising the sharing of information using and applying international and European rules and standards so that a common language and information basis is shared among Member States; on the other hand, it is fundamental that a customised approach is applied on how to tailor this common framework to specific national needs, considering variable advancement levels in the implementation of the MSP Directive and different strategic goals.

Therefore, the WP3 was structured in six main tasks, organised in two blocks: one (3.1) supporting a common framework for cross-border data sharing, and the second (3.2–3.6) tackling national-specific needs.

Task 3.1 focused on building a common knowledge base and supporting sharing and compatibility of MSP-relevant data at the Mediterranean scale by sharing and consolidating data and information needs, implementing a common knowledge catalogue of metadata on MSP-relevant information, and analysing the current data gaps and weaknesses.

Tasks 3.2, 3.3, 3.4, 3.5, 3.6 developed specific activities to support the implementation of MSPD at national level in Italy, Malta, France, Greece and Slovenia, respectively.

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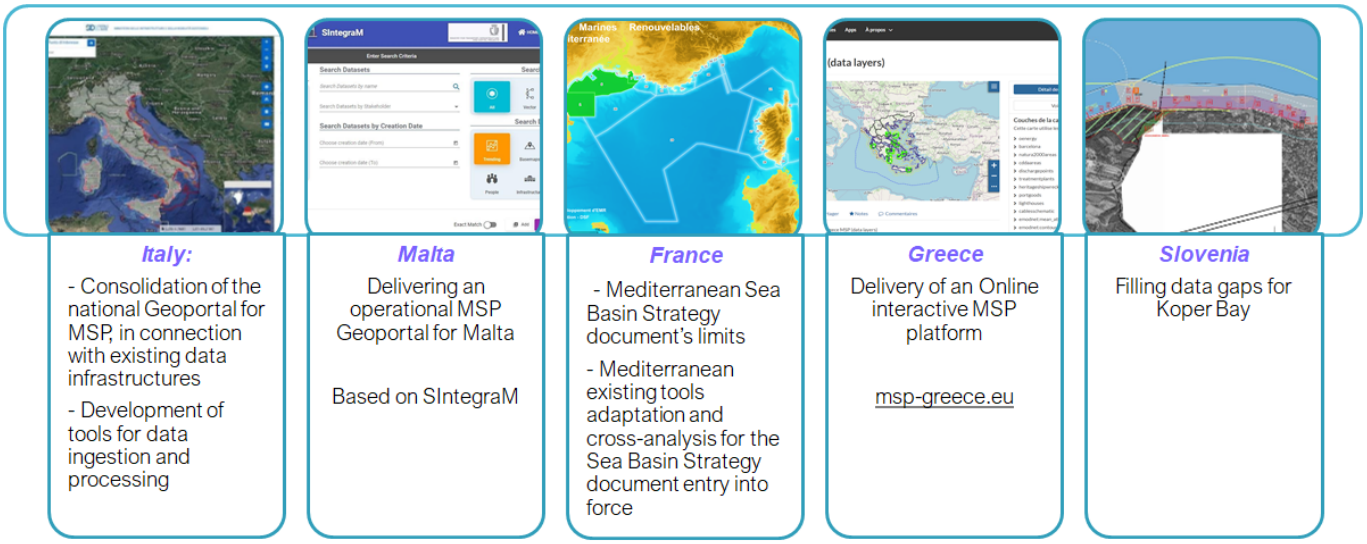

Figure 1: the different activities developed by the partners at national level during WP3

This dual approach has the aim to support collaboration between MSs to achieve data gathering and homogenization both at National and basin scales in order to have a common dataset and information framework to achieve a coherent implementation of MSP in the Mediterranean.

The activities related to the task 3.1, with some perspectives and lessons learned, are presented in the deliverable "D.27 - Analysis and methodological guidance on sharing data and information", while this deliverable, "D26 MSP knowledge catalogue implementation", describes the implementation, main functionalities and an overview of the content of the MSP knowledge catalogue.

2 Implementation of the MSP knowledge catalogue

The goal of the sub-task 3.1.2 “Implementation of a common MSP knowledge catalogue” was the implementation of a tool for the collection and sharing of MSP-relevant information for the Mediterranean Sea.

This catalogue doesn’t have the ambition to provide a unique place where to directly access and visualise all the geospatial datasets relevant for supporting MSP for all Member States in the Mediterranean area. More concretely and realistically, it has been implemented to exploit standard metadata and interoperable services to reference relevant information from national MSP data portals, ongoing and past European projects (e.g. SUPREME, SIMWESTMED, PORTODIMARE) and other European and international portals (e.g. EMODnet), allowing to search, filter and aggregate information in relation to geographic area (e.g. marine basins and regions), topic categories (e.g. maritime uses, environmental characteristics), data availability policies (e.g. free, on demand, for research purposes), interoperability (e.g. web services).

Previous initiatives and projects already approached the issue of the dishomogeneity of distribution, availability, access of marine data. In particular, in the Mediterranean area, some EU funded projects had specific activities focused on this, namely ADRIPLAN, SUPREME, SIMWESTMED and PORTODIMARE, to mention the most important ones dealing explicitly with Maritime Spatial Planning.

Starting from those experience, to which various MSPMED partners participated as main contributors, the Comprehensive Knowledge Archive Network - CKAN[1] was chosen as the tool to implement the catalogue. It is an open source project used all over the world to organise and make available open data on many different domains. It is well maintained by an active open source community of developers and it is strongly based on open standards for the description of metadata and the interoperable services used for accessing and sharing them. It was also previously used as a tool to prepare and share datasets among partners in the projects SUPREME and PORTODIMARE.

In the MSPMED project it has been used as a collector of already existing datasets, described through metadata referencing the original source of information.

The main goal in fact is to allow the creation and possible growth of a centralised hub of curated information that has the aim to make more visible and accessible datasets already organised by Member States in their portals and catalogues.

The analysis performed through the questionnaire shows that many portals already exist to share MSP-related information, but there are various issues for a Mediterranean-wide use case, such as the fact that they are generally not MSP-focused, the main language is the

[1] https://ckan.org/

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national one, classifications of domains/topics do not cover main MSP categories of information. This way a user who wants to collect information on a cross-boundary topic would have to go in each and every portal and deal with all of those differences and inconsistencies.

Through the MSP knowledge catalogue, on the other hand, it will be easier to filter datasets by domain area, subject category, provider, type of web service and be able to reach and (where possible) view and download datasets of interest.

Main functionalities and content of the tool

The MSP knowledge catalogue is a web portal with a simple and clean interface that allows users to access information related to MSP in the Mediterranean sea.

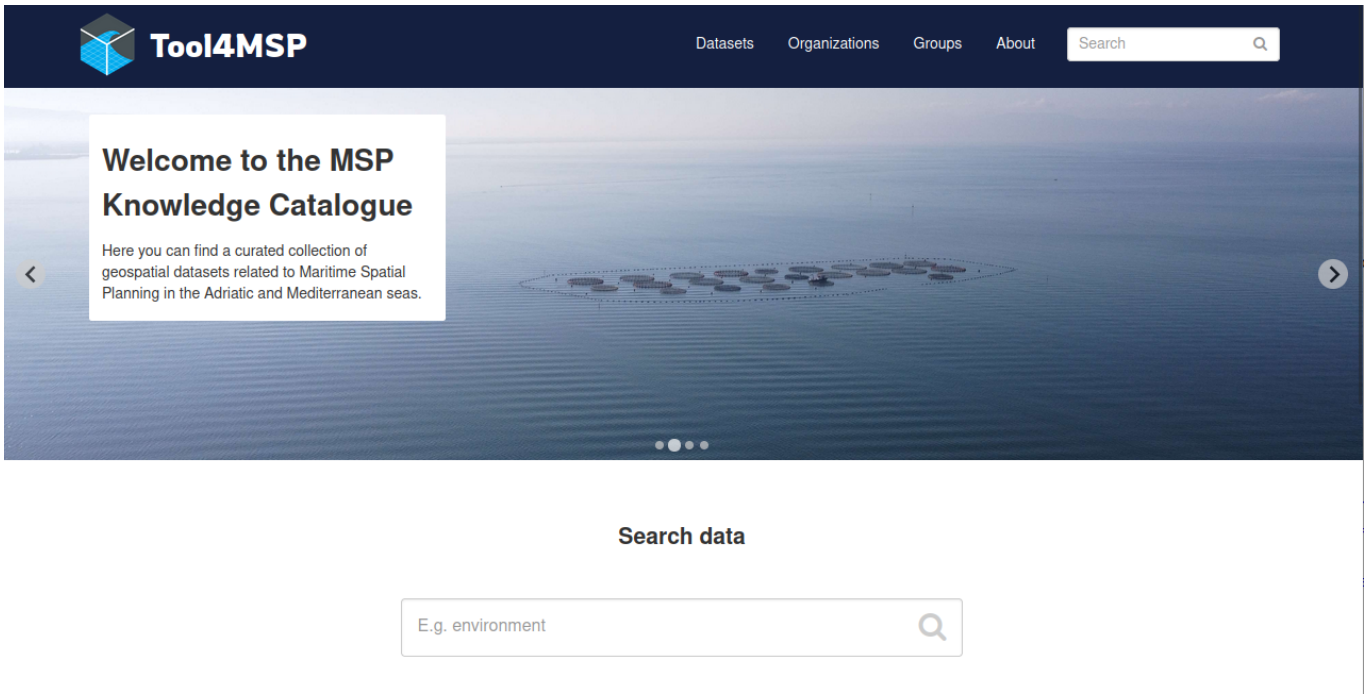

Figure 2: homepage of the MSP Knowledge Catalogue

To search for information, in the home page there is a search textbox where users can write free text to match information in the catalogue. Alternatively, three elements in the top bar menu allows you to list:

- Datasets: all the datasets contained in the catalogue;
- Organisations: datasets grouped by organisations and entities who have the responsibilities of managing the datasets in the catalogue;

- Groups: aggregations of datasets by some criteria defined by the catalogue administrators (e.g. by spatial domain, project, specific topic, etc.).

Another simplified way to access subsets of the catalogue content are the sections *Popular tags*, *Featured Categories*, *Featured Datasets* and *Featured Groups*, which are available in the bottom part of the home page to filter the datasets based on predefined criteria, managed by the system administrators.

The *dataset* is the central element of the portal and, in this context, should not be understood simply as the data itself, but above all as the metadata describing a dataset, which might be directly accessible from the catalogue itself or simply refer to its original source.

For the access to datasets collected in the MSPMED project that have relevance for the national MSP plans, a dedicated *group* (called "MSP in the Mediterranean" group[2]) has been created.

[2] https://catalogue.tools4msp.eu/group/msp-in-the-mediterranean

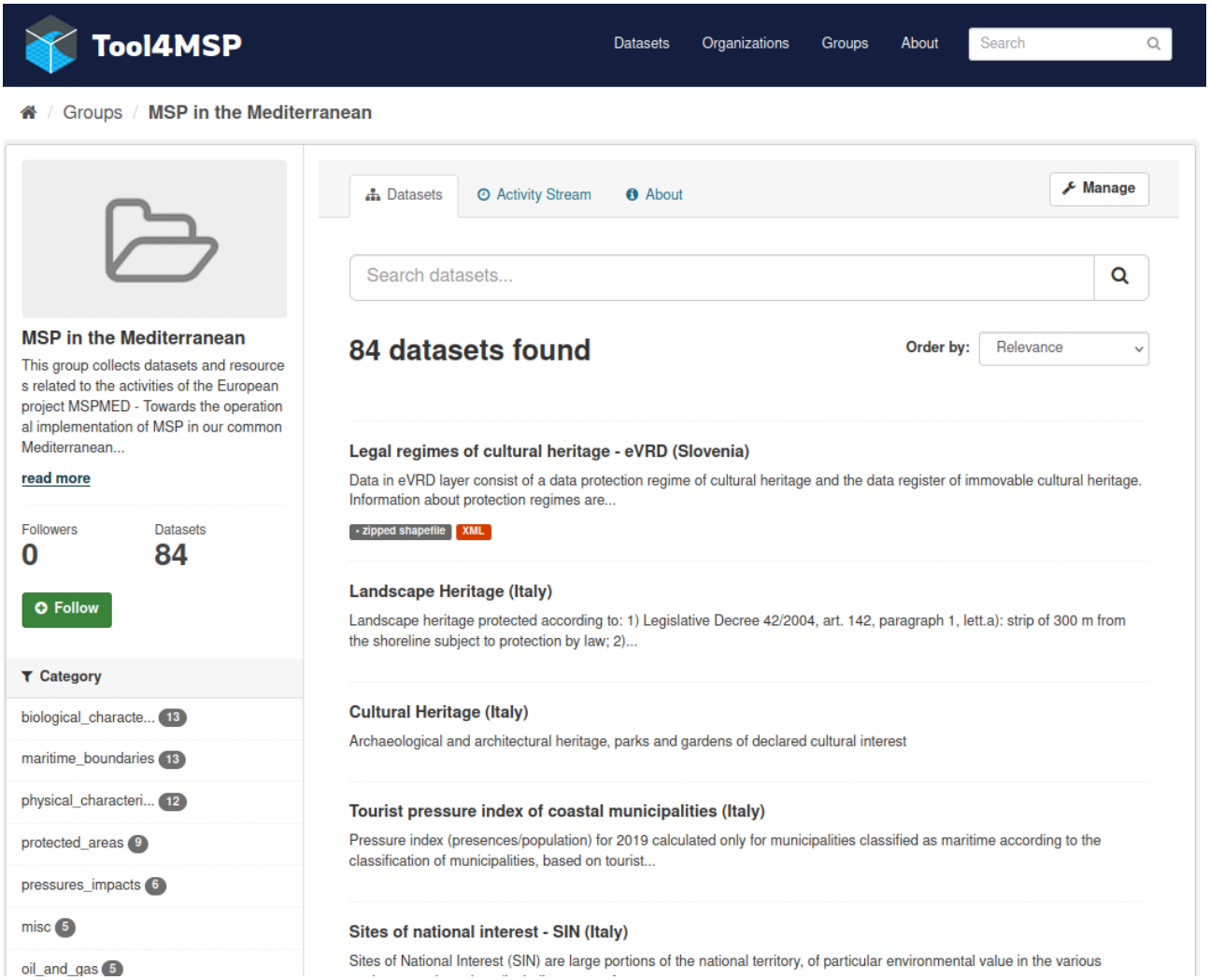

Figure 3: section of the MSP Knowledge Catalogue dedicated to the datasets related to MSP in the Mediterranean Sea.

All datasets available in the group *MSP in the Mediterranean* are listed in the central section of the window, grouped in pages with 20 elements each.

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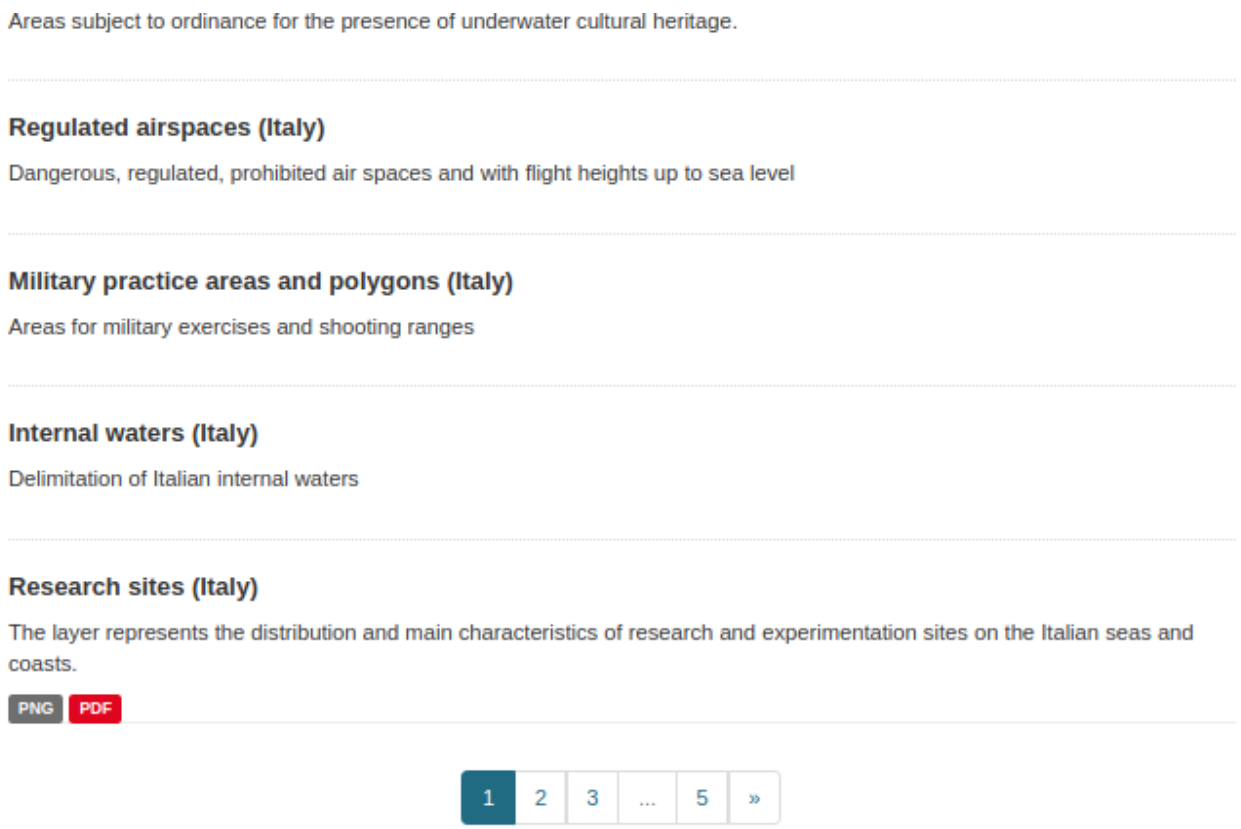

Figure 4: pagination of the datasets in the main MSP Knowledge Catalogue window.

On the left-hand side, 5 sections are presented to help you filter information that is relevant to you:

- Category
- Sub Category
- Owner
- Web services
- Domain area

Under each filter title, the values used in the catalogue are presented with a number on the right indicating how many datasets contain that value in the metadata.

Clicking on an element, all datasets containing that value will be filtered and listed as a result; if you click on another element on the left, both filters will be applied, further sub-filtering the results (see. An example in Figure 5).

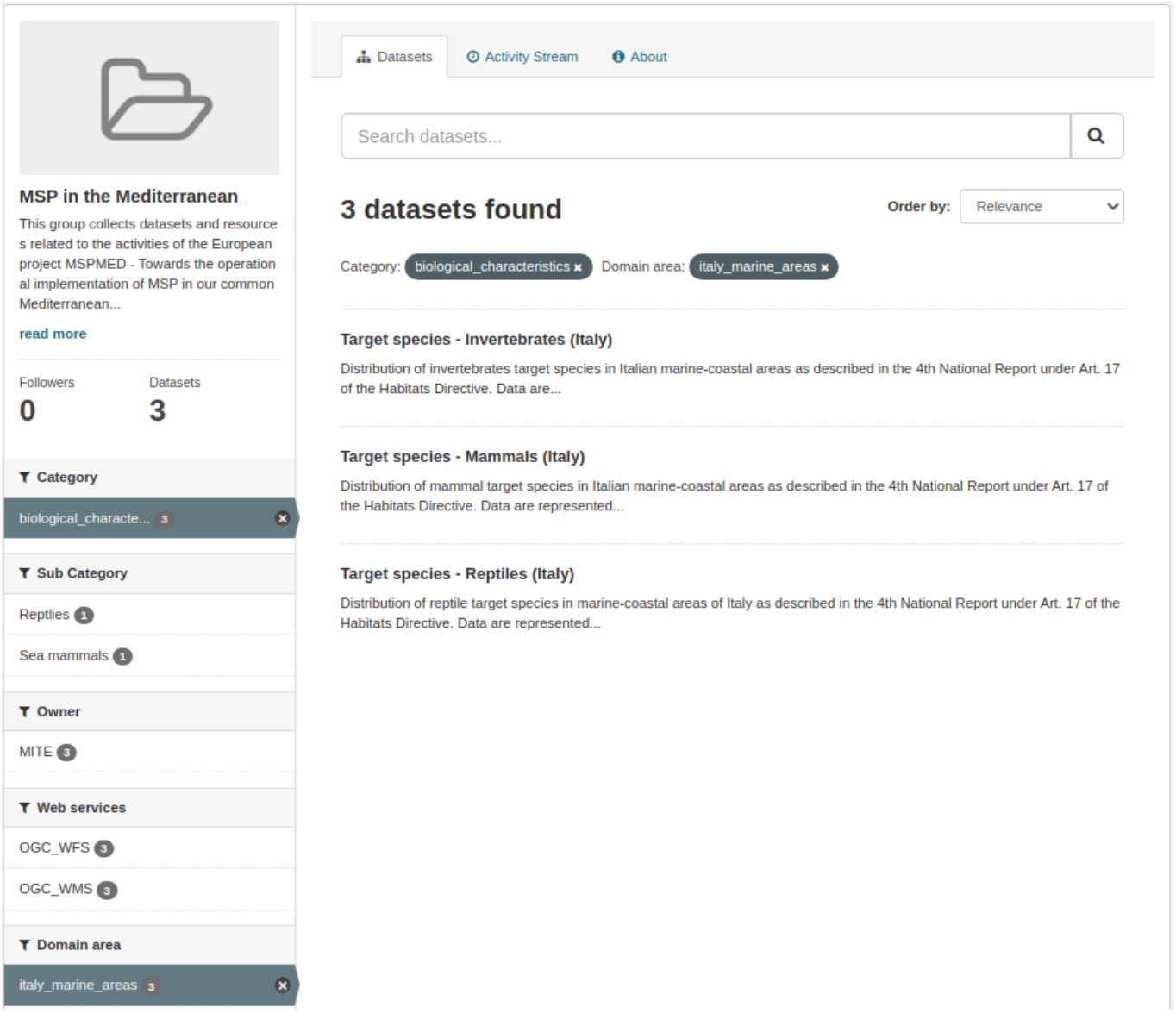

Figure 5: selecting datasets of interest using the filters available on the left panel. In the example, two filters are applied, *biological characteristics* under the *Category* filter and *Italy marine areas* under *Domain area*, resulting in three datasets found.

To access information for a dataset, just click on the title and you will be presented with a description page for that dataset.

The information is organised in several sections: on the left-hand side, the organisation managing the dataset in this catalogue is presented, together with some links to share the dataset in various social media and, at the bottom, the licence under which the dataset can be

re-used; on the central part, the following paragraphs present the information associated with the dataset:

- Title and abstract
- Related datasets
- Data and Resources
- Additional info

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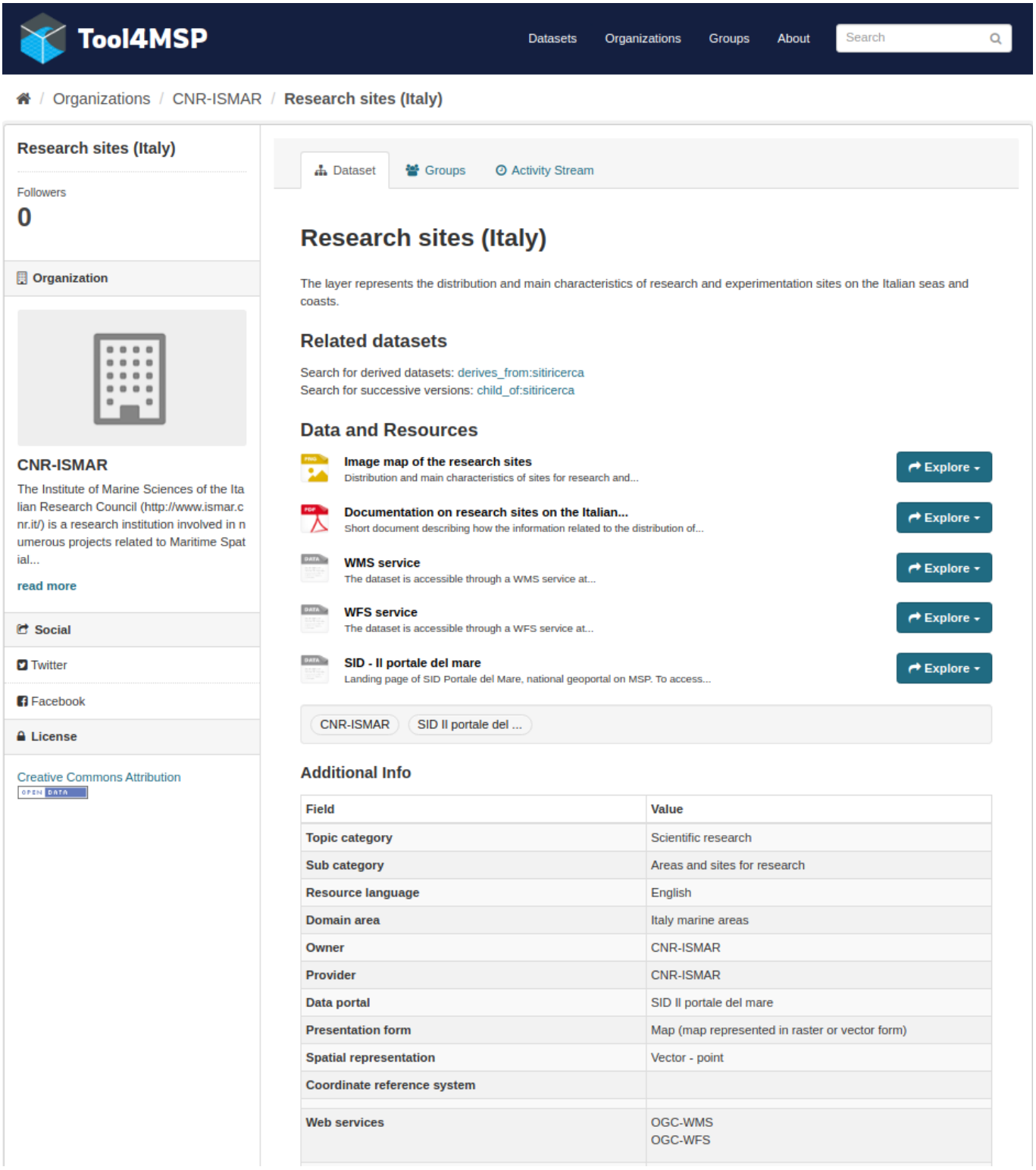

Figure 6: description page for a dataset.

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While the *title*, *abstract* and the *Additional info* section contain simply descriptive metadata, useful to understand content and characteristics of the dataset, *Related datasets* and *Data and Resources* have a different scope:

- **Data and Resources** are additional elements that can be added to enrich the description of a dataset. They can be images for an overview, links to external resources such as descriptive web pages, URLs of web services such as WMS and WFS, documents for further analysis, and actual data which can be loaded directly into the system or referenced as an external resource.
- **Related datasets** are an extension to the platform specifically developed in the MSPMED project to allow datasets in the system to be linked. Two types of connections are available: datasets that are derived from another (subset, processed product, …) and datasets that are successive to another (surveys repeated at different timeframes, data updated from previous years, …).

The metadata used to describe the datasets contains standard metadata fields, common to ISO 19115 and also INSPIRE metadata schemas, such as Resource title, Resource abstract, Temporal extent, Responsible party, and other metadata elements that has been customised or adapted to focus on MSP, such as the topic category, sub category, domain area, data portal.

In particular the metadata elements *Category* and *Sub category* have been specialised for MSP-purposes, based on experiences from previous projects (e.g. SUPREME and PORTODIMARE) and other European initiatives (HELCOM-VASAB, EMODnet Human-Activities).

The list of categories in the MSP Knowledge catalogue is the following:

- Maritime boundaries
- Terrestrial boundaries
- Physical characteristics
- Types of habitat
- Biological characteristics
- Aquaculture
- Fishing
- Renewable energies
- Installations & infrastructure
- Maritime transport and traffic flows
- Ports
- Nature and species conservation sites & protected areas
- Military
- Raw material extraction areas
- Scientific research

- Submarine cable & pipeline routes
- Tourism & recreation
- Underwater cultural heritage
- Coastal defence
- Human population
- Economic indicators
- Social indicators
- Coastal land uses/activities
- Source of pollution
- Pressures and impacts
- Spatial policy
- Oil and gas
- Miscellaneous

Currently, the distribution of datasets is not comprehensive of all the information collected by Member States for the preparation of their plan, nor is it homogeneous in terms of spatial or thematic coverage. Member states have in fact adopted very different procedures for collecting, organising and sharing information, and this information has only been partially described and linked in the MSP knowledge catalogue, as an example of the potential of the system and as an initial step towards the availability of a common MSP knowledge collection for the Mediterranean.

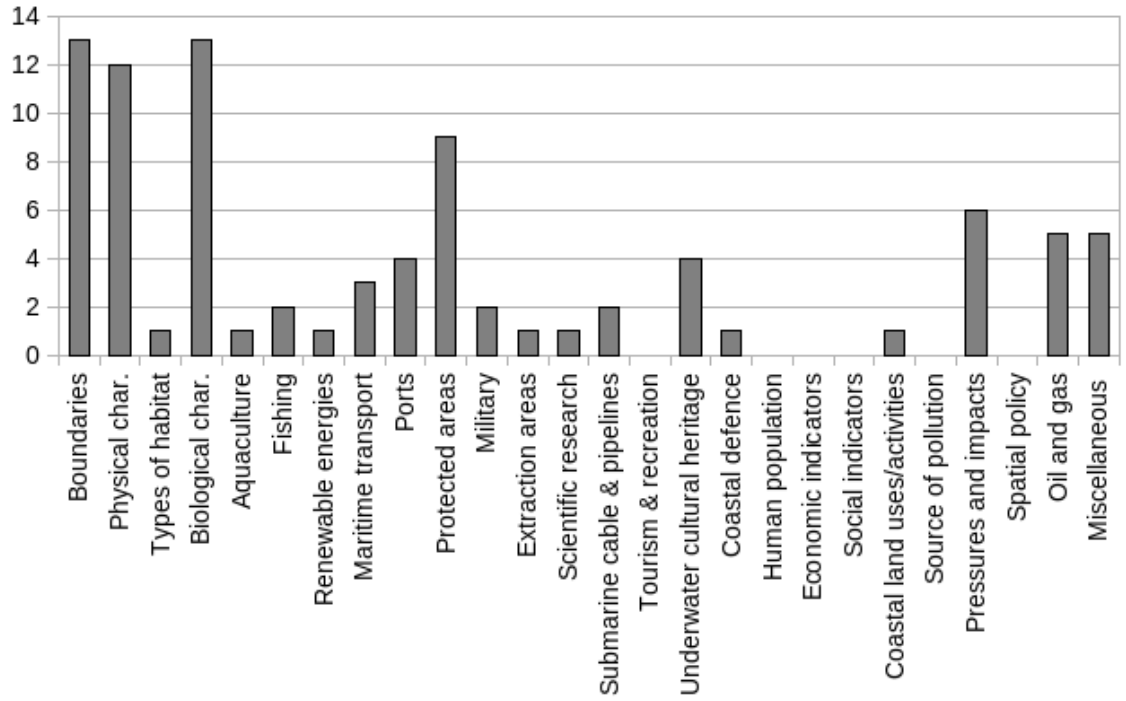

Figure 7: summary of the number of datasets present in the MSP knowledge catalogue grouped by category, at the time of writing.

The content of the catalogue is continuously updated by the MSPMED project partners, so the information represented in this report on the number and representativeness of datasets may not be up-to-date.

Managing information in the catalogue

The MSP Knowledge Catalogue uses the functionalities of the software CKAN to manage users and their permissions to access and edit information in the portal.

General users don't need to be registered in the portal to access information on datasets. All datasets that are public are visible to all users and the related information (metadata, additional resource) is also accessible.

Users can register to the portal, using the OAuth 2.0 protocol through a Google mail account, to be able to create metadata for new datasets and contribute to the enrichment of the catalogue. This is anyway only possible if the user is added, by an administrator, as a member of one of the organisations managing the contact of the portal. This is done to allow datasets to be added to the portal only by trusted users and to keep the content organised and quality controlled.

Different administrative roles can also be applied to managed users permissions in relation to groups, organisations or the whole portal.

Once users are granted with some editing permissions, they can add new datasets and add or modify metadata and resources to it from a dedicated web page.

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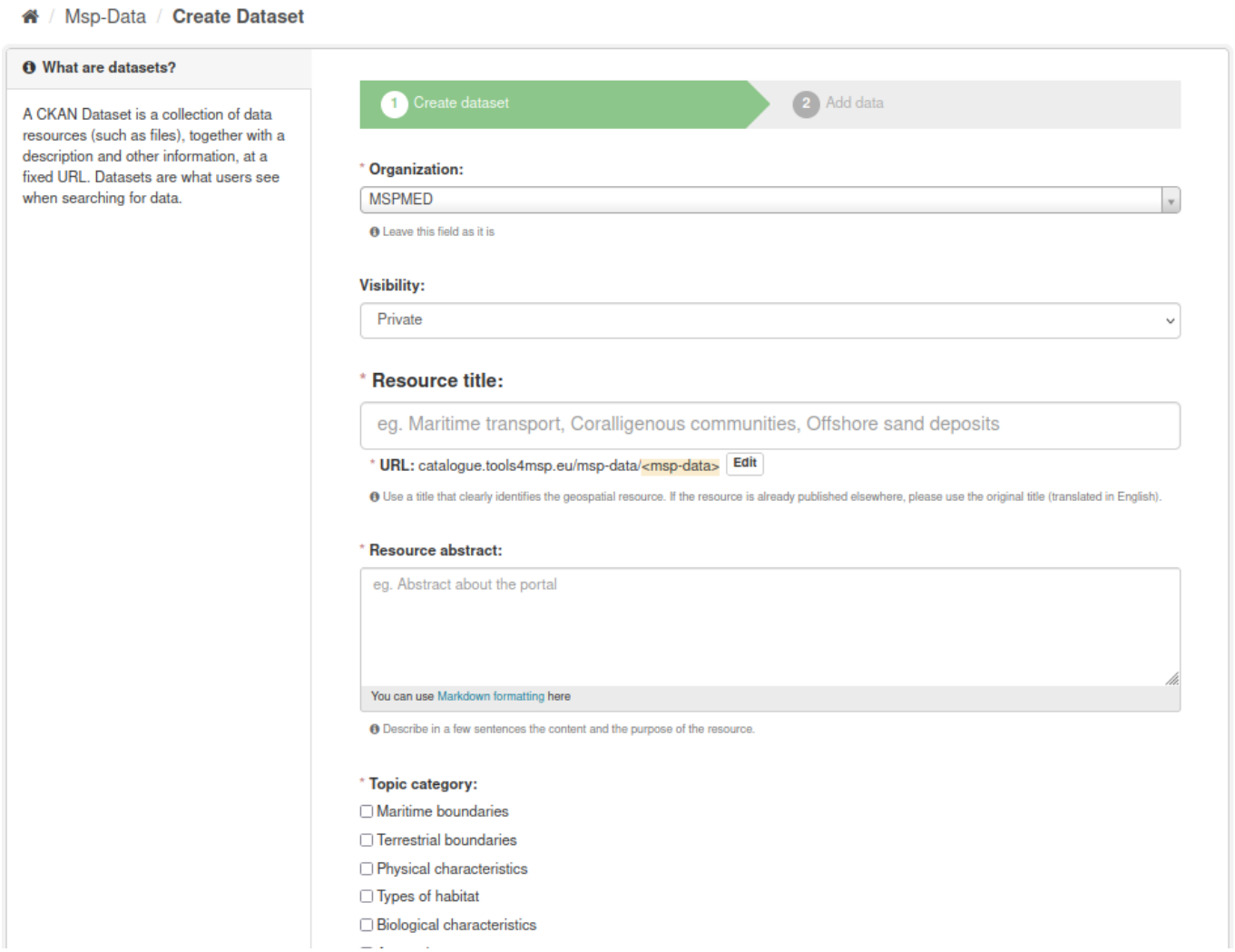

Figure 8: initial section of the web page interface for adding information to a new dataset.

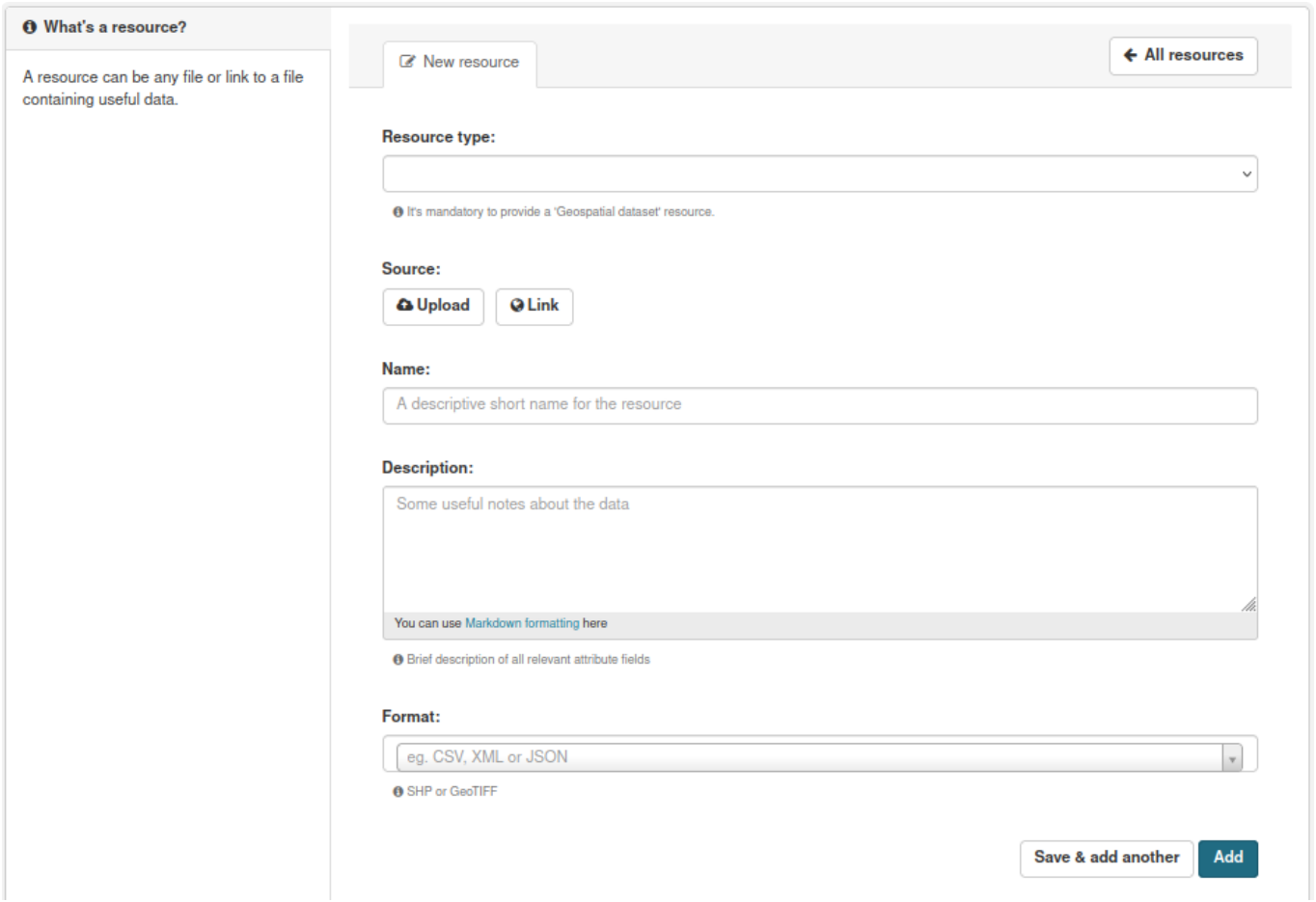

Figure 9: web page interface for adding new resources to a dataset.