



**EMODnet**



European Marine  
Observation and  
Data Network

# **EMODnet Thematic Lot n° 6 – Human Activities**

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**Start date of the project: 03/03/2017 - (24 months)**

**EMODnet Phase III – Interim Report**

**Reporting Period: 03/03/2017 – 21/02/2018**

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## Executive summary

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The general objective of EMODnet Human Activities is to become the entry point for maritime data on the spatial extent and intensity of human activity in the ocean. For this reason, special attention is given to collating accurate data from official sources, as well as to making user experience as friendly as possible.

With the new phase of EMODnet, the focus is on further developing its operational service where marine data and data products on the spatial extent and intensity of human activities in the ocean are made interoperable and freely available. According to the contract, EMODnet Human Activities is mandated to build the following data themes:

- Aggregate extraction
- Cultural heritage
- Dredging (e.g. navigational)
- Fisheries zones
- Hydrocarbon extraction
- Ports
- Aquaculture (including freshwater)
- Ocean energy facility
- Spatial planning zones
- Pipelines and cables
- Protected areas
- Waste disposal
- Wind farms

Compared with the previous phase, there are some new datasets, such as freshwater aquaculture, waste collected in ports and spatial planning zones, for which work is still ongoing. Furthermore, even though not requested by the contract, the Human Activities team has also made available a number of additional datasets, such as:

- State of bathing waters
- Fish catches
- Monthly first sales of fish
- Hydrocarbon extraction licences
- Lighthouses

Moreover, one of the key objectives of the new phase is to make available a series of vessel density maps. This was also a requirement of the previous EMODnet phase, when in fact it turned out impossible to obtain the necessary data to compile the maps. For this reason, with the new phase it was decided to purchase a set of data from a commercial provider. Vessel density maps also happened to be the most requested dataset by users, according to a survey carried out in 2016. For this reason, it is expected that the release of the maps might increase EMODnet's visibility considerably, especially because shipping is by far the maritime activity that has the largest impact on the marine environment.

Besides collecting and making available data on human activities in ocean, during the first year of the project other activities were also carried out.

The team compared EMODnet data models with INSPIRE's, in view of increasing compliance with INSPIRE standards. In the next step of this task, our findings will be submitted to the INSPIRE working group to agree on what measures might be taken to improve compliance.

In view of fostering cooperation with Regional Sea Conventions, a series of meetings took place between 2017 and 2018. The Human Activities team met the organisations responsible for the implementation of Regional Sea Conventions and discussed how to better liaise in the future to mutual benefit. Follow-up meetings will take place in the coming months to assess the progress made.

Further to the release of new visual guidelines for the portal, a revamped version of the Human Activities website has been developed on a test site. This version will be reviewed at the Technical Working Group Meeting in March, and then will go live.

In order to increase the visibility of EMODnet Human Activities and expand its user base, a communication strategy was drafted at the beginning of the project. Amongst other things, communication activities include participation in events, publication of articles and blog posts. The blog that was launched in the previous EMODnet phase has proved to be an effective tool to spread the word about EMODnet outside its inner circle. Blog posts on themes related to EMODnet Human Activities have been shared on social media and have attracted users that were previously unaware of the project.

Web statistics show that new user visit the portal each month. Human Activities can now boast a significant share of users from industry, which may lead to believe that providing harmonised and interoperable data is contributing to generating value added in the blue economy. Nonetheless, because of how information from users is collected, it remains difficult to understand how data are being used exactly. To cope with this issue, the download form is being changed, so as to make some basic contact information mandatory. In the coming months, the Human Activities team will thus reach out to selected users and enquire as to how they have used the data. Based on the feedback received, use case stories will be drafted and shared on the blog, so as to shed light on the benefits of the project.

# Introduction

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The contract for the new phase of EMODnet Human Activities was signed in March 2017. The consortium that was awarded the contract is the same that developed the portal in the previous phase:

- Cogea (lead company)
- AND International
- AZTI Tecnalia
- CETMAR
- Eurofish International Organisation
- Lovell Johns

EMODnet Human Activities has been a member of the EMODnet family since September 2013. Since it was not included in the first EMODnet phase from 2009 to 2012, in the previous EMODnet phase its main objective was to quickly build a base of data, so as to catch up with the other portals.

With the new phase of EMODnet, the focus is on further developing the operational service where marine data and data products on the spatial extent and intensity of human activities in the ocean are made interoperable and freely available. According to the contract, EMODnet Human Activities is mandated to build the following data themes:

- Aggregate extraction
- Cultural heritage
- Dredging (e.g. navigational)
- Fisheries zones
- Hydrocarbon extraction
- Ports
- Aquaculture (including freshwater)
- Ocean energy facility
- Spatial planning zones
- Pipelines and cables
- Protected areas
- Waste disposal
- Wind farms

Compared with the previous phase, there are some new datasets, such as freshwater aquaculture, waste collected in ports and spatial planning zones, for which work is still ongoing. Furthermore, even though not requested by the contract, the Human Activities team has also made available a number of additional datasets, such as:

- State of bathing waters
- Fish catches
- Monthly first sales of fish
- Hydrocarbon extraction licences
- Lighthouses

Moreover, one of the key objectives of the new phase is to make available a series of vessel density maps. This was also a requirement of the previous EMODnet phase, when in fact it turned out impossible to obtain the necessary data to compile the maps. For this reason, with new phase it was decided to purchase a set of data from a commercial provider. Vessel density maps also happened to be the most requested dataset by users, according to a survey carried out in 2016. For this reason, it is expected that the release of the maps might increase EMODnet's visibility considerably, especially because shipping is by far the maritime activity that has the largest impact on the marine environment.

The general objective of EMODnet Human Activities is to become the entry point for maritime data on the spatial extent and intensity of human activity in the ocean. For this reason, the team developing the pay special attention to collating accurate data from official sources, as well as to making user experience as friendly as possible. With a view to increase EMODnet visibility, a blog was launched in the previous phase of EMODnet to increase awareness on the work of the Human Activities team and on how its data could be used.

The current phase of EMODnet also takes on some new challenges, such as improving compliance with INSPIRE standards, analyse standards and protocols of non-EU organisations involved in similar initiatives, and better coordinate with Regional Sea Conventions.



## Highlights in this reporting period

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- **All of our datasets have received an update.**
- **An entirely new dataset on pipelines has been released:** in the previous EMODnet phase it was not possible to compile a dataset on pipelines, mainly due to lack of information. Upon further research, we have managed to collate data from a limited number of sources, so as to develop a first dataset on submarine pipelines, albeit with limited coverage. The dataset was made available on the portal in January 2018. In the coming months, it will be used to encourage other sources to share their data. A “request for data” on pipelines has also been posted on the EMODnet Data Ingestion Portal.
- **An entirely new dataset on freshwater aquaculture has been released:** the data cover Austria, Bulgaria, Czech Republic, Denmark, Greece, Ireland, Norway, Poland, Slovenia, Spain, and the UK. Additional sources of data are being looked at, so as to cover more countries.
- **A set of AIS for 2017 has been purchased from a commercial provider:** the data will be used to create a series of vessel density maps that are expected to be available before the end of 2018. There has been increasing interest in the maritime community about this initiative, as testified by the latest blog post published on this topic, which on LinkedIn was viewed over 2000 times and shared over 40 times.
- **Web Feature Services (WFS) were migrated from MapServer to GeoServer:** the migration was implemented in late 2017 in view of OpenSeaLab. It has allowed greater compatibility with the central portal.
- **WFS for Main Ports and Fish Sales were also published:** due to technical reasons no WFS used to be available for these two datasets. Again, a solution was found in view of OpenSeaLab, after migrating from MapServer to GeoServer.
- **New style guidelines have been implemented to the portal in a development site:** just like most of the other portals, the new visual guidelines developed by TRUST-IT have been implemented on EMODnet Human Activities.
- **An initial version of the revamped website will be available in March:** the initial version will be available for review and discussion at the Technical Working Group meeting that will take place in Mallorca in March. Amongst other things, it will also include a new download form, whereby users who download data will be requested to type a valid email address. The Human Activities team might use the address to enquire about what the data have been downloaded for. It is believed that this will make it possible to find out more about use cases.
- **4 meetings with Regional Sea Conventions took place:** in view of increasing coordination and fostering cooperation with Regional Sea Conventions, the Human Activities team met with each of the organisations responsible for Regional Sea Conventions. Follow-up meetings will report on the actions agreed.

- **A detailed analysis of compliance with INSPIRE has been developed:** all current EMODnet dataset models have been compared with INSPIRE Application schemas and feature types, so as to understand to what extent EMODnet data models are compliant with INSPIRE. The results of the analysis will be shared with the INSPIRE implementation team to decide what further steps might be taken.
- **About 50% of EMODnet Human Activities users are businesses:** much to the surprise of the Human Activities team itself, the analysis of web statistics has revealed that nearly 50% of users are from the private sector; mainly engineering, oil & gas, and renewable energy consultancies. This may suggest that EMODnet Human Activities' data are being used to create value added in the economy. During the next year of the project, the Human Activities team will focus on finding out more about why users download the data and what they do with them. Use cases will be disseminated on the blog and on social media accounts, so as to increase awareness about the potential and true benefits of EMODnet.

## Summary of the work done

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**Task 1 - Develop a common method of access to data held in repositories:** the contract was signed in March 2017. The portal had not been updated since September 2016, when the previous contract expired. Initially we focused on updating all of our datasets. At the time of writing, all of them have been updated, in some cases with the addition of new sources and/or information.

Work has also commenced on datasets that were not included in the previous EMODnet phase. A new dataset on freshwater aquaculture has been developed from scratch and is now available for users to view and download. Furthermore, we have also collated some preliminary information on pipelines, a dataset that proved particularly difficult to build in the previous EMODnet phase, due to a general lack of data. The dataset on pipelines went live in January 2018, albeit with limited coverage. In some EU and non-EU countries it is not allowed to disclose information on the exact location of pipelines, lest they might become a potential objective for a terrorist attack. Some information is available through commercial providers, but, even if purchased, it cannot be disseminated to the wider public. Moreover, commercial databases often only provide a schematic representation of pipeline routes, which would be of scant significance for EMODnet, where accuracy of geographic information is key.

“Maritime Spatial Planning” and “Waste collected in ports” are two new datasets that are also being developed. It has not yet been possible to publish even a preliminary version with partial coverage, as data collection is still ongoing. However, it is envisaged that both datasets will be made available within 2018.

**Task 2 - Construct products from one or more data sources that provide users with information about the distribution of parameters in time and space:** EMODnet Human Activities is mandated to develop vessel density maps of the EU, and to do so a set of AIS data was purchased from a commercial provider, after various attempts to obtain the same data from EMSA.

The data consists of messages sent by automatic tracking system installed on board ships and received by terrestrial and satellite receivers alike. The dataset covers the whole 2017 for an area that corresponds to EU waters. Making the density maps will imply cleaning and processing the data, and then calculating ship density (monthly average) in given grid cells. The final product displayed on the portal will be quite similar to “heat maps”, with darker cells indicating higher density, and lighter cells indicated lower density. As is always the case with EMODnet, users will also be allowed to download and reuse the maps whatever their purpose, while raw data will not be disclosed to any third party.

Because each ship transmits an AIS message at short time intervals (which may vary from few seconds to few minutes), the amount of data to process might be overwhelming. Suffice it to say that we have divided a year worth's of data into 12 monthly files, each containing at least 50 million records for a total size of 20 GB. Therefore, it will take some

time before the maps are made live on the portal, although it is estimated that the first set of maps should be available before the end of 2018.

Vessel density maps are by far the most requested dataset by users, according to a survey carried out in the previous EMODnet phase. Making them available for free on the portal might increase EMODnet's visibility considerably. The Human Activities team have paid great attention to building momentum around this initiative, with a series of blog posts that delve into the many challenges of such a complex task. The latest blog published on this topic was shared on LinkedIn where it received more than 2 000 views.

**Task 3 - Develop procedures for machine-to-machine connections to data and data products:** all of EMODnet Human Activities' datasets can be served via webservices (WFS and WMS). WMS was unavailable in the previous EMODnet phase and was implemented in view of OpenSeaLab. Web Feature Services (WFS) were migrated from MapServer to GeoServer to allow greater compatibility with the central portal. WFS for Main Ports and Fish Sales (previously unavailable) were also published. A number of organisations have made initial requests for WFS or WMS links.

**Task 4 - Develop a web portal allowing users to find, visualise and download data:** the textual content of the portal was updated to reflect the new contract. New style guidelines have been implemented to the map, search and information pages in a development site. An initial version of the revamped website will be available for review and discussion at the next Technical Workshop in March.

**Task 5 - Ensure the involvement of regional sea conventions:** in order to establish a structured form of cooperation with regional sea conventions, 4 meetings (one for each convention) took place between 2017 and 2018. The meetings were used to discuss the progress of EMODnet Human Activities, what actions should be taken to ensure that our work is consistent with the work of the RSCs, and what could be improved to make EMODnet Human Activities team more useful to them.

**Task 6 - Facilitate interoperability with data distributed by non-EU organisations:** initiatives similar to EMODnet Human Activities are being mapped. The management of the UNESCO's inventory on MSP has been contacted, as it is expected that existing MSP portals around the world are in principle quite similar to EMODnet Human Activities. The US Marine Cadastre is also being looked at. It is expected to complete the mapping in March 2018. Each initiative will be described through a proforma that will report on data, standards, governance, financial resources, etc. A series of recommendations might be developed to align EMODnet Human Activities to other initiatives around the world, or simply to benchmark best practices.

**Task 7 - Install a process to monitor performance and deal with user feedback:** user feedback is being monitored consistently across the various portals following the indications from the Secretariat and TRUST-IT. In addition, in the second year of the project a questionnaire will be administered to a list of users. The feedback will be collated and will inform a fine-tuning plan to be implemented before the end of the project.

**Task 8 - Operate a help desk offering support to users:** a help-desk service was set up shortly after the signature of the contract. Currently, it is possible to request help via email, telephone or live chat. The telephone and live-chat help-desk services are manned Monday through Friday during business hours. Users seem to still prefer email though, as no one has requested help via telephone and very few have used live chat. E-mail requests are generally addressed with 1.5 half days; telephone and chat requests are addressed in real time.

# Challenges encountered during the reporting period

| Main challenge  | Measures taken   |
|---|--|
| <b>Aquaculture</b><br>(1) Update of national datasets realized at different pace in the MSs.<br>(2) Lack of data and/or no reply from national authorities concerning conditions for disclosure in several MS and non-EU countries<br>(3) Different approaches identified for mapping shellfish areas (polygons) in different MS and non EU countries<br>(4) Wide range of freshwater finfish farmed within the EU  | (1) Bi-monthly consultation of websites and/or contacts with data owner for being informed of updates<br>(2) Renewal of contacts/demands and promotion of EMODENT portal<br><br>(3) Inventory of available datasets providing polygons for farming areas and comparison of representation choices (cages, tables / whole concessions). Analysis on the way for harmonizing data.<br>(4) Grouping by main species and relevant family of species (ex: salmonids, cyprinids...)        |
| <b>Maritime heritage</b><br>(1) Underwater archaeology site and wrecks: very few new sources identified with generally no access to detailed coordinates of sites<br>(2) Lack of information on the age and characteristics of shipwrecks in available datasets and no clear criteria for assessing their heritage value<br>(3) No regular updates for lighthouses data and difficulties to obtain replies from alternative sources on the costs and conditions for access to full information (including metadata allowing to better characterize each lighthouse) | (1) Searching for new sources (national authorities, scientific bodies...) and new approaches (polygons for protected areas)<br><br>(2) Investigation of new sources providing information on the age and the type of wrecks. Reflexion on the relevance of defining different historic periods for wrecks (Hellenistic, Roman, middle-age....)<br><br>(3) Investigation on the interest of purchasing datasets from alternative sources with more accurate coordinates and metadata |
| <b>Maritime spatial planning</b><br>Deadline for implementation of Maritime Spatial Plans is 2021 (Directive 2014/89/EU). Several Member States indicate that they will not get any plan in place before that deadline.   | To reinforce the message that plans in preparation and projects are valuable information for EMODNET.<br>To strengthen the relationship with MSP national contact points by attending the Member States Expert Group on MSP (14-15 March 2018)   |

| Main challenge   | Measures taken  |
|--|---|
| <b>Waste collected in ports</b><br>Highly fragmented data in multiple formats.<br>European Maritime Safety Agency (EMSA) does not hold data on waste at major ports. DG-MOVE has the data, but the requirements of the data protection regulation imply the need to obtain individual authorization port by port | A specific action has been implemented to speed up the gathering of individual authorizations.  |
| <b>Pipelines</b><br>In many countries there are no useful sources of data.,<br>Commercial providers are not helpful, because, if we buy the data, they do not allow us to disseminate them.  | By collating data from available sources, a dataset with limited coverage has been released. It will be used to encourage other sources to share their data.  |
| <b>Vessel density map</b><br>(1) Data not easily available through EMSA for legal reasons.<br>(2) The contract requires to create vessel density map but does not specify what is meant by 'density'.<br>(3) The vast amount of data required to create the maps requires enormous computing power.              | (1) Data have been purchased from a commercial provider.<br>(2) Ongoing dialogue on methods with the JRC, HELCOM and other organisations.<br>(3) The data are being pre-processed by the commercial provider according to a method identified by the Human Activities team. The option of setting up a dedicated server to process the data and create the map is being investigated. |
| <b>WFS compatibility issues with the central portal</b>  | Migrated WFS from MapServer to GeoServer  |

## Allocation of project resources

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| Categories  | Resource usage (%) |
|---|--------------------|
| Making data and metadata interoperable and available            | 23.5%              |
| Preparing data products   | 3%                 |
| Preparing web-pages, viewing or search facilities               | 5%                 |
| Managing user feedback  | 3%                 |
| Project management  | 2.5%               |
| Outreach and communication activities                           | 2.5%               |
| Involvement of regional sea conventions                         | 1%                 |
| Analysis of standards and protocols used by non-EU organisation | 2%                 |



# Work package updates

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## **WP 2 – Data Collection**

### **Cultural heritage**

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#### **What's new:**

Data on lighthouses in non-EU countries have been collected. Alternative data sources are being scoped so as to provide more accurate coordinates and relevant attributes (age and heritage value of lighthouses). A new source for wrecks ("Historic England" website) has been identified. Rather than giving the exact coordinates of wrecks (a practice that is not favoured by researchers), sites are identified by polygons delimiting a larger area within the wreck is. We are investigating to what extent similar datasets are available in other EU areas. Considering the limited geographic coverage of the current dataset on wrecks, new sources are being looked at (<https://www.wrecksites.eu/>). A new source for Roman shipwrecks and other archeology sites in the Mediterranean has been identified (The Oxford Roman economy Project). Datasets and maps are available on the whole Mediterranean Sea. Contacts are in course.

**What's next:** the accuracy of lighthouses coordinates will be improved and their coverage will be enlarged. We also would like to and distinguish the lighthouses having a recognised heritage value. Purchase of data is also being evaluated. As to submerged prehistoric archeology, new sources will be investigated and geographic coverage will be improved (Baltic, Black Sea, Mediterranean). New sources will also be investigated for wrecks (NIRD project, wrecksites.eu, national sources etc.).

### **Aquaculture**

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**What's new:** The dataset on marine finfish has been updated and enlarged with data from Norway and Ireland. Marine inland aquaculture data in Spain and Poland have been added. Data collection is still undergoing in other EU MS and neighboring countries. New national sources have been identified (Portugal, Italy, France, Turkey, Maghreb countries) and contacts established with data owners for assessing the feasibility of making them available in the portal. A freshwater aquaculture dataset has been created. The data cover Austria, Bulgaria, Czech Republic, Denmark, Greece, Ireland, Norway, Poland, Slovenia, Spain, and the UK. Investigation on the existence of national sources for other EU and neighbor countries.

**What's next:** in a joint effort with the JRC, we are evaluating the feasibility of adding algae in the marine aquaculture dataset and providing new datasets on algae and shellfish harvesting areas. New data will be collected in order to fill in data gaps in finfish and shellfish aquaculture, as well as to expand the geographical coverage beyond the EU (in particular Mediterranean countries). More detail will be provided on shellfish areas (and potentially finfish areas): detailed concession areas, with polygons rather than points (data available in France, Spain, Portugal, Italy, Norway). New data might also be provided on areas suitable/acceptable for marine aquaculture development: biosecurity areas (areas in good sanitary conditions for shellfish harvesting or farming delimited by national competent authorities in application of Regulation (EC) N° 854/2004 of 29. April 2004) and

environmental and socio-economic areas (as defined in Multiannual National Strategic Plans for the promotion of sustainable aquaculture for 2014-2020 - Art 34 of the Common Fisheries Policy).

### **Aggregate extraction**

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**What's new:** a new field has been added in the data model ('Material Type'), including information on the type of the extracted material (e.g. sand, fill sand, gravel, till, mud, etc.), when available. New data on raw material production have been added for Denmark.

**What's next:** new data on polygons of license areas for aggregate extractions for UK, Denmark, France and Belgium.

### **Dredging**

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**What's new:** a new field has been added in the data model ('Material Type'), including information on the type of the extracted material (e.g. sand, fill sand, gravel, till, mud, etc.), when available; materials dredged at ports/harbours in 2014, and collected by OSPAR (Dumping of Wastes or Other Matter at Sea for Belgium, France, Germany, Ireland, the Netherlands, Portugal, Spain and the UK), have been included; information on dredging activities in Spanish ports in 2015 has been collected.

**What's next:** update collected data.

### **Environment**

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**What's new:** "Natura 2000" and "Nationally designated areas (CDDA)" layers have been updated. The dataset "state of bathing waters" has been updated with the latest information reported by EU Member States for the 2016 bathing season, as well as some historical data since 1990.

**What's next:** provide a new update in 2018.

### **Ocean energy facilities**

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**What's new:** the dataset has been updated to include new facilities and provide up-to-date information on those previously included.

**What's next:** provide a new update in 2018. A new field will be included in the data model to add the link to the studies conducted for the Environmental Impact Assessment during the consenting process for different test sites and projects in Ireland, Spain, Portugal, France, Sweden, The Netherlands, Denmark and United Kingdom.

### **Other forms of area management**

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**What's new:** the dataset was updated in October 2017. Compared with the previous version this new updated dataset contains updated information on the Black Sea Advisory Countries, and also 'Market', 'Aquaculture', and 'Outermost Regions' Advisory Councils. The new dataset groups all the advisory councils in a single layer (previously split across several layers).

**What's next:** provide a new update in 2018.

## Waste disposal

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**What's new:** new data have been collected on Spain, data on sites in Scotland were acquired in August.

**What's next:** search new data sources and update collected data.

## Wind farms

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**What's new:** the dataset was updated early in 2018 to include new wind farms and provide up-to-date information on those previously included. Data have been purchased from a commercial provider ([www.thewindpower.net](http://www.thewindpower.net)) to crosscheck the information collected.

**What's next:** provide a new update in (late) 2018.

## Fisheries

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**What's new:** the dataset on fish catches was updated in April 2017 and it covers a time series from 1950 to 2015. Compared with the previous version this new version includes data for 2015, as well as the new Main Commercial Species identified by the EUMOFA in 2015. The dataset on monthly first sales was also updated in 2017 and now includes new information on fish presentation (e.g. whole, headed, gutted, etc.) and preservation state (e.g. fresh, frozen, etc.). Information on presentation and preservations state are also retrieved from EUMOFA.

**What's next:** provide new updates in 2018.

## Hydrocarbon extraction

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**What's new:** The entire dataset has been updated and installations previously not covered have been added through Marine Traffic's AIS data. The new installations are located in Bulgaria, Libya, Poland, Russia (in the Baltic Sea and in the Black Sea), Spain and Ukraine.

**What's next:** provide a new update in 2018.

## Cables

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**What's new:** the dataset has been updated. Compared with the previous version, this version includes the gigabit per second values that come from the Cable System Database of the Packet Clearing House Organisation, available online at <https://prefix.pch.net/applications/cablesystem/>.

**What's next:** provide a new update in 2018.

## Pipelines

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**What's new:** this is a completely new dataset created in 2017 and made available early in January 2018. It is the result of the aggregation and harmonization of datasets provided by several sources from all over the EU (plus Norway). The database contains lines representing the actual routes of offshore pipelines (where available) in the following countries: Croatia, Denmark, Estonia, Finland, Germany, Ireland, Netherlands, Norway, Poland, Russia, Spain (Andalucía).

**What's next:** the dataset is incomplete, as many countries do not make available these data for security reasons. It is unlikely it will ever be complete, unless the legislative framework changes. However, the dataset will be updated as soon as additional data are available.

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### Major ports

**What's new:** the dataset has been updated with 2016 data from Eurostat.

**What's next:** provide a new update in 2018 with 2017 data.

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### Major ports – waste collected

**What's new:** this is a new dataset and an extensive research of data sources is being carried out. Contacts have been established with EMSA, DG MARE and DG MOVE in order to get access to MARPOL information. DG-MOVE suggested a contractor that carried out a study on waste in ports. The contractor sent a list of contacts, some suggested by ESPO. In parallel, direct contacts have been made port by port in order to get access to the information.

**What's next:** Authorisations by ports will be sought. Those obtained will be sent to DG MOVE to allow them to facilitate the MARPOL data for EMODNET.

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### Spatial planning zones

**What's new:** all national authorities in charge of MSP have been contacted. Data have been obtained from Belgium and Mecklenburg Vorpommern Federal State (Germany). Denmark, Spain and Lithuania have indicated that they do not envisage to have data available until 2021. Malta has indicated data availability. Secondary information has been identified for Estonia, Finland, Latvia, Netherlands and Ireland.

**What's next:** the information collected so far will be geo-referenced. In March 2018, we will attend the Member States Expert Group on MSP to explore what other data might be made available to EMODnet.

## ***WP 3 – Data Harmonisation***

Generally speaking, data harmonisation procedures have remained the same for all dataset, with only few exceptions.

"Pipelines" is a new dataset, and information from different sources has had to be harmonised so to create a common data model. Each pipeline has now the following harmonised attributes (where available): status (in service, decommissioned, under construction, proposed, planned), country, code, name, year, medium (air, condensate, 'control', cooling water, gas, geothermal heating, glycol, methanol, oil, sewage, water), operator, from and to locality or facility, length (metres) and size (inches). It should be noted that when a pipeline crosses more than a country, it may appear as two different pipelines which do not perfectly overlap. This is because it was not possible to harmonise the geometric component of the data, as each source reports a slightly different pipeline's path and there is no way to know which is more accurate.

“Freshwater aquaculture” is also a new dataset and includes data from 10 EU MS (Austria, Bulgaria, Denmark, Greece, Ireland, Poland, Slovenia, Spain, UK-Scotland and Czech Republic) and Norway, thus making 11 different sources. The preparation of this new dataset involved important data harmonisation work, including transposition of data into a dataset format, translation and harmonisation of species names, production stages and farm types, creation of geodatabase entities from Excel and CSV files and conversion of all entities into WGS 84 SCR.

Furthermore, it is envisaged that a significant harmonization work will involve the new dataset on Maritime Spatial Planning. At the time of writing, only a limited amount of data has been collected, but later on in the project the different plans will have to be harmonised if we want to produce a consistent dataset.

Most importantly, we have analyzed all current EMODnet dataset models, comparing them with INSPIRE Application schemas and featuretypes and searching for closest matches, so as to understand to what extent EMODnet data models are compliant with INSPIRE. A result of this analysis is attached to this Report.

The next step will be to cross-check the results of this analysis with the INSPIRE working group and decide if and how EMODnet data models can be modified without altering the information provided.

## ***WP4 - Design of the GIS database***

In the second phase of EMODnet Human Activities the design and implementation of the geographical database aimed to improve the representation of data, as well as the management and the feeding of the database. In the current phase, there are 14 populated data themes, each organized in one or more geodatabases with their spatial domain and coordinate system (WGS84). Each geodatabase is storing one or more feature classes, tables and relationship classes (if required).

The schemas developed for each geodatabase define not only the physical structure of the database, but also the geometry types (points, polygons, lines), rules, relationships, properties of each dataset, and field types (text, double, short or long integer).

Based on our previous experience population and harmonisation of the database was improved by using standardised attributes for both mandatory fields, as specified in the Tendering Specifications, as well as additional attributes that are continuously updated.

Once the database schemas were defined, we edited the data collected harmonising mandatory and additional attributes. Data were uploaded into each geodatabase after the harmonisation process. Harmonisation mainly consist of projecting raw data in a common coordinate system, editing the attributes of collected shapefiles or tables, and calculating common numeric values like the distance to the coast. This procedure made it possible to feed the database without modify its schema as we did in the past.

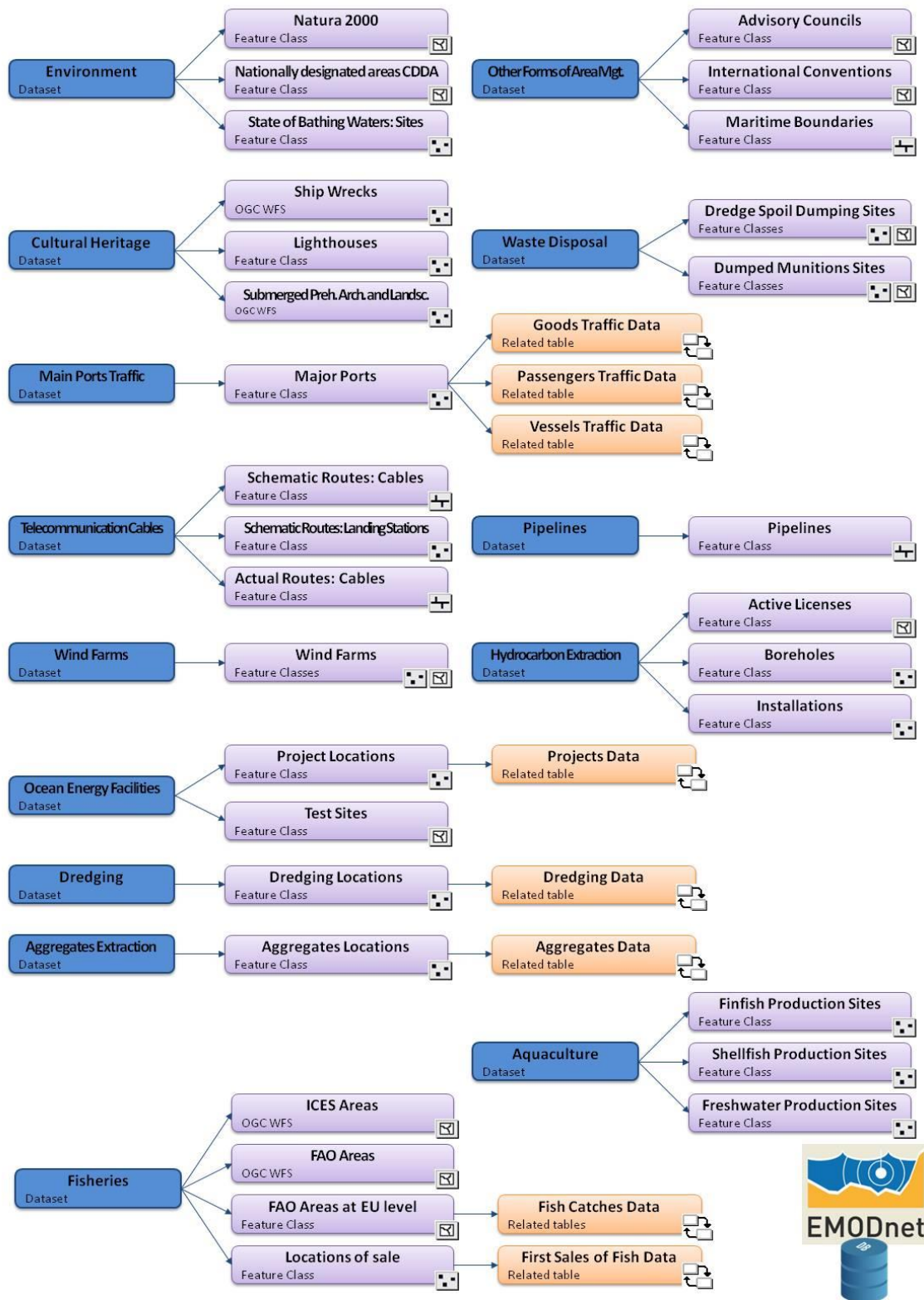
14 data themes are currently populated with vector data of one or more geometry types. Each feature class is a collection of geographic features that share the same geometry type (such as point, line, or polygon) and the same attribute fields for a common area.

Generally speaking there are two ways to organise feature classes:

1. E.g. in the case of Hydrocarbon Extraction, after the harmonisation process, data were loaded in their feature class (boreholes or platforms, both point type) where they are automatically organised according to fields properties and several coded values domains.
2. E.g. In the case of Major Ports Traffic, given the amount of information contained in each related table (passengers, goods and vessels traffic) it was decided to keep the geometric (i.e. points representing main ports) and the alphanumeric (i.e. tables containing attributes) components separate. Subsequently, through a relationship class (one-to-many) it was possible to correlate the geometric and the alphanumeric component using a common key field.

We made available also a shapefile version of each geodatabase datasets, so as to make it easier to read and write geographical datasets using the EMODnet Human Activities data with a wide variety of software.

The current state of the Human Activities available datasets is outlined in the figures below:



## ***WP 5 – Population of the database***

The following datasets have been uploaded:

- Aggregate extraction
- Dredging
- Lighthouses
- Wrecks
- Submerged Prehistoric Archaeology and Landscapes
- Natura 2000 areas
- Nationally Designated areas (CDDA)
- State of bathing waters
- ICES Statistical Areas
- FAO Fishery Statistical Areas
- Fish Catches by FAO Fishery Statistical Areas
- Monthly first sales of fish
- Active licences (hydrocarbon extraction)
- Boreholes (hydrocarbon extraction)
- Offshore installations (hydrocarbon extraction)
- Main ports (passengers, goods, vessels traffic)
- Finfish production (aquaculture)
- Freshwater production (aquaculture)
- Shellfish production (aquaculture)
- Project locations (ocean energy)
- Test sites (ocean energy)
- Advisory councils
- International conventions
- Maritime boundaries
- Telecommunication cables (schematic routes)
- Telecommunication cables (actual route locations)
- Cable landing stations
- Pipelines
- Dredge spoil dumping
- Dumped munitions
- Wind farms (points and polygons)



## ***WP 6 – Maintenance of the portal***

### **Tasks Completed:**

#### Content

Textual content was updated to reflect the new contract.

#### LiveChat

Implementation of LiveChat and associated mobile and desktop help software to allow instant communication with users. LiveChat is available on all pages within EMODnet Human Activities. The Help desk is manned Monday through Friday during business hours, apart from public holidays in Italy. In this case a user can leave a message via the live chat software where a standard holding response will be generated.

#### WFS/WMS

Web Feature Services (WFS) were migrated from MapServer to GeoServer to allow greater compatibility with the central portal. WFS for Main Ports and Fish Sales (previously unavailable) were also published. Information pages were updated with WFS link examples (e.g. Filtering).

Web Map Services (WMS) were made available through GeoServer. Example links and code to implement in OpenLayers were made available in the information pages.

#### Piwik

Piwik was implemented to allow a centralised version to monitor web statistics. TrustIT have been given access. Google Analytics is also still implemented until user statistics are monitored and reported centrally.

#### Revamped Website

New style guidelines have been implemented to the map, search and information pages in a development site.

### **Next steps:**

#### Revamped Website

The revamp of the home page is in progress, and an initial version of the revamped website will be available for review and discussion at the next Technical Workshop in March.

## ***WP 7 – Development of data products***

A meeting took place in Brussels on 7/9/2017 to discuss whether and to what extent EMODnet Human Activities and EMSA can collaborate to develop a series of vessel density maps.

The meeting was attended by:

- DG MARE
- JRC
- EMSA
- EMODnet Secretariat
- EMODnet Human Activities
- HELCOM
- Institute for Water of the Republic of Slovenia
- Lux Space
- Norwegian Coastal Administration (NCA)
- Norwegian Defence Research Establishment

EMSA has been mandated to start preparing vessel density maps, so this exercise could be conducted in conjunction with EMODnet Human Activities. EMSA has access to raw terrestrial and satellite AIS data, by virtue of a service contract with a commercial provider (LuxSpace). The raw data cannot be shared with EMODnet HA for legal reasons. However, EMSA might decide to develop the maps based on a method agreed with EMODnet HA.

A concept note was prepared by the Human Activities team in October, and then shared with EMSA in view of their High Level Steering Group (HLSG) meeting in November. The HLSG will decide whether EMSA can carry out the exercise based on EMODnet HA's requirements.

While waiting for a reply from EMSA, it was decided with DG MARE to move forward and buy AIS data from a commercial provider, in such a way as to comply with the contractual obligation of delivering vessel density maps before March 2019.

The data cover the whole 2017 and the following area, which corresponds to EU waters:

**Figure 1 – Area of Interest for AIS data, 2017**



The data purchased have the following characteristics:

- The AIS messages that will be delivered are the ones relevant to assess shipping activities (AIS messages 1, 2, 3, 18 and 19).
- The AIS messages will be downsampled to 3 minutes. All available data will be delivered in case further analysis is needed
- Duplicate signals will be removed
- Wrong MMSI signals will be removed
- Wrong IMO numbers will be corrected
- Special characters and diacritics will be removed
- Signals with erroneous speed over ground (SOG) (negative values or speed higher than 80 knots) will be removed.
- Signals with erroneous course over ground (COG) (negative values or more than 360°) will be removed
- S-AIS noise will be removed by using Kalman filters
- Footprint filtering will be performed for S-AIS data consistency.

This pre-processing of data (agreed with HELCOM and the JRC) will make it possible to save time and provide the first maps before the end of the contract.

At the time of writing, there is ongoing discussion with the JRC, HELCOM, and CEFAS, the main topic being what is meant by “density”. HELCOM recreates ship routes starting from AIS messages, then superimposes a 1km\*1km grid and then counts the number of track lines that cross each cell. Another method could also take into account lines’ length, as number of track lines alone might be misleading. On the other hand, the JRC suggests counting ship positions (so points, not lines) in grid cells at fixed time intervals.

First tests are being carried out and the idea is to use the JRC’s method, as it is believed to give a more accurate representation of density, although it should be noted that the other methods are equally valid and simply return different (so, not wrong) results.

The first set of maps will be made available online in the second half of 2018.

## ***WP 8 – Involvement of regional sea conventions***

The objective of this WP is to ensure maximum coherence with data delivery to and from Regional Sea Conventions. To do so, a structured form of cooperation with RSCs has been established. Overall, four meetings took place between the Human Activities team and each organisation representing a Regional Sea Convention. The main issues discussed concerned the progress of EMODnet Human Activities and what actions should be taken to ensure that our project is consistent with and can support the work of RSCs, especially in the framework of the MSFD process. Further to the meetings, an action plan will be developed to outline what measures are to be taken to ensure data flow to and from RSCs. Two more meetings are envisaged during the project to assess the degree of implementation of the actions decided during the previous meetings.

- **The Bucharest Convention**

The Black Sea Commission collects data from contracting parties and harmonises them. There might be issues when it comes to sharing data with EMODnet, as approval from contracting parties is requested. Vessel density, waste disposal, aquaculture and protected areas were identified as the EMODnet datasets most relevant to the work of the Black Sea Commission. The Black Sea Commission committed to inviting a representative of the Human Activities team to their future meetings, so as to better coordinate the two initiatives.

- **The Helsinki Convention**

CETMAR introduced EMODnet to HELCOM at their headquarters in Helsinki in December. The topics addressed during the meeting were: (i) introduction of EMODNet – Human activities (HA) datasets; (ii) assessment of the portal (overall and for specific datasets); (iii) synergies exploration for EMODnet and HELCOM. The overall conclusions of the meeting were very positive, remarking further collaboration in the datasets related to dredged material, cable and pipelines, wind farms, maritime spatial planning.

- **The OSPAR Convention**

OSPAR has been cooperating with EMODNet Human Activities since 2014. During the meeting they suggested we try and add location of turbines to our wind farms data, and update our dataset on munitions dumpsites with OSPAR's latest data. OSPAR are very interested in the forthcoming vessel density maps and would like to liaise with the Human Activities team to share insights on methods. The cables dataset is also of the utmost interest, as OSPAR do not have this type of data. In 2018, OSPAR will start working on the Quality Status Report 2023 and will use EMODnet Human Activities' data. Cooperation will be sought also to improve compliance with INSPIRE.

- **The Barcelona Convention**

The Convention Secretariat has not used EMODnet Human Activities much until now, although they have been using other EMODnet Portals for quite some time. During the meeting they recognised that several datasets (notably protected areas, hydrocarbon extraction, waste disposal and the forthcoming dataset on MSP) offered by Human Activities are very relevant to their work. The Secretariat also presented their new platform InfoMAP, which will provide marine data relevant to the Convention. The platform is currently at a pilot stage.

The minutes of the meetings are attached to this report.

## ***WP 9 – Analysis of standards and protocols used by non-EU organizations***

The Tendering Specifications call for an analysis of standards and protocols used by non-EU organizations, particularly those based in countries such as Australia, China, India, Japan and the United States, that operate significant ocean observation programs.

To facilitate interoperability with Human Activities data distributed by non-EU organisations, analyses of standards and protocols of the mapped organisations have been started. Contact with UNESCO's inventory "MSP Around the World" has been established in

order to obtain a list of potentially relevant Marine Spatial Planning (MSP) initiatives to be analyzed. Currently, desk analyses gathered information on standards and protocols used by the organization/initiative based in the USA, i.e. MarineCadastre.gov. Analyses of organizations from other continents are expected to be completed in March 2018 and reported in a structured proforma which will feed into the recommendations formulated in the Fine-Tuning work package. Once mapped and analysed initiatives will be presented in a specific section on the Human Activities portal.

### ***WP 10 – Monitoring of effectiveness in addressing users’ needs***

As envisaged in the Technical Proposal submitted to EASME, a monitoring campaign will be launched in the second year of the project. A questionnaire will be sent to a list of users, who will be given the opportunity of rating EMODnet Human Activities based on several criteria (usefulness of information, accuracy, user-friendliness, etc.) Users will also be allowed to comment on specific aspects of the project and provide suggestions and recommendations.

### ***WP 11 – Setting-up and operation of a help-desk***

A help-desk service was set up shortly after the signature of the contract. Currently, it is possible to request help via email, telephone or live chat. The telephone and live-chat help-desk services are manned Monday through Friday during business hours. Users seem to still prefer email though, as no one has requested help via telephone and very few have used live chat. E-mail requests are generally addressed with 1.5 half days; telephone and chat requests are addressed in real time.

### ***WP 12 – Fine tuning***

Based on the output of WP 10, as well as on feedback from the Secretariat and TRUST-IT, a fine-tuning plan will be drafted and implemented before the end of the project.

### ***WP 13 – Dissemination and communication***

A detailed Dissemination and Communication plan has been drafted. It analyses the opportunity and feasibility of further improving the current layout of the portal, identification, and selection of additional communication channels (print media, news and communications agencies, social media, audio-visual media, and specialized websites), identification and selection of sector events where EMODnet Human Activities may be promoted, and creation of synergies with national and regional initiatives and events. Furthermore, the content of the Human Activities section in the EMODnet general portal, the “About” section in the EMODnet Human Activities portal, and EMODnet general brochure have been updated so as to reflect the objectives and characteristics of the new phase of EMODnet.

Furthermore, since the blog section has proved to be an effective tool to increase the visibility of the project, posts related to topics covered by EMODnet Human Activities have

been published regularly (2 blogs per month), in accordance with a plan that covers the entire duration of the project.

An address list with potential users has been updated on a regular basis and mass mails were circulated about the special events organized by the EMODnet team (e.g. Open Sea Lab).

Similar activities (2 blogs monthly, updates of address list, coverage in Eurofish Magazine, mass mails, general updates on portal and brochures, distribution of promotional materials on fisheries and aquaculture related events which Eurofish attends) are planned to be continued in 2018.

Specific events where EMODnet HA was promoted;

- Cogea had a stand at the European Maritime Day in Poole where live demonstrations of EMODnet Human Activities were given to users.
- AZTI presented an abstract to the 'COAST Bordeaux 2017' congress. This international symposium on 'Systemic and Biodiversity Evolution of Marine Coastal Ecosystems under the Pressure of Climate Change, Natural and Anthropogenic Local Factors', will be held in Bordeaux from the 7th to the 10th of November 2017.
- Article on EMODnet Open Sea Lab in the Eurofish magazine No 5. (October 2017 – 5000 copies)
- Eurofish had a stand at the Icelandic Fisheries Exhibition & Conference (promotional materials), September 13-15, 2017
- DanFish / DanAqua, Aalborg, Denmark, Exhibition of equipment for the fishing industry, seminars & workshops (promotional materials), September 28, 2017
- Madrid, Spain; conference on value addition opened with session on innovation organized by Eurofish (promotional materials), November 2017
- Eurofish hold a presentation about EMODnet HA at its annual Governing Council, February 2018
- Opportunity to promote EMODnet through channels (social media, news) of the Black Sea Commission was developed by Eurofish

## User Feedback

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| Date       | Name                   | Organisation                | Type of user feedback<br>(e.g. technical, case study etc.)                                   | Response time        |
|------------|------------------------|-----------------------------|--|----------------------|
| 17/5/17    | Knut Krämer            | Marum                       | How to cite EMODnet  | Ca. 30 minutes       |
| 15/6/17    | Mariana Horigome       | Metocean                    | Technical  | 1 day                |
| 26/6/17    | Claudia Junge          | Aquatt                      | Copyright  | Ca. 30 minutes       |
| 28/7/17    | Isaac Durá             | Heraspace                   | Technical: enquiry on how to use fisheries and marine protected areas for a project proposal | 2 days               |
| 11/9/2017  | César Real             | IESE                        | Enquiry on missing data on shellfish aquaculture in Galicia (new source proposed)            | Same day             |
| 19/9/2017  | Jean-Baptiste Jouffray | Stockholm Resilience Centre | Technical (enquiry on how to use data on aggregates extraction)                              | Same day             |
| 10/01/18   | Maurizio Gibin         | JRC                         | Methodological – collaboration on vessel density map   | 1 day                |
| 24/01/18   | Pascal Derycke         | EMODnet Secretariat         | Technical: WFS/WMS   | Same day (live chat) |
| 25/01/18   | Youshuo Yan            | Unknown                     | Technical: asked if it is possible to have data in excel format.                             | Same day (live chat) |
| 14/02/2018 | Allan Audsley          | University of Stirling      | Technical: could not open a zipped archive   | Same day (live chat) |

## Meetings held/attended since last report

| Date                        | Location                 | Title  | Internal/External + Short Description   |
|-----------------------------|--------------------------|--|---|
| <b>4 May 2017</b>           | Rome                     | Internal kick-off meeting                          | The purpose of the meeting was to kick-off the project and organise the internal work.  |
| <b>23 May 2017</b>          | Bruxelles                | EMODnet kick-off                                   | EMODnet kick-off meeting  |
| <b>20-21 June 2017</b>      | Marne-la-Vallée (France) | INSPIRE Extension workshop                         | ( <a href="http://www.eurogeographics.org/content/workshop-inspire-extension-june-2017">http://www.eurogeographics.org/content/workshop-inspire-extension-june-2017</a> ) |
| <b>5-6 July 2017</b>        | Genova (Italy)           | Technical working group meeting                    | The EMODnet Ad Hoc Technical Working Group supports the technical implementation of the EMODnet Central Portal.   |
| <b>7 September 2017</b>     | Bruxelles                | Shipping density maps from AIS signals             | The aim of this meeting was to discuss the preparation of vessel density maps by Human Activities   |
| <b>13-15 September 2017</b> | Rome                     | 8 <sup>th</sup> EMODnet Steering Committee Meeting | The aim of this meeting was to revise progress and set the priorities for future developments   |
| <b>22-23 September 2017</b> | Antwerp                  | OpenSeaLab Kick-off event                          | A presentation of EMODnet HA potential and actual use cases was given at OpenSeaLab kick-off event  |
| <b>4-6 October 2017</b>     | Bruxelles                | FAO-COST workshop algae production                 | EMODnet HA's work on aquaculture was presented to producers and stakeholders.   |
| <b>12 December 2017</b>     | Helsinki                 | Involvement of Regional Sea Conventions            | A meeting was organized with HELCOM to discuss how EMODnet could support their work and vice versa.   |
| <b>22 December 2017</b>     | Istanbul                 | Involvement of Regional Sea Conventions            | A meeting was organized with the Black Sea Commission to discuss how EMODnet could support their work and vice versa.   |
| <b>1 February 2018</b>      | Athens                   | Involvement of Regional Sea Conventions            | A meeting was organized with the Barcelona Convention to discuss how EMODnet could support their work and vice versa.   |
| <b>16 February 2018</b>     | London                   | Involvement of Regional Sea Conventions            | A meeting was organized with OSPAR to discuss how EMODnet could support their work and vice versa.  |



## Outreach and communication activities

| Date                   | Media                  | Title   | Short description and/or link to the activity   |
|------------------------|------------------------|---|---|
| <b>4/05/2017</b>       | Blog of EMODNET-HA.    | Update on aggregate extraction data                               | <a href="http://www.emodnet-humanactivities.eu/blog/?m=201705">http://www.emodnet-humanactivities.eu/blog/?m=201705</a>   |
| <b>18-19/05/2017</b>   | Conference             | EU Maritime Day   | Live demonstration of EMODnet Human Activities  |
| <b>5/06/2017</b>       | Blog of EMODNET-HA.    | Vessel density maps: help us make a difference                    | <a href="http://www.emodnet-humanactivities.eu/blog/?m=201706">http://www.emodnet-humanactivities.eu/blog/?m=201706</a>   |
| <b>to be published</b> | Blog of EMODNET-HA.    | Waste disposal at sea: what and where.                            | Article explaining what kind of waste we refer to and where it takes place.   |
| <b>To be published</b> | Blog of EMODNET-HA.    | Largest EU maritime freight transport countries                   | Largest EU maritime freight transport countries   |
| <b>07/08/20147</b>     | Blog of EMODnet HA     | What dredging dataset is available on EMODnet                     | <a href="http://www.emodnet-humanactivities.eu/blog/?p=354">http://www.emodnet-humanactivities.eu/blog/?p=354</a>   |
| <b>21/08/2017</b>      | Blog of EMODnet HA     | Looking at EU maritime freight transport countries and ports      | <a href="http://www.emodnet-humanactivities.eu/blog/?p=318">http://www.emodnet-humanactivities.eu/blog/?p=318</a>   |
| <b>06/09/2017</b>      | Blog of EMODnet HA     | Blowing in the wind, mapping the sea.                             | <a href="http://www.emodnet-humanactivities.eu/blog/?p=385">http://www.emodnet-humanactivities.eu/blog/?p=385</a>   |
| <b>21/09/2017</b>      | Blog of EMODnet HA     | Waste disposal at sea: what and where                             | <a href="http://www.emodnet-humanactivities.eu/blog/?p=398">http://www.emodnet-humanactivities.eu/blog/?p=398</a>   |
| <b>09/10/2017</b>      | Blog of EMODnet HA     | Contribution of EMODnet Ocean Energy to Maritime Spatial Planning | <a href="http://www.emodnet-humanactivities.eu/blog/?p=417">http://www.emodnet-humanactivities.eu/blog/?p=417</a>   |
| <b>10/10/2017</b>      | Eurofish Magazine no 5 | Open Sea Lab  | <a href="http://www.eurofishmagazine.com/magazine-issues/item/427-eurofish-magazine-issue-5-2017-september-october">http://www.eurofishmagazine.com/magazine-issues/item/427-eurofish-magazine-issue-5-2017-september-october</a> |

| Date                | Media              | Title   | Short description and/or link to the activity   |
|---------------------|--------------------|---|---|
| <b>7-10/11/2017</b> | Poster             | EMODnet Human Activities portal: geo-referenced information on human activities | Poster was presented in the COAST 2017 congress, an international symposium on 'Systemic and Biodiversity Evolution of Marine Coastal Ecosystems under the Pressure of Climate Change, Natural and Anthropogenic Local Factors', held in Bordeaux |
| <b>28/11/2017</b>   | Blog of EMODnet HA | Inland aquaculture: a river of opportunities?                                   | <a href="http://www.emodnet-humanactivities.eu/blog/?p=433">http://www.emodnet-humanactivities.eu/blog/?p=433</a>   |
| <b>06/12/2017</b>   | Blog of EMODnet HA | Vessel density map: and so it begins!   | <a href="http://www.emodnet-humanactivities.eu/blog/?p=467">http://www.emodnet-humanactivities.eu/blog/?p=467</a>   |
| <b>19/12/2017</b>   | Blog of EMODnet HA | Marine aggregate extraction data to support new 2018 MSFD reporting phase       | <a href="http://www.emodnet-humanactivities.eu/blog/?p=497">http://www.emodnet-humanactivities.eu/blog/?p=497</a>   |
| <b>18/01/2018</b>   | Blog of EMODnet HA | Marine aquaculture zoning and site selection, contribution of GIS-based tools   | <a href="http://www.emodnet-humanactivities.eu/blog/?p=513">http://www.emodnet-humanactivities.eu/blog/?p=513</a>   |
| <b>25/01/2018</b>   | Blog of EMODnet HA | And then there were pipelines   | <a href="http://www.emodnet-humanactivities.eu/blog/?p=533">http://www.emodnet-humanactivities.eu/blog/?p=533</a>   |
| <b>15/02/2018</b>   | Blog of EMODnet HA | Links between dredge spoil dumping and the marine environment                   | <a href="http://www.emodnet-humanactivities.eu/blog/?p=558">http://www.emodnet-humanactivities.eu/blog/?p=558</a>   |

# Updates on Progress Indicators

## Ind 1 - Volume of data made available through the portal

| Activity   |  |                               | Type/format |       |          |                                      |                    |                  |
|--|--|-------------------------------|-------------|-------|----------|--------------------------------------|--------------------|------------------|
|  |  |                               | Points      | Lines | Polygons | Related tables/records               | Raster tiles/cells | OGC Web Services |
| Cultural heritage  | Lighthouses                                      |                               | 4.062       |       |          |                                      |                    |                  |
|  | Ship Wrecks                                      |                               |             |       |          |                                      |                    | 1 WFS            |
|  | Submerged Prehistoric Archaeology and Landscapes |                               |             |       |          |                                      |                    | 1 WFS            |
| Aquaculture  | Shellfish  |                               | 1.217       |       |          |                                      |                    |                  |
|  | Finfish  |                               | 2.495       |       |          |                                      |                    |                  |
|  | Freshwater                                       |                               | 6.898       |       |          |                                      |                    |                  |
| Aggregate extraction   |  |                               | 340         |       |          | 1 table containing 2.337 records     |                    |                  |
| Dredging   |  |                               | 985         |       |          | 1 table containing 4.668 records     |                    |                  |
| Ocean energy facility  | Projects   |                               | 143         |       |          | 1 table containing 209 records       |                    |                  |
|  | Test sites                                       |                               |             |       | 30       |                                      |                    |                  |
| Other forms of area management/designation   | International conventions                        |                               |             |       | 4        |                                      |                    |                  |
|  | Maritime boundaries                              |                               |             | 198   |          |                                      |                    |                  |
|  | Advisory councils                                |                               |             |       | 11       |                                      |                    |                  |
| Waste disposal (solids, including dredge material, dumped munitions, marine constructions) | Dumped munitions                                 |                               | 98          |       | 163      |                                      |                    |                  |
|  | Dredge spoil dumping                             |                               | 1.414       |       | 1.731    |                                      |                    |                  |
| Wind farms   |  |                               | 359         |       | 208      |                                      |                    |                  |
| Fisheries  | Fishery zones (FAO and ICES)                     | FAO Fishery Statistical Areas |             |       |          |                                      |                    | 1 WFS            |
|  |  | ICES Statistical Areas        |             |       |          |                                      |                    | 1 WFS            |
|  | Fishery catches by FAO statistical area          |                               |             |       | 137      | 5 tables containing 79.608 records   |                    |                  |
|  | Monthly first sales, EUMOFA                      |                               | 2.035       |       |          | 1 table containing 1.078.519 records |                    |                  |
| Hydrocarbon extraction   | Boreholes  |                               | 24.776      |       |          |                                      |                    |                  |
|  | Active licenses                                  |                               |             |       | 1.980    |                                      |                    |                  |
|  | Offshore installations                           |                               | 1.759       |       |          |                                      |                    |                  |

| Activity            |                                     |                                    | Type/format |       |   |                                      |                    |                  |
|---------------------|-------------------------------------|------------------------------------|-------------|-------|---|--------------------------------------|--------------------|------------------|
|                     |                                     |                                    | Points      | Lines | Polygons  | Related tables/records               | Raster tiles/cells | OGC Web Services |
| Cables              | Landing stations (schematic cables) |                                    | 415         |       |   |                                      |                    |                  |
|                     | Schematic cables                    |                                    |             | 166   |   |                                      |                    |                  |
|                     | Actual route locations (cables)     |                                    |             | 202   |   |                                      |                    |                  |
| Pipelines           |                                     |                                    |             | 1.068 |   |                                      |                    |                  |
| Environment         | Protected areas                     | Nationally designated areas (CDDA) |             |       | 94.705 areas, 11.974 of which are coastal and/or marine |                                      |                    |                  |
|                     |                                     | Natura 2000                        |             |       | 27.510 areas, 4.574 of which are coastal and/or marine  |                                      |                    |                  |
|                     | State of bathing waters             |                                    | 16.071      |       |   |                                      |                    |                  |
|                     | Vessel density                      |                                    |             |       |   |                                      |                    |                  |
| Major ports traffic | Goods                               |                                    | 893         |       |   | 1 table containing 235.200 records   |                    |                  |
|                     | Passengers                          |                                    |             |       |   | 1 table containing 74.157 records    |                    |                  |
|                     | Vessels                             |                                    |             |       |   | 1 table containing 2.557.632 records |                    |                  |

**Ind 2 - Organisations supplying each type of data based on (formal) sharing agreements and broken down into country and organisation type (e.g. government, industry, science)**

| Organisation   | Country | Type                   |
|--|---------|------------------------|
| Administration of the Republic of Slovenia for Food Safety, Veterinary Sector and Plant Protection | SI      | Government             |
| Amateur Radio Lighthouse Society   | US      | Association            |
| APA-APFF   | PT      | Government             |
| Aquakultur Register  | AT      | Government             |
| Associazione Mediterranea Aquacoltori  | IT      | Producers organisation |
| Autorità Portuale di Genova  | IT      | Government             |

| Organisation   | Country | Type                       |
|--|---------|----------------------------|
| Autorità Portuale di Piombino                                  | IT      | Government                 |
| Basin Directorate for Water Management in the Black Sea Region | BG      | Government                 |
| Biuletyn Informacji Publicznej                                 | PL      | Government                 |
| Black Sea Commission   | TR      | International Organisation |
| Boletín Oficial del Estado                                     | ES      | Government                 |
| Bollettino Ufficiale della Regione Campania                    | IT      | Government                 |
| BSH Contis   | DE      | Government                 |
| Bulgarian Food and Safety Agency                               | BG      | Government                 |
| Bureau de Recherches Géologiques et Minières                   | FR      | Research                   |
| Capitaneria di Porto di Monfalcone                             | IT      | Government                 |
| Capitaneria di Porto di Roma                                   | IT      | Government                 |
| CETMEF   | FR      | Government                 |
| CHR  | DK      | Government                 |
| CINSEDO  | IT      | Research                   |
| Clarkson Research  | UK      | Industry                   |
| Comité National de la Conchyliculture                          | FR      | Producers organisation     |
| Comune di Ragusa   | IT      | Government                 |
| Croatian Hydrocarbon Agency                                    | HR      | Government                 |
| Crown Estate, The  | UK      | Government                 |
| Cyprus Port Authority  | CY      | Government                 |
| Danish Energy Agency   | DK      | Government                 |
| DEME-Group   | BE      | Industry                   |
| Department of Agriculture, Food and the Marine                 | IE      | Government                 |
| Department of Communication, Energy and Natural Resources      | IE      | Government                 |
| Department of Energy & Climate Change                          | UK      | Government                 |
| Department of Environment - Marine Division                    | UK      | Government                 |
| DRAVOSA  | ES      | Industry                   |
| Dutch Ministry of Economic Affairs                             | NL      | Government                 |
| EMEC Orkney  | UK      | Industry                   |
| EMODnet Bathymetry   | EU      | Research                   |
| EnergiData   | DK      | Government                 |
| Energistyrelsen  | DK      | Government                 |
| ENMC   | PT      | Government                 |
| EUMOFA   | EU      | EU-funded project          |
| European Environment Agency                                    | DK      | Research                   |
| Euroshell  | EU      | FP7 Project                |
| EUROSTAT   | LU      | DG of the EU               |
| Falmouth Bay Test Site   | UK      | Industry                   |
| FAO  | IT      | International Organisation |
| Faroese Geological Survey                                      | FO      | Research                   |
| Fiskeridirektoratet  | NO      | Government                 |
| Francesco Baittiner & Figli                                    | IT      | Industry                   |
| Geological Survey of Montenegro                                | ME      | Research                   |

| Organisation   | Country | Type                       |
|--|---------|----------------------------|
| Greg's Cable Map   | ZA      | Individual                 |
| HELCOM   | FI      | International Organisation |
| ICES   | DK      | International Organisation |
| Ifremer  | FR      | Science                    |
| IGME   | ES      | Research                   |
| Instituto de Estadística y Cartografía de Andalucía                      | ES      | Government                 |
| Italia Nostra  | IT      | Association                |
| Latvian Environment, Geology and Meteorology Centre                      | LV      | Research                   |
| LBEG Geozentrum Hannover   | DE      | Research                   |
| MACHU  | EU      | FP7 Project                |
| MAGRAMA  | ES      | Government                 |
| Malta Environment & Planning Authority                                   | MT      | Government                 |
| MAPAMA   | ES      | Government                 |
| Marine and Hydrokinetic Technology Database                              | US      | Research                   |
| Marine Scotland  | UK      | Government                 |
| Marine Traffic   | EL      | Industry                   |
| Maritime Administration of Latvia  | LV      | Government                 |
| Ministère de la Transition écologique et solidaire                       | FR      | Government                 |
| Ministero dello Sviluppo Economico                                       | IT      | Government                 |
| Ministry for Environment   | PT      | Government                 |
| Ministry for Infrastructures   | ES      | Government                 |
| Ministry for Transport and Infrastructure - Continental Shelf Department | MT      | Government                 |
| Ministry of Agriculture and Forestry                                     | FI      | Government                 |
| Ministry of Defence  | ES      | Government                 |
| Ministry of Energy, Commerce, Industry and Tourism                       | CY      | Government                 |
| Ministry of Energy, Tourism and Digital Agenda                           | ES      | Government                 |
| Ministry of Environment, Energy and Climate Change                       | EL      | Government                 |
| Ministry of Rural Development and Food                                   | EL      | Government                 |
| MUMM   | BE      | Science                    |
| Nature Agency  | DK      | Government                 |
| NIBIS  | DE      | Government                 |
| Ocean Energy Systems   | PT      | Industry                   |
| Oil & Gas Authority  | UK      | Government                 |
| Oljedirektoratet   | NO      | Government                 |
| Orange   | FR      | Industry                   |
| OSPAR  | UK      | International Organisation |
| Packet Clearing House  | US      | Research                   |
| Polish Geological Institute  | PL      | Research                   |
| Préfecture de la Région Languedoc-Roussion                               | FR      | Government                 |
| Préfecture des Alpes Maritimes   | FR      | Government                 |
| Préfecture du l'Herault  | FR      | Government                 |
| Préfecture du Var  | FR      | Government                 |
| Provincia di Pescara   | IT      | Government                 |

| Organisation                                    | Country | Type                       |
|---|---------|----------------------------|
| Puertos del Estado                              | ES      | Government                 |
| Queen's University Belfast                      | UK      | Research                   |
| Regione Emilia Romagna                          | IT      | Government                 |
| Regione Lazio                                   | IT      | Government                 |
| Regione Siciliana                               | IT      | Government                 |
| Rijkswaterstaat Nordzee                         | NL      | Government                 |
| Scottish Government Spatial Data Infrastructure | UK      | Government                 |
| SEDNET  | NL      | Research                   |
| SHOM  | FR      | Research                   |
| SOWFIA  | EU      | EU-funded project          |
| SPLASHCOS                                       | EU      | FP7 Project                |
| Státní veterinární správa                       | CZ      | Government                 |
| Swedish Energy Agency                           | SE      | Government                 |
| Telegeography                                   | US      | Industry                   |
| The European Atlas of the Seas                  | EU      | Research                   |
| The Wind Power                                  | FR      | Industry                   |
| Thetys  | US      | Research                   |
| TNO   | NL      | Industry                   |
| Trasporto Europa                                | IT      | Industry                   |
| UNEP-MAP  | EL      | International Organisation |
| Veterinary Services                             | CY      | Government                 |
| Wageningen UR                                   | NL      | Research                   |
| WindEurope                                      | BE      | Industry                   |

**Ind 3 - Organisations that have been approached to supply data with no result, including type of data sought and reason why it has not been supplied**

Nothing to report.

**Ind 4 - Organisations that have downloaded each data type**

*Users are asked for their organisation name when downloading data or requesting WFS links. It is a non-mandatory field. Only those organisations that can be easily validated online as genuine are listed.*

*1<sup>st</sup> March 2017 to 31<sup>st</sup> January 2018*

- ABPmer (Environment), UK
- ADEDE (Research), BE
- Advisian (Environment), AE
- APEM Ltd (Environment), UK
- Asia Research Institute - ARI (Fisheries and agriculture), ID
- Atkins (Energy), UK
- Atlas Engineering (Energy), FR
- Bangor University (Research), UK
- BP (Energy), UK

- British Oceanographic Data Centre (Research), UK
- Bundeswehr Geoinformation Service (Other), DE
- C2Wind, (Energy), DK
- Ca' Foscari University (Education), IT
- California State University, Sacramento (Energy), US
- Carl von Ossietzky University of Oldenburg (Environment), DE
- Cathie Associates Ltd (Energy), UK
- CEFAS - Centre for Environment (Environment), UK
- Centre for Environment, Fisheries and Aquaculture Science (Fisheries and agriculture), UK
- Centre for New Energy Technologies (Energy), PT
- Cerema (Physical planning), FR
- Cost Monitor Group (Energy), IR
- Cranfield University (Research), UK
- CS Canada (Other), CA
- Deep BV (Energy), NL
- Delft University of Technology (Research), NL
- Deltares (Research), NL
- DEME (Energy), BE
- DG3 (Energy), PT
- DHI (Environment), UK
- Dirm-MEMN (Fisheries and agriculture), FR
- Dow Europe GmbH (Other), CH
- dpa-infografik (Education), DE
- DP Energy (Energy), IE
- DROTA (Environment), PT
- DTU (Fisheries and agriculture), DK
- Ecologic (Research), DE
- Edinburgh University (Research), UK
- EDPR UK (Energy), UK
- Effe (Energy), DZ
- EGS International (Other), UK
- eircom Ltd (Other), UK
- Energy and Water Associates (Energy), UK
- Eni (Mining), IT
- Envision Mapping Ltd (Environment), UK
- ERM (Environment), IT
- Esri France (Research), FR
- Esri BELUX (Other), BE
- Esri UK (Research), UK
- Eticas (Other), ES
- European Environment Agency (Environment), DK
- ExxonMobil Development Co. (Energy), US
- Faroe Petroleum (Energy), NO
- Federal Institute of Technology in Lausanne - EPFL (Education), CH
- Flanders Marine Institute (Fisheries and agriculture), BE
- Forschungszentrum Jülich (Research), DE
- Fugro Survey (Energy), NL
- Gardline Geosurvey Ltd (Energy), UK
- Genesis Oil and Gas Ltd (Energy), UK
- Geological Survey of Denmark and Greenland – GEUS (Research), DK



- Geophysical Quality Services (Energy), UK
- Geoteam Srl (Energy), IT
- Ghent University (Research), BE
- Granadilla Environmental Observatory (Environment), ES
- Greenpeace (Environment), UK
- G-tec S.A. (Research), BE
- Hansa Hydrocarbons Ltd (Energy), UK
- Hartley Anderson Ltd (Research), UK
- HCMR - Hellenic Centre for Marine Research (Research), GR
- HPC AG (Environment), IT
- innogy SE (Energy), DE
- Institute for Water of the Republic of Slovenia (Environment), SI
- Institute of Interim Management (IIM) (Other), IT
- Intertek (Energy), UK
- The Inter-University Institute for Earth System Research - CEAMA (Education), ES
- ISMAR-CNR (Research), IT
- Istanbul Technical University (Education), TR
- Italia Hydrographic Institute (Other), IT
- Jenrick (Environment), NL
- Joint Nature Conservation Committee (Environment), UK
- Joint Research Centre (Energy), NL
- KIOST (Energy), KR
- KSS (Energy), FR
- Land Office for Agriculture, Environment and Rural Areas (Fisheries and agriculture), DE
- Leidos (Environment), US
- Marche Polytechnic University (Research), IT
- MaREI (Research), IE
- Marine Institute (Research), IE
- Marine Scotland (Fisheries and agriculture), UK
- Marine Harvest Scotland Ltd (Fisheries and agriculture), UK
- MarineSpace Ltd (Environment), UK
- MARUM (Research), DE
- MESL (Research), UK
- MetOcean Solutions (Environment), NZ
- Metria (Environment), SE
- MFRC - GMIT (Education), IE
- Miguel de Cervantes European University – UEMC (Other), ES
- Mita Drius (Environment), IT
- Nanyang Technological University (Education), SG
- National and Technical University of Athens (Energy), GR
- National Institute of Biology (Research), SI
- National Institute of Oceanography and Experimental Geophysics (Fisheries and agriculture), IT
- National University Agraria La Molina - UNALM (Environment), PE
- Natural Power (Energy), UK
- NHTV Breda University of Applied Sciences (Research), NL
- NLMOD (Research), NL
- NOVELTIS (Environment), FR
- N-Sea (Other), NL
- oceanDTM (Research), UK

- OMT (Other), FR
- Pelagian (Physical planning), UK
- Phoenix RDS Ltd (Energy), UK
- Plan-GIS GmbH (Energy), DE
- Plymouth Marine Laboratory (Research), UK
- Plymouth University (Education), UK
- Portuguese Hydrographic Institute (Other), PT
- Portland State University (Education), US
- Portuguese Institute of the Sea and the Atmosphere - IPMA (Research), PT
- PwC (Energy), NL
- Red Penguin Ltd (Transport), UK
- Région Nouvelle-Aquitaine (Energy), FR
- Roland Berger (Research), UK
- Roskilde University (Education), DE
- Royal Belgian Institute of Natural Sciences (Environment), BE
- Royal Boskalis Westminster N.V. (Other), NL
- Royal HaskoningDHV (Environment), NL
- RPS (Environment), UK
- RWTH Aachen University (Energy), DE
- Saricon bv (Environment), NL
- Scottish Association for Marine Science (Research), UK
- Shell (Other), NG
- Shell UK Ltd (Energy), UK
- SHOM (Other), FR
- SIGGIS (Energy), BE
- SINAY (Environment), FR
- SMRU Consulting (Environment), UK
- Spanish Institute of Oceanography (Research), ES
- State Agency for Agriculture, Environment and Rural Areas (Environment), DE
- Stockholm Resilience Centre (Research), SE
- Swansea University (Education), UK
- Swire Seabed (Physical planning), NO
- TC Vode – ETCICM (Environment), SI
- Technical Education Copenhagen - TEC (Other), DK
- Technical University of Denmark (Fisheries and agriculture), DK
- TenneT (Energy), NL
- Tesco (Environment), UK
- Tethys Research Institute (Environment), IT
- The Geological Survey of Denmark and Greenland - GEUS (Research), DK
- The Renewables Consulting Group (Energy), UK
- Thünen-Institute (Research), DE
- uDolap Technische Ecologie (Environment), NL
- Ulster University (Research), IE
- UN-IHE Delft (Education), NL
- Università Iuav di Venezia (Physical planning), IT
- University Centre Of The Westfjords (Education), IS
- University College Cork - UCC (Education), IE
- University Institute European De La Mer (Education), FR
- University of Aberdeen (Education), UK
- University of Algarve (Education), PT
- University of Antwerp (Environment), BE

- University of Azores (Education), PT
- University of Coimbra (Environment), PT
- University of Colorado Boulder (Education), US
- University of Edinburgh (Education), UK
- University of Geneva (Environment), CH
- University of Haifa (Research), IL
- University of Houston (Energy), US
- University of Lisbon (Research), PT
- University of Malaga (Tourism), ES
- University of Padua (Research), IT
- University of Seville (Research), ES
- University of the Aegean (Environment), GR
- University of Ulster (Education), UK
- University of Venice IUAV (Education), IT
- University of Veterinarian Medicine Hanover Foundation (Environment), DE
- U.S. Fish and Wildlife Service (Other), US
- Vahana (Energy), AE
- Wageningen Marine Research (Environment), NL
- Wasit Provence Council (Other), IQ
- World Maritime University (Research), SE

## **Ind 5 - Volume of each type of data and of each data product downloaded from the portal**

*1<sup>st</sup> March 2017 to 31<sup>st</sup> January 2018*

*Included are instances of downloads and initial requests for WFS links. Statistics exclude Human Activities and Central Portal partners.*

|  |     |  |             |
|--|-----|--|-------------|
| Wind Farms                             | 248 | Lighthouses                                      | 39          |
| Telecommunication Cables (schematic)   | 171 | Fish Catches                                     | 33          |
| Telecommunication Cables (actual)      | 137 | State of Bathing Waters                          | 33          |
| Offshore Installations                 | 109 | OSPAR Maritime Area                              | 26          |
| Main Ports                             | 100 | Barcelona Convention                             | 24          |
| Shellfish Production                   | 91  | Advisory Councils                                | 23          |
| Maritime Boundaries                    | 65  | Bucharest Convention                             | 23          |
| Dredge Spoil Dumping                   | 63  | HELCOM Maritime Area                             | 23          |
| Hydrocarbon Extraction Active Licenses | 59  | Fish Sales                                       | 16          |
| Dumped Munitions                       | 56  | FAO Fishery Statistical Areas                    | 6           |
| Natura2000                             | 56  | Pipelines (New Jan 18)                           | 4           |
| CDDA                                   | 51  | ICES Statistical Areas                           | 2           |
| Ocean Energy Facilities                | 49  | Telecommunication Landing Stations               | 2           |
| Aggregate Extraction                   | 46  | Freshwater Aquaculture (New Nov 17)              | 1           |
| Finfish Production                     | 45  | Ship Wrecks                                      | n/a         |
| Dredging                               | 43  | Submerged Prehistoric Archaeology and Landscapes | n/a         |
| Hydrocarbon Extraction Boreholes       | 42  | <b>Total</b>                                     | <b>1686</b> |

## Ind 6 - Using user statistics to determine the main pages utilised and to identify preferred user navigations routes

1<sup>st</sup> March 2017 to 31<sup>st</sup> January 2018

Statistics include all visitors including partners.

*View Data*

| Month  | Unique Page Views | Avg. Time on Page (mm:ss) | Page Views | New Visitors | % New Visitors |
|--------|-------------------|---------------------------|------------|--------------|----------------|
| Mar-17 | 296               | 03:36                     | 435        | 176          | 59.46%         |
| Apr-17 | 312               | 03:22                     | 437        | 186          | 59.62%         |
| May-17 | 335               | 03:24                     | 510        | 149          | 44.48%         |
| Jun-17 | 384               | 03:45                     | 597        | 179          | 46.61%         |
| Jul-17 | 305               | 03:10                     | 433        | 138          | 45.25%         |
| Aug-17 | 255               | 02:49                     | 401        | 121          | 47.45%         |
| Sep-17 | 397               | 02:32                     | 557        | 219          | 55.16%         |
| Oct-17 | 416               | 02:37                     | 590        | 205          | 49.28%         |
| Nov-17 | 506               | 03:35                     | 705        | 217          | 42.89%         |
| Dec-17 | 398               | 03:00                     | 567        | 179          | 44.97%         |
| Jan-18 | 392               | 03:06                     | 601        | 158          | 40.31%         |

*Home*

| Month  | Unique Page Views | Avg. Time on Page (mm:ss) | Page Views | New Visitors | % New Visitors |
|--------|-------------------|---------------------------|------------|--------------|----------------|
| Mar-17 | 123               | 00:37                     | 169        | 56           | 45.53%         |
| Apr-17 | 155               | 01:25                     | 200        | 60           | 38.71%         |
| May-17 | 171               | 00:48                     | 232        | 57           | 33.33%         |
| Jun-17 | 184               | 00:56                     | 253        | 65           | 35.33%         |
| Jul-17 | 281               | 00:32                     | 435        | 178          | 63.35%         |
| Aug-17 | 114               | 01:27                     | 157        | 54           | 47.37%         |
| Sep-17 | 158               | 02:05                     | 198        | 48           | 30.38%         |
| Oct-17 | 194               | 00:55                     | 251        | 78           | 40.21%         |
| Nov-17 | 267               | 01:23                     | 341        | 99           | 37.08%         |
| Dec-17 | 191               | 00:58                     | 269        | 66           | 34.55%         |
| Jan-18 | 209               | 01:13                     | 267        | 75           | 35.89%         |

*Search Data*

| Month  | Unique Page Views | Avg. Time on Page (mm:ss) | Page Views | New Visitors | % New Visitors |
|--------|-------------------|---------------------------|------------|--------------|----------------|
| Mar-17 | 240               | 00:39                     | 340        | 141          | 58.75%         |
| Apr-17 | 280               | 01:12                     | 450        | 144          | 51.43%         |
| May-17 | 231               | 01:26                     | 351        | 109          | 47.19%         |

| Month  | Unique Page Views | Avg. Time on Page (mm:ss) | Page Views | New Visitors | % New Visitors |
|--------|-------------------|---------------------------|------------|--------------|----------------|
| Jun-17 | 327               | 01:36                     | 496        | 166          | 50.76%         |
| Jul-17 | 305               | 00:51                     | 452        | 157          | 51.48%         |
| Aug-17 | 156               | 00:38                     | 230        | 83           | 53.21%         |
| Sep-17 | 326               | 00:32                     | 541        | 181          | 55.52%         |
| Oct-17 | 623               | 01:00                     | 1,066      | 296          | 47.51%         |
| Nov-17 | 592               | 00:49                     | 892        | 272          | 45.95%         |
| Dec-17 | 401               | 01:06                     | 628        | 187          | 46.63%         |
| Jan-18 | 489               | 01:10                     | 748        | 217          | 44.38%         |

**Ind 7 - List of what the downloaded data has been used for (divided into categories e.g. Government planning, pollution assessment and (commercial) environmental assessment, etc.)**

*1<sup>st</sup> March 2017 to 31<sup>st</sup> January 2018*

*Users must select their sector when downloading data or requesting WFS links.*

|    |                           |        |
|----|---------------------------|--------|
| 1  | Research                  | 20.24% |
| 2  | Environment               | 18.25% |
| 3  | Energy                    | 15.90% |
| 4  | Other                     | 13.56% |
| 5  | Education                 | 13.31% |
| 6  | Fisheries and agriculture | 8.13%  |
| 7  | Physical planning         | 3.74%  |
| 8  | Demography                | 2.49%  |
| 9  | Transport                 | 1.65%  |
| 10 | Mining                    | 1.30%  |
| 11 | Forestry                  | 0.65%  |
| 12 | Tourism                   | 0.60%  |
| 13 | Health                    | 0.20%  |

**Ind 8 - List of web-services made available and user organisations connected through these web-services**

*1<sup>st</sup> March 2017 to 31<sup>st</sup> January 2018*

List of Web Feature Services (WFS)

WFS are available as XML format, or JSON format.

Aggregate Extraction

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=aggregates&OUTPUTFORMAT=json>

Aquaculture - Finfish Production

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=finfish&OUTPUTFORMAT=json>

Aquaculture - Shellfish Production

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=shellfish&OUTPUTFORMAT=json>

Aquaculture - Freshwater

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=freshwater&OUTPUTFORMAT=json>

Cultural Heritage - Lighthouses

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=lighthouses&OUTPUTFORMAT=json>

Dredging

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=dredging&OUTPUTFORMAT=json>

Environment - Protected Areas - Nationally Designated Areas

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=cdda&OUTPUTFORMAT=json>

Environment - Protected Areas - Natura 2000

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=natura2000&OUTPUTFORMAT=json>

Environment - State of Bathing Waters

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=bathingwaters&OUTPUTFORMAT=json>

Fisheries - First Sales of Fish

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=fishsales&OUTPUTFORMAT=json>

Fisheries - Fish Catches by FAO Fishery Statistical Areas - Major Area

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=majorcatches&OUTPUTFORMAT=json>

Fisheries - Fish Catches by FAO Fishery Statistical Areas - Sub-area Area

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=subareacatches&OUTPUTFORMAT=json>

Fisheries - Fish Catches by FAO Fishery Statistical Areas - Division Area

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=divisioncatches&OUTPUTFORMAT=json>

Fisheries - Fish Catches by FAO Fishery Statistical Areas - Sub-division Area

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=subdivisioncatches&OUTPUTFORMAT=json>

Fisheries - Fish Catches by FAO Fishery Statistical Areas - Sub-unit Area

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=subunitcatches&OUTPUTFORMAT=json>

Hydrocarbon Extraction - Active Licenses

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=activelicenses&OUTPUTFORMAT=json>

Hydrocarbon Extraction - Boreholes

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=hydrocarbons&OUTPUTFORMAT=json>

Hydrocarbon Extraction - Offshore Installations

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=platforms&OUTPUTFORMAT=json>

Main Ports - Goods Traffic

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=portgoods&OUTPUTFORMAT=json>

Main Ports - Passengers Traffic

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=portpassengers&OUTPUTFORMAT=json>

Main Ports - Vessels Traffic

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=portvessels&OUTPUTFORMAT=json>

Ocean Energy Facilities - Project Locations

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=oenergy&OUTPUTFORMAT=json>

Ocean Energy Facilities - Test Sites

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=oenergytests&OUTPUTFORMAT=json>

Other Forms of Area Management/Designation - Advisory Councils

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=advisorycouncils&OUTPUTFORMAT=json>

Other Forms of Area Management/Designation - Barcelona Convention

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=barcelona&OUTPUTFORMAT=json>

Other Forms of Area Management/Designation - Bucharest Convention

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=bucharest&OUTPUTFORMAT=json>

Other Forms of Area Management/Designation - HELCOM Maritime Area

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=helcom&OUTPUTFORMAT=json>

Other Forms of Area Management/Designation - ICES Statistical Areas

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=icesareas&OUTPUTFORMAT=json>

Other Forms of Area Management/Designation - Maritime Boundaries

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=maritimebnds&OUTPUTFORMAT=json>

Other Forms of Area Management/Designation - OSPAR Maritime Area

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=ospar&OUTPUTFORMAT=json>

Pipelines

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=shellfish&OUTPUTFORMAT=json>

Cables - Telecommunication Cables (schematic routes)

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=cablesschematic&OUTPUTFORMAT=json>

Cables - Kis Orca Subsea Cables



<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=kisorcacables&OUTPUTFORMAT=json>

Cables - Landing Stations

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=landingstations&OUTPUTFORMAT=json>

Cables - SIGCables Submarine Cables Route

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=sigcables&OUTPUTFORMAT=json>

Cables - BSH CONTIS Cables

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=bshcontiscables &OUTPUTFORMAT=json>

Waste Disposal - Dredge Spoil Dumping (Points)

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=dredgespoil &OUTPUTFORMAT=json>

Waste Disposal - Dredge Spoil Dumping (Polygons)

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=dredgespoilpoly&OUTPUTFORMAT=json>

Waste Disposal - Dumped Munitions (Points)

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=munitions&OUTPUTFORMAT=json>

Dumped Munitions (Polygons)

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=munitionspoly&OUTPUTFORMAT=json>

Wind Farms - Wind Farms (Points)

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=windfarms&OUTPUTFORMAT=json>

Wind Farms - Wind Farms (Polygons)

<http://77.246.172.208/geoserver/emodnet/wfs?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=windfarmspoly&OUTPUTFORMAT=json>

## **List of Web Map Services (WMS)**

Aggregate Extraction - Aggregate Extraction

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=activelicense&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Aquaculture - Finfish Production

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=finfish&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Aquaculture - Shellfish Production

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=shellfish&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Aquaculture - Freshwater

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=freshwater&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Cultural Heritage - Lighthouses

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=lighthouses&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Dredging

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=dredging&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Environment - Protected Areas - Nationally Designated Areas

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=cdda&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Environment - Protected Areas - Natura 2000

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=natura2000&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Environment - State of Bathing Waters

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=bathingwaters&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Hydrocarbon Extraction - Active Licenses

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=activelicenses&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Hydrocarbon Extraction - Boreholes

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=hydrocarbons&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Hydrocarbon Extraction - Offshore Installations

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=platforms&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Main Ports - Port Locations

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=portlocations&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Ocean Energy Facilities - Project Locations

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=oenergy&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Ocean Energy Facilities - Test Sites

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=oenergytests&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Other Forms of Area Management/Designation - Advisory Councils - Baltic

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=baltic&FORMAT=image%2Fpng&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-20,0,20,60&WIDTH=500&HEIGHT=500>

#### Other Forms of Area Management/Designation - Advisory Councils - Long Distance Fleet

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=longdistancefleet&FORMAT=image%2Fpng&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG%3A4326&BBOX=-20,0,20,60&WIDTH=500&HEIGHT=500>

Other Forms of Area Management/Designation - Advisory Councils - Mediterranean

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=mediterranean&FORMAT=image%2Fpng&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLE S=&SRS=EPSG%3A4326&BBOX=-20,0,20,60&WIDTH=500&HEIGHT=500>

Other Forms of Area Management/Designation - Advisory Councils - North Sea

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=northsea&FORMAT=image%2Fpng&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG%3A4326&BBOX=-20,0,20,60&WIDTH=500&HEIGHT=500>

Other Forms of Area Management/Designation - Advisory Councils - North Western Waters

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=northwesternwaters&FORMAT=image%2Fpng&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG%3A4326&BBOX=-20,0,20,60&WIDTH=500&HEIGHT=500>

Other Forms of Area Management/Designation - Advisory Councils - Pelagic Stocks

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=pelagicstocks&FORMAT=image%2Fpng&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG%3A4326&BBOX=-20,0,20,60&WIDTH=500&HEIGHT=500>

Other Forms of Area Management/Designation - Advisory Councils - South Western Waters

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=southwesternwaters&FORMAT=image%2Fpng&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG%3A4326&BBOX=-20,0,20,60&WIDTH=500&HEIGHT=500>

Other Forms of Area Management/Designation - Barcelona Convention

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=barcelona&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

Other Forms of Area Management/Designation - Bucharest Convention

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=bucharest&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

Other Forms of Area Management/Designation - HELCOM Maritime Area

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=helcom&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Other Forms of Area Management/Designation - ICES Statistical Areas

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=icesareas&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Other Forms of Area Management/Designation - Maritime Boundaries

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=maritimebnds&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Other Forms of Area Management/Designation - OSPAR Maritime Area

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=ospar&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Pipelines

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=pipelines&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Cables- Telecommunication Cables (schematic routes)

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=cablesschematic&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Cables - Kis Orca Subsea Cables

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=kisorcacables&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Cables - Landing Stations

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=landingstations&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Cables - SIGCables Submarine Cables Route

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=sigcables&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Cables - BSH CONTIS Cables

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=bshcontiscables&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Waste Disposal - Dredge Spoil Dumping (Points)

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=dredgespoil&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Waste Disposal - Dredge Spoil Dumping (Polygons)

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=dredgespoilpoly&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Waste Disposal - Dumped Munitions (Points)

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=munitions&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Waste Disposal - Dumped Munitions (Polygons)

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=munitionspoly&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

#### Wind Farms - Wind Farms (Points)

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=windfarms&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-11,35,14,60&WIDTH=600&HEIGHT=600>

#### Wind Farms (Polygons)

<http://77.246.172.208/geoserver/emodnet/wms?LAYERS=windfarmspoly&FORMAT=image/png&TRANSPARENT=TRUE&SERVICE=WMS&VERSION=1.1.1&REQUEST=GetMap&STYLES=&SRS=EPSG:4326&BBOX=-30.4269,23.7383,42.3846,72.2793&WIDTH=650&HEIGHT=400>

### **User organisations connected through these web-services**

Users are asked to volunteer their organisation name and sector and country when requesting initial WFS or WMS information. Organisation name and country are not mandatory fields. Only those organisations that can be easily validated online as genuine are listed. It is not possible to track user's organisations who have acquired the links from other sources (e.g. from a shared link) or track an organisation's usage once web services are in use.

Organisations that have made initial requests for WFS or WMS links include the following:

- Atkins (Energy), UK
- Atlas Engineering (Energy), FR
- BP (Energy), UK
- British Oceanographic Data Centre (Research), UK
- C2Wind, (Energy), DK
- California State University, Sacramento (Energy), US
- Cathie Associates Ltd (Energy), UK
- Centre for New Energy Technologies (Energy), PT
- Cerema (Physical planning), FR
- CS Canada (Other), CA
- Deep BV (Energy), NL
- DG3 (Energy), PT
- Dow Europe GmbH (Other), CH
- Esri France (Research), FR
- Esri UK (Research), UK
- Eticas (Other), ES
- Flanders Marine Institute (Fisheries and agriculture), BE
- Fugro Survey (Energy), NL
- Gardline Geosurvey Ltd (Energy), UK
- Genesis Oil and Gas Ltd (Energy), UK
- Geological Survey of Denmark and Greenland – GEUS (Research), DK
- Ghent University (Research), BE
- G-tec S.A. (Research), BE
- Institute for Water of the Republic of Slovenia (Environment), SI
- Intertek (Energy), UK
- ISMAR-CNR (Research), IT
- Italia Hydrographic Institute (Other), IT
- Marine Harvest Scotland Ltd (Fisheries and agriculture), UK
- National and Technical University of Athens (Energy), GR
- National Institute of Biology (Research), SI
- NOVELTIS (Environment), FR
- Pelagian (Other), UK
- Phoenix RDS Ltd (Energy), UK
- Plan-GIS GmbH (Energy), DE
- Plymouth Marine Laboratory (Research), UK
- Royal HaskoningDHV (Environment), NL
- SHOM (Other), FR
- Spanish Institute of Oceanography (Research), ES
- Thünen-Institute (Research), DE
- Miguel de Cervantes European University – UEMC (Other), ES
- University of Lisbon (Research), PT

- University of Colorado Boulder (Education), US
- Wageningen Marine Research (Environment), NL



## Recommendations for follow-up actions by the EU

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- Extend the scope of the project to neighbouring countries: EMODnet Human Activities already covers some non-EU countries on a voluntary basis. However, in certain areas (e.g. in the Mediterranean) it is paramount to also include neighbouring countries to give a better picture of human activity. Data might not be easily available, and additional financial resources might thus be required.
- Establish an obligation to make available data on pipelines and cables: this type of data can be quite difficult to find for a number of reasons. Nonetheless, it is fundamental to know where infrastructure is located, as there might be conflicts with several others activities.
- Consider setting up own AIS monitoring network: currently the EU Commission and its agencies purchase AIS data from commercial providers. While increasing competition is driving prices down and value for money up, legal constraints limit the possibility of sharing the raw data with third parties.

# Annex : EMODNET human activities data models: towards compliance with INSPIRE DATA Specifications

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## 1. Background.

The INSPIRE Directive, that came into force on 15 May 2007, aims to create a European Union spatial data infrastructure for the purposes of EU environmental policies and policies or activities which may have an impact on the environment.










This European Spatial Data Infrastructure will enable the sharing of environmental spatial information among public sector organizations, facilitate public access to spatial information across Europe and assist in policy-making across boundaries.

To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context, the INSPIRE Directive required that common Implementing Rules (IR) were adopted for:

- Metadata
- Data Specifications
- Network Services
- Data and Service Sharing
- Spatial Data Services
- Monitoring and Reporting

Datasets in scope of INSPIRE are the ones which come under one or more of the 34 spatial data themes (below).

### ANNEX: 1

|  |   |
|--|---|
| <br><a href="#">Addresses</a>                 | <br><a href="#">Administrative units</a>         |
| <br><a href="#">Cadastral parcels</a>         | <br><a href="#">Coordinate reference systems</a> |
| <br><a href="#">Geographical grid systems</a> | <br><a href="#">Geographical names</a>           |
| <br><a href="#">Hydrography</a>               | <br><a href="#">Protected sites</a>              |
| <br><a href="#">Transport networks</a>        |   |

## ANNEX: 2

|   |                            |   |                              |
|---|----------------------------|---|------------------------------|
|  | <a href="#">Elevation</a>  |  | <a href="#">Geology</a>      |
|  | <a href="#">Land cover</a> |  | <a href="#">Orthoimagery</a> |

## ANNEX: 3

|   |   |   |  |
|---|---|---|--|
|    | <a href="#">Agricultural and aquaculture facilities</a> |    | <a href="#">Area management / restriction / regulation zones &amp; reporting units</a> |
|    | <a href="#">Atmospheric conditions</a>                  |    | <a href="#">Bio-geographical regions</a>   |
|    | <a href="#">Buildings</a>                               |    | <a href="#">Energy Resources</a>   |
|  | <a href="#">Environmental monitoring Facilities</a>     |  | <a href="#">Habitats and biotopes</a>  |
|  | <a href="#">Human health and safety</a>                 |  | <a href="#">Land use</a>   |
|  | <a href="#">Meteorological geographical features</a>    |  | <a href="#">Mineral Resources</a>  |
|  | <a href="#">Natural risk zones</a>                      |  | <a href="#">Oceanographic geographical features</a>                                    |
|  | <a href="#">Population distribution and demography</a>  |  | <a href="#">Production and industrial facilities</a>                                   |
|  | <a href="#">Sea regions</a>                             |  | <a href="#">Soil</a>   |
|  | <a href="#">Species distribution</a>                    |  | <a href="#">Statistical units</a>  |
|  | <a href="#">Utility and governmental services</a>       |   |  |

## 2. Objectives.

Within this task, each dataset contained in the EMODnet Human Activities' portal has been analyzed to look at what needs to be done to align the actual data models to INSPIRE's Data Specifications.

The [INSPIRE Implementing Rules on interoperability of spatial data sets and services \(IRs\)](#) and [Technical Guidelines](#) (Data Specifications) specify common data models, code lists, map layers and additional metadata on the interoperability, to be used when exchanging spatial datasets.

Within this task, a first analysis has been made to compare the EMODnet Human Activities' datasets to the INSPIRE Application Schemas developed by the INSPIRE thematic groups and published [online](#).

Based on the outcome of the analysis, it is expected that (i) some data models may already be compliant with INSPIRE and no action will have to be taken; (ii) some data models will only require minor modifications; (iii) some data models will differ to a great extent from INSPIRE's and major modifications will be required.

## 3. Methodology

The first step has been to make the inventory of currently published EMODnet Human Activities' datasets, get their current data schemas, and look for the best fit INSPIRE Application Schema(s) and spatial objects or featuretypes, according to the INSPIRE documentation and the [tools](#) that are made available by INSPIRE to achieve these tasks.

Moreover, we have consulted the documentation and blogs maintained by the different [thematic clusters](#) created to support INSPIRE implementation in the Member States (see Table 1).

**Table 1 - Thematic clusters created to support the implementation of INSPIRE data specifications**

| Cluster Name<br>Facilitator   | INSPIRE Themes   | Theme<br>Abbreviations |
|---|--|------------------------|
| <a href="#">Statistical Cluster</a><br><a href="#">Mirosław MIGACZ</a>                  | Statistical Units, Population Distribution, Human Health and Safety<br>Statistical Units, Population Distribution, Human Health and Safety | (SU-PD-HH)             |
| <a href="#">Marine and Atmosphere Cluster</a><br><a href="#">Keiran MILLARD</a>         | Oceanographic Geographical Features, Sea Regions, Atmospheric Conditions and Meteorological Geographical Features                          | (OF, SR, AC, MF)       |
| <a href="#">Earth Science Cluster</a><br><a href="#">Amelia Baptie</a>                  | Geology, Soil, Natural Risk Zones, Mineral resources, Energy resources   | (GS-SO-NZ-MR-ER)       |
| <a href="#">Land Cover and Land Use Cluster</a><br><a href="#">Lena HALLIN-PIHLATIE</a> | Land Use, Land Cover   | (LU-LC)                |

| Cluster Name<br>Facilitator  | INSPIRE Themes   | Theme<br>Abbreviations |
|--|--|------------------------|
| <a href="#">Elevation, Orthoimagery, Reference Systems, Geographical Grids Cluster</a><br><b>Jordi ESCRIBU</b> | Elevation, Orthoimagery, Coordinate Reference Systems, Geographical Grid   | (EL-OI-RS-GG)          |
| <a href="#">Environmental Monitoring and Observations Cluster</a><br><b>Katharina SCHLEIDT</b>                 | Environmental Monitoring Facilities, Observations and Measurements   | (EF-OM)                |
| <a href="#">Biodiversity and Management Areas Cluster</a><br><b>Stefania MORRONE</b>                           | Protected Sites, Area Management/Restriction/Regulation Zones and Reporting Units, Habitats and Biotopes, Species Distribution, Bio-geographical Regions | (PS-BR-HB-SD-AM)       |
| <a href="#">Facilities, Utilities and Public Services Cluster</a><br><b>Angel LOPEZ ALOS</b>                   | Facilities, Utilities and Public Services  | (PF, AF, US)           |
| <a href="#">Topographic and Cadastral Reference Data</a><br><b>Anja HOPFSTOCK</b>                              | Hydrography, Geographical Names, Administrative Units, Cadastral Parcels, Addresses, Buildings, Transport Networks                                       | (HY-GN-AU-CP-AD-BU-TN) |

Source: <https://themes.jrc.ec.europa.eu/>
























































We have used the HALE Studio (The HUMBOLDT Alignment Editor) open software tool, to visually compare the current EMODnet dataset's schemas with the INSPIRE selected schemas. The HUMBOLDT Alignment Editor (hale studio) is a tool for defining and evaluating conceptual schema mappings. hale studio allows domain experts to create logically and semantically consistent mappings and to transform geodata based on these mappings.

## 4. Results

Matchup of EMODnet Human Activities' datasets and INSPIRE Application Schema(s).

Currently, these are the 54 featurtypes included in the EMODnet Human Activities' portal (see Figure 2)

Figure 2 - List of featurtypes served by EMODnet human activities WFS Service.

- ▼ ☐  [www.emodnet.co.uk](http://www.emodnet.co.uk)
  - ☐  [activelicenses](#)
  - ☐  [advisorycouncils](#)
  - ☐  [aggregates](#)
  - ☐  [aquaculture](#)
  - ☐  [baltic](#)
  - ☐  [barcelona](#)
  - ☐  [bathingwaters](#)
  - ☐  [blacksea](#)
  - ☐  [bshcontiscables](#)
  - ☐  [bucharest](#)
  - ☐  [cablesschematic](#)
  - ☐  [cdda](#)
  - ☐  [divisioncatches](#)
  - ☐  [dredgespoil](#)
  - ☐  [dredgespoilpoly](#)
  - ☐  [dredging](#)
  - ☐  [finfish](#)
  - ☐  [icesareas](#)
  - ☐  [fishsales](#)
  - ☐  [freshwater](#)
  - ☐  [helcom](#)
  - ☐  [hydrocarbons](#)
  - ☐  [kisorcacables](#)
  - ☐  [landingstations](#)
  - ☐  [lighthouses](#)
  - ☐  [longdistancefleet](#)
  - ☐  [majorcatches](#)
  - ☐  [maritimebnds](#)
  - ☐  [market](#)
- ☐  [mediterranean](#)
- ☐  [munitions](#)
- ☐  [munitionspoly](#)
- ☐  [natura2000](#)
- ☐  [northsea](#)
- ☐  [northwesternwaters](#)
- ☐  [oenergy](#)
- ☐  [oenergytests](#)
- ☐  [ospar](#)
- ☐  [outermostregions](#)
- ☐  [pelagicstocks](#)
- ☐  [pipelines](#)
- ☐  [platforms](#)
- ☐  [portlocations](#)
- ☐  [portgoods](#)
- ☐  [portpassengers](#)
- ☐  [portvessels](#)
- ☐  [shellfish](#)
- ☐  [sigcables](#)
- ☐  [southwesternwaters](#)
- ☐  [subareacatches](#)
- ☐  [subdivisioncatches](#)
- ☐  [subunitcatches](#)
- ☐  [windfarms](#)
- ☐  [windfarmspoly](#)

### ***Summary of candidate INSPIRE models retained for EMODnet's human activities datasets.***

For each EMODnet's human activities portal dataset, we have identified the INSPIRE application schemas, featurtypes and codelists included in **Errore. L'origine riferimento non è stata trovata..** In some cases, there are more than one possible application schema that could be related to an EMODnet's dataset. The selected INSPIRE elements included in the table include a link to the INSPIRE web pages that fully describe and define these elements.

**Table 2 - Summary of matchup analysis for EMODnet's human activities portal datasets against the INSPIRE application schemas**

| EMODnet's portal thematic category | EMODnet's dataset name (from WFS) | INSPIRE Application Schema   | INSPIRE Featuretype  | Remarks  |
|------------------------------------|-----------------------------------|--|--|--|
| <b>Aggregate Extraction</b>        | aggregates                        | Annex III: <a href="#">Mineral Resources model</a>   | <a href="#">Mining Activity</a>  | Dredge mining: <a href="#">Mining Activity Type value</a>  |
| <b>Aquaculture</b>                 | freshwater                        | Annex III: <a href="#">Agricultural and Aquaculture Facilities Model</a>   | <a href="#">holding, Site, FarmAnimalSpecies</a>   | <a href="#">Aquaculture Species Value</a>  |
|                                    | finfish                           | Annex III: <a href="#">Agricultural and Aquaculture Facilities Model</a>   | <a href="#">holding, Site, FarmAnimalSpecies</a>   | <a href="#">Aquaculture Species Value</a>  |
|                                    | shellfish                         | Annex III: <a href="#">Agricultural and Aquaculture Facilities Model</a>   | <a href="#">holding, Site, FarmAnimalSpecies</a>   | <a href="#">Aquaculture Species Value</a>  |
| <b>Cultural Heritage</b>           | lighthouses                       | Annex III: <a href="#">Building Base</a>   | <a href="#">Building</a>   | <a href="#">lighthouse: buildingNature value</a>   |
| <b>Dredging</b>                    | dredging                          | Annex III: <a href="#">Mineral Resources model</a><br>Annex II: <a href="#">Geology model</a>  | <a href="#">Mining Activity</a><br><a href="#">Geomorphologic Feature</a>                        | <a href="#">Mining Activity Type value</a><br><a href="#">dredged channel: AnthropogenicGeomorphologicFeatureTypeValue</a> |
| <b>Environment</b>                 | cdda                              | Annex I: <a href="#">Protected Sites simple models.</a><br>Annex I: Protected Sites Full   | <a href="#">ProtectedSite, DesignationType</a>   | <a href="#">DesignationValue</a>   |
|                                    | Natura2000                        | Annex I: <a href="#">Protected Sites simple models.</a><br>Annex I: Protected Sites Full   | <a href="#">ProtectedSite</a>  | <a href="#">Natura2000DesignationValue</a>   |
|                                    | bathingwaters                     | Annex III: <a href="#">INSPIRE Human Health application schema</a>   | <a href="#">EnvhealthDeterminantStatisticasData</a>  | Water: <a href="#">envHealthDeterminantTypevalue</a>   |
| <b>Fisheries</b>                   | icesareas                         | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a>  | <a href="#">ManagementRestrictionOrRegulationZone</a>  | Marine region: <a href="#">Zone Type</a>   |
|                                    | divisioncatches                   | Annex III: <a href="#">Statistical Units Vector</a><br>Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Vector Statistical Unit</a><br><a href="#">ManagementRestrictionOrRegulationZone</a> | Marine region: <a href="#">Zone Type</a>   |

| EMODnet's portal thematic category | EMODnet's dataset name (from WFS) | INSPIRE Application Schema   | INSPIRE Featuretype   | Remarks   |
|------------------------------------|-----------------------------------|--|---|---|
|                                    | majorcatches                      | Annex III: <a href="#">Statistical Units Vector</a><br><br>Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Vector Statistical Unit</a><br><br><a href="#">ManagementRestrictionOrRegulationZone</a>        | Marine region: <a href="#">Zone Type</a>                      |
|                                    | subareacatches                    | Annex III: <a href="#">Statistical Units Vector</a><br><br>Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Vector Statistical Unit</a><br><br><a href="#">ManagementRestrictionOrRegulationZone</a>        | Marine region: <a href="#">Zone Type</a>                      |
|                                    | subdivisioncatches                | Annex III: <a href="#">Statistical Units Vector</a><br><br>Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Vector Statistical Unit</a><br><br><a href="#">ManagementRestrictionOrRegulationZone</a>        | Marine region: <a href="#">Zone Type</a>                      |
|                                    | Sub-unit                          | Annex III: <a href="#">Statistical Units Vector</a><br><br>Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Vector Statistical Unit</a><br><br><a href="#">ManagementRestrictionOrRegulationZone</a>        | Marine region: <a href="#">Zone Type</a>                      |
|                                    | Fishsales (error?)                | Annex III: <a href="#">Statistical Units Vector</a><br><br>Annex I: <a href="#">Water Transport Network model</a>                            | <a href="#">Vector Statistical Unit</a><br><br><a href="#">portnode</a>                                     |   |
| Hydrocarbon Extraction             | activelicenses                    | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a>  | <a href="#">ManagementRestrictionOrRegulationZone</a>   | prospecting and mining permit area: <a href="#">Zone Type</a> |
|                                    | hydrocarbons                      | Annex III: <a href="#">Energy Resources Vector</a><br><br>Annex III: <a href="#">Mineral Resources</a>                                       | <a href="#">Fossil Fuel Resource, Fossil Fuel Resource Type</a><br><br><a href="#">Exploration Activity</a> | <a href="#">Fossil Fuel Value</a>                             |



| EMODnet's portal thematic category         | EMODnet's dataset name (from WFS) | INSPIRE Application Schema  | INSPIRE Featuretype   | Remarks  |
|--|-----------------------------------|---|---|--|
|  |                                   | <a href="#">model</a>   |   | <a href="#">liquidhydrocarbons/oil or gaseous hydrocarbons: commoditycodeValue</a> |
|  | platforms                         | Annex III: <a href="#">Energy Resources Vector</a>  | <a href="#">Fossil Fuel Resource</a>                                    | <a href="#">Fossil Fuel Value</a>  |
| Main Ports                                 | Portlocations                     | Annex I: <a href="#">Water Transport Network model</a>  | <a href="#">portnode</a>  |  |
|  | Portgoods                         | Annex III: <a href="#">Statistical Units Vector</a><br>Annex I: <a href="#">Water Transport Network model</a> | <a href="#">Vector Statistical Unit</a><br><br><a href="#">portnode</a> |  |
|  | portpassengers                    | Annex III: <a href="#">Statistical Units Vector</a><br>Annex I: <a href="#">Water Transport Network model</a> | <a href="#">Vector Statistical Unit</a><br><br><a href="#">portnode</a> |  |
|  | portvessels                       | Annex III: <a href="#">Statistical Units Vector</a><br>Annex I: <a href="#">Water Transport Network model</a> | <a href="#">Vector Statistical Unit</a><br><br><a href="#">portnode</a> |  |
| Ocean Energy Facilities                    | oenergy                           | Annex III: <a href="#">Energy Resources Vector</a>  | <a href="#">Renewable and Waste Resource</a>                            | "tide, wave, ocean": <a href="#">Renewable and waste value</a>                     |
|  | oenergytest                       | Annex III: <a href="#">Energy Resources Vector</a>  | <a href="#">Renewable and Waste Resource</a>                            | "tide, wave, ocean": <a href="#">Renewable and waste value</a>                     |
| Other Forms of Area Management/Designation | baltic                            | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a>                             | <a href="#">Management Restriction Or Regulation Zone</a>               | Marine region: <a href="#">Zone Type</a>   |
|  | Longdistancefleet                 | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a>                             | <a href="#">Management Restriction Or Regulation Zone</a>               | Marine region: <a href="#">Zone Type</a>   |
|  | mediterranean                     | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a>                             | <a href="#">Management Restriction Or Regulation Zone</a>               | Marine region: <a href="#">Zone Type</a>   |

| EMODnet's portal thematic category         | EMODnet's dataset name (from WFS) | INSPIRE Application Schema  | INSPIRE Featuretype                                       | Remarks                                  |
|--|-----------------------------------|---|---|--|
| Other Forms of Area Management/Designation | northsea                          | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | outermostregions                  | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | market                            | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | Aquaculture                       | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | blacksea                          | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | northwesternwaters                | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | pelagicstocks                     | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | southwesternwaters                | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | barcelona                         | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | bucharest                         | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | Helcom                            | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |
|  | ospar                             | Annex III: <a href="#">Area Management Restriction and Regulation Zones model</a> | <a href="#">Management Restriction Or Regulation Zone</a> | Marine region: <a href="#">Zone Type</a> |

| EMODnet's portal thematic category | EMODnet's dataset name (from WFS) | INSPIRE Application Schema   | INSPIRE Featuretype   | Remarks  |
|------------------------------------|-----------------------------------|--|---|--|
|                                    | maritimebnds                      | Annex I: <a href="#">Maritime Units</a>  | <a href="#">Baseline</a><br><a href="#">Maritime Zone</a><br><a href="#">Maritime Boundary</a>                                  |  |
| <b>Cables</b>                      | bshcontiscables                   | <a href="#">Common Utility Network Elements</a>  | <a href="#">Telecommunication cable</a> , <a href="#">Utility link</a>  |  |
|                                    | kisorcacables                     | <a href="#">Common Utility Network Elements</a>  | <a href="#">Telecommunication cable</a> , <a href="#">Utility link</a>  |  |
|                                    | sigcables                         | <a href="#">Common Utility Network Elements</a>  | <a href="#">Telecommunication cable</a> , <a href="#">Utility link</a>  |  |
|                                    | cableschematic                    | <a href="#">Common Utility Network Elements</a>  | <a href="#">Telecommunication cable</a> , <a href="#">Utility link</a>  |  |
|                                    | landingstations                   | <a href="#">Common Utility Network Elements</a>  | <a href="#">Utility node</a> , <a href="#">Appurtenance</a>   | <a href="#">Telecommunications Appurtenance Type Value</a>   |
| <b>Pipelines</b>                   | pipelines                         | <a href="#">Common Utility Network Elements</a><br><a href="#">Existing Land Use</a> , <a href="#">Sampled Land Use</a> , <a href="#">Planned Land Use</a> | <a href="#">Pipe</a> , <a href="#">Utility link</a>   | Utilities: <a href="#">HILUCS Land Use Value - Code list</a>   |
| <b>Waste Disposal</b>              | dredgespoil                       | <a href="#">Mineral Resources model</a><br><a href="#">Area Management Restriction and Regulation Zones</a><br><a href="#">Geology application schema</a>  | <a href="#">Mining waste</a><br><a href="#">ManagementRestrictionOrRegulationZone</a><br><a href="#">Geomorphologic Feature</a> | area For Dumping Of Waste: <a href="#">Zone Type</a><br><br>dump: <a href="#">AnthropogenicGeomorphologicFeatureTypeValue</a>                  |
|                                    | dredgespoilpoly                   | <a href="#">Mineral Resources model</a><br><a href="#">Area Management Restriction and Regulation Zones</a><br><a href="#">Geology application schema</a>  | <a href="#">Mining waste</a><br><a href="#">ManagementRestrictionOrRegulationZone</a><br><a href="#">Geomorphologic Feature</a> | area For Dumping Of Waste: <a href="#">Zone Type</a><br><br>dump: <a href="#">AnthropogenicGeomorphologicFeatureTypeValue</a>                  |
|                                    | munitions                         | <a href="#">Geology application schema</a><br><a href="#">Area Management Restriction and Regulation Zones</a>   | <a href="#">Geomorphologic Feature</a>  | dump: <a href="#">AnthropogenicGeomorphologicFeatureTypeValue</a><br><br>restricted zones around contaminated sites: <a href="#">Zone Type</a> |

| EMODnet's portal thematic category | EMODnet's dataset name (from WFS) | INSPIRE Application Schema   | INSPIRE Featuretype                          | Remarks   |
|------------------------------------|-----------------------------------|--|--|---|
|                                    | munitionspoly                     | <a href="#">Geology application schema</a><br><a href="#">Area Management Restriction and Regulation Zones</a> | <a href="#">Geomorphologic Feature</a>       | dump:<br><a href="#">AnthropogenicGeomorphologicFeatureTypeValue</a><br><br>restricted zones around contaminated sites: <a href="#">Zone Type</a> |
| Wind Farms                         | windfarms                         | Annex III: <a href="#">Energy Resources Vector</a>   | <a href="#">Renewable And Waste Resource</a> | Wind: <a href="#">Renewable and waste value</a>   |
|                                    | windfarmspoly                     | Annex III: <a href="#">Energy Resources Vector</a>   | <a href="#">Renewable And Waste Resource</a> | Wind: <a href="#">Renewable and waste value</a>   |

## Aggregates extraction & Dredging

The dataset on **aggregate extractions** in the EU is the result of the aggregation and harmonization of datasets provided by several sources from all across the EU. The database contains points representing aggregate extraction sites, by year (although some data are indicated by a period of years), in the following countries: Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Poland, Spain, Sweden, The Netherlands and United Kingdom.

The dataset on **dredging** in the EU is the result of the aggregation and harmonization of datasets provided by several sources from all across the EU. The database contains points representing dredging sites in the following countries: Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Spain, Sweden, The Netherlands and United Kingdom.

For both datasets, we have identified the [INSPIRE Mineral Ressources model](#) and the “[Mining Activity](#)” featuretype, as the most adapted schemas for the EMODnet’s aggregates and dredging datasets.

Within the “Mining Activity” featuretype, the attribute “[Mining Activity Type value](#)” (see Figure 3) includes two terms that can be associated to the dredging and aggregate extraction activities.

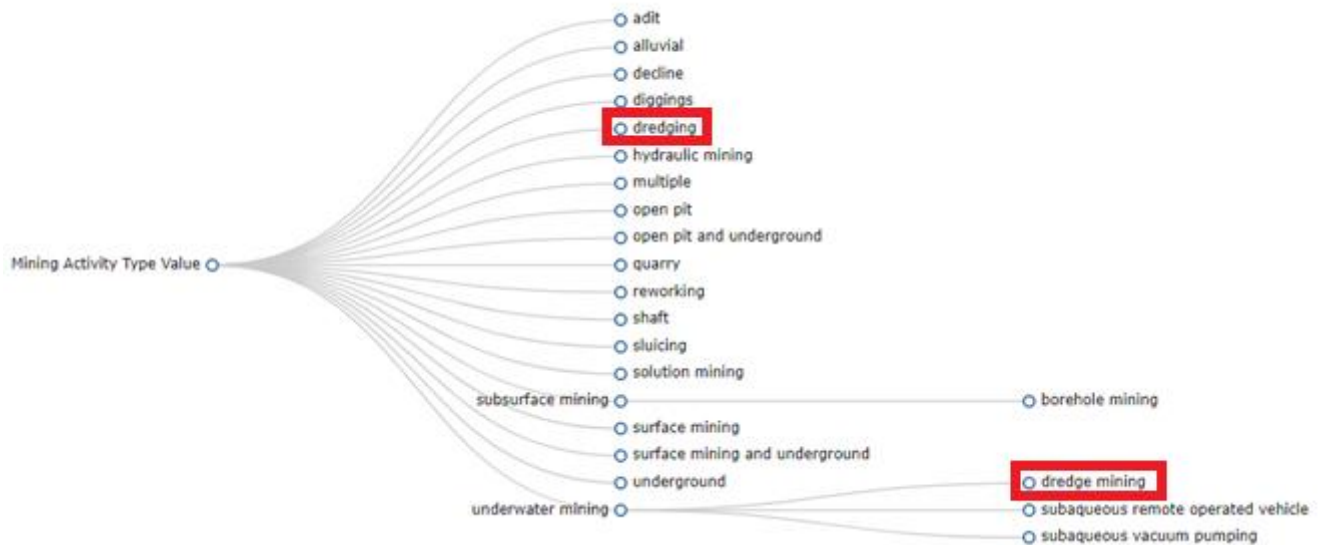
**dredging** - [INSPIRE Code list value [dredging](#)]

Definition: *A form of open pit mining in which the digging machinery and processing plant are situated on a floating barge or hull.*

**dredge mining** - [INSPIRE Code list value [dredge mining](#)] - (Parent: [underwater mining](#))

Definition: *Excavation of underwater mineral resources by floating equipment. Dredging systems are classified as mechanical or hydraulic, depending on the method of material transport.*

Figure 3 - Mining Activity Type value code list elements.

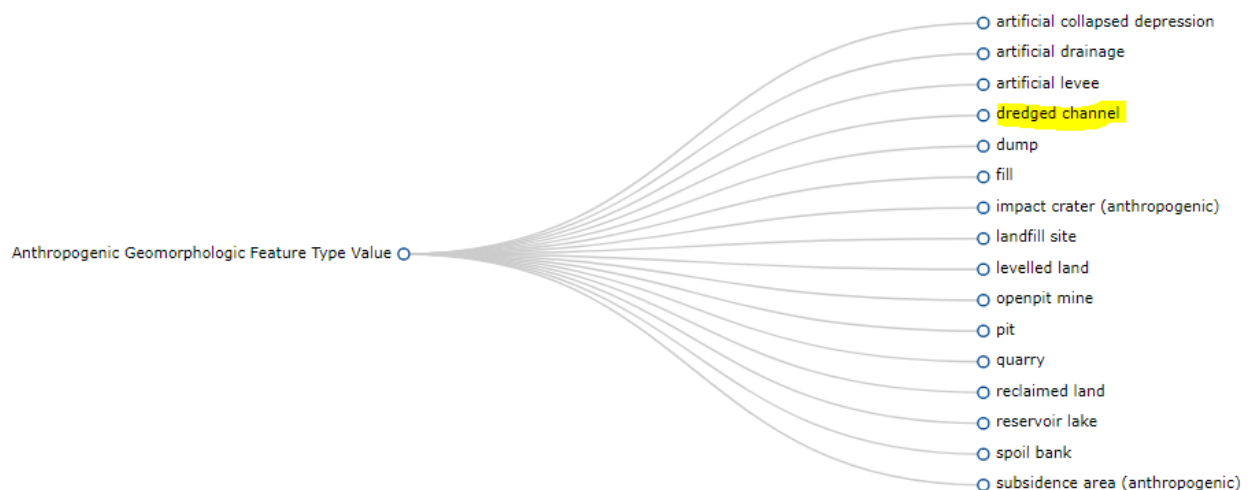


Moreover, under the INSPIRE [Geology application schema](#) and under the “[Geomorphologic Feature](#)” featurtype, we find the [AnthropogenicGeomorphologicFeatureTypeValue](#) codelist (Figure 4) that contains “dredge channel” element defined as follows:

**dredged channel** - [INSPIRE Code list value [dredged channel](#)]

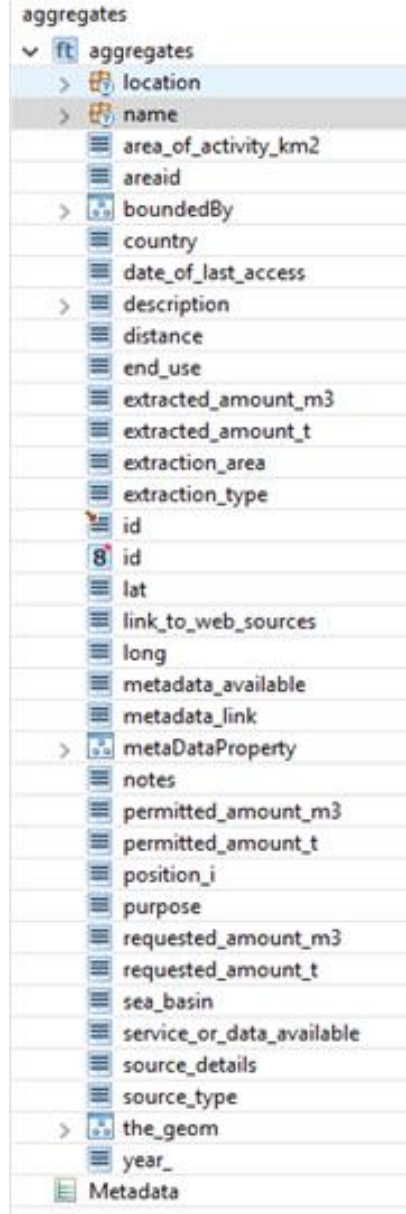
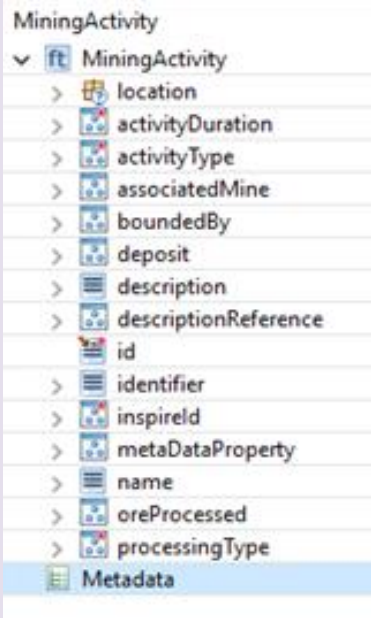
Definition: *A roughly linear, deep water area formed by a dredging operation for navigation purposes*

Figure 4 - Dredge channel element in the [AnthropogenicGeomorphologicFeatureTypeValue](#) codelist



















































The detailed comparison between EMODnet’s aggregate dataset schema and the INSPIRE “Mining Activity” featuretype is presented in Table 3, and the comparison of dredging dataset schema with the INSPIRE “[Geomorphologic Feature](#)” is presented in Table 4.

**Table 3 - Comparison of EMODnet’s aggregate extraction and dredgings data models with the INSPIRE’s MiningActivity featuretype.**

| EMODnet’s aggregates dataset schema.   | INSPIRE “Mining Activity” featuretype schema.                                       |
|--|---|
|  |  |

**Table 4 - Comparison of dredging dataset schema with the INSPIRE “[Geomorphologic Feature](#)”**

| EMODnet’s dredging dataset schemas  | INSPIRE “ <a href="#">Geomorphologic Feature</a> ” featuretype schema.   |
|---|--|
| <b>dredging</b><br> <b>dredging</b><br>>  location<br>>  name<br> areaid<br>>  boundedBy<br> country<br> date_of_last_access<br>>  description<br> end_use<br> extracted_amount_m3<br> extracted_amount_t<br> extraction_area<br> extraction_type<br> id<br> id<br> lat<br> link_to_web_sources<br> long<br> metadata_available<br> metadata_link<br>>  metaDataProperty<br> notes<br> permitted_amount_m3<br> permitted_amount_t<br> position_i<br> purpose<br> sea_basin<br> service_or_data_available<br> source_details<br> source_type<br>>  the_geom<br> year_<br> Metadata | <b>AnthropogenicGeomorphologicFeature</b><br> <b>AnthropogenicGeomorphologicFeature</b><br>>  location<br>>  anthropogenicGeomorphologicFeatureType<br>>  boundedBy<br>>  description<br>>  descriptionReference<br>>  geologicHistory<br> id<br>>  identifier<br>>  inspireId<br>>  metaDataProperty<br>>  name<br>>  name<br>>  themeClass<br> Metadata |

## Aquaculture

Within EMODNET’s human activities portal, the **finfish** dataset provides information about the location of seawater finfish farms in the EU and partner countries where data are available. There is an obligation for MS to inventory all authorized aquaculture sites under the Council Directive 2006/88/EC on animal health requirements. Despite this obligation, the availability of data varies significantly among MS from no data available at all to a complete regularly updated dataset (e.g.in Scotland). Most MS with only a marginal finfish production are not able to provide a list with the geolocation of farms. In the main



producer countries, there is usually a public list of authorized farms with geolocation data and sometimes information on the species. Data is provided here for Cyprus, Denmark, Greece, Ireland, Finland, Norway, Spain and the UK. There are no sea-based finfish farms in Belgium, Bulgaria, Latvia, Lithuania, the Netherlands and Poland. Data are still missing in other EU MS.

The **freshfish** dataset provides information about the location of freshwater finfish farms in the EU and partner countries where data are available.

The **shellfish** dataset provides information about the location of shellfish farms. It relies on the EUROSHELL project (<http://www.euroshell-fp7.eu/Mapping-with-Sextant/Catalogue>) for France, Ireland, Italy, the Netherlands and the UK (for England and Wales only). Euroshell data come from professional, scientific and governmental sources (Associazione Mediterranea Acquacoltori in Italy, the Sea Fisheries Protection Authority in Ireland, the Comité National de la Conchyliculture and IFREMER in France, Wageningen in the Netherlands). Data for other countries were not available in the Euroshell database so we used the lists of registered production sites under Council Directive 2006/88/EC on animal health. Points represented in the map correspond to different definitions depending on the source. They represent farm sites in Denmark, Greece, Ireland, Italy, Spain and the UK while they represent the centre of production areas for France and the Netherlands.

Within INSPIRE, under Annex III there is the [Agricultural and Aquaculture Facilities Model](#) that would be the one to take into account for data harmonisation. Under this model there are two featuretypes that could be relevant, the "[holding](#)" and the "[Site](#)" defined as:

#### Holding

##### *Spatial object type*

Definition: The whole area and all infrastructures included on it, covering the same or different "sites", under the control of an operator to perform agricultural or aquaculture activities. The holding includes one specialisation of ActivityComplex, ie. Activity. the values of ActivityType are expressed conform the classification of the economic activity of the holding, according to the NACE rev. 2.0 coding. Holding is a thematic extension of the generic Class "Activity Complex" shared with other thematic areas describing entities related with Economical Activities (Legal Entity Class – Business).

#### Site















































































##### *Spatial object type*

Definition: All land at a same or distinct geographic location under the management control of a holding covering activities, products and services. This includes all infrastructure, equipment and materials. The geometry of the site must be a point or a surface. Multipoint or multisurface is not allowed.

Moreover, the species has to be designated under the “FarmAnimalSpecies” datatype, that for aquaculture species, establishes as the reference code list, the **ASFIS (Aquatic Sciences and Fisheries Information System)** List of Species for Fishery Statistics Purposes published by the Food and Agriculture Organization of the United Nations.

In Table 5 are presented the detailed schemas of EMODNET’s data models for aquaculture datasets, and in Table 6 the detailed schemas of INSPIRE Agricultural and Aquaculture Facilities Model featuretypes.

**Table 5 – EMODNET’s data models for aquaculture datasets.**

| EMODNETs’ shemas of aquaculture datasets  |  |   |
|---|--|---|
| <b>finfish</b><br> finfish<br>>  location<br>>  name<br> arctic_char<br>>  boundedBy<br> cod<br> country<br>>  description<br> distance_to_coast_m<br> finid<br> halibut<br> id<br> lumpfish<br> meagre<br>>  metaDataProperty<br> other_species<br> owner_name<br> point_info<br> position_coastline<br> production<br> purpose<br> salmon<br> seabass<br> seabream<br> species_detailed<br> species_harmonised<br> status<br>>  the_geom<br> trout<br> tubot<br> tuna<br> wolffish<br> wrasse<br> Metadata | <b>shellfish</b><br> shellfish<br>>  location<br>>  name<br>>  boundedBy<br> costal_inland<br> country<br>>  description<br> distance_to_shore_m<br> id<br>>  metaDataProperty<br> position_info<br> shellid<br> site_name<br> site_typology<br> species<br>>  the_geom<br> Metadata | <b>freshwater</b><br> freshwater<br>>  location<br>>  name<br>>  boundedBy<br> carp<br> catfish<br> country<br>>  description<br> eel<br> farm_type<br> id<br>>  metaDataProperty<br> ornamental<br> other<br> owner_name<br> point_info<br> pond_fish<br> production<br> salmon<br> site_id<br> species_de<br> status<br> sturgeon<br>>  the_geom<br> tilapia<br> trout<br> Metadata |

**Table 6 - Featuretypes and instances within the INSPIRE Annex III: Agricultural and Aquaculture Facilities Model 4.0.**

|   |   |   |
|---|---|---|
| <div> <div>ft</div> <div>Holding</div> <div> <div>location</div> <div>8 beginLifespanVersion</div> <div>boundedBy</div> <div>contains</div> <div>actuate</div> <div>arcrole</div> <div>href</div> <div>nilReason</div> <div>owns</div> <div>remoteSchema</div> <div>role</div> <div>show</div> <div>Site</div> <div>title</div> <div>type</div> <div>description</div> <div>descriptionReference</div> <div>8 endLifespanVersion</div> <div>function</div> <div>Function</div> <div>geometry</div> <div>id</div> <div>identifier</div> <div>inspireId</div> <div>Identifier</div> <div>metaDataProperty</div> <div>name</div> <div>name</div> <div>thematicId</div> <div>8 validFrom</div> <div>8 validTo</div> <div>Metadata</div> </div> </div> | <div> <div>ft</div> <div>Site</div> <div> <div>location</div> <div>activity</div> <div>actuate</div> <div>arcrole</div> <div>href</div> <div>nilReason</div> <div>owns</div> <div>remoteSchema</div> <div>role</div> <div>show</div> <div>title</div> <div>type</div> <div>boundedBy</div> <div>description</div> <div>descriptionReference</div> <div>geometry</div> <div>id</div> <div>identifier</div> <div>includesAnimal</div> <div>metaDataProperty</div> <div>name</div> <div>Metadata</div> </div> </div> | <div> <div>T</div> <div>FarmAnimalSpecies</div> <div> <div>aquaculture</div> <div>actuate</div> <div>arcrole</div> <div>href</div> <div>nilReason</div> <div>owns</div> <div>remoteSchema</div> <div>role</div> <div>show</div> <div>title</div> <div>type</div> <div>livestock</div> <div>Metadata</div> </div> </div> |
|---|---|---|

## Cultural Heritage

The **lighthouses** dataset provides the location of lighthouses inventoried by the Amateur Radio Lighthouse Society (ARLS). It includes both existing lighthouses and historical ones that have been removed, relocated or destroyed (column Status). The dataset includes the name of the lighthouse, its code in the ARLSH database and the gridsquare within which it is located. Coordinates are approximate for most of the lighthouses.

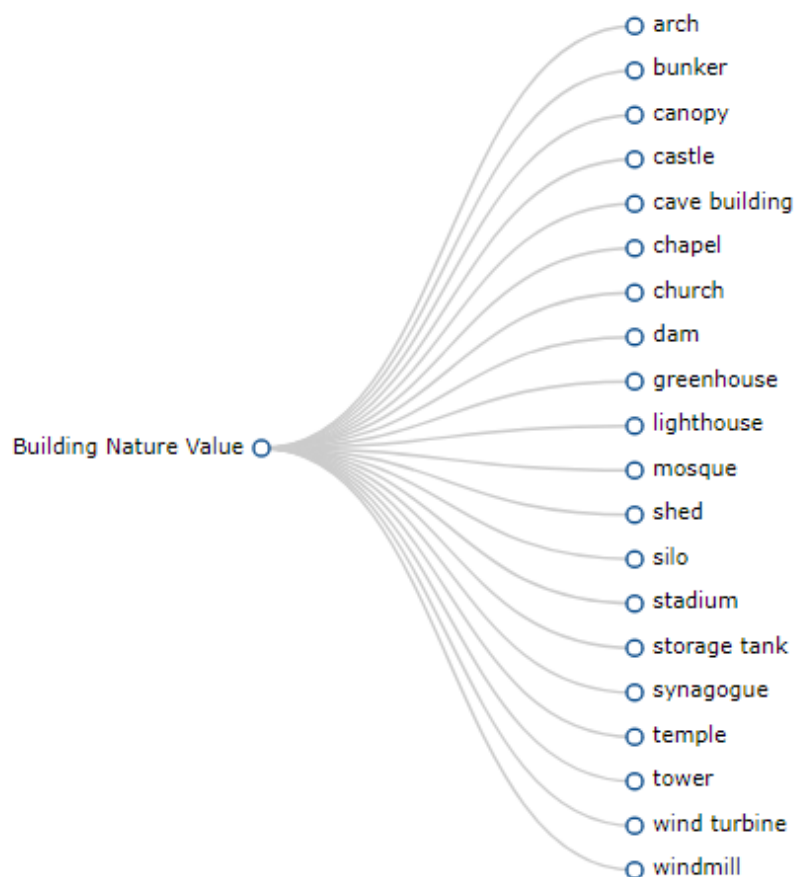
Within INSPIRE, lighthouses are considered as a “[Building](#)” featuretype under the [INSPIRE AnnexIII buildings 2d model](#) with a [buildingNature value](#) named “lighthouse” (Figure 5).

### Building Nature Value - Code list

**Definition:** Values indicating the nature of a building.























































**Description:** NOTE 1: This code list does not aim to be exhaustive as the attribute buildingNature addresses only noticeable buildings. NOTE 2: The values included in this code list address mainly (but not only) two international use cases: air flights where buildings may be obstacles and marine navigation where buildings may be landmarks. NOTE 3: This code list should only be applied for buildings, even if it may be applicable to other constructions (for example, not all dams are buildings).

**Figure 5 - Building Nature value code list elements.**



In Table 7 are represented the schema of the EMODNETs lighthouses data model compared with the Building featuretype included in the INSPIRE Buildings2D application schema.

**Table 7 - Comparison of EMODnet's lighthouse data models with the INSPIRE's Building featuretype.**

| EMODnet's data model for lighthouses.   | INSPIRE data model for Buildings2d including lighthouse as a buildingNature value.  |
|---|---|
| <p><b>lighthouses</b></p> <ul style="list-style-type: none"> <li>▼  lighthouses <ul style="list-style-type: none"> <li>&gt;  location</li> <li>&gt;  name</li> <li> arlhs_number</li> <li>&gt;  boundedBy</li> <li> country</li> <li>&gt;  description</li> <li> distance_to_shore_m</li> <li> gridsquare</li> <li> id</li> <li> lstatus</li> <li>&gt;  metaDataProperty</li> <li> position_coastline</li> <li> status</li> <li>&gt;  the_geom</li> </ul> </li> <li> Metadata</li> </ul> | <p><b>Building</b></p> <ul style="list-style-type: none"> <li>▼  Building <ul style="list-style-type: none"> <li>&gt;  location</li> <li>&gt;  beginLifespanVersion</li> <li>&gt;  boundedBy</li> <li>▼  buildingNature <ul style="list-style-type: none"> <li> actuate</li> <li> arcrole</li> <li> href</li> <li> nilReason</li> <li> owns</li> <li> remoteSchema</li> <li> role</li> <li> show</li> <li> title</li> <li> type</li> </ul> </li> <li>&gt;  conditionOfConstruction</li> <li>&gt;  currentUse</li> <li>&gt;  dateOfConstruction</li> <li>&gt;  dateOfDemolition</li> <li>&gt;  dateOfRenovation</li> <li>&gt;  description</li> <li>&gt;  descriptionReference</li> <li>&gt;  elevation</li> <li>&gt;  endLifespanVersion</li> <li>&gt;  externalReference</li> <li>&gt;  geometry2D</li> <li>&gt;  heightAboveGround</li> <li> id</li> <li>&gt;  identifier</li> <li>&gt;  inspireId</li> <li>&gt;  metaDataProperty</li> <li>&gt;  name</li> <li>&gt;  name</li> <li>&gt;  numberOfBuildingUnits</li> <li>&gt;  numberOfDwellings</li> <li>&gt;  numberOfFloorsAboveGround</li> <li>&gt;  parts</li> </ul> </li> <li> Metadata</li> </ul> |

The **wrecks dataset** has been developed under the MACHU EU project, involving seven EU MS (BE, DE, NL, PL, PT, UK, SE). The MACHU GIS database provides information about wrecks, sites and objects underwater. MACHU is an application on Underwater Cultural Heritage providing historic and archaeological information. MACHU is not intended to give exact positions of wrecks a site, in the aim of ensuring their protection.

The **archeological sites** dataset has been developed under the SPLASHCOS EU project, involving 20 EU Member States plus Norway, Russia, Ukraine and Switzerland. SPLASHCOS - Submerged Prehistoric Archaeology and Landscapes of the Continental Shelf - is a four-year research network (2009 to 2013) funded by the European Commission under its COST program (Cooperation in Science and Technology) as COST Action TD0902. Its aim is to bring together archaeologists, marine geoscientists, heritage agencies, and commercial and industrial organizations interested in researching, managing and preserving the archives of archaeological and palaeoclimatic information locked up on the drowned prehistoric landscapes of the European continental shelf, and to disseminate that knowledge to a wider audience.

These two last described datasets are not served through the WFS Service of EMODNET and they are not being maintained under the EMODnet's project, thus we will skip the analysis of their data model as won't be able to perform any further harmonization process. However, it's worth mentioning that we have found an initiative to propose a data model under the INSPIRE initiative to hold the spatial data related to cultural heritage: <http://digital.csic.es/handle/10261/94227>

## ***Environment***

Under the Environment thematic category we find three datasets: Natura2000, ccda and bathingwaters.

The **Natura2000** and **ccda** datasets are entirely based on the European Environmental Agency's (EEA) datasets "Natura 2000" and "Nationally designated areas (CDDA)". Natura 2000 is an ecological network composed of sites designated under the Birds Directive (Special Protection Areas, SPAs) and the Habitats Directive (Sites of Community Importance, SCIs, and Special Areas of Conservation, SACs). The Common Database on Designated Areas (CDDA) is more commonly known as Nationally designated areas. The inventory began in 1995 under the CORINE programme of the European Commission. It is now one of the agreed Eionet priority data flows maintained by EEA with support from the European Topic Centre on Biological Diversity. It is a result of an annual data flow through Eionet countries. The EEA publishes the dataset and makes it available to the World Database of Protected Areas (WDPA). The CDDA data can also be queried online in the European Nature Information System (EUNIS).

Both EEA's datasets have been filtered by Cogea to show only maritime areas and sites (i.e. areas entirely at sea), and coastal areas and sites (internal areas that intersect and/or are tangent, using 1 km buffer, to the marine regions and subregions geographic boundaries shapefile, available at <https://www.eea.europa.eu/data-and-maps/data/msfd-regions-and->





































































[subregions](#)). For further information please visit EEA's website. Compared with the previous version, this version of includes: update to 'CDDA v14' and 'Natura 2000 End 2016', both published by the EEA in 2017; new fields have been added to CDDA, reporting the lowest possible level code of the Nomenclature of Territorial Units for Statistics (NUTS1, NUTS2 or NUTS3) in which the geographical entity is located, the percentage of the total area of marine ecosystems in the site, the major ecosystem type, additional notes about sites; new fields have been added to Natura 2000 with area of site (ha), and the percentage of the site considered marine.

Within INSPIRE, these datasets can be aligned with the INSPIRE Annex I Protected Sites full, or the [Protected Sites simple models](#).

Below are detailed the schemas of the natura2000 and ccda datasets compared with the INSPIRE ProtectedSite featuretypes in Protected sites full and simple models.

**Table 8. Comparison of the schemas in current EMODnets ccda and natura2000 datasets with the INSPIRE Protected sites models**

| EMODnet's natura2000 dataset schema   | EMODnet's ccda dataset schema | INSPIRE Protected sites full model's ProtectedSite featuretype. | INSPIRE Protected sites simple model's ProtectedSite featuretype.   |
|---|-------------------------------|---|---|
| <p>natura2000</p> <ul style="list-style-type: none"> <li>▼ ft natura2000 <ul style="list-style-type: none"> <li>&gt; location</li> <li>&gt; name</li> <li>8 area_ha</li> <li>&gt; boundedBy</li> <li>8 coast_mar</li> <li>country</li> <li>&gt; description</li> <li>directive</li> <li>id</li> <li>8 mar_perc</li> <li>&gt; metaDataProperty</li> <li>ms</li> <li>8 release_da</li> <li>sitecode</li> <li>sitedesc</li> <li>sitename</li> <li>sitetype</li> <li>&gt; the_geom</li> <li>Metadata</li> </ul> </li> </ul> |                               |   | <p>ProtectedSite</p> <ul style="list-style-type: none"> <li>▼ ft ProtectedSite <ul style="list-style-type: none"> <li>&gt; location</li> <li>&gt; boundedBy</li> <li>&gt; description</li> <li>&gt; descriptionReference</li> <li>&gt; geometry</li> <li>id</li> <li>&gt; identifier</li> <li>&gt; inspireID</li> <li>&gt; 8 legalFoundationDate</li> <li>&gt; legalFoundationDocument</li> <li>&gt; metaDataProperty</li> <li>&gt; name</li> <li>&gt; siteDesignation</li> <li>&gt; siteName</li> <li>&gt; siteProtectionClassification</li> <li>Metadata</li> </ul> </li> </ul> |

|  |   |  |  |
|--|---|--|--|
|  | cdda<br>▼  cdda<br>>  location<br>>  name<br>>  boundedBy<br> cdda_disse<br> coast_mar<br> country<br>>  description<br> desig_abbr<br> designate<br> ecotype<br> id<br> iso3<br> iucncat<br> iucndes<br> iucnlink<br> marperc<br>>  metaDataPro<br> notes<br> nuts<br> odesignate<br> parent_iso<br> site_area<br> site_code<br> site_name<br>>  the_geom<br> year<br> Metadata | ProtectedSite<br>▼  ProtectedSite<br>>  location<br>>  activitiesAndImpact<br>>  beginLifespanVersion<br>>  boundedBy<br>>  dataSource<br>>  description<br>>  descriptionReferenc<br>>  documentation<br>>  endLifespanVersion<br>>  fundingSource<br>>  geometry<br>>  id<br>>  identifier<br>>  inspireID<br>>  isASpeciesAggregat<br>>  isInRegion<br>>  isManagedBy<br>>  legalExpiryDate<br>>  legalFoundationDat<br>>  legalFoundationDoc<br>>  metaDataProperty<br>>  name<br>>  natura2000Respond<br>>  officialsiteArea<br>>  ownership<br>>  presentHabitat<br>>  protectedEntity<br>>  qualityAndImportan<br>>  siteDescription<br>>  siteDesignation<br>>  siteIdentifier<br>>  siteLength<br>>  siteManagementPla<br>>  siteName<br>>  siteProtectionClassi<br>>  spatialResolution<br>>  timePeriod<br>>  vulnerability<br> Metadata |  |
|--|---|--|--|

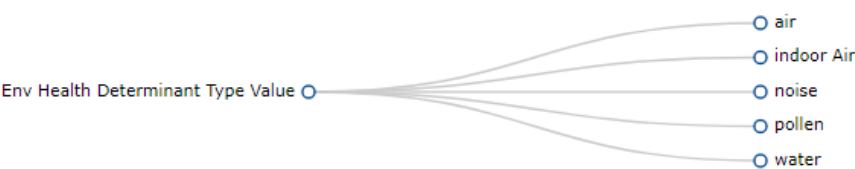
The **bathingwaters** dataset is based on the dataset "Bathing Water Directive - Status of bathing water" provided by The European Topic Centre on Water and made available by the European Environment Agency at <https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing-water-9>.



For **bathingwaters dataset**, the most similar featurtype found in INSPIRE corresponds to the “[EnvhealthDeterminantStatisticasData](#)” in the [INSPIRE Human Health application schema](#). Below is a description on the main attributes that have to be provided to this featurtype.

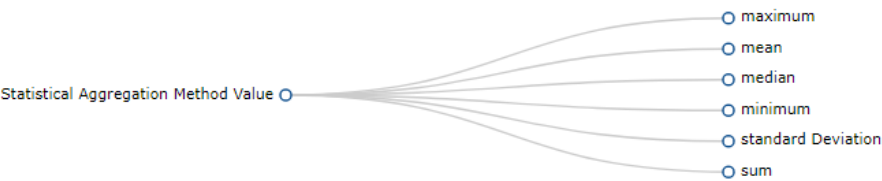
The “[envHealthDeterminantTypevalue](#)”, which in our case would be “water” from the codelist shown in Figure 1Figure 6.

**Figure 6 - Env Health Determinant Type Value code list elements**



Nevertheless, under the statistical Aggregation method under this INSPIRE model we cannot find the complex statistical aggregation methodologies used to derive the bathing quality indicator given in the EMODnet’s dataset which corresponds to the indicator provided for the EU Bathing waters Directive (see Figure 7).

**Figure 7 - Statistical Aggregation Method Value code list elements**



For the information related to the Statistical Unit we should align to the [VectorStatisticalUnit](#) under the [INSPIRE Statistical Units Base application schema](#).

The comparison of current EMODNET's dataset schema with the INSPIRE's EnvhealthDeterminantStatisticasData featuretype is presented in Table 9.

**Table 9 - Comparison of current EMODNET's bathingwaters dataset schema with the INSPIRE's EnvhealthDeterminantStatisticasData featuretype.**

| EMODnet bathingwaters dataset schema   | INSPIRE EnvhealthDeterminantStatisticasData featuretype in the Human Health application schema   |
|--|--|
| <p><b>bathingwaters</b></p> <ul style="list-style-type: none"> <li>▼  <b>bathingwaters</b> <ul style="list-style-type: none"> <li>&gt;  location</li> <li>&gt;  name</li> <li>&gt;  boundedBy</li> <li> bwatercat</li> <li> bwid</li> <li> bwname</li> <li> cc</li> <li> class</li> <li> commune</li> <li> country</li> <li>&gt;  description</li> <li> id</li> <li> latitude_bw</li> <li> longitude_bw</li> <li>&gt;  metaDataProperty</li> <li> province</li> <li> region</li> <li> searegion</li> <li>&gt;  the_geom</li> <li> y1990</li> <li> y1991</li> <li> y1992</li> <li> y1993</li> <li> y1994</li> <li> y1995</li> <li> y1996</li> <li> y1997</li> <li> y1998</li> <li> y1999</li> <li> y2000</li> <li> y2001</li> <li> y2002</li> <li> y2003</li> <li> y2004</li> <li> y2005</li> <li> y2006</li> <li> y2007</li> <li> y2008</li> <li> y2009</li> </ul> </li> </ul> | <p><b>EnvHealthDeterminantStatisticalData</b></p> <ul style="list-style-type: none"> <li>▼  <b>EnvHealthDeterminantStatisticalData</b> <ul style="list-style-type: none"> <li>&gt;  location</li> <li>&gt;  aggregationUnit</li> <li>&gt;  boundedBy</li> <li>&gt;  description</li> <li>&gt;  descriptionReference</li> <li> id</li> <li>&gt;  identifier</li> <li>&gt;  measure</li> <li>&gt;  metaDataProperty</li> <li>&gt;  name</li> <li>&gt;  statisticalMethod</li> <li>&gt;  type</li> <li> Metadata</li> </ul> </li> </ul> |

## Fisheries

Under EMODnet's datasets related to Fisheries we find:

**Icesareas** dataset that delineates the ICES divisions and subdivisions of FAO Major Fishing area 27. The ICES Statistical Areas are used **as** bounding areas for calculation of fish statistics, e.g. catch per unit effort (CPUE) and stock estimates.






















































As these areas are bounded to statistics, the INSPIRE [Statistical Units Vector](#) application schema would be the most appropriate one. However, as these areas are also used for regulation purposes (set fisheries quotas and regulations), the INSPIRE's Annex III: [Area Management Restriction and Regulation Zones model](#) could also be a candidate.

In Table 10 are presented the schema of EMODnet's icesarea dataset compared with the INSPIRE "AreaStatisticalUnit" and "[ManagementRestrictionOrRegulationZone](#)" featuretypes.

**Table 10 - Comparison of current EMODNET's bathingwaters dataset schema with the INSPIRE's EnvhealthDeterminantStatisticasData featuretype.**

| EMODnets icesareas dataset  | INSPIRE's Annex III: Area Management Restriction and Regulation Zones- ManagementRestrictionOrRegulationZone featuretype | INSPIRE's Annex III: Area Management Restriction and Regulation Zones- ManagementRestrictionOrRegulationZone featuretype |
|---|--|--|
| <p><b>icesareas</b></p> <ul style="list-style-type: none"> <li>ft icesareas <ul style="list-style-type: none"> <li>&gt; location</li> <li>&gt; name</li> <li>8 area_km2</li> <li>&gt; boundedBy</li> <li>&gt; description</li> <li>ices_area</li> <li>id</li> <li>&gt; metaDataProperty</li> <li>&gt; the_geom</li> <li>Metadata</li> </ul> </li> </ul> |  |  |



|  |   |  |   |
|--|---|--|---|
|  | <b>AreaStatisticalUnit</b><br>▼  <b>AreaStatisticalUnit</b><br>>  location<br>>  administrativeUnit<br>>  8 areaValue<br>>  8 beginLifespanVersion<br>>  boundedBy<br>>  country<br>>  description<br>>  descriptionReference<br>>  8 endLifespanVersion<br>>  evolutions<br>>  geographicalName<br>>  geometry<br>>  id<br>>  identifier<br>>  inspireId<br>>  8 landAreaValue<br>>  8 livableAreaValue<br>>  lowers<br>>  metaDataProperty<br>>  name<br>>  predecessors<br>>  referencePeriod<br>>  successors<br>>  tessellation<br>>  thematicId<br>>  uppers<br>>  validityPeriod<br> Metadata |  | <b>ManagementRestrictionOrRegulationZone</b><br>▼  <b>ManagementRestrictionOrRegulationZone</b><br>>  location<br>>  8 beginLifespanVersion<br>>  boundedBy<br>>  competentAuthority<br>>  description<br>>  descriptionReference<br>>  designationPeriod<br>>  8 endLifespanVersion<br>>  environmentalDomain<br>>  geometry<br>>  id<br>>  identifier<br>>  inspireId<br>>  legalBasis<br>>  metaDataProperty<br>>  name<br>>  name<br>>  plan<br>>  relatedZone<br>>  specialisedZoneType<br>>  thematicId<br>>  zoneType<br> Metadata |
|--|---|--|---|

The datasets on fish catches in the EU (**Divisioncatches**, **majorcatches**, **subareacatches**, **Subdivisioncatches**, and **subunitscatches**) are the result of the aggregation of EUROSTAT's fish catches datasets fish\_ca\_atl 27, fish\_ca\_atl 34, fish\_ca\_atl 37. EUROSTAT data have been related to FAO's georeferenced fishing statistical areas. Fish species have been grouped by EUMOFA's larger aggregations such as EUMOFA's Commodity Groups (CG) and Main Commercial Species (MCS). Tonnes live weight is provided for each fish species caught in EU fishing statistical area, by year of reference, fish species, CG, MCS and country. The dataset is updated yearly, as soon as new data from EUROSTAT is released. It covers a time series from 1950 to 2015. Compared with the previous version this new version includes data for 2015, as well as the new Main Commercial Species identified by the EUMOFA in 2015.

As in the former dataset, for these dataset that hold statistics related to areas, the INSPIRE [Statistical Units Vector](#) application schema would be the most appropriate one to be harmonized with (see **Erreur. L**

'origine riferimento non è stata trovata.'). Under this model, the "[AreaStatisticalUnit](#)" and "[Statistical tessellation](#)" featurtypes should be used to define the different areas, sub-areas, divisions, subdivisions, etc

In Table 11 are presented the EMODnet's FAO catches datasets' current schemas.

**Table 11 - EMODnet's FAO catches datasets' schemas**

|   |
|---|
| EMODnet's FAO catches datasets' schemas |
|---|

| divisioncatches   | subdivisioncatches   | subareacatches  | majorcatches  |
|---|--|---|---|
| <div> <div>ft</div> <div>divisioncatches</div> </div> <div> <div>&gt;</div> <div>location</div> </div> <div> <div>&gt;</div> <div>name</div> </div> <div> <div>&gt;</div> <div>boundedBy</div> </div> <div> <div>cg_code</div> </div> <div> <div>commodity_group</div> </div> <div> <div>country_code</div> </div> <div> <div>country_name</div> </div> <div> <div>&gt;</div> <div>description</div> </div> <div> <div>eurostat_fish_name</div> </div> <div> <div>f_area</div> </div> <div> <div>f_code</div> </div> <div> <div>f_division</div> </div> <div> <div>f_level</div> </div> <div> <div>f_status</div> </div> <div> <div>f_subarea</div> </div> <div> <div>f_subdivis</div> </div> <div> <div>f_subunit</div> </div> <div> <div>fish_en</div> </div> <div> <div>fishereg_label</div> </div> <div> <div>fishereg_level</div> </div> <div> <div>fishreg</div> </div> <div> <div>8</div> <div>gid</div> </div> <div> <div>id</div> </div> <div> <div>main_commercial_spec</div> </div> <div> <div>mcs_code</div> </div> <div> <div>&gt;</div> <div>metaDataProperty</div> </div> <div> <div>ocean</div> </div> <div> <div>species</div> </div> <div> <div>subocean</div> </div> <div> <div>8</div> <div>surface</div> </div> <div> <div>&gt;</div> <div>the_geom</div> </div> <div> <div>8</div> <div>tlw_1950</div> </div> <div> <div>8</div> <div>tlw_1951</div> </div> <div> <div>8</div> <div>tlw_1952</div> </div> <div> <div>8</div> <div>tlw_1953</div> </div> <div> <div>8</div> <div>tlw_1954</div> </div> <div> <div>8</div> <div>tlw_1955</div> </div> <div> <div>8</div> <div>tlw_1956</div> </div> <div> <div>8</div> <div>tlw_1957</div> </div> <div> <div>8</div> <div>tlw_1958</div> </div> <div> <div>8</div> <div>tlw_1959</div> </div> <div> <div>8</div> <div>tlw_1960</div> </div> <div> <div>8</div> <div>tlw_1961</div> </div> | <div> <div>ft</div> <div>subdivisioncatches</div> </div> <div> <div>&gt;</div> <div>location</div> </div> <div> <div>&gt;</div> <div>name</div> </div> <div> <div>&gt;</div> <div>boundedBy</div> </div> <div> <div>cg_code</div> </div> <div> <div>commodity_group</div> </div> <div> <div>country_code</div> </div> <div> <div>country_name</div> </div> <div> <div>&gt;</div> <div>description</div> </div> <div> <div>eurostat_fish_name</div> </div> <div> <div>f_area</div> </div> <div> <div>f_code</div> </div> <div> <div>f_division</div> </div> <div> <div>f_level</div> </div> <div> <div>f_status</div> </div> <div> <div>f_subarea</div> </div> <div> <div>f_subdivis</div> </div> <div> <div>f_subunit</div> </div> <div> <div>fish_en</div> </div> <div> <div>fishereg_label</div> </div> <div> <div>fishereg_level</div> </div> <div> <div>fishreg</div> </div> <div> <div>8</div> <div>gid</div> </div> <div> <div>id</div> </div> <div> <div>main_commercial_sp</div> </div> <div> <div>mcs_code</div> </div> <div> <div>&gt;</div> <div>metaDataProperty</div> </div> <div> <div>ocean</div> </div> <div> <div>species</div> </div> <div> <div>subocean</div> </div> <div> <div>8</div> <div>surface</div> </div> <div> <div>&gt;</div> <div>the_geom</div> </div> <div> <div>8</div> <div>tlw_1950</div> </div> <div> <div>8</div> <div>tlw_1951</div> </div> <div> <div>8</div> <div>tlw_1952</div> </div> <div> <div>8</div> <div>tlw_1953</div> </div> <div> <div>8</div> <div>tlw_1954</div> </div> <div> <div>8</div> <div>tlw_1955</div> </div> <div> <div>8</div> <div>tlw_1956</div> </div> <div> <div>8</div> <div>tlw_1957</div> </div> <div> <div>8</div> <div>tlw_1958</div> </div> <div> <div>8</div> <div>tlw_1959</div> </div> <div> <div>8</div> <div>tlw_1960</div> </div> <div> <div>8</div> <div>tlw_1961</div> </div> <div> <div>8</div> <div>tlw_1962</div> </div> | <div> <div>ft</div> <div>subareacatches</div> </div> <div> <div>&gt;</div> <div>location</div> </div> <div> <div>&gt;</div> <div>name</div> </div> <div> <div>&gt;</div> <div>boundedBy</div> </div> <div> <div>cg_code</div> </div> <div> <div>commodity_group</div> </div> <div> <div>country_code</div> </div> <div> <div>country_name</div> </div> <div> <div>&gt;</div> <div>description</div> </div> <div> <div>eurostat_fish_name</div> </div> <div> <div>f_area</div> </div> <div> <div>f_code</div> </div> <div> <div>f_division</div> </div> <div> <div>f_level</div> </div> <div> <div>f_status</div> </div> <div> <div>f_subarea</div> </div> <div> <div>f_subdivis</div> </div> <div> <div>f_subunit</div> </div> <div> <div>fish_en</div> </div> <div> <div>fishereg_label</div> </div> <div> <div>fishereg_level</div> </div> <div> <div>fishreg</div> </div> <div> <div>8</div> <div>gid</div> </div> <div> <div>id</div> </div> <div> <div>main_commercial_speci</div> </div> <div> <div>mcs_code</div> </div> <div> <div>&gt;</div> <div>metaDataProperty</div> </div> <div> <div>ocean</div> </div> <div> <div>species</div> </div> <div> <div>subocean</div> </div> <div> <div>8</div> <div>surface</div> </div> <div> <div>&gt;</div> <div>the_geom</div> </div> <div> <div>8</div> <div>tlw_1950</div> </div> <div> <div>8</div> <div>tlw_1951</div> </div> <div> <div>8</div> <div>tlw_1952</div> </div> <div> <div>8</div> <div>tlw_1953</div> </div> <div> <div>8</div> <div>tlw_1954</div> </div> <div> <div>8</div> <div>tlw_1955</div> </div> <div> <div>8</div> <div>tlw_1956</div> </div> <div> <div>8</div> <div>tlw_1957</div> </div> <div> <div>8</div> <div>tlw_1958</div> </div> <div> <div>8</div> <div>tlw_1959</div> </div> <div> <div>8</div> <div>tlw_1960</div> </div> <div> <div>8</div> <div>tlw_1961</div> </div> | <div> <div>ft</div> <div>majorcatches</div> </div> <div> <div>&gt;</div> <div>location</div> </div> <div> <div>&gt;</div> <div>name</div> </div> <div> <div>&gt;</div> <div>boundedBy</div> </div> <div> <div>cg_code</div> </div> <div> <div>commodity_group</div> </div> <div> <div>country_code</div> </div> <div> <div>country_name</div> </div> <div> <div>&gt;</div> <div>description</div> </div> <div> <div>eurostat_fish_name</div> </div> <div> <div>f_area</div> </div> <div> <div>f_code</div> </div> <div> <div>f_division</div> </div> <div> <div>f_level</div> </div> <div> <div>f_status</div> </div> <div> <div>f_subarea</div> </div> <div> <div>f_subdivis</div> </div> <div> <div>f_subunit</div> </div> <div> <div>fish_en</div> </div> <div> <div>fishereg_label</div> </div> <div> <div>fishereg_level</div> </div> <div> <div>fishreg</div> </div> <div> <div>8</div> <div>gid</div> </div> <div> <div>id</div> </div> <div> <div>main_commercial_spe</div> </div> <div> <div>mcs_code</div> </div> <div> <div>&gt;</div> <div>metaDataProperty</div> </div> <div> <div>ocean</div> </div> <div> <div>species</div> </div> <div> <div>subocean</div> </div> <div> <div>8</div> <div>surface</div> </div> <div> <div>&gt;</div> <div>the_geom</div> </div> <div> <div>8</div> <div>tlw_1950</div> </div> <div> <div>8</div> <div>tlw_1951</div> </div> <div> <div>8</div> <div>tlw_1952</div> </div> <div> <div>8</div> <div>tlw_1953</div> </div> <div> <div>8</div> <div>tlw_1954</div> </div> <div> <div>8</div> <div>tlw_1955</div> </div> <div> <div>8</div> <div>tlw_1956</div> </div> <div> <div>8</div> <div>tlw_1957</div> </div> <div> <div>8</div> <div>tlw_1958</div> </div> <div> <div>8</div> <div>tlw_1959</div> </div> <div> <div>8</div> <div>tlw_1960</div> </div> <div> <div>8</div> <div>tlw_1961</div> </div> <div> <div>8</div> <div>tlw_1962</div> </div> |

**Fishsales** dataset originates from the data on monthly first sales of fish made available by the European Market for Fisheries and Aquaculture products (EUMOFA). EUMOFA data have been related to the first-sale place locations. Fish species have been grouped into EUMOFA's aggregations such as Commodity Groups (CG) and Main Commercial Species (MCS). For each fish species in each place of sale, volume (net weight in kg), value (Euro) and price (Euro/kg) are provided on a monthly basis by year of reference, CG, MCS and country. The 2017 update of the dataset also includes information on fish presentation (e.g.

whole, headed, gutted, etc.) and preservation state (e.g. fresh, frozen, etc.). Information on presentation and preservation state are also retrieved from EUMOFA. The geographical coverage of data is: Belgium, Germany, Denmark, Estonia, France, Ireland, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Spain, Sweden and the UK. The dataset is updated twice a year. It covers a time series from 2007 to 2017 (not complete). The EUMOFA is a fully-fledged observatory but is also a work in progress: its coverage may be extended in the future.

Again, the fishsales statistics can be related to areas using the INSPIRE [Statistical Units Vector](#) application schema and the “[Vector Statistical Unit Geometry](#)” featuretype. In **Errore. L'origine riferimento non è stata trovata.** is presented the EMODnet's fishsales dataset's schema along with the INSPIRE's “ManagementRestrictionOrRegulationZone” featuretype

**Table 12 - EMODnet's fishsales dataset's schema**

| EMODnet's fishsales dataset's schema  | INSPIRE's Annex III: Area Management Restriction and Regulation Zones-ManagementRestrictionOrRegulationZone featuretype  |
|---|--|
| <b>fishsales</b><br>▼ <b>ft</b> fishsales<br>> location<br>> name<br>> boundedBy<br>commoditycode<br>commoditydescript<br>country<br>> description<br>> id<br>8 id<br>lat<br>loc_code<br>loc_name<br>loc_name_eumof<br>loccode<br>lon<br>> metaDataProperty<br>month<br>8 monthno<br>presentation<br>preservation<br>8 price<br>speciescode<br>speciesdescript<br>> the_geom<br>8 value<br>8 volume<br>year<br>Metadata | <b>AreaStatisticalUnit</b><br>▼ <b>ft</b> AreaStatisticalUnit<br>> location<br>> administrativeUnit<br>> 8 areaValue<br>> 8 beginLifespanVersion<br>> boundedBy<br>> country<br>> description<br>> descriptionReference<br>> 8 endLifespanVersion<br>> evolutions<br>> geographicalName<br>> geometry<br>> id<br>> identifier<br>> inspireId<br>> 8 landAreaValue<br>> 8 livableAreaValue<br>> lowers<br>> metaDataProperty<br>> name<br>> predecessors<br>> referencePeriod<br>> successors<br>> tessellation<br>> thematicId<br>> uppers<br>> validityPeriod<br>Metadata |

#### 4.1.1 Hydrocarbon Extraction

There are three datasets under the EMODnet's Hydrocarbon Extraction thematic category:

**Activelicenses** dataset is the result of the aggregation and harmonization of datasets provided by several EU and non-EU sources. It is updated every year and contains polygons representing active

offshore hydrocarbon licences in the following countries: Croatia, Denmark, France, Germany, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Spain and UK. Where available each polygon has the following attributes: country, code, name, type (exploration, exploitation), licensing round (it includes also pending applications in France and Spain), area (square km), area info (it indicates if the area value is original from the source or has been calculated), starting year, ending year, operator.

Within INSPIRE, the most appropriate model to align with would be the Annex III: [Area Management Restriction and Regulation Zones model](#), which includes the “[ManagementRestrictionOrRegulationZone](#)” featuretype.

Under the Area Management Restriction and Regulation Zones model, the Active licenses for hydrocarbons extraction could be considered as a “*prospecting and mining permit area*” included in the [Zone Type Code](#) codelist.

[prospecting and mining permit area](#) - [INSPIRE Code list value [prospecting and mining permit area](#)]

Definition: *The area on which the prospection or extraction of any mineral has been authorised and for which that right or permit is granted.*












































Description: *EXAMPLE: Directive 94/22/EC on conditions for granting and using authorisations for the prospection, exploration and production of hydrocarbons, stipulates that the limits of the geographical areas covered by an authorisation and the duration of that authorisation must be determined in proportion to what is justified in terms of the best possible exercise of the activities from an economic and technical point of view.*

The comparison between EMODnet’s Activelicenses dataset schema and the ManagementRestrictionOrRegulationZone featuretype is presented in Table 13.

**Table 13 - Comparison of EMODnet’s Activelicenses dataset schema with the INSPIRE’s Annex III: Area Management Restriction and Regulation Zones-ManagementRestrictionOrRegulationZone featuretype.**

| EMODNETs Activelicenses featuretype schema | INSPIRE’s Annex III: Area Management Restriction and |
|--|--|
|--|--|



|  | Regulation Zones-<br>ManagementRestrictionOrRegulationZone featuretype   |
|--|--|
| <b>activelicense</b><br>▼  <b>activelicense</b><br>>  location<br>>  name<br> area_info<br> area_sqkm<br>>  boundedBy<br> code<br> country<br>>  description<br> id<br>>  metaDataProperty<br> objectId<br> operator<br> round<br>>  the_geom<br> type<br> year_end<br> year_start<br> Metadata | <b>ManagementRestrictionOrRegulationZone</b><br>▼  <b>ManagementRestrictionOrRegulationZone</b><br>>  location<br>>  beginLifespanVersion<br>>  boundedBy<br>>  competentAuthority<br>>  description<br>>  descriptionReference<br>>  designationPeriod<br>>  endLifespanVersion<br>>  environmentalDomain<br>>  geometry<br> id<br>>  identifier<br>>  inspireId<br>>  legalBasis<br>>  metaDataProperty<br>>  name<br>>  name<br>>  plan<br>>  relatedZone<br>>  specialisedZoneType<br>>  thematicId<br>>  zoneType<br> Metadata |

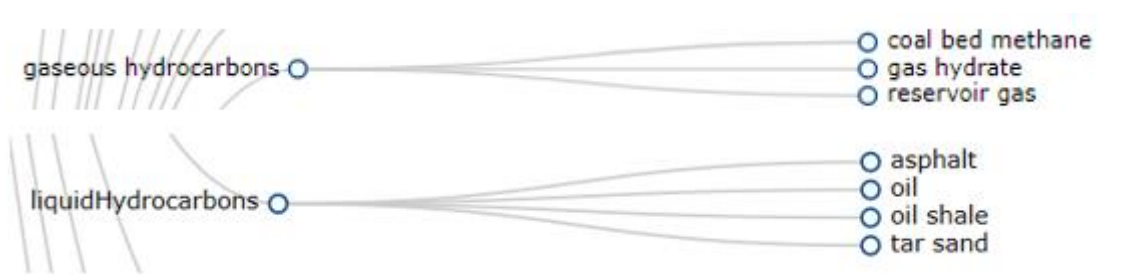
The **platforms (offshore installations)** dataset, is modelled on OSPAR's dataset on offshore installations, having the same fields and attributes. OSPAR monitors the development of offshore installations and maintains an updated inventory of all oil and gas offshore installations in the OSPAR maritime area, the OSPAR Oil and Gas Offshore inventory. The database includes the name and ID number, location, operator, water depth, production start, current status, category and function of the installation. At present more than 1500 offshore installations are operational in the OSPAR maritime area, most of them sub-sea steel installations and fixed steel installations. Contracting Parties with oil and gas industry offshore installations are: Denmark, Germany, Ireland, the Netherlands, Norway, Spain and the United Kingdom. In addition, data on Italian offshore installations have been collected and harmonized from the Italian Ministry of Economic Development, from Marine Traffic and Helcom data on Polish and Russian installations in the Baltic Sea, from Marine Traffic data on Bulgarian, Russian and Ukrainian installations in the Black Sea, Lybian and Spanish installations in the Mediterranean Sea, from the Croatian Hydrocarbon Agency data on Croatian installations in the Adriatic Sea.

The **Hydrocarbons (boreholes)** dataset contains points representing offshore hydrocarbon boreholes drilled in the following countries: Croatia, Cyprus, Denmark, Faroe Islands, France, Germany, Greece

(only for western coast), Ireland, Italy, Latvia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Spain, and UK. Each point has the following attributes (where available): status (active, abandoned, suspended, other), country, code, name, year (spud date), purpose (exploration, exploitation, other), content (crude oil, natural gas, crude oil and natural gas, dry, other), operator, drilling company/facility, distance to coast (metres) and water depth (metres). The distance to coast (EEA coastline shapefile) has been calculated using the original data map projections, where available. In the other cases it was used the UTM WGS84 Zone projected coordinate system where data fall in. Compared with the previous version this new version has been not only updated but was also reviewed (dataset schema and attributes values) in order to make it more compliant with INSPIRE.

































































These two datasets contain information that corresponds to the INSPIRE Annex III: [Energy Resources Vector application schema](#), and below this the “[Fossil Fuel Resource](#)” type. Nevertheless, in hydrocarbons dataset there is a mixed information about exploitation and exploration sites under the “purposes” attribute. The exploration activity within INSPIRE is taken into account within the [Mineral Resources model](#), as “[Exploration Activity](#)” featuretype, which should be linked to a [commodity](#) featuretype whose “[commoditycodeValue](#)” should be liquidhydrocarbons/oil or gaseous hydrocarbons (see Figure 8 **Errore. L'origine riferimento non è stata trovata.**).

**Figure 8 - Values for liquidhydrocarbons and gaseous hydrocarbons contained in the commoditycodeValues codelist**



In Table 14 are represented the schemas of platforms and hydrocarbons datasets included in EMODnet's WFS service compared with the VectorEnergyResource featuretype in INSPIRE.

**Table 14 - Comparison of EMODnet's platforms and hydrocarbons datasets with the INSPIRE's VectorEnergyResource from [Energy Resources Vector application schema](#).**

| EMODnet's human activities datasets  |   | INSPIRE's VectorEnergyResource from <a href="#">Energy Resources Vector application schema</a>  |
|--|---|---|
| <b>platforms</b><br>▼  platforms<br>>  location<br>>  name<br>>  boundedBy<br> category<br> class<br> coast_dist<br> country<br> current_status<br>>  description<br> function<br> id<br> latitude<br> location_blocks<br> longitude<br>>  metaDataProperty<br> operator<br> platformid<br> primary_production<br> production_start<br> remarks<br>>  the_geom<br> water_depth<br> weight_sub<br> weight_top<br> Metadata | <b>hydrocarbons</b><br>▼  hydrocarbons<br>>  location<br>>  name<br>>  boundedBy<br> code<br> company<br> country<br> depth<br>>  description<br> distance<br> hydrocarbon<br> id<br>>  metaDataProperty<br> operator<br> purpose<br> status<br>>  the_geom<br> year<br> Metadata | <b>VectorEnergyResource</b><br>▼  VectorEnergyResource<br>>  location<br>>  beginLifespanVersion<br>>  boundedBy<br>>  ClassificationAndQuantificationFramework<br> description<br>>  descriptionReference<br>>  endLifespanVersion<br>>  exploitationPeriod<br>>  geometry<br> id<br>>  identifier<br>>  inspireId<br>>  metaDataProperty<br> name<br>>  reportingAuthority<br>>  resourceName<br>>  verticalExtent<br> Metadata |

## Main Ports

There are four datasets in EMODnets Human Activities Ports category. These include a **portlocations** dataset which identifies the different ports in Europe and the **portgoods**, **portpassengers** and **portvessels** datasets which include some statistics associated to the EU ports (schemas presented in Table 15).

These datasets are the result of the aggregation and harmonization of datasets provided to EUROSTAT by ports in EU Member States and Norway. EUROSTAT data have been related to GISCO's georeferenced ports. These datasets are updated on an annual basis where the most recent update includes annual data from 2014, 2015 and 2016 (where available). Goods and Passengers data are available from 2001 while vessel is maintained from 2006 onwards. Goods traffic data are reported in thousand tonnes by







































type of cargo and direction. Passengers traffic data are reported in thousand passengers (excluding cruise passengers) by direction and traffic type. Vessels traffic data are reported in unit and gross tonnage (thousand) of vessels by vessel size class and vessel type. Original data is reported quarterly by EUROSTAT but has been aggregated on an annual basis to produce this dataset.

Within INSPIRE, the best fit model related to this information is the Annex I: [Water Transport Network model](#), that includes the “[portnode](#)” or “[portarea](#)” featuretypes (Table 16). Within this model, there are not attributes that can be related to the statistics included in EMODnet. A possible alternative would be to align these attributes to the INSPIRE [Statistical Units Vector](#) application schema and the “[Vector Statistical Unit Geometry](#)” featuretype.

**Table 15 - EMODnets’ Port’s datasets schemas**

| EMODnets’ port datasets schemas   |   |  |  |
|---|---|--|--|
| portgoods   | portlocations   | portpassengers   | portvessels  |
| ▼ ft portgoods<br>> location<br>> name<br>> boundedBy<br>cargo_type<br>cargo_type_code<br>country<br>data_src_c<br>> description<br>direct<br>id<br>8 id<br>> metaDataProperty<br>port_coor_<br>port_id<br>portcode<br>portname<br>> the_geom<br>8 thousand_of_tonn<br>8 year<br>Metadata | ▼ ft portlocations<br>> location<br>> name<br>> boundedBy<br>data_src_c<br>> description<br>id<br>> metaDataProperty<br>port_coor_<br>port_id<br>> the_geom<br>Metadata | ▼ ft portpassengers<br>> location<br>> name<br>> boundedBy<br>country<br>data_src_c<br>> description<br>direct<br>id<br>8 id<br>> metaDataProperty<br>8 pasf_1000<br>port_coor_<br>port_id<br>portcode<br>portname<br>> the_geom<br>traffic_type<br>8 year<br>Metadata | ▼ ft portvessels<br>> location<br>> name<br>> boundedBy<br>country<br>data_src_c<br>> description<br>8 gross_tonnage_gt_thous<br>id<br>8 id<br>> metaDataProperty<br>8 novessels<br>port_coor_<br>port_id<br>portcode<br>portname<br>> the_geom<br>tonnage<br>8 tonnageindex<br>tonnagesize<br>8 vesselindex<br>vesseltype<br>8 year<br>Metadata |

**Table 16 - INSPIRE PortNode and PortArea featuretypes'schemas.**

| INSPIRE Annex I: Water Transport Network model's<br>PortNode and PortArea featuretypes'schemas.   |   |
|---|---|
| <b>PortNode</b><br> <b>PortNode</b><br>>  location<br>>  8 beginLifespanVersion<br>>  boundedBy<br>>  description<br>>  descriptionReference<br>>  8 endLifespanVersion<br>>  geographicalName<br>>  geometry<br>>  id<br>>  identifier<br>>  inNetwork<br>>  inspireId<br>>  metaDataProperty<br>>  name<br>>  spokeEnd<br>>  spokeStart<br>>  8 validFrom<br>>  8 validTo<br> Metadata | <b>PortArea</b><br> <b>PortArea</b><br>>  location<br>>  8 beginLifespanVersion<br>>  boundedBy<br>>  description<br>>  descriptionReference<br>>  8 endLifespanVersion<br>>  geographicalName<br>>  geometry<br>>  id<br>>  identifier<br>>  inNetwork<br>>  inspireId<br>>  metaDataProperty<br>>  name<br>>  8 validFrom<br>>  8 validTo<br> Metadata |

## Ocean Energy Facilities & Wind farms

There are two datasets within EMODNET's Ocean energy Facilities category, the **oenergy (project locations)** and the **oenergytests** which include information representing Ocean Energy project sites and Ocean Energy test sites in Europe.

The **oenergy (project locations)** dataset is the result of the aggregation and harmonization of datasets provided by several sources from all across the EU. It is updated every year. The database contains points representing Ocean Energy project sites in the following countries: Belgium, Denmark, Finland, France, Ireland, Italy, Norway, Portugal, Russia, Spain, Sweden, The Netherlands and United Kingdom. Where available, each point has the following attributes: site code (ID\_1), project code (ID), name, location, country, sea basin, distance to coast (metres), resource type (wave, tidal, salinity gradient, wave/wind), starting year, ending year, lease status, technology (Based on [www.aquaret.com/](http://www.aquaret.com/)), device, device scale (Full scale, prototype, etc.), project scale (Commercial, Demonstrator Array, etc.), project status (operational, completed, etc.), project capacity (KW), promoter, and position info (it indicates if the attribute value is original from the source or has been estimated or calculated the polygon centroid).

The **oenergytests** database contains polygons representing Ocean Energy test sites in the following countries: Denmark, France, Ireland, Norway, Portugal, Spain, Sweden, The Netherlands and United Kingdom. Where available, each polygon has the following attributes: test site code, name, location, country, sea basin, distance to coast (metres), resource type (wave, tidal), starting year, ending year, lease status, site status, capacity (kW), depth (metres), area (square km), grid connection, number of berths, developer, and position info (it indicates if the attribute value is original from the source or has been estimated).

The most related INSPIRE model for these dataset would be the Annex III: [Energy Resources Vector application schema](#) and below this the “[Renewable And Waste Resource](#)” Spatial object type, where the [Renewable and waste value](#) would be “*tide, wave, ocean*” (cf. **Errore. L'origine riferimento non è stata trovata.**).

The comparison of **oenergy (project locations)** and **oenergytests** datasets schemas with the [Renewable And Waste Resource](#) schema is presented in Table 17**Errore. L'origine riferimento non è stata trovata.**

**Table 17 - Comparison of oenergy (project locations) and oenergytests datasets schemas with the [Renewable And Waste Resource](#) schema**

|                                   |  |
|-----------------------------------|--|
| EMODNETs oenergy datasets schemas | INSPIRE’s Annex III: Energy Resources Vector application schema - Renewable And Waste Resource featuretype |
|-----------------------------------|--|

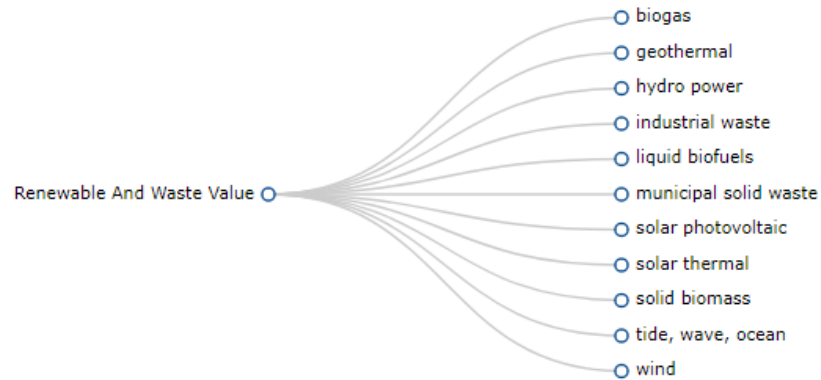


|  |   |  |
|--|---|--|
| <b>oenergy</b><br>> <b>oenergy</b><br>> location<br>> name<br>> boundedBy<br>> coast_dist<br>> country<br>> date_of_la<br>> description<br>> device<br>> device_sca<br>> end_year<br>> facid<br>> id<br>> id<br>> lat<br>> link_to_so<br>> location1<br>> long_<br>> metadata_a<br>> metadata_l<br>> metaDataProperty<br>> otherlinks<br>> position_i<br>> project_ca<br>> project_pr<br>> project_sc<br>> resource<br>> sea_basin<br>> service_or<br>> source<br>> source_det<br>> start_year<br>> status<br>> technology<br>> the_geom<br>> web_page<br>> Metadata | <b>oenergytests</b><br>> <b>oenergytests</b><br>> location<br>> name<br>> area_km2<br>> boundedBy<br>> capacitykw<br>> coast_dist<br>> country<br>> depth_m<br>> description<br>> developer<br>> endyear<br>> gridconnec<br>> id<br>> id_ts<br>> lastaccess<br>> lease_stat<br>> metaDataProperty<br>> metadavail<br>> metalink<br>> no_berths<br>> notes<br>> otherlinks<br>> posinfo<br>> possource<br>> resource<br>> seabasin<br>> service<br>> source<br>> sourcedeta<br>> sourcelink<br>> startyear<br>> status<br>> testsite<br>> the_geom<br>> web_page<br>> Metadata | <b>RenewableAndWasteResource</b><br>> <b>RenewableAndWasteResource</b><br>> location<br>> 8 beginLifespanVersion<br>> boundedBy<br>> 8 Capacity<br>> ClassificationAndQuantificationFramework<br>> dateOfDetermination<br>> description<br>> descriptionReference<br>> 8 endLifespanVersion<br>> exploitationPeriod<br>> geometry<br>> id<br>> identifier<br>> inspireId<br>> metaDataProperty<br>> name<br>> reportingAuthority<br>> resourceName<br>> typeOfResource<br>> verticalExtent<br>> Metadata |
|--|---|--|

For **wind farms** datasets that result from the aggregation and harmonization of datasets provided by several sources from across the EU, contain points and/or (where available) polygons representing offshore wind farms in the following countries: Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Spain, Sweden and United Kingdom. Each point has the following attributes (where available): Name, N° of turbines, Status (Authorized, Operational, Planned, Under Construction), Country, Year, Website, Power (MW), Distance to coast (meters), Perimeter (kilometres), Surface (square kilometres) only for polygons.

For these datasets, the same INSPIRE model should be used with the difference that in this case, the **Renewable and waste value** would be “wind” (see **Errore. L'origine riferimento non è stata trovata.**)

**Figure 9 - Renewable and waste Value code list elements**



The current EMODnet's windfarms datasets schemas and the [Renewable And Waste Resource](#) schema are presented in Table 18.



**Table 18 - Comparison of EMODnet's windfarms datasets' schemas with the [Renewable And Waste Resource](#) schema**

| EMODnet's windfarms datasets' schemas  |  | INSPIRE's Annex III: Energy Resources Vector application schema - Renewable And Waste Resource featuretype   |
|--|--|--|
| <b>windfarms</b><br>▼ ft windfarms<br>> location<br>> name<br>> boundedBy<br>country<br>> description<br>dist_coast<br>id<br>ljstatus<br>> metaDataProperty<br>n_turbines<br>power_mw<br>start<br>status<br>> the_geom<br>website_<br>Metadata | <b>windfarmspoly</b><br>▼ ft windfarmspoly<br>> location<br>> name<br>> boundedBy<br>country<br>> description<br>dist_coast<br>id<br>ljstatus<br>> metaDataProperty<br>n_turbines<br>power_mw<br>start<br>status<br>> the_geom<br>website_<br>Metadata | <b>RenewableAndWasteResource</b><br>▼ ft RenewableAndWasteResource<br>> location<br>> 8 beginLifespanVersion<br>> boundedBy<br>> 8 Capacity<br>> ClassificationAndQuantificationFramework<br>> dateOfDetermination<br>> description<br>> descriptionReference<br>> 8 endLifespanVersion<br>> exploitationPeriod<br>> geometry<br>id<br>identifier<br>inspireId<br>metaDataProperty<br>name<br>reportingAuthority<br>resourceName<br>> typeOfResource<br>> verticalExtent<br>Metadata |

## Other Forms of Area Management/Designation

Under this thematic category, EMODnet's human activities Portal includes several datasets:





































































The **[baltic](#)**, **[mediterranean](#)**, **[northsea](#)**, **[northwesternwaters](#)**, **[southwesternwaters](#)**, **[pelagicstocks](#)** and **[longdistancefleets](#)** datasets include the Regional Advisory Councils (RAC) areas. These **[RACs](#)** have been created after the reform of the common fisheries policy (CFP), and seek to involve stakeholders in the fisheries sector more closely in the decision-making process in this field. The RAC areas are meant to be management units areas based on biological criteria. In EMODnet, they are represented like polygons as exposed in the Atlas of the Seas. The schemas of these datasets are presented in Table 19.

**Table 19 - EMODnets' RAC's datasets schemas**

| EMODnets' datasets schemas covering the Regional Advisory Councils (RAC) areas.   |   |   |   |
|---|---|---|---|
| <b>baltic</b><br>▼ <b>ft</b> baltic<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>8 gid<br>id<br>legalfou_1<br>8 legalfound<br>members<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>> the_geom<br>url<br>Metadata                         | <b>mediterranean</b><br>▼ <b>ft</b> mediterranean<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>8 gid<br>id<br>legalfou_1<br>8 legalfound<br>members<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>> the_geom<br>url<br>Metadata           | <b>northsea</b><br>▼ <b>ft</b> northsea<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>8 gid<br>id<br>legalfou_1<br>8 legalfound<br>members<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>> the_geom<br>url<br>Metadata           |   |
| <b>northwesternwaters</b><br>▼ <b>ft</b> northwesternwaters<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>8 gid<br>id<br>legalfou_1<br>8 legalfound<br>members<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>> the_geom<br>url<br>Metadata | <b>southwesternwaters</b><br>▼ <b>ft</b> southwesternwaters<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>8 gid<br>id<br>legalfou_1<br>8 legalfound<br>members<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>> the_geom<br>url<br>Metadata | <b>pelagicstocks</b><br>▼ <b>ft</b> pelagicstocks<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>8 gid<br>id<br>legalfou_1<br>8 legalfound<br>members<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>> the_geom<br>url<br>Metadata | <b>longdistancefleet</b><br>▼ <b>ft</b> longdistancefleet<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>8 gid<br>id<br>legalfou_1<br>8 legalfound<br>members<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>> the_geom<br>url<br>Metadata |

Other datasets (**blacksea**, **aquaculture**, **markets**, and **outermostregions**) in this category include areas managed by other Advisory councils. The schemas of these datasets are presented in Table 20.

**Table 20 – EMODnet’s european advisory councils’ datasets schemas**

| EMODnets’ datasets schemas covering other international Advisory Councils areas.   |   |  |  |
|--|---|--|--|
| blacksea   | aquaculture   | market   | outermostregions   |
| ▼  blacksea<br>>  location<br>>  name<br>>  boundedBy<br>>  description<br>8  gid<br> id<br> legalfou_1<br>8  legalfound<br> members<br>>  metaDataProperty<br> namespace<br> nationale<br> nutscode<br>>  the_geom<br> url<br> Metadata | ▼  aquaculture<br>>  location<br>>  name<br>>  boundedBy<br>>  description<br>8  gid<br> id<br> legalfou_1<br>8  legalfound<br> members<br>>  metaDataProperty<br> namespace<br> nationale<br> nutscode<br>>  the_geom<br> url<br> Metadata | ▼  market<br>>  location<br>>  name<br>>  boundedBy<br>>  description<br>8  gid<br> id<br> legalfou_1<br>8  legalfound<br> members<br>>  metaDataProperty<br> namespace<br> nationale<br> nutscode<br>>  the_geom<br> url<br> Metadata | ▼  outermostregions<br>>  location<br>>  name<br>>  boundedBy<br>>  description<br>8  gid<br> id<br> legalfou_1<br>8  legalfound<br> members<br>>  metaDataProperty<br> namespace<br> nationale<br> nutscode<br>>  the_geom<br> url<br> Metadata |

Furthermore, this thematic category in EMODnet’s human activities portal includes datasets representing the areas covered by the Barcelona, Bucharest, HELCOM and OSPAR International Conventions. Bucharest Convention dataset was locally created by cutting marine area of Black Sea and Sea of Azov. HELCOM dataset was downloaded or connect via WMS to <http://maps.helcom.fi/ArcGIS/services/DataDelivery/MapServer/WMSServer>. The schemas of these datasets are presented in Table 21 **Errore. L'origine riferimento non è stata trovata..**

**Table 21 - EMODnets' RSC's datasets schemas**

| EMODnets' datasets schemas covering European Regional Sea Convention areas.  |  |  |  |
|--|--|--|--|
| <b>ospar</b><br>▼ <b>ft</b> ospar<br>> location<br>> name<br>> boundedBy<br>country<br>> description<br>id<br>8 id<br>legalfou_1<br>8 legalfound<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>8 objectid<br>> the_geom<br>Metadata | <b>helcom</b><br>▼ <b>ft</b> helcom<br>> location<br>> name<br>> boundedBy<br>country<br>> description<br>id<br>8 id<br>legalfou_1<br>8 legalfound<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>8 objectid<br>> the_geom<br>Metadata | <b>barcelona</b><br>▼ <b>ft</b> barcelona<br>> location<br>> name<br>> boundedBy<br>country<br>> description<br>id<br>8 id<br>legalfou_1<br>8 legalfound<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>8 objectid<br>> the_geom<br>Metadata | <b>bucharest</b><br>▼ <b>ft</b> bucharest<br>> location<br>> name<br>> boundedBy<br>country<br>> description<br>id<br>8 id<br>legalfou_1<br>8 legalfound<br>> metaDataProperty<br>namespace<br>nationale<br>nutscode<br>8 objectid<br>> the_geom<br>Metadata |

All these datasets should be **aligned** with the INSPIRE's Annex III: [Area Management Restriction and Regulation Zones model](#) (already mentioned in the fisheries section concerning the **icesareas** dataset), using the "[Management Restriction Or Regulation Zone](#)" featuretype (**Errore. L'origine riferimento non è stata trovata.**) and choosing the "marine region" element from the [Zone Type Code](#) codelist (**Errore. L'origine riferimento non è stata trovata.**), whose definition is exposed below.

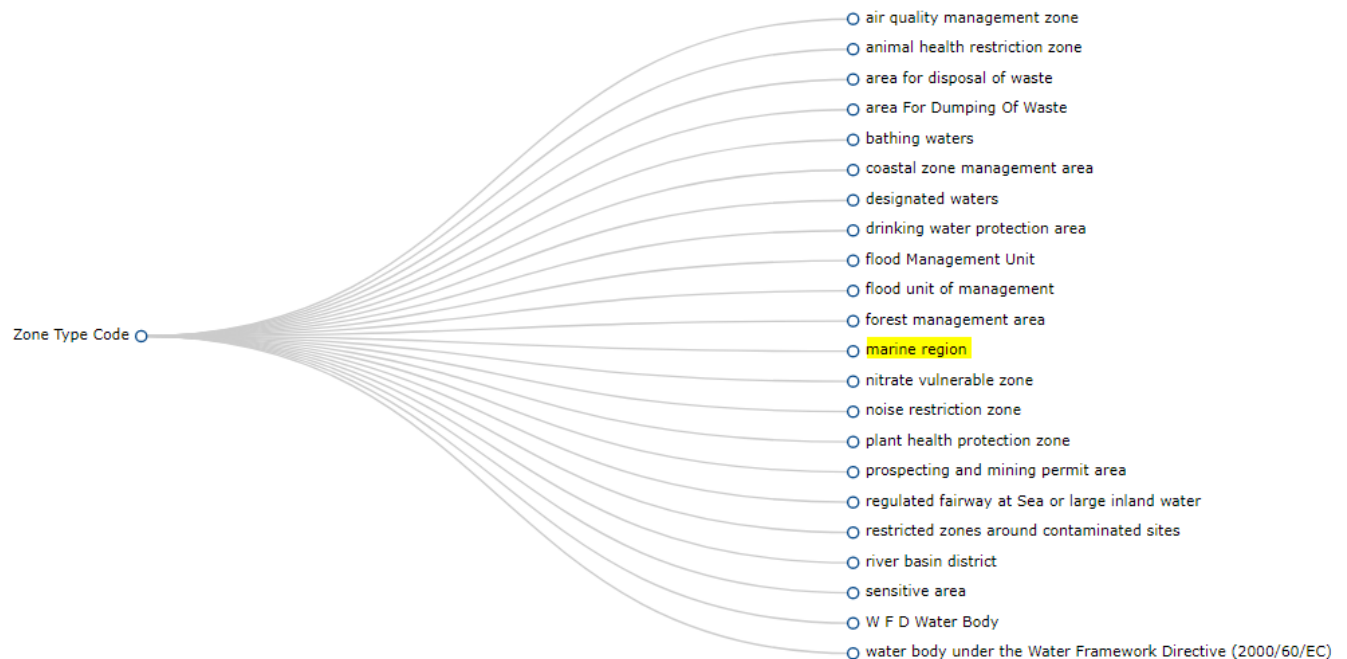
**marine region** - [INSPIRE Code list value [marine region](#)]

Definition: *Marine regions and their subregions are sea regions designated under international, Union, national or sub-national legislation for the purpose of assessment, management and regulation.*

Description: *EXAMPLE 1: For each Marine Region a marine strategy shall be developed and implemented to maintain and improve good environmental status.*  
*SOURCE: Marine Strategy Framework Directive (2008/56/EC).*  
*EXAMPLE 2: Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention) shall apply to the protection of the marine environment of the Baltic Sea Area which comprises the water-body and the seabed including their living resources and other forms of marine life.*  
*EXAMPLE 3: The Convention for the Protection of the marine Environment of the North-East Atlantic (OSPAR Convention) is dealing with specific areas like: prevention and elimination of pollution from land-based sources; prevention and elimination of pollution by dumping or incineration; prevention and elimination of pollution from offshore sources and assessment of the quality of the marine environment.*  
*EXAMPLE 4: Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) aims to to prevent, abate and combat pollution of the Mediterranean Sea area and to protect and enhance the marine environment in that area.*  
*EXAMPLE 5: The Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention) aims to prevent, reduce and control the pollution and protect the biodiversity and the marine living resources.*  
*EXAMPLE 6: UNEP Regional Seas Programme aims*

*to address the accelerating degradation of the world's oceans and coastal areas through the sustainable management and use of the marine and coastal environment.*

**Figure 10 - Elements included in the Zone Type code codelist in the INSPIRE [Area Management Restriction and Regulation Zones model](#)**



It is worth mentioning that within INSPIRE there is also the [Sea Regions](#) model where a Sea Region is defined as:

a 2D geometry of an area or line with common (physical or chemical) characteristics that is covered by an ocean, sea or similar salt water body. The model allows the concept of named seas, as well subdivisions and aggregation of seas according to physical or chemical properties. The Sea Regions theme provides mechanisms to describe both the sea bed and sea surface as well as inter-tidal areas and the shoreline.

Thus, we consider that the EMODnet's management areas datasets are conceptually aligned to the INSPIRE's Annex III: [Area Management Restriction and Regulation Zones model](#).

The **Maritime boundaries** dataset list the coordinates of points which are the vertices of segments which, in turn, define the maritime boundaries. This layer therefore features the following elements: - The textual content of international conventions establishing maritime boundaries in Europe. Maritime boundaries featured in this layer include territorial waters, bi- or multi-lateral boundaries (e.g. in the North Sea) as well as contiguous and exclusive economic zones. Some fishing areas are also defined. - The coordinates of points listed in these conventions are vertices of maritime boundaries - The maritime

boundaries themselves, defined as the segments which links the different points listed in the international conventions. This layer covers the coast and surrounding seas of EU-25 as well as the sea around Iceland and Greenland. Restrictions are those cases where no regulatory text exists within the UNCLOS till now. Missing lines have been updated from marineregions.org even with no information about treats or regulatory text.

For this dataset the most appropriate INSPIRE data application schema would be the ANNEXI: Administrative Units/ [Maritime Units](#) model, where there are various featuretypes that may be applicable depending on the type of boundary (see different featuretypes and their definitions below).

#### *Application schema - Maritime Units*

**[Baseline](#)** - Spatial object type

*The line from which the outer limits of the territorial sea and certain other outer limits are measured.*

**[Maritime Zone](#)** - Spatial object type

*A belt of sea defined by international treaties and conventions, where coastal State executes jurisdictional rights.*

**[Maritime Boundary](#)** - Spatial object type

*A line depicting the separation of any type of maritime jurisdiction.*

The schemas of EMODnet's maritimebnds dataset and the INSPIRE [Maritime Units](#) model's featuretypes are presented in Table 22.


















































**Table 22 - Comparison of EMODnet's maritimebnds dataset schema with the INSPIRE [Maritime Units](#) model's featuretypes schemas**

| EMODnet's maritimebnds dataset schema  | INSPIRE <a href="#">Maritime Units</a> model's featuretypes schemas  |   |   |
|--|--|---|---|
| <b>maritimebnds</b><br>▼ <b>ft</b> maritimebnds<br>> location<br>> name<br>> boundedBy<br>country<br>description<br>id<br>legalfou_1<br>8 legalfound<br>localid<br>mblsds_mbl<br>mblszotpid<br>> metaDataProp<br>nationale<br>nutscode<br>sitename<br>> the_geom<br>Metadata | <b>MaritimeBoundary</b><br>▼ <b>ft</b> MaritimeBoundary<br>> location<br>8 beginLifespanVers<br>> boundedBy<br>country<br>description<br>descriptionRefere<br>8 endLifespanVersio<br>geometry<br>id<br>identifier<br>inspireId<br>legalStatus<br>metaDataProperty<br>name<br>technicalStatus<br>Metadata | <b>MaritimeZone</b><br>▼ <b>ft</b> MaritimeZone<br>> location<br>> baseline<br>8 beginLifeSpanVersio<br>boundary<br>boundedBy<br>country<br>description<br>descriptionReferenc<br>8 endLifespanVersion<br>geometry<br>id<br>identifier<br>inspireId<br>metaDataProperty<br>name<br>name<br>name<br>zoneType<br>Metadata | <b>Baseline</b><br>▼ <b>ft</b> Baseline<br>> location<br>8 beginLifespanVersio<br>boundedBy<br>description<br>descriptionReferenc<br>8 endLifespanVersion<br>id<br>identifier<br>inspireId<br>metaDataProperty<br>name<br>segment<br>Metadata |

## Pipelines and Cables

The **bshcontiscables**, **kisorcables** and **sigcables** datasets contain lines representing actual submarine telecom cable routes locations. The underlying data are collated from a variety of sources: SIGCables (managed by Orange), the Federal Maritime and Hydrographic Agency (BSH Contis), and Greg's Cable Map (via Kis-Orca). Their schemas are presented in Table 23.

**Table 23 - EMODnets cables datasets schemas**

| EMODnet's cables datasets schemas.   |   |   |
|--|---|---|
| <b>bshcontiscables</b><br> <b>bshcontiscables</b><br>>  location<br>>  name<br>>  boundedBy<br>>  description<br> featurespe<br> featuretyp<br> id<br>>  metaDataProperty<br> status<br>>  the_geom<br> Metadata | <b>kisorcacables</b><br> <b>kisorcacables</b><br>>  location<br>>  name<br>>  boundedBy<br> capacity_g<br>>  description<br> distance_k<br> id<br> 8 id<br> inservice<br>>  metaDataProperty<br> notes<br> notlive<br> 8 objectid<br> overland<br> precise<br>>  the_geom<br> url1<br> url2<br> Metadata | <b>sigcables</b><br> <b>sigcables</b><br>>  location<br>>  name<br>>  boundedBy<br>>  description<br> dism_year<br> id<br> inst_year<br> length<br>>  metaDataProperty<br> 8 objectid<br> sgc_id<br> status<br>>  the_geom<br> Metadata |

The **cableschematic** and **landing** datasets contain lines and points representing cables and related landing points for Telecommunication network: The underlying data is property of Telegeography and is available online at <https://github.com/telegeography/www.submarinecablemap.com>. Compared with the previous version, this version of includes the gigabit per second values that come from the Cable System Database of the Packet Clearing House organization and are available online at <https://prefix.pch.net/applications/cablesystem/>. Cables are represented as stylised paths, as actual cable routes locations are not available in most cases. The dataset includes any cable that crosses the EU waters (Marine regions). Marine regions and subregions boudaries are defined in Article 4 of the Marine Strategy Framework Directive (MSFD) and available online at <https://www.eea.europa.eu/data-and-maps/data/msfd-regions-and-subregions>. Their schemas are presented in Table 24.



**Table 24 - EMODnets cablesschematic and landings datasets schemas**

| EMODnets cablesschematic and landings datasets schemas   |   |
|--|---|
| <b>cablesschematic</b><br>▼ ft cablesschematic<br>> location<br>> name<br>> boundedBy<br>capacity<br>capacity_g<br>> description<br>id<br>8 id<br>landing_po<br>lenght_km<br>> metaDataProperty<br>owners<br>rfs<br>source<br>> the_geom<br>url_1<br>url_2<br>Metadata | <b>landingsstations</b><br>▼ ft landingstations<br>> location<br>> name<br>> boundedBy<br>description<br>id<br>> metaDataProperty<br>source<br>> the_geom<br>Metadata |

Within INSPIRE, there is an application schema dedicated to [cable transport networks](#). This schema is meant for cableway transports infrastructures such as those included in the Cableway Type Value codelist (Figure 11), and thus cannot be aligned with the cables datasets in EMODnet.

**Figure 11 - Elements in the Cableway Type Value codelist**


The INSPIRE application schema that includes information on telecommunication cables is the [Common Utility Network Elements](#). This application includes several featuretypes that may be associated to the cable lines and landing points (if considered as nodes). All these featuretypes are listed [here](#). Among these featuretypes we will outline the [Telecommunication cable](#) featuretype (subtype of [cable](#) featuretype) that could be aligned with EMODnet's cables datasets and the [Appurtenance](#) (appurtenance is a node object that is described by its type via the attribute "appurtenanceType"), which is a subtype of [Utility node](#) featuretype. A subtype of Appurtenance is the [Telecommunications Appurtenance Type Value](#) code list, that includes the following elements:

- antenna
- copper
- Maintenance Loop
- copper Repeater
- digital Cross Connect
- digital Loop Carrier
- exchange
- fiber Interconnect
- joint Closure
- load Coil
- main Distribution Frame
- multiplexer
- optical Maintenance Loop
- optical Repeater
- patch Panel
- splice Closure
- splitter
- terminal
- termination
- notice Board

Furthermore, in the [Common Utility Network Elements model](#) we also find the [Utility link](#) feature type that is described as “a linear spatial object that describes the geometry and connectivity of a utility network between two points in the network.”

In Table 25 are presented the alternative feature types in INSPIRE’s [Common Utility Network Elements model](#) to represent the EMODnet’s cables and landings datasets.

**Table 25 - INSPIRE [Common Utility Network Elements model](#) and corresponding feature types schemas**

| INSPIRE <a href="#">Common Utility Network Elements model</a> and corresponding feature types schemas   |  |   |   |
|---|--|---|---|
| Cable   | Appurtenance   | UtilityNode   | UtilityLink   |
| <div> <div>ft Cable</div> <div> <div>location</div> <div>beginLifespanVersion</div> <div>boundedBy</div> <div>currentStatus</div> <div>description</div> <div>descriptionReference</div> <div>endLifespanVersion</div> <div>governmentalService</div> <div>id</div> <div>identifier</div> <div>inNetwork</div> <div>inspireId</div> <div>link</div> <div>metaDataProperty</div> <div>name</div> <div>utilityDeliveryType</div> <div>utilityFacilityReference</div> <div>validFrom</div> <div>validTo</div> <div>verticalPosition</div> <div>warningType</div> <div>Metadata</div> </div> </div> | <div> <div>ft Appurtenance</div> <div> <div>location</div> <div>appurtenanceType</div> <div>beginLifespanVersion</div> <div>boundedBy</div> <div>currentStatus</div> <div>description</div> <div>descriptionReference</div> <div>endLifespanVersion</div> <div>geometry</div> <div>governmentalService</div> <div>id</div> <div>identifier</div> <div>inNetwork</div> <div>inspireId</div> <div>metaDataProperty</div> <div>name</div> <div>specificAppurtenance</div> <div>spokeEnd</div> <div>spokeStart</div> <div>utilityFacilityReference</div> <div>validFrom</div> <div>validTo</div> <div>verticalPosition</div> <div>Metadata</div> </div> </div> | <div> <div>ft UtilityNode</div> <div> <div>location</div> <div>beginLifespanVersion</div> <div>boundedBy</div> <div>currentStatus</div> <div>description</div> <div>descriptionReference</div> <div>endLifespanVersion</div> <div>geometry</div> <div>governmentalService</div> <div>id</div> <div>identifier</div> <div>inNetwork</div> <div>inspireId</div> <div>metaDataProperty</div> <div>name</div> <div>spokeEnd</div> <div>spokeStart</div> <div>utilityFacilityReference</div> <div>validFrom</div> <div>validTo</div> <div>verticalPosition</div> <div>Metadata</div> </div> </div> | <div> <div>ft UtilityLink</div> <div> <div>location</div> <div>beginLifespanVersion</div> <div>boundedBy</div> <div>centrelineGeometry</div> <div>currentStatus</div> <div>description</div> <div>descriptionReference</div> <div>endLifespanVersion</div> <div>endNode</div> <div>fictitious</div> <div>governmentalService</div> <div>id</div> <div>identifier</div> <div>inNetwork</div> <div>inspireId</div> <div>metaDataProperty</div> <div>name</div> <div>startNode</div> <div>utilityFacilityReference</div> <div>validFrom</div> <div>validTo</div> <div>verticalPosition</div> <div>Metadata</div> </div> </div> |

The **pipelines** dataset is the result of the aggregation and harmonization of datasets provided by several sources from all over the EU (plus Norway). The database contains lines representing the actual routes of offshore pipelines (where available) in the following countries: Croatia, Denmark, Estonia, Finland, Germany, Ireland, Netherlands, Norway, Poland, Russia, Spain (Andalucía). Each line has the following harmonized attributes (where available): status (in service, decommissioned, under construction, proposed, planned), country, code, name, year, medium (air, condensate, 'control', cooling water, gas, geothermal heating, glycol, methanol, oil, sewage, water), operator, from and to locality or facility, length (meters) and size (inches).

Under INSPIRE [Common Utility Network Elements model](#) we find the [Pipe](#) featuretype, that includes different subtypes according to the type of pipe:

- [Oil Gas Chemicals Pipe](#)
- [Sewer Pipe](#)
- [Thermal Pipe](#)
- [Water Pipe](#)

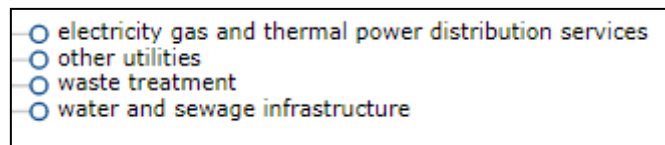
The comparison between EMODnet's pipelines dataset schema and INSPIRE [Common Utility Network Elements model's](#) pipe featuretype schema is presented in Table 26.

**Table 26 - Comparison between EMODnet's pipelines dataset schema and INSPIRE [Common Utility Network Elements model's](#) pipe featuretype schema**

| EMODnet's pipelines dataset schema   | INSPIRE <a href="#">Common Utility Network Elements model's</a> pipe featuretype schema  |
|--|--|
| <p><b>pipelines</b></p> <ul style="list-style-type: none"> <li>ft pipelines               <ul style="list-style-type: none"> <li>location</li> <li>name</li> <li>boundedBy</li> <li>country</li> <li>country_co</li> <li>description</li> <li>from_loc</li> <li>id</li> <li>length_m</li> <li>medium</li> <li>metaDataProperty</li> <li>operator</li> <li>size_in</li> <li>status</li> <li>the_geom</li> <li>to_loc</li> <li>year</li> </ul> </li> <li>Metadata</li> </ul> | <p><b>Pipe</b></p> <ul style="list-style-type: none"> <li>ft Pipe               <ul style="list-style-type: none"> <li>location</li> <li>beginLifespanVersion</li> <li>boundedBy</li> <li>cables</li> <li>currentStatus</li> <li>description</li> <li>descriptionReference</li> <li>endLifespanVersion</li> <li>governmentalServiceReference</li> <li>id</li> <li>identifier</li> <li>inNetwork</li> <li>inspireId</li> <li>link</li> <li>metaDataProperty</li> <li>name</li> <li>pipeDiameter</li> <li>pipes</li> <li>pressure</li> <li>utilityDeliveryType</li> <li>utilityFacilityReference</li> <li>validFrom</li> <li>validTo</li> <li>verticalPosition</li> <li>warningType</li> </ul> </li> <li>Metadata</li> </ul> |

When looking into the whole INSPIRE domain, pipelines for water, sewage and fuel/gas are also included under Land Use theme: [Existing Land Use](#), [Sampled Land Use](#) and [Planned Land Use](#). Within these application schemas, cables and pipes are considered as Land Use attribute. The Land Use attribute uses elements from the [HILUCS Land Use Value - Code list](#) that among many other elements, includes the utilities shown in Figure 12.

**Figure 12 - Utility elements included in the [HILUCS Land Use Value - Code list](#)**



## Waste Disposal

The **dredgespoil** and the **munitions** datasets contain information about either polygons and points representing sites where dredge dumping and dumping of munitions is performed. in Baltic Sea, North Sea, Celtic Seas, Iberian Coast and Bay of Biscay, Macaronesia and Mediterranean Sea. Information was picked from different sources depending on the country.

In INSPIRE we have found the following featuretypes that may be aligned to these datasets:

For **dredgespoil**, under the INSPIRE [Mineral Resources model](#) there is a featuretype called [Mining waste](#) which is a subtype of “Miningfeature” featuretype and whose definition and attributes are shown in Figure 13.

**Figure 13 - Mining Waste featuretype’s attributes**

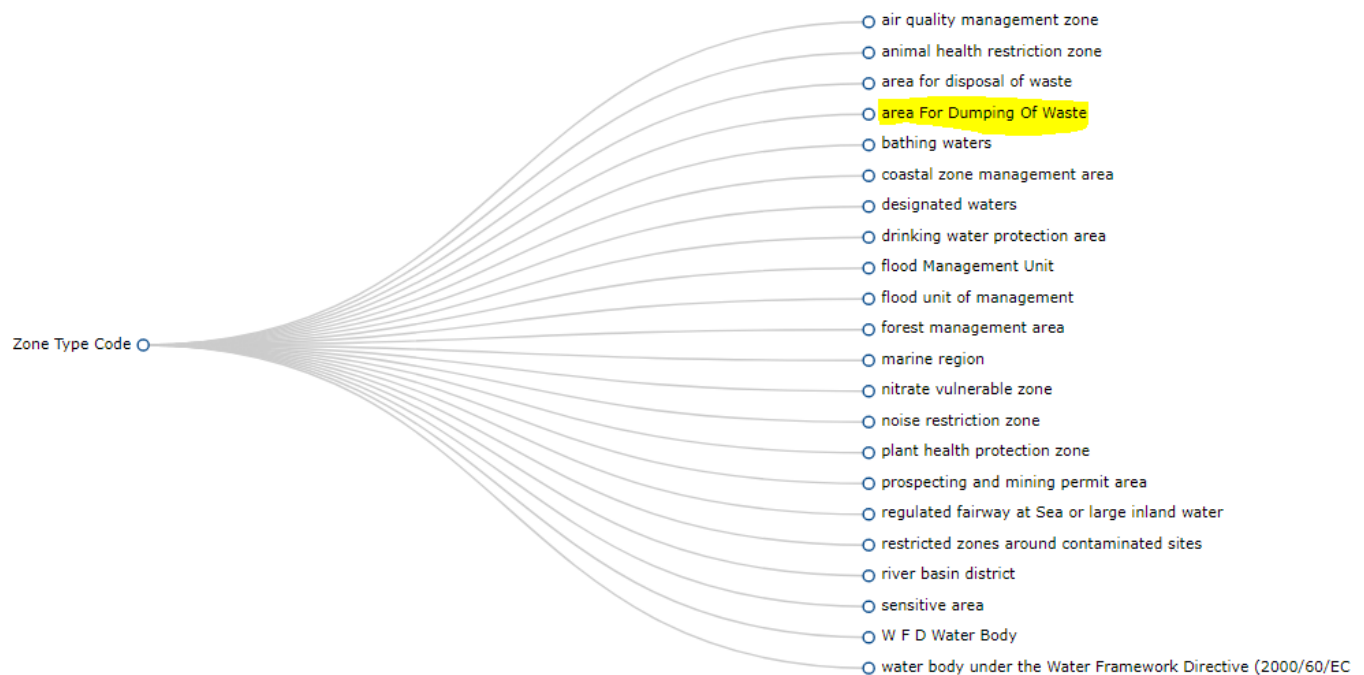
|  |  |
|--|--|
| <b>Mining Waste - Spatial object type</b>  |  |
| <b>Definition:</b> Mining-selected waste (or simply mining waste) can be defined as a part of the materials that result from the exploration, mining and processing of substances governed by legislation on mines and quarries. |  |
| <b>Package:</b> Mine   |  |
| <b>Subtype of:</b> Mining Feature  |  |
| <b>Attributes:</b>   |  |
| ‣ material   |  |
| ‣ storage Type   |  |
| ‣ waste Measure  |  |
| ‣ waste Type   |  |
| ‣ environmental Impact   |  |
| ‣ inspire Id - MiningFeature   |  |
| <b>Associated objects - Optional:</b>  |  |
| ‣ Mining Feature Occurrence - ( Name of the association: occurrence ) - from Mining Feature  |  |

Under the INSPIRE [Area Management Restriction and Regulation Zones](#) model, and as an attribute of its “[ManagementRestrictionOrRegulationZone](#)” featuretype, we have found under the [Zone Type](#) codelist, which includes the “area For Dumping Of Waste” (Figure 14) defined as follows:

[area For Dumping Of Waste](#) - [INSPIRE Code list value [area For Dumping Of Waste](#)]

Definition: *Area affected by uncontrolled disposal of waste as defined in Waste Framework Directive (2006/12/EC) Art 4.*

**Figure 14 - Area For Dumping Of Waste element within the [Zone Type](#) codelist**

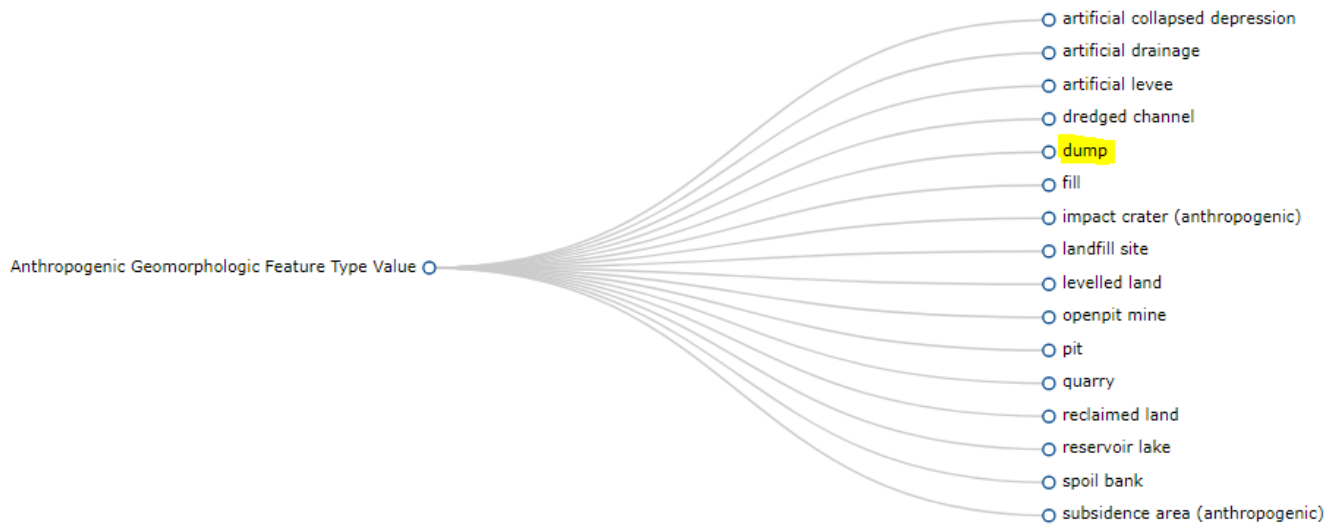


Finally, under the INSPIRE [Geology application schema](#) and under the “[Geomorphologic Feature](#)” featuretype, we find the [AnthropogenicGeomorphologicFeatureTypeValue](#) codelist (Figure 15 **Errore. L'origine riferimento non è stata trovata.**) that contains “dump” element defined as follows:

[dump](#) - [INSPIRE Code list value [dump](#)]

Definition: *An area of smooth or uneven accumulations or piles of waste rock, earthy material, or general refuse that without major reclamation are incapable of supporting plants.*

Figure 15 - Dump" element within the [AnthropogenicGeomorphologicFeatureTypeValue](#) codelist



In Table 27 are presented the EMODnet's dredgespoil dataset's schema and the ManagementRestrictionOrRegulationZone & AnthropogenicGeomorphologicFeature featuretypes.

**Table 27 - EMODnet's dredgespoil dataset's schema compared with the ManagementRestrictionOrRegulationZone & AnthropogenicGeomorphologicFeature featuretypes schemas**

| EMODnet's dredgespoil dataset schema.   | INSPIRE's Annex III: Area Management Restriction and Regulation Zones- ManagementRestrictionOrRegulationZone featuretype  | INSPIRE's Annex III: Geology- AnthropogenicGeomorphologicFeature featuretype   |
|---|---|--|
| <b>dredgespoil</b><br><b>dredgespoil</b><br>>  location<br>>  name<br>>  boundedBy<br>country<br>depth_m_<br>>  description<br>dist_coast<br>id<br>>  metaDataProperty<br>objectid<br>oscom_code<br>status<br>>  the_geom<br>updateyear<br>year_opera<br>Metadata | <b>ManagementRestrictionOrRegulationZone</b><br><b>ManagementRestrictionOrRegulationZone</b><br>>  location<br>>  beginLifespanVersion<br>>  boundedBy<br>>  competentAuthority<br>>  description<br>>  descriptionReference<br>>  designationPeriod<br>>  endLifespanVersion<br>>  environmentalDomain<br>>  geometry<br>id<br>>  identifier<br>>  inspireId<br>>  legalBasis<br>>  metaDataProperty<br>name<br>name<br>plan<br>>  relatedZone<br>>  specialisedZoneType<br>>  thematicId<br>>  zoneType<br>Metadata | <b>AnthropogenicGeomorphologicFeature</b><br><b>AnthropogenicGeomorphologicFeature</b><br>>  location<br>>  anthropogenicGeomorphologicFeature<br>>  boundedBy<br>>  description<br>>  descriptionReference<br>>  geologicHistory<br>id<br>>  identifier<br>>  inspireId<br>>  metaDataProperty<br>name<br>name<br>>  themeClass<br>Metadata |

In the case of the munition dumping dataset, only the ManagementRestrictionOrRegulationZone featuretype seems to be alignable with the munition dumping dataset if we 'd consider munition as a type of waste. If munition dumping zones should be better considered as hazardous areas, the same featuretype could be applied but then the zonetype would correspond to "a restricted zone around contaminated sites"

**[restricted zones around contaminated sites](#)** - [INSPIRE Code list value [restricted zones around contaminated sites](#)]

Definition: Zones established to protect human, plant and animal health and control movement and development within a contaminated site.

Description: EXAMPLE: Chernobyl Nuclear Power Plant Exclusion Zone which was established to evacuate the local population and to prevent people from entering the heavily contaminated territory.  
 EXAMPLE: Zone



*established around an area suffering from soil contamination to restrict development and protect human health.*

We may mention that for Hazardous events, there is a INSPIRE model for [Natural Risk Zones](#) that consider a list of hazard types in the [Natural Hazard Classification](#) codelist. This codelist includes many natural hazards but not anthropogenic ones such as munitions. In Table 28 **Errore. L'origine riferimento non è stata trovata.** is presented the schema of EMODnet's munition dataset.

**Table 28 - Schema of EMODnet's munition dataset**

| munitions |                  |
|-----------|------------------|
| ▼ ft      | munitions        |
| > ft      | location         |
| > ft      | name             |
| > ft      | boundedBy        |
| > ft      | description      |
| > ft      | dist_coast       |
| > ft      | id               |
| > ft      | metaDataProperty |
| > ft      | munition_type    |
| > ft      | the_geom         |
| > ft      | Metadata         |

## ***Recursive attributes in EMODnet's datasets and their consideration in INSPIRE***

There are some recursive attributes in EMODnet's datasets such as countries, data sources, etc., for which we have looked at, in INSPIRE data specifications.

### ***Countries***

The INSPIRE Application schema [Base Types 2](#), contains the [CountryCode](#) codelist that includes the Country code as defined in the Interinstitutional style guide published by the Publications Office of the European Union.

When several countries share some authority over the same area, the INSPIRE [Administrative Units](#) application schema includes the [Condominium](#) featuretype defined as "An administrative area established independently to any national administrative division of territory and administered by two or more countries".



## Related parties

For attributes that include a reference to a related party (data provider, authority, etc) the INSPIRE [Administrative Units](#) application schema includes the [Related Party](#) data type (see Figure 16)

**Figure 16 - Attributes of the INSPIRE Related Party data type included in the INSPIRE [Administrative Units](#) application schema**

### Related Party - Data type

**Definition:** An organisation or a person with a role related to a resource.

**Description:** NOTE 1 A party, typically an individual person, acting as a general point of contact for a resource can be specified without providing any particular role.

**INSPIRE Application schema:** **Base Types 2** - [INSPIRE Application schema **Base Types 2**]

#### Attributes:

› individual Name

› organisation Name

› position Name

› contact

› role

#### Constraints:

› individual, organisation or position name shall be provided

## Dates and Time intervals (periods)

For these kinds of attributes INSPIRE includes a valuetype called [TM\\_GeometricPrimitive](#) that includes “TM\_Instant” and a related “TM\_Period” to hold both individual dates and periods (see Figure 17)

**Figure 17 - INSPIRE TM\_GeometricPrimitive Valuetype**

## TM\_GeometricPrimitive

**Package:** Temporal Objects

**Supertype of:**

TM\_Instant

TM\_Period

**Subtype of:** TM\_Primitive

## 5. Conclusions and Discussion

After the first analysis of current EMODnet's datasets schemas against the elements (application schemas, featuretypes, codelists, etc.) in INSPIRE, we can conclude:

### ***Thematic alignment:***

- ✓ Most datasets in EMODnet human activities can be related to an existing INSPIRE application schemas and featuretypes.
- ✓ Some datasets can be related to more than one INSPIRE application schemas, so a deeper analysis should be made to decide to which of these different application schemas it aligns best.
- ✓ There are some INSPIRE models that are directly (thematically) related to the EMODnet datasets (i.e. aquaculture) and others that are related more indirectly (i.e. munition dumping).

### ***Similarity of spatial objects and attributes***

Even in the cases where the EMODnet's datasets are directly related to an INSPIRE application schema and featuretype, the differences between the models are important and the harmonization process to define and implement the transformation rules can be rather complex.

Some recursive attributes on common attributes such as country, dates, etc. could be already transformed to the INSPIRE specifications (i.e. countrycodes, commodities, Date attributes).

For the cases where some of the information contained in EMODnet data models is not considered within the related INSPIRE application schema there may be two alternatives:

- Transform the data model using a combination of different INSPIRE application schemas (for example in the cases where some areas (i.e. portnodes or portareas) have different statistics associated to them (portgoods, portpassengers, portvessels).
- Propose/create and extending INSPIRE data model with attributes that are included in the EMODnet model. This alternative would be much more time consuming and should involve INSPIRE Maintenance and Implementation Group.

At this moment we'd need to analyse better how these alternatives should be implemented, and which solutions would be most suitable, based on the recommendations of INSPIRE experts and other data managers experience.

### ***Data lineage***

In many cases the EMODnet's datasets are got from Official administrations or organisms that are also subjected to implement INSPIRE data models.

Considering the INSPIRE principle on "input once, use many", a possible recommendation could be to contact those organizations in order to check about their plans to align their datasets to INSPIRE data specifications and try to harmonize only those datasets and parts of datasets produced within the scope of EMODnet's data gathering tasks.

### ***Next steps***

This analysis will be presented to INSPIRE experts to confirm that the results of this analysis are correct, and to ask for advice on the best way to proceed with harmonization.

## Annex : Minutes of the meetings with Regional Sea Conventions

### HELCOM

|                      |  |
|----------------------|--|
| <b>Participants:</b> | <b>HELCOM<sup>1</sup>:</b> Joni Kaitaranta; Juuso Haapaniemi; Manuel Frias Vega; Florent Nicolas.<br><br><b>CETMAR<sup>2</sup>:</b> José L. Santiago |
|----------------------|--|

|                |   |
|----------------|---|
| <b>Agenda:</b> | 1. Introduction of EMODNet – Human activities (HA) dataset.<br>2. Assessment of the portal (overall and for specific datasets)<br>3. Synergies exploration for EMODnet and HELCOM<br>4. AOB |
|----------------|---|

| Minutes   | Action   |
|---|--|
| The main topics on the agenda were presented to participants.   | All attendants accept the agenda.  |
| <p>The datasets of the Human Activities portal were introduced (i.e. aggregate extraction, aquaculture, cultural heritage, dredging, environment, fisheries, hydrocarbon extraction, main ports, ocean energy facilities, other forms of Area Management/Designation, pipelines and cables, waste disposal, wind farms).</p> <p>The focus was on the updated datasets and the forthcoming ones;</p> | <p>Several projects and initiatives carried out by HELCOM are aligned to the EMODnet HA objectives, in particular, the <a href="#">Baltic LINES</a> and the Baltic Sea Pressure and Impact Index. The initiatives and publications regarding the Port Reception Facilities (PRFs) were also identified as useful for gathering data on waste disposal and in main ports.</p> <p>The dredge and deposit (or disposal) of dredging information is collected annually by HELCOM. This data and the collaboration for a fluent exchange of it was discussed.</p> |

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|   |  |
|---|--|
| Maritime Spatial Planning, waste disposal in main ports and vessels density.  |  |
| The most related datasets to the HELCOM map and data service as well as the most popular (i.e. downloaded) datasets from the HA portal were introduced. | <p>HELCOM identified the wind-farms and cable and pipelines were identified as very interesting for their projects.</p> <p>Potential feedback and assessment were also offered for the MSP and vessel density datasets.</p> <p>The aquaculture, dredging, hydrocarbon and waste disposal were presented as medium interest.</p> <p>Sharing data through WFS services would be the HELCOM preferred method but not many institutions use this OGC standard service yet. The main reason is because this method would make <a href="#">building the prototype MSDI easier for Baltic Lines</a>. HELCOM also shares data in shapefiles in the Map And Data Service (MADS) as well as they use ArcGIS rest interface and INSPIRE compliant OGC WMS Standard:<br/><a href="http://helcom.fi/baltic-sea-trends/data-maps">http://helcom.fi/baltic-sea-trends/data-maps</a></p>   |
| Synergies on how to collaborate were explored, in particular the advertisement of certain updates and the publication of new datasets.                  | <p>EMODnet HA plans to publish the MSP information in Feb/March 2018. HELCOM will give feedback on this in the frame of the Baltic Lines project.</p> <p>The dredge information is usually published in November by HELCOM, and then, HA should update the datasets related.</p> <p>HELCOM enhance the use of Web Feature Service (WFS) in order to achieve a realtime data update, in especial for the wind-farms. EMODnet HA will promote this practices as much as possible.</p> <p>Some of the information of pipelines and cables is in schematic routes. The encouragement to achieve the exact locations were suggested by HELCOM.</p> <p>The HELCOM tools for comparing different datasets (e.g. <a href="http://maps.helcom.fi/website/Aisexplorer/">http://maps.helcom.fi/website/Aisexplorer/</a>) were introduced as a potential data product for EMODnet.</p> <p>The metadata catalogue on MSP (<a href="http://metadata.helcom.fi/geonetwork/srv/eng/catalog.search#/metadata/aa96bca9-23f5-4e24-bc92-be24cf101d59">http://metadata.helcom.fi/geonetwork/srv/eng/catalog.search#/metadata/aa96bca9-23f5-4e24-bc92-be24cf101d59</a>) were also a potential starting point to find out the data required for HA.</p> |
| AOB   |  |

## The Barcelona Convention

|                      |   |
|----------------------|---|
| <b>Participants:</b> | <b>Barcelona:</b> <ul style="list-style-type: none"> <li>• <b>Jelena Knezevic</b> - MED POL Programme Officer;</li> <li>• <b>Christos Ioakeimidis</b> - Marine Litter Project Officer</li> </ul> <b>AND International:</b> <ul style="list-style-type: none"> <li>• <b>S  verine Renault</b> – Managing Director at AND-I;</li> <li>• <b>Safa SOUIDI</b> – Consultant.</li> </ul> |
| <b>Agenda:</b>       | <ol style="list-style-type: none"> <li>1. Context of creation and objective of EMODNet – Human activities (HA) portal.</li> <li>2. Assessment of the HA datasets and exploration of synergies between EMODNet and Barcelona Convention.</li> <li>3. Discussion on the completeness of EMODNet HA datasets.</li> <li>4. Relevant contacts for further collaboration.</li> </ol>    |

| Minutes  | Action  |
|--|---|
| <p>The overall context of creation and the objective of the EMODNet Human Activities portal were introduced.</p> <p>AND-International presented the website and its content and answered the Barcelona Convention questions on data sources, quality control, and Maritime Spatial Planning. Although it is not part of the Human Activities portal, the MedSea checkpoint was also briefly introduced.</p> <p>AND International has also highlighted that the current and future development of EMODNet will be based on further coordination and long-term cooperation with regional sea conventions and other partners.</p> | <p>Barcelona Convention has initially highlighted their frequent use of Seabed habitats, Chemistry and Biology portals in the framework of the implementation of their protocols (i.e. Specially Protected Areas and Biological Diversity “SPA protocol” and the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities).</p> <p>Furthermore, the Barcelona Convention Secretariat has expressed their interest in the Human Activities Portal (not very much used until now) and the relevance of some datasets to their activities. In general, one of the main interests of the HA portal for the Barcelona Convention is the possibility to show various sources of pressure at once. They have also welcomed a future collaboration between BC and EMODNet project.</p> |
| <p>The main users of EMODNet and the most downloaded datasets were also presented.</p> <p>The different datasets of human activities were introduced focusing on updated datasets and forthcoming ones, namely Maritime Spatial Planning (MSP), waste disposal in main ports and vessels density.</p> <p>Synergies and possible areas of collaboration</p>   | <p>Based on the information provided by AND-I regarding the different EMODNet HA datasets, the Barcelona Convention Secretariat has expressed interest and potential synergies and areas of collaboration between their activities<sup>3</sup> and EMODNet datasets as follows:</p> <ul style="list-style-type: none"> <li>- Environment datasets, particularly the Nationally Designated Areas dataset could be relevant for the Barcelona Convention activities, developed in the framework of the SPA Protocol. It could also be</li> </ul>  |

<sup>3</sup> Activities are developed to implement the seven protocols of the Barcelona Convention.

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| <p>were discussed.</p> | <p>interesting to include Specially Protected Areas of Mediterranean Importance in EMODNet portal. Activities under SPA Protocol are managed by the Regional Activity Centre for Specially Protected Areas (<a href="#">SPA/RAC</a>)<sup>4</sup>;</p> <ul style="list-style-type: none"> <li>- Hydrocarbon Extraction datasets (active Licenses, boreholes and Offshore installations) could be relevant for activities under the Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal, implemented by the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (<a href="#">REMPEC</a>)<sup>5</sup>;</li> <li>- MSP dataset could be relevant for the Protocol on the Integrated Coastal Zone Management in the Mediterranean (ICZM Protocol). Activities under this protocol are managed by the Regional Activity Centre for Priority Actions Programme (PAP/RAC)<sup>6</sup>. Barcelona Convention mentioned two ongoing projects, implemented by PAP/RAC in this field, one in the eastern Mediterranean (the GEF Adriatic: Implementation of the Ecosystem Approach in the Adriatic Sea through Marine Spatial Planning implemented in Albania and Montenegro) and in the Western Mediterranean.</li> <li>- The waste disposal in main ports dataset could be relevant for activities under the umbrella of the Protocol on the prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal, implemented by the Mediterranean Pollution Assessment and Control Programme (<a href="#">MED POL</a>)<sup>7</sup>.</li> </ul> <p>The Barcelona Convention secretariat also highlighted</p> |
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<sup>4</sup> SPA/RAC : one of the seven components of the Barcelona Convention Secretariat in charge of the implementation of the SPA protocol.

<sup>5</sup> REMPEC: one of the seven components of the Barcelona Convention Secretariat in charge of the implementation of the prevention and emergency protocol.

<sup>6</sup> PAP/RAC : one of the seven components of the Barcelona Convention Secretariat in charge of the implementation of the ICZM protocol.

<sup>7</sup> MED POL: one of the seven Barcelona Convention components in charge of the implementation of the Dumping, land-based pollution and hazardous wastes protocols.

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|   | <p>their interest in marine litter data (not currently covered by EMODNet Human Activities portal) and recommended to check the Waste Atlas initiative.</p> <p>Barcelona Convention Secretariat has also presented their future platform, the InfoMAP, which is conceived to provide and share data, information services and knowledge for the benefit of the Barcelona Convention components and Contracting Parties. InfoMAP, is at a pilot stage and is being established by the <a href="#">INFO/RAC</a><sup>8</sup>. It is expected that data would be used internally but possible interactions with Emodnet could be checked and discussed internally.</p> <p>Barcelona Convention Secretariat invited AND-I team to take contact with the Barcelona Convention components (mentioned above) to establish specific areas of collaboration.</p> <p>The Secretariat indicated however, that there are strict rules regarding data dissemination and that these rules differ among projects depending on the data providers and sources of funding.</p> |
| Issues related to the completeness of EMODNet datasets were discussed.  | <p>Barcelona Convention has suggested data sources that could be relevant for EMODNet HA portal:</p> <ul style="list-style-type: none"> <li>- General Fisheries Commission for the Mediterranean “GFCM” (for fisheries and aquaculture data).</li> <li>- The results of the two ongoing projects on MSP in the Mediterranean sea.</li> </ul>   |
| Possible collaboration, particularly the attendance of AND-I to High level meetings related to data collection under the Barcelona Convention relevant to EMODNet project were discussed. | <p>Barcelona Convention Secretariat has specified that they are still preparing their meetings list for their current biannual programme of work and they will inform us about any relevant meeting.</p>   |
| Contacts of the Barcelona Convention components were provided by the Barcelona Convention Secretariat.  | <p>REMPEC: Gabino Gonzalez, Head of Office of REMPEC - <a href="mailto:ggonzalez@rempec.org">ggonzalez@rempec.org</a></p> <p>PAP/RAC: <b>Zeljka Skaricic – Director of PAP/RAC</b></p>   |

<sup>8</sup> INFO/RAC: one of the seven Barcelona Convention components in charge of establishing a common information management infrastructure to facilitate and support information and communication activities across MAP.



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|   | <a href="mailto:zeljka.skaricic@paprac.org">zeljka.skaricic@paprac.org</a> |
| AND-International proposed to meet once a year to follow-up on EMODNet's activity and possible synergies. | The Barcelona Convention agreed to this proposition.                       |

## Black Sea Commission

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| <b>Participants:</b> | <b>BSC<sup>9</sup>:</b> Prof. Halil Ibrahim Sur - Executive Director, Ms. Irina Makarenko - Pollution Monitoring and Assessment Officer.<br><br><b>Eurofish<sup>10</sup>:</b> Aina Afanasjeva – Director, Toni Bartulin – Project Manager. |
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| <b>Agenda:</b> | 5. Introduction of EMODNet – Human activities (HA) dataset.<br>6. Synergies exploration for EMODnet and Black Sea Commission (BSC)<br>7. Involvement of BSC in EMODnet Human Activities<br>8. Other |
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| Minutes   | Action  |
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| <p>The general objective of the EMODnet and datasets of the Human Activities portal were presented, while highlighting an importance and objectives to involve the Bucharest Sea Convention into it.</p> <p>The focus was on available datasets at HA portal and the ones at the BSC.</p> | <p>The Black Sea Commission is familiar with EMODnet activities and it welcomes EMODnet's mission to provide publicly open data.</p> <p>In order to provide dataset available at BSC, the Secretariat needs an approval made by each MS.</p> <p>BSC presented its way of collecting data from the Member States (MSs) together with structure and the main obstacles in reporting (incompatibility in reporting relevant data among MSs).</p> <p>Data available at BSC is collected by each Member State (Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine) from their respective Ministries of Environment or related institutions – one or two officials in each country are responsible for data (verified by Ministry) delivery on a yearly basis (until August).</p> <p>Fisheries data is collected from GFCM.</p> <p>BSC is responsible for official data harmonisation they receive.</p> |
| <p>The most related datasets to the BSC map and data service as well as the most popular (i.e. downloaded) datasets from the HA portal were introduced (ppt presentation shared with participants).</p>   | <p>BSC identified the vessel density, waste disposal, and aquaculture together with environment related data as interesting for their future activities.</p> <p>The BSC data is open only for registered users, and, in order to make them available to Consortium, Eurofish has to send a request/letter (with required datasets) to BSC with benefits/results of making them available to EMODnet, what then will be presented to each MS. Once (if) the MSs signed agreement</p>   |

<sup>9</sup> [irina.makarenko@blacksea-commission.org](mailto:irina.makarenko@blacksea-commission.org), [halil.i.sur@blacksea-commission.org](mailto:halil.i.sur@blacksea-commission.org)

<sup>10</sup> [Aina.Afanasjeva@eurofish.dk](mailto:Aina.Afanasjeva@eurofish.dk), [toni.bartulin@eurofish.dk](mailto:toni.bartulin@eurofish.dk)

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|  | <p>to share data, the data will be open to EMODnet Consortium. It has been agreed that Eurofish will send such letter before the next Governing Council in August 2018.</p> <p>BSC provided the data and reporting Indicators/Tools they have at disposal <a href="http://www.blacksea-commission.org/bsimap.asp">http://www.blacksea-commission.org/bsimap.asp</a>.</p> <p>Eurofish has to select indicators of the EMODnet HA interest and to include them in the request/letter to be presented to the MSs.</p> <p>On 10<sup>th</sup> January, BSC delivered to Eurofish the document “BLACK SEA INTEGRATED MONITORING AND ASSESSMENT PROGRAM” for years 2017-2022 with their MSs reporting data.</p>  |
| <p>Synergies on how to collaborate were explored, in particular Eurofish’s attendance in the future official meetings/governing council where BSC’s Member States will participate, what was recognized as an opportunity to liaise with relevant officials that provide data for BSC. Eurofish has expressed interest to be invited for these events.</p> <p>Potential contacts for different various data were suggested by BSC.</p> | <p>It has been agreed that the BSC will send an invitation to Eurofish for their future meeting to be in position to liaise with the main stakeholders relevant for datasets of EMODnet HA interest.</p> <p>MSP is not harmonised. <b>Laura Aleksandrov</b> has been identified as a contact point for MSP data relevance.</p> <p>Other sources of potential datasets relevant for EMODnet HA were presented by BSC:</p> <ul style="list-style-type: none"> <li>• International Commission on the protection of Danube River <a href="http://www.icpdr.org/main/">www.icpdr.org/main/</a></li> <li>• Danube Commission <a href="http://www.danubecommission.org">www.danubecommission.org</a></li> <li>• Environment Monitoring in the Black Sea <a href="http://emblasproject.org/">http://emblasproject.org/</a> (cruises research)</li> <li>• International Maritime Organisation (BSC represent it for capacity building).</li> </ul> |
| <p>The general conclusions have been made regarding the cooperation, and further aforementioned steps.</p>   | <p>BSC welcomed initiative by EMODnet HA (Eurofish) and is open to cooperate in the future.</p> <p>Proposal to publish articles/events about Black Sea and Human Activities on their official channels (social media, website) has been offered by BSC.</p>   |

## OSPAR

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| <b>Participants:</b> | <b>OSPAR<sup>11</sup>:</b> John Mouat; Christ Moulton; Lena Avellan; Jo Foden.<br><br><b>AZTI<sup>12</sup>:</b> Javier Franco; Oihana Solaun. |
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| <b>Agenda:</b> | 9. Introduction of EMODNet – Human activities (HA) dataset.<br>10. Assessment of the portal (overall and for specific datasets).<br>11. Synergies exploration for EMODnet and OSPAR.<br>12. AOB. |
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| The general objective of the meeting was presented and the EMODnet Human Activities portal was introduced.  | The OSPAR Commission is familiar with EMODnet activities.  |
| The most popular (i.e. downloaded) datasets from the HA portal, as well as the most related datasets to the OSPAR map and data service were introduced. | <p>In order to visualize the information gaps for any human activity, OSPAR suggested to include a symbol in the map where data is not available for a country.</p> <p>They also suggested to include the source link for each data available on our portal. Some of the available links do not work properly, so they should be revised/updated.</p> <p>Regarding wind energy, in addition to the licenced areas it would be interesting to have the locations of the turbines.</p> <p>In April 2018 there will be a meeting of the OSPAR Biodiversity Committee and it will decide the datasets more relevant in terms of impacts on marine biodiversity. At first, they are fishing, trawling, aggregate extraction and shipping.</p> <p>For aggregate extraction it would be of interest to provide information on polygons better than points.</p> <p>Concerning AIS data, OSPAR is very interested in products that EMODnet Human Activities will prepare based on that data. Regarding shipping, they would like to know, since the very beginning, the process and</p> |

<sup>11</sup> [john.mouat@ospar.org](mailto:john.mouat@ospar.org) ; [chris.moulton@ospar.org](mailto:chris.moulton@ospar.org) ; [lena.avellan@ospar.org](mailto:lena.avellan@ospar.org) ; [jo.foden@ospar.org](mailto:jo.foden@ospar.org)

<sup>12</sup> [jafranco@azti.es](mailto:jafranco@azti.es) ; [osolaun@azti.es](mailto:osolaun@azti.es)

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|  | <p>methods used to prepare the data and products. COGEA will be informed to contact them.</p> <p>There are more munitions dumpsites available in the “OSPAR Encounters with Dumped Chemical and Conventional Munitions – 2014” dataset<sup>13</sup> than in the “Dumped munitions” dataset available on the EMODnet Human Activities portal. CETMAR will be informed.</p> <p>The “Cables” dataset is interesting for OSPAR because they do not collect that type of data. This information could be interesting for the Status Report they have to prepare by 2023.</p>  |
| <p>Synergies on how to collaborate were explored, in particular the advertisement of certain updates and the publication of new datasets (such as Marine Spatial Planning (MSP), waste disposal in main ports and licensed areas for aggregates extractions).</p>  | <p>In 2017 OSPAR has focused their efforts on the Intermediate Assessment 2017. In 2018, they will work on their data portal to update the info they need for the Quality Status Report 2023. In that phase, they will get data from other sources (i.e., EMODnet) to complete that information.</p> <p>Usually, OSPAR collects data from contracting parties in October each year. After being agreed, this data should be available in April (after the approval by the Committee). So, in the next year they can provide updated data on:</p> <ul style="list-style-type: none"> <li>- Dredging locations (points and polygons).</li> <li>- Aggregate extraction data.</li> <li>- Munitions.</li> <li>- AIS.</li> <li>- Ocean energy installations (wave and tidal).</li> </ul> |
| <p>Conclusions on the compliance with INSPIRE analysis were presented to know if they have the same problems as us and how they are facing them.</p> <p>Since point sources from industrial and urban activities can lead to pressures in coastal areas, the possibility of creating a dataset based on the European Pollutant Release and Transfer Register (E-PRTR; <a href="http://prtr.ec.europa.eu/#/home">http://prtr.ec.europa.eu/#/home</a>) was considered.</p> | <p>Chris Moulton is the data manager involved in this kind of tasks in OSPAR. It was suggested that Yolanda Sagarminaga (AZTI) will contact him to discuss this issue directly. They do not know this register. However, they pointed out that the quality assurance of the data is very important when chemical data is considered. In that sense, they mentioned that some experts have no confidence in the data available on the EMODnet Chemistry portal. In summer 2018 OSPAR will be contacted again to organise a skype/webex meeting.</p>   |

<sup>13</sup> [https://odims.ospar.org/layers/geonode:ospar\\_encounters\\_2014\\_01](https://odims.ospar.org/layers/geonode:ospar_encounters_2014_01)

## List of abbreviations and acronyms

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|                |   |
|----------------|---|
| <b>AIS</b>     | Automatic Identification System                           |
| <b>CDDA</b>    | Common Database on Designated Areas                       |
| <b>CEFAS</b>   | Centre for Environment, Fisheries and Aquaculture Science |
| <b>COG</b>     | Course Over Ground  |
| <b>EC</b>      | European Commission                                       |
| <b>EEA</b>     | European Environment Agency                               |
| <b>EMODnet</b> | European Marine Observation and Data Network              |
| <b>EMSA</b>    | European Maritime Safety Agency                           |
| <b>EU</b>      | European Union  |
| <b>EUMOFA</b>  | European Market Observatory of Fisheries and Aquaculture  |
| <b>HA</b>      | Human Activities  |
| <b>HLSG</b>    | High Level Steering Group                                 |
| <b>JRC</b>     | Joint Research Centre                                     |
| <b>MARPOL</b>  | Maritime Pollution  |
| <b>MS</b>      | Member State  |
| <b>MSFD</b>    | Marine Strategy Framework Directive                       |
| <b>MSP</b>     | Maritime Spatial Planning                                 |
| <b>NCA</b>     | Norwegian Coastal Administration                          |
| <b>RSC</b>     | Regional Sea Convention                                   |
| <b>SOG</b>     | Speed Over Ground   |
| <b>WFS</b>     | Web Feature Service                                       |
| <b>WMS</b>     | Web Map Service   |