EMODnet Thematic Lot n° 7 – Human Activities

EMODnet Phase 2 – Annual (interim) report 2

Reporting Period: 2/8/2014 – 16/09/2015

Date: 07/10/2015

Table of Content

1. Introduction 3
2. Highlights in this reporting period 5
3. Summary of the work done 6
4. Challenges encountered during the reporting period 7
5. Allocation of project resources 10
6. Meetings held since last report 11
7. Work package updates 13
WP1 – Project Management 13
WP 2 – Development of the portal and maintenance 13
WP 4/5 – Data collection / harmonisation 14
WP7 – Data analysis 14
8. User Feedback 69
9. Outreach and communication activities 74
10. Updates on Progress Indicators 76
Indicator 1 - Volume of data made available through the portal 76
Indicator 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). 77
Indicator 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. 78
Indicator 4 - Volume of each type of data and of each data product downloaded from the portal... 79
Indicator 5 - Organisations that have downloaded each data type 80
Indicator 6 - Using user statistics to determine the main pages utilised and to identify preferred user navigations routes 82
Indicator 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.) 83
Indicator 8 - List of web-services made available and user organisations connected through these web-services 84
11. Additional User Statistics 86

Annex 1 – Overview of data collection 88

1. Introduction

The European Marine and Observation Data Network (EMODnet) Human Activities (www.emodnet-humanactivities.eu) is a project financed by the EU Commission, which aims to map the spatial extent and intensity of a wide array of marine and maritime activities in EU waters.

The project is part of a wider long-term initiative, whose purpose is to unlock fragmented and hidden marine data resources across Europe, and to make these available to individuals and organisations (public and private). This should facilitate investment in sustainable coastal and offshore activities through improved access to quality-assured, standardised and harmonised marine data which are interoperable and free of restrictions on use.

There are currently 7 web portals (Bathymetry, Geology, Seabed Habitats, Biology, Chemistry, Physics and Human Activities) that are making available geographic datasets addressing different maritime themes.

The Human Activities portal is being developed by a consortium made up of 6 companies: Cogea, AND International, AZTI Tecnalia, CETMAR, Eurofish International Organisation, and Lovell Johns.

EMODnet Human Activities aims to facilitate access to existing marine data on activities carried out in EU waters, by building a single entry point for geographic information on 14 different themes:

1. Aggregate extraction
2. Commercial and recreational shipping
3. Cultural heritage
4. Dredging
5. Fisheries zones
6. Hydrocarbon extraction
7. Major ports
8. Mariculture
9. Ocean energy facilities
10. Pipelines and cables
11. Protected areas
12. Waste disposal
13. Wind farms
14. Other forms of area management / designation

Furthermore, three entirely new datasets have recently been collected: hydrocarbon active licences, offshore installations, and state of bathing waters.

The information provided through the portal is collated from a variety of sources, harmonised and made interoperable.

Data are free and free of any restrictions, in such a way as to ensure their use from a multitude of stakeholders (policy makers, researchers, students, spatial planners, etc.).

Besides making available data for download, the portal also features an interactive map, through which users can have a quick and user-friendly overview of where activities are taking place.

All datasets available on the portal are complemented with INSPIRE-compliant metadata, so as to provide Human Activities users with complete information on the way data are processed.

The overarching objective of the project is to make it easier for the widest possible number of users to access existing information on the spatial extent of human activities at sea. In the long term, this will inform better evidence-based decision making, and reduce the indirect costs related to retrieving data currently scattered across multiple sources.

The general idea is that EMODnet Human Activities users will be empowered with a ready-to-use database, thus spending less time looking for data, while being able to focus more on their final goals.

At the time of writing the project has just completed its second year and will end in September 2016. Data collection is almost complete, and an increasing number of users is now relying on EMODnet Human Activities as the entry point for spatial information on the use of EU seas.

A thorough users survey will be carried out in the third year of the project, in order to fine-tune the portal and pave the way for the next phase of EMODnet. However, based on preliminary feedback, it can already be argued that Human Activities is now being used by a multitude of stakeholders from different backgrounds, its main users being researchers, students, and maritime spatial planners.

The reason why users choose EMODnet Human Activities seems to be related to the easier access it gives to information otherwise scattered across different sources.

Compared with the other EMODnet portals, Human Activities tends to have a cross-cutting impact on several marine areas, thus serving a variety of purposes. Its data, for instance, are being used as a proxy for pressures (e.g. to define the footprint of disturbance to the seabed) by experts of various marine disciplines, and this makes Human Activities one of the EMODnet portals with the most heterogeneous user base.

Whether Human Activities will manage to establish itself as the official entry point for spatial information on the use of EU seas is difficult to predict. In the absence of specific regulation, data transmission to EMODnet largely depends on the ability of the consortium running the project, and on data sources' willingness to contribute to the project. While many institutions are endorsing the idea that Europe should develop standardised information on the uses of the sea, several others remain reluctant to share their data for a variety of reasons.

2. Highlights in this reporting period

- A MapServer update has been completed. The URL http://www.emodnet-humanactivities.eu/ has been switched to this new web server.
- WFS v1.1.0 have been created for almost all datasets. Some datasets (e.g. maritime transport) have large volumes of data and complex relationships between features and attributes (multi-temporal datasets), and thus it is technically challenging to serve them via WFS. Links and sample query statements were passed to VLIZ to aid Query Tool development for the Central Portal.
- New datasets have been added: 'telecom cables' 'finfish mariculture', 'hydrocarbon licenses', 'offshore installations' 'fish catches by FAO statistical area', and 'state of bathing waters'. The latter four are entirely new, as they were not included in the contract.
- Communication activities went on with EMODnet Human Activities being presented at the Member States Expert Group on MSP in Brussels, EurOCEAN 2014 in Rome, and EuroGOOS 2014 Conference in Lisbon, EMODnet-MSFD coordination meeting, and the European Maritime day 2015 in Athens.
- A new version of the website was released that contained a number of high priority updates
    - point 'clustering' was developed for the View Data page, so that layers with many points can be viewed effectively, and at smaller scales;
    - the 'information' button on the View Data page used to retrieve attributes has been removed. This extra step is no longer necessary;
    - download links from the legend have been added;
    - some layers have been sub-divided on the legend, allowing the user to toggle on/off by category;
    - other minor visual/functional improvements.
- A conference call with key stakeholders was organised on 16 January 2015. A series of improvements have been implemented as a result of another conference call with OSPAR.
- Metadata have updated to better explain the process history and overall quality of data.
- A meeting with the JRC took place to discuss how to integrate their vessel traffic density maps into Human Activities.
- A new work package was complete: Data Analysis, to give a complete overview of what has been achieved so far in terms of data quality and coverage.
- New 'View Data' page release including: filter layer display by attribute(s); toggle map to full screen map display; share map view tool.

3. Summary of the work done

During the second year of the project, the Human Activities team mainly focused on completing data collection for the remaining sea basins, and on updating the data already collected during the first year.

Despite our effort, a number of datasets are still incomplete, either because there are ongoing discussions with DG MARE and the sources (this is especially the case of 'pipelines and cables' and 'shipping'), or because sources simply do not cooperate (e.g. generally speaking, it is particularly challenging to obtain data from Black Sea countries).

Besides the datasets requested in the contract, the Human Activities team also decided to collect new datasets, either at the suggestion of stakeholders (e.g. 'hydrocarbon licences'), or because the data were easily available through a reliable source (e.g. 'state of bathing waters').

Through a series of meeting and conference calls, we established a permanent dialogue with key stakeholders, many of whom are also MSFD actors. The dialogue with stakeholders helped improve the existing services, as well as develop new ones.

More generally, the Human Activities team implemented a series of fine-tuning measures, with the view of providing user with an improved experience.

A new work package was launched: 'Data analysis'. After finalising data collection, the companies of the Human Activities consortium provided a complete overview of what has been achieved in the first two years of the project, in terms of obtaining, harmonising and making available data online. The data analysis .

Furthermore, as during the first year, Human Activities was presented at a number of conferences and events across the EU, with the aim of increasing its user base.

The next year will be dedicated to:

- Maintaining the portal
- Completing data collection for those datasets that could not be collected
- Updating existing data
- Secure sustainability of data collection through a memorandum of understanding with data sources
- Fine-tuning the portal based on stakeholders' feedback
- Developing a search engine optimisation (SEO) strategy to drive traffic to the website

4. Challenges encountered during the reporting period

Activity	Challenge	Measures
All	Data sources unwilling to cooperate.	The Human Activities team has repeatedly invited data sources to cooperate. In some cases formal letters have been sent. Next year, a memorandum of understanding will be sent to data sources to formalize their involvement.
All	Data sources not using WMS/WFS.	Not all data sources are able to serve their data via WMS/WFS. Those who are generally use their own data models, thus making impossible for the Human Activities team to use their data. Next year a memorandum of understanding will be sent to all data sources, inviting them to serve their data via WMS/WFS, according to EMODnet's data model.
All	The Human Activities portal is not as popular at it could be. Too many people outside the EMODnet family are not aware of its existence.	A search engine optimization (SEO) strategy will be devised starting from the third year. That should increase the number of visits to the portal dramatically.
Shipping	AIS data are not easy to obtain.	The solution proposed initially (obtaining data through EMSA) seems impracticable. A meeting with the JRC was organised in July 2015 to explore a different way to obtain the same data.
Pipelines and cables	Data on pipelines are not easily available and / or not accurate.	The possibility to obtain data on pipelines via DG ENER / MOVE is being explored with DG MARE. This data however is property of a commercial third party, and it will not be easy to obtain it.
All	Attribute data for Main Ports and Fish Catches are complex and include many linked tables. It is technically challenging to serve them via WFS.	It is under discussion with partners how practical/useful it would be to release full or restricted WFS for these layers.

Aside from the above challenges, a specific comment should be made on the experience with INSPIRE. The Human Activities team fully endorses INSPIRE approach, in particular when it aims 'to lay down general rules aimed at the establishment of the Infrastructure for Spatial Information in the European Community'. Lack of interoperability standards is one of the main difficulties in accessing marine data in the EU.

For this reason, over the past two years EMODnet Human Activities has paid particular attention to developing INSPIRE-compliant metadata for each dataset made available through the portal. The metadata are compiled and validated through INSPIRE's metadata editor, available at http://inspire-geoportal.ec.europa.eu/editor/.

At the same time the Human Activities team has also sought to source INSPIRE-compliant datasets, based on the assumption that Member States and data providers are (or are in the process of being) in line with Directive 2007/2/EC. This has been carried out primarily by searching for datasets on the 'discovery' section of the INSPIRE geoportal (http://inspire-geoportal.ec.europa.eu/discovery/), especially during the initial phase of the project. However, so far INSPIRE geoportal has not been particularly useful, mainly for the following reasons:

- Only few datasets on the human activities of interest are currently included in the geoportal.
- When available for more than a country, datasets may differ in aspects suchs as data models, units of measurement, and coordinate systems, and thus require further harmonisation in any case.
- Many countries upload data on the geoportal in their national language.

As a general rule, the Human Activities team do not enquire whether data sources are 'INSPIRE-compliant', as we believe that, although more than a synergy can be established between the two projects, it is out of the scope of EMODnet to survey INSPIRE compliance. A simple search on the INSPIRE geoportal reveals whether a certain dataset is available, and is thus considered an adequate method to find out whether there is sufficient data.

In June 2015 a meeting took place at the JRC in ISPRA where EMODnet thematic coordinators, the EMODnet central portal team and JRC, who are responsible for coordinating technical aspects of INSPIRE, discussed how to better connect the two projects

The level of compliance of EMODnet as a whole (including Human Activities) was considered advanced, although several steps must be taken to achieve full compliance. The main challenges as far as Human Activities is concerned are to be found in the fact that INSPIRE has recently developed a set of data models that were not available by the time we started developing ours. This implies that at a certain point in the project we will need to adapt our current data models in such a way as to be in line with INSPIRE. In principle, this should not be a problem, as data sources are supposed to adopt those data models as well. However, our experience suggests that the uptake of INSPIRE is not likely to increase dramatically in the near future, thus creating more than a problem for Human Activities if data models are to be modified in the meantime. From this point of view, it would have been far better if INSPIRE had liaised with the Human Activities team when developing the data models.

Another major obstacle to achieving full compliance is the inherent difficulty in taking stock of all the necessary background information that is necessary to develop INSPIRE-compliant datasets. Even though INSPIRE has improved considerably over the last few months in terms of user-friendliness and ease of access, there still remains a number of cumbersome procedures that are described across a multitude of documents, not always easy to find, read and interpret. This makes it extremely difficult for users to come to master INSPIRE without investing considerable effort.

However, the above issues should be addressed in the future through improved cooperation between EMODnet and Inspire .Each EMODnet thematic group will provide contact details of one or two people who can be responsible for liaison with the JRC team.

Furthermore, as part of their 'marine pilot', the JRC team are working on written guidance as to what need to be done to make EMODnet compliant with INSPIRE. Progress will be presented at the EMODnet developers' workshop on 23 October in Ostend.

Once this is done, a conversation can start about making EMODnet compliant. This will almost certainly mean changes to the EMODnet or the INSPIRE data models.

5. Allocation of project resources

1. Making data and metadata interoperable and available: 20%
2. Preparing data products: 0%
3. Preparing web-pages, viewing or search facilities:10%
4. Project management: 4%
5. Interaction with users: 6%
6. Other: 0%

6. Meetings held since last report

Date	Location	Topic	Short Description
03/10/2014	Skype meeting	Wind farms	We introduced EMODnet project to EWEA and we agreed collaboration protocols for sharing information about new references on wind farms. They will try to send us more info about potential installation of wind farms if possible. We exchange data for their validation.
9-10/12/2014	Brussels	3rd Steering Committee Meeting	Main issues discussed: progress update; targeted improvement of thematic and Central Portal to enhance harmonisation, user friendliness and usefulness; feedback from technical working group; EMODnet in the evolving marine data and observation waterscape; simplification and harmonization of the progress indicators/metrics; update on North Sea Checkpoint peer-to-peer data;
16/01/2015	Conference call	Coordination with key stakeholders	Participants: ICES, World Maritime University, JRC, Helcom, European Environment Agency, Wageningen University, The Crown Estate, Cefas, OSPAR.
27/02/2015	Brussels	EMODnet – MSFD Coordination meeting	A demonstration of the portal was provided. Further to the discussion on metadata we had during the Coordination meeting, the "lineage" section has been expanded.
31/03/2015	Conference call	Coordination with OSPAR	Main issues discussed: improvement of datasets based on OSPAR data; improvement of "lineage" (quality & validity) section of metadata on Human Activities; OSPAR also noted that it would be useful to provide a sort of a 'change log' to easily spot changes whenever a dataset is updated

Date	Location	Topic	Short Description
21/04/2015	Conference call	Coordination with Italian partners	conference call with the Italian partners involved in the EMODnet system (including checkpoints). It was agreed to investigate options to organise an EMODnet day in Italy.
30/06/2015	Ispra	EMODnet-INSPIRE meeting	The EMODnet project coordinators, data managers, and the secretariat met with members of the EC-EEA INSPIRE Team at JRC in Ispra, Italy, to better understand the relationships between EMODnet and INSPIRE.
1-2/06/2015	Ispra	EMODnet Steering Committee	Main issues discussed: update from the thematic lots on specific issues of concern; updates from DG MARE and the Secretariat; EMODnet events and calendar 2015; updates from the North Sea Checkpoint and Mediterranean Checkpoint; Central portal Query Tool – VLIZ; Feedback from the technical Working Group – VLIZ; External developments and interactions;
02/06/2015	Ispra	Open Seminar for JRC staff	The purpose of the seminar was to inform interested staff at the Joint Research Centre in Ispra and other stakeholders about the basic principles, architecture and development of the various components of the EMODnet.

7. Work package updates

Below are reported only the work packages for which there have been updates.

WP1 – Project Management

As announced in the previous interim report, the project is now managed through Teamwork, a cloud-based project management platform that makes it possible to assign roles and responsibilities, set milestones, monitor task progress and deadlines. The platform is also used as an online repository to share working files between the Consortium members.

WP 2 – Development of the portal and maintenance

Progress:

- System Updates
  - The portal was moved to a new web server. This web server uses the latest MapServer version to aid the serving of Web Feature Services (WFS).
  - Improvements to hosting infrastructure including enhanced DDoS protection.
- WFS Development
  - WFS v1.1.0 web services were created.
  - WFS links were added to the Search Data page.
  - Refinement and testing of WFS so VLIZ could use for Query Tool development.
  - Test output of WFS in JSON format, as requested by VLIZ.
- Tool and Functionality Developments
  - Point 'clustering' was developed for the View Data page, so that layers with many points can be viewed effectively, and at smaller scales.
  - The 'information' button on the View Data page used to retrieve attributes was removed. This extra step is no longer necessary.
  - Download links from the legend have been added.
  - Some layers have been sub-divided on the legend, allowing the user to toggle on/off by category.
  - Filter layer display by attribute(s)
  - Toggle map to full screen map display
  - Share map view tool (get an encoded URL that remembers map extent, base mapping type, which layers are displayed and how they are filtered)
  - Improved harmonisation with other portals (banner etc.)
  - Improved point symbology, categorisation and minor graphical improvements
  - 'Database under Construction' image added to legend and search page with links to the information page. This makes it clear to the user that the database does not yet have complete coverage.
  - Other minor visual/functional improvements and bug fixes.

- Data
    - New datasets made available to view and download: Fish Catches, Telecom Cables (schematic and actual routes), Ocean Facilities, Hydrocarbon Extraction Active Licenses and Finfish Production
    - Data updates to multiple layers
    - Metadata reviewed for all layers and new metadata implemented where necessary.

Next Steps:

- New data updates for Ocean Facilities, Dredging and Aggregates.
- New data layer for Lighthouses.
- Discussions and planning of Year 3 priorities and tasks.

WP 4/5 – Data collection / harmonisation

See a full report in the section below.

Three new datasets have recently been collected and not included in the data analysis report: hydrocarbon active licences, offshore installations, and state of bathing waters.

Three datasets are on hold and haven't been included in the Data analysis report either:

- Shipping: obtaining AIS data from EMSA seems quite challenging. A meeting with the JRC was organised in Ispra in July to find an alternative solution.
- Pipelines: DG MARE is investigating whether it is possible to collect this data via DG ENER / MOVE.
- Cultural heritage: data on lighthouses has been collected. Recently a positive reply has also been received as far as wrecks and underwater settlements are concerned. The Human Activities team is currently testing how to integrate this data into Human Activities.

WP7 – Data analysis

An in-depth analysis of each dataset provided by Human Activities has been carried out by the experts of the Consortium. Each "human activity" has been supervised by an expert with deep knowledge of the field. The expert in charge has produced a report with an assessment of the overall quality, accuracy, and precision of the data in the database.

Below are provided the data analysis reports. Please note that the reports cover the updates of the 'Data collection' and 'Data Harmonisation' work packages (WP 4 and 5).

Advisory councils

Geographic representation

Format: vector

Type: polygon

Detailed description

This shape lists the areas covered by the Regional Advisory Councils (RAC) as polygons as exposed in the Atlas of the Seas. Additional information regarding to legal foundation have been added to the original shape.

Data model

Fields	Data Type	Attributes
Name	Text	Long Distance Fleeet; South-western Waters; North-western Waters; Mediterranean; North Sea; Baltic; Pelagic Stocks
legalFound	Date	
legalFou_1	Text	
country	Text	
namespace	Text	
nationalLe	Text	International
NUTScode	Text	BE; DE; DK; EE; ES; EU; FI; FR; GR; HR; IE; IT; LT; LV; MT; NL; PL; PT; SE; SI; UK
URL	Text	

Missing information

None.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Russia	✓	
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	
	Netherlands	✓	
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain	✓	
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia	✓	
	Croatia	✓	
Black Sea	Bulgaria	✓	
	Romania	✓	
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Greece	✓	
Aegean-Levantine Sea	Greece	✓	
Macaronesia	Portugal	✓	
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
European Atlas of the Seas	http://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/#lang=EN;bkgd=5:1;mode=1;pos=11.754:54.605:4;theme=48:0.8:1;	

Accuracy of data

Information about foundation and countries represented in each RAC has been added to information contained in the original source (Atlas of the Seas). Furthermore the original shapefile has been re-projected into WGS84.

Accurate to the original source.

Difficulties encountered

None

Aggregate Extraction

Geographic representation

Format: vector

Type: point

Detailed description

The geodatabase 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.

Validation and quality assurance remain up to primary data sources, while harmonization is carried out by AZTI-Tecnalia. The harmonisation process consisted of identifying a set of attributes common to all the different dataset. To do so, it was necessary to define a homogenous set of variables for each attribute. Therefore, raw data attributes may use a different terminology, although the information contained remains basically the same.

Data model

Fields	Data Type	Attributes
POSITION INFO	Text	Estimated; original; polygon centroid of dredging area; polygon centroid of dredging polygon
COUNTRY	Text	BE, BG, DK, DE, EE, IE, EL, ES, FR, HR, IT, CY, LV, LT, ME, MT, NL, PL, PT, RO, SI, FI, SE, UK, NO, IS
SEA BASIN	Text	Greater North Sea; Celtic Sea; Bay of Biscay and Iberian Coast; Western Mediterranean; Adriatic Sea; Black Sea; Ionian Sea and the Central Mediterranean Sea; Aegean-Levantine Sea; Macaronesia
EXTRACTION AREA	Text	
AREA OF ACTIVITY (km^2)	Number (double)	
YEAR	Number (double) or range of years	
PERMITTED AMOUNT (m^3)	Number (double) or N/A (not available	
PERMITED AMOUNT (t)	Number (double) or N/A (not available	
REQUESTED AMOUNT (m^3)	Number (double) or N/A (not available	
REQUESTED AMOUNT (t)	Number (double) or N/A (not available	
EXTRACTED AMOUNT (m^3)	Number (double) or N/A (not available	
EXTRACTED AMOUNT (t)	Number (double) or N/A (not available	
EXTRACTION TYPE	Text or N/A (not available	Marine sediment extraction
PURPOSE	Text or	Maintenance dredging; capital dredging; others; N/A

Fields	Data Type	Attributes
	N/A (not available	
END USE	Text or N/A (not available	Beach nourishment; commercialization; confined deposit; construction material; embankment; filling material; land deposit; reuse; sea disposal; wetland restoration; N/A

Missing information

None.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia		
	Latvia		
	Lithuania		
	Russia		
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway		
	Denmark		
	Germany		
	Netherlands		
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden		
Celtic Sea	United Kingdom		
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal		
Western Mediterranean	Spain	✓	
	France		
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia		

Sea basin	Country	Data coverage	Notes
	Croatia		
Black Sea	Bulgaria		
	Romania		
Ionian Sea and the Central Mediterranean Sea	Italy		
	Greece		
Aegean-Levantine Sea	Greece		
	Cyprus		
Macaronesia	Portugal		
	Spain		

Data sources

Data source by Member State	Link	Contact person and e-mail
HELCOM	http://maps.helcom.fi/website/mapservice/index.html	***Minna Pyhälä*** ***(***minna.pyhala@helcom.fi***)***
ICES-Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem (WGEXT)	http://www.ices.dk/community/groups/Pages/WGEXT.aspx	***Maria Lifentseva*** ***(***Maria.Lifentseva@ices.dk***)***
(FR) **IFREMER**	http://wwz.ifremer.fr/institut	***Laure Simplet*** ***(***Laure.Simplet@ifremer.fr***)***
(ES) **Ministerio de Agricultura, Alimentación y Medio Ambiente** (MAGRAMA), División para la Protección del Mar	http://www.magrama.gob.es/es/	***Ainhoa Pérez Puyol*** ***(***APPuyol@magrama.es***)***
(BE) **MUMM**-Management Unit of the North Sea Mathematical Models, The Royal Belgian Institute of Natural Sciences)	http://www.mumm.ac.be/EN/	***Serge Scory*** ***(***S.Scory@mumm.ac.be***)***
(IT) **Regione Lazio**, Direzione ambiente, Centro di Monitoraggio GIZC / ISPRA		***Maria Concetta Giunta*** (mariaconcetta.giunta@isprambiente.it)
(UK) **The Crown Estate**	http://www.thecrownestate.co.uk/	***Kevin O'Shea*** ***(***kevin.o.shea@rhdhv.com***)***

Accuracy of data

When the extraction site was not geo-referenced in the original dataset, coordinates were estimated based on the available information (e.g., the name of the area). Since extraction sites in this EMODnet dataset are represented as points, extraction areas represented as polygons in the original datasets are represented by the polygon centroid in the current dataset.

For further information on validation and quality assurance, it is suggested that primary data sources are contacted. Generally speaking, data are to be considered very reliable, because they come from national sources officially in charge for their collection.

Difficulties encountered

None.

Dredge spoils dumping

Geographic representation

Format: vector

Type: polygon and points

Detailed description

Shapefiles of dumping sites show features defined as both polygons and points in the Baltic Sea, North Sea, Celtic Seas, Iberian Coast and Bay of Biscay, Macaronesia, West Mediterranean and Adriatic Sea.

Different sources have been used depending on the country or basin. For the Baltic Sea sites of dredged spoils dumping, a shapefile has been downloaded from the HELCOM's map server. The positions of the dumping points in France were digitized from several geo-referenced maps scanned from the reports of CETMEF (2009, 2010, 2012 and 2013). In the case of Italy the positions were digitized from several geo-referenced maps based on scanned versions of IMO's reports (2010 and 2011) on the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and its 1996 Protocol. So the position of these points needs be reviewed. The coordinates of dumping points in Norway, Sweden, Germany and Spain have been taken form OSPAR dumping reports of 2008, 2009, 2010 and 2011. The coordinates of dumping points in Spain have been updated from 2012 MAGRAMA (Spanish Government) reports to OSPAR. In the case of Portugal a shapefile available from DGRM (Portuguese Government) has used. Data from Bulgaria have been provided as central point and radius by Bulgarian Ministry of environment and waters. As far as the UK is concerned a shapefile was provided by the Department of Environment - Marine Division.

Furthermore the original geographical references have been re-projected into WGS84.

Data model

Fields	Data Type	Attributes
ID	Number (integer)	
Country	Text	Denmark; Estonia; Finland; France; Germany; Italy; Latvia; Lithuania; Norway; Poland; Portugal; Russia; Spain; Sweden; Bulgaria; United Kingdom
Name	Text	
Updateyear	Number (integer)	
OSCOM Code	Text	
Depth (m)	Text	
Status	Text	Operational; Closed; Closed not4WD; Disused; Not 4 waste dis; Open;
years_oper	Number (integer)	
D_Coast_km	Number (real)	

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden		
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Russia	✓	
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	
	Netherlands		
	Belgium		
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland		
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	

Sea basin	Country	Data coverage	Notes
	Portugal	✓	
Western Mediterranean	Spain	✓	
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia		
	Croatia	✓	
Black Sea	Bulgaria	✓	
	Romania		
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Greece	✓	
Aegean-Levantine Sea	Greece		
Macaronesia	Portugal	✓	
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
Spanish Minister of Agriculture, Food and Environment (MAGRAMA) - ES	http://www.magrama.gob.es/en/	APPuyol@magrama.es
CETMEF-MEDEE (Centre d'Études Techniques Maritimes Et Fluviales - Département Environnement Littoral et Cours d'Eau) - FR		celine.le-guyader@developpement-durable.gouv.fr
Basin Directorate for Water Management in Black Sea Region – Varna – Black Sea countries		bdvarna@bsbd.org
Department of Environment - Marine Division - UK		cara.lavery@doeni.gov.uk
Direção de Serviços de Ambiente Marinho e Sustentabilidade. Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos - PT		edias@dgrm.mam.gov.pt
Scottish Government spatial information and data - UK		Martyn.Cox@scotland.gsi.gov.uk
Servizio emergenze ambientali in mare (SEAM) - IT		valerio.sammarini@isprambiente.it
Independent Public Relations and Publishing Department		infor@morh.hr

Data source by Member State	Link	Contact person and e-mail
Ministry of Defence of the Republic of Croatia - HR **Hellenic Navy Hydrographic Service** - EL **Department of Fisheries and Marine Research** - CY		geopol_hnhs@navy.mil.gr gkokosis@dls.moi.gov.cy

Accuracy of data

Accurate to original source.

Difficulties encountered

None

Dredging

Geographic representation

Format: *vector*

Type: *point*

Detailed description

The geo-database on dredging in the EU is the result of the aggregation and harmonization of dredging datasets provided by several sources from all across the EU.

Validation and quality assurance remain up to primary data sources, while harmonization is carried out by AZTI-Tecnalia. The harmonisation process consisted of identifying a set of attributes common to all the different dataset. To do so, it was necessary to define a homogenous set of variables for each attribute. Therefore, raw data attributes may use a different terminology, although the information contained remains basically the same.

Data model

Fields	Data Type	Attributes
POSITION INFO	Text	Estimated; original; polygon centroid of dredging area; polygon centroid of dredging polygon
COUNTRY	Text	BE, BG, DK, DE, EE, IE, EL, ES, FR, HR, IT, CY, LV, LT, ME, MT, NL, PL, PT, RO, SI, FI, SE, UK, NO, IS
SEA BASIN	Text	Greater North Sea; Celtic Sea; Bay of Biscay and Iberian Coast; Western Mediterranean; Adriatic Sea; Black Sea; Ionian Sea and the Central Mediterranean Sea; Aegean-Levantine Sea; Macaronesia
EXTRACTION AREA	Text	
YEAR	Number (double) or range of years	
PERMITED AMOUNT (m^3)	Number (double) or N/A (not available	
PERMITTED AMOUNT (t)	Number (double) or N/A (not available	
EXTRACTED AMOUNT (m^3)	Number (double) or N/A (not available	
EXTRACTED AMOUNT (t)	Number (double) or N/A (not available	
EXTRACTION TYPE	Text or N/A (not available	Harbour dredging; estuary dredging; sea dredging; sea lane; N/A
PURPOSE	Text or N/A (not available	Maintenance dredging; capital dredging; commercial; others; N/A
END USE	Text or N/A (not available	Beach nourishment; commercialization; confined deposit; construction material; embankment; filling material; land deposit; reuse; sea disposal; wetland restoration; N/A

Missing information

None.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Russia		
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	
	Netherlands	✓	
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain	✓	
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia	✓	
	Croatia	✓	
Black Sea	Bulgaria	✓	
	Romania	✓	
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Malta	✓	
	Greece	✓	
Aegean-Levantine Sea	Greece	✓	
	Cyprus	✓	
Macaronesia	Portugal	✓	
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
OSPAR (Dumping of Wastes or Other Matter at Sea)	http://www.ospar.org/content/content.asp?menu=01511400000000_000000_000000	***Sylvie Ashe*** ***(***sylvie.ashe@ospar.org***)***
HELCOM (Dredging sites)	http://maps.helcom.fi/website/mapservice/index.html	***Minna Pyhälä*** ***(***minna.pyhala@helcom.fi***)***
(FR) **Centre d'études techniques maritimes et fluviales** (CETMEF)	http://www.eau-mer-fleuves.cerema.fr/	***Lea Gerard*** ***(***lea.gerard@developpement-durable.gouv.fr***)***
(PT) **Administração do Porto de Aveiro, Administração do Porto da Figueira da Foz, Direção de Gestão de Espaços, Ambiente e Infraestruturas**	www.portodeaveiro.pt	***Maria Manuel Cruz*** ***(***mariamanuel.cruz@portodeaveiro.pt***)***
(ES) **Ministerio de Agricultura, Alimentación y Medio Ambiente** (MAGRAMA), División para la Protección del Mar	http://www.magrama.gob.es/es/	***Ainhoa Pérez Puyol*** ***(***APPuyol@magrama.es***)***
(ES) **Puertos del Estado**	http://www.puertos.es/es-es/Paginas/default.aspx	***José Sierra*** ***(***jsierra@PUERTOS.ES***)***

Accuracy of data

When the dredging site was not geo-referenced in the original dataset, coordinates were estimated based on the available information (e.g., the port name, origin of the dredging material).

For further information on validation and quality assurance, it is suggested that primary data sources are contacted. Generally speaking data are to be considered very reliable, because they come from national sources officially in charge for their collection.

Difficulties encountered

None

Dumped Munitions

Geographic representation

Format: vector

Type: points, polygons

Detailed description

Munition dumping sites defined as points and polygons in the Baltic Sea, Bay of Biscay and Iberian peninsula and Western Mediterranean.

Information in point format is available only for the OSPAR region. (http://www.ospar.org/html_documents/ospar/html/data/ospar_munitions_dumpsites.zip). Spatial entities for the Baltic sea, Bay of Biscay and Iberian peninsula and Western Mediterranean area have been selected and distance to coast has been calculated in km.

Different sources have been used depending on the country or basin. The coordinates of areas of munitions dumping in the Mediterranean Sea have been taken from the report "Ammunitions Dumping Sites in the Mediterranean Sea" by the MED POL (United Nations Environmental Programme) 22 May 2009. In the case of Spain, coordinates provided by Ministry of Defence have been included in the Atlantic and Mediterranean coast. Munitions dumping sites in France have also been digitized from marine charts available at http://data.shom.fr. Dumping areas in the Baltic Sea have been taken from "Notices to Mariners. 2014" (Maritime Administration of Latvia) and "Report to the 16th Meeting of Helsinki Commission; 1994".

Data model

Fields	Data Type	Attributes
ID	Number (real)	
TYPE_OF_MU	Text	Unknown; Chemical; Conventional; Conventional & Chemical
DIST_COAST	Number (real)	
SOURCE	Text	

Missing information

Position in France have been digitized based on marine charts.

Data coverage

Sea basin	Country	Data coverage		Notes
		Points	Polygons	
Baltic Sea	Sweden	✓	✓	
	Finland			
	Estonia			
	Latvia		✓	
	Lithuania			
	Russia			
	Poland			
	Germany			
	Denmark	✓	✓	
Greater North Sea	Norway			
	Denmark			
	Germany			
	Netherlands			
	Belgium	✓		
	France	✓	✓	
	United Kingdom			
	Sweden			
Celtic Sea	United Kingdom			
	Ireland			
Bay of Biscay and Iberian Coast	France	✓	✓	
	Spain	✓		
	Portugal			
Western Mediterranean	Spain	✓	✓	
	France		✓	
	Italy		✓	
Adriatic Sea	Italy			
	Slovenia			
	Croatia			
Black Sea	Bulgaria			
	Romania			
Ionian Sea and the Central Mediterranean Sea	Italy			
	Greece			
	Malta		✓	
Aegean-Levantine Sea	Greece			
Macaronesia	Portugal			
	Spain			

Data sources

Data source by Member State	Link	Contact person and e-mail
OSPAR Commission – BE, DK, ES, FR, PT, SE		sylvie.ashe@ospar.org
HYDROGRAPHIC SERVICE-Maritime Administration of Latvia – LV		navarea@lhd.lv
SHOM - FR		webmaster@shom.fr
Ministry of Defence - ES		gcoll@fn.mde.es
MED POL (United Nations Environmental Programme) - IT		

Accuracy of data

Accurate according to original source.

Difficulties encountered+

None

Fish catches

Geographic representation

Format: vector

Type: polygon

Detailed description

The geo-database on fish catches in the EU was created in 2015 by Cogea for the European Marine Observation and Data Network (EMODnet). It is 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 geo-referenced fishing statistical areas. Fish species have been grouped by EUMOFA's larger aggregations such as Commodity Groups (CG) and Main Commercial Species (MCS). Live weight in tonnes is provided for each fish species caught in EU fishing statistical areas, by year of reference, fish species, CG, and MCS. The dataset is updated yearly, as soon as new data from EUROSTAT is released. It covers a time series from 1950 to 2012.

Data model

Fields	Data Type	Attributes
SPECIES	Text	FAO 3-alpha code of fish species
FISH NAME	Text	Latin name of fish species
FISH_EN	Text	English name of fish species
MCS code	Number	Main Commercial Species code, according to EUMOFA
CG code	Number	Commodity Group code, according to EUMOFA
FISHREG	Number	FAO statistical area
COUNTRY	Text	Name of fishing country

Missing information

None.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Russia	✓	
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Island	✓	
	Germany	✓	
	Netherlands	✓	
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain	✓	

Sea basin	Country	Data coverage	Notes
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia	✓	
	Croatia	✓	
Black Sea	Bulgaria	✓	
	Romania	✓	
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Greece	✓	
Aegean-Levantine Sea	Greece	✓	
Macaronesia	Portugal	✓	
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
EU	Food and Agriculture Organisation of the United Nations (FAO)	Emmanuel.Blondel@fao.org
EU	EUROSTAT	

Accuracy of data

Fishery statistics are collected from official national sources either directly by Eurostat for the members of the European Economic Area (EEA) or indirectly through other international organisations for other countries. The data are collected using internationally agreed concepts and definitions developed by the Coordinating Working Party on Fishery Statistics (CWP), comprising Eurostat and several other international organisations with responsibilities in fishery statistics. The flag of the fishing vessel is used as the primary indication of the nationality of the catch, though this concept may vary in certain circumstances.

In general, the data refer to the fishing fleet size on 31 December of the reference year. The data are derived from national registers of fishing vessels which are maintained pursuant to Regulation 26/2004 which contains information on the vessel characteristics — the administrative file of fishing vessels is maintained by the European Commission's Directorate-General for Maritime Affairs and Fisheries.

There has been a transition in measuring the tonnage of the fishing fleet from gross registered tonnage (GRT) to that of gross tonnage (GT). This change, which has taken place at different speeds within the national administrations, gives rise to the possibility of non-comparability of data over time and of non-comparability between countries.

Catches of fishery products include items taken for all purposes (commercial, industrial, recreational and subsistence) by all types and classes of fishing units operating in inshore, offshore and in high-seas fishing areas.

The flag of the fishing vessel is used as the primary indication of the nationality of the catch. The catch is normally expressed in live weight and derived by the application of conversion factors to the landed or product weight. As such, catch statistics exclude quantities which are caught and taken from the water (that is, before processing) but which, for a variety of reasons, are not landed.

Difficulties encountered

Processing EUROSTAT's tables to make them suitable for a geo-database is a time consuming process. It would be desirable that EUROSTAT could transmit the data according to the above-mentioned data model.

Fisheries Zones

Geographic representation

Format: Vector

Type: Polygons

Detailed description

This dataset is made up of two separate layers. 'FAO Statistical Areas for Fishery Purposes' and 'ICES Statistical Areas'.

FAO Statistical Areas are arbitrary areas, the boundaries of which were determined in consultation with international fishery agencies on various considerations, including (i) the boundary of natural regions and the natural divisions of oceans and seas; (ii) the boundaries of adjacent statistical fisheries bodies already established in inter-governmental conventions and treaties; (iii) existing national practices; (iv) national boundaries; (v) the longitude and latitude grid system; (vi) the distribution of the aquatic fauna; and (vii) the distribution of the resources and the environmental conditions within an area.

The rationale of the FAO Major Fishing Areas has been that the areas should, as far as possible, coincide with the areas of competence of other fishery commissions when existing. This system facilitates comparison of data, and improves the possibilities of cooperation in statistical matters in general.

ICES Statistical Areas delineate the 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.

Data model

FAO areas

Fields	Data Type	Attributes
Area code	Number	FAO code of the statistical area
Level	Text	Division, Major, Sub-division, Sub-area, Sub-unit
Ocean	Text	Name of the Ocean
Subocean	Number	Subdivision of the Ocean

ICES areas

Fields	Data Type	Attributes
Area km^2	Number	
ICES areas	Text	Code of ICES area

Missing information

The contract only requests to make available FAO and ICES areas, and in this regard the dataset is complete. However, in view of giving more valuable information, additional data could be associated to FAO and ICES polygons, such as state of fish stocks and catch per unit effort. Information on catches by fishing area has already been provided as a separate dataset.

Data coverage

N.B. coverage by country is not reported for this dataset, because it does not make sense for this type of data.

Sea basin	Data coverage	Notes
Baltic Sea	✓	
Greater North Sea	✓	
Celtic Sea	✓	
Bay of Biscay and Iberian Coast	✓	
Western Mediterranean	✓	
Adriatic Sea	✓	
Black Sea	✓	
Ionian Sea and the Central Mediterranean Sea	✓	
Aegean-Levantine Sea	✓	
Macaronesia	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
FAO (all EU)	Food and Agriculture Organisation of the United Nations (FAO)	Emmanuel.Blondel@fao.org
ICES (all EU)	International Council for the Exploration of the Sea (ICES)	accessions@ices.dk

Accuracy of data

As regards FAO areas, the FAO declares that the designations employed and the presentation of material in this information product are not warranted to be error free and do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. FAO makes every effort to ensure, but does not guarantee, the accuracy, completeness or authenticity of the information in this information product.

For various historical reasons the Areas in the Pacific were not so developed, with the exception of Area 87 corresponding to the CPPS area of competence. Initiatives for closer cooperation between agencies in the interest of better data, not only in the field of tunas, have suggested that some changes are necessary to the present FAO fishing areas/boundaries in the Pacific.

The boundaries of fishing areas could be modified and adjusted according to new requirements, but it is inadvisable to introduce too frequent amendments to the already established areas. Revisions to boundaries should only be introduced after consultation with all the national fishery authorities and fishery agencies concerned with the areas under revision. Unless there are other over-riding reasons, boundaries lines should be drawn along 5° lines of longitude and latitude.

When it comes to ICES, its areas delineate the divisions and subdivisions of FAO Major Fishing area 27, so the same consideration should apply.

Difficulties encountered

None.

Hydrocarbon extraction (boreholes)

Geographic representation

Format: *vector*

Type: *point*

Detailed description

The geo-database on offshore hydrocarbon extraction in the EU was created in 2014 by Cogea for the European Marine Observation and Data Network (EMODnet). It is the result of the aggregation and harmonization of datasets provided by several sources from all across the EU (plus Norway). It is updated every six months, and is available for viewing and download (data on Germany are available only for viewing) on EMODnet - Human Activities web portal (www.emodnet-humanactivities.eu). The database contains points representing offshore hydrocarbon boreholes drilled in the following countries: Croatia, Cyprus, Denmark, France, Germany, Greece, Ireland, Italy, Latvia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Spain, and UK. Each point has the following attributes: status (active, abandoned, suspended, unknown, other), country, code, name, year (spud date), purpose (exploration, exploitation, other, unknown), fluid type (oil, gas, oil and gas, other, unknown), operator, drilling company, coastal distance and water depth. The new features in the current version of the dataset are:- Update of boreholes data to April 2015- The dataset on Germany now contains boreholes, instead of platforms (in the previous version). The source is also different.

Data model

Fields	Data Type	Attributes
STATUS	Number (double)	Active; abandoned; suspended; other, unknown
COUNTRY	Text	BE, BG, CZ, DK, DE, EE, IE, EL, ES, FR, HR, IT, CY, LV, LT, LU, HU, ME, MT, NL, AT, PL, PT, RO, SI, SK, FI, SE, UK, NO, IS
CODE	Text or Unknown	
NAME	Text or Unknown	
YEAR	Number (double)	
PURPOSE	Number (double)	Exploitation; exploration/appraisal; other; unknown
HYDROCARBON	Number (double)	Crude oil; natural gas; crude oil and natural gas; other, unknown
OPERATOR	Text or Unknown	
DRILLING_COMPANY	Text or Unknown	
COAST_DISTANCE	Number	
WATER_DEPTH	Number (double)	

Missing information

It would be interesting to have information on quantities extracted, but it is unlikely to find any source that makes available this data publicly.

Please note that this dataset has been integrated by two additional datasets: 'hydrocarbon licenses' and 'offshore installations'.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden		
	Finland		
	Estonia		
	Latvia	✓	
	Lithuania		
	Russia		
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	
	Netherlands	✓	
	Belgium		
	France	✓	
	United Kingdom	✓	
	Sweden		
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain	✓	
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia		
	Croatia	✓	
Black Sea	Bulgaria		
	Romania		
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Greece	✓	

Sea basin	Country	Data coverage	Notes
	Malta	✓	
Aegean-Levantine Sea	Greece		
	Cyprus	✓	
Macaronesia	Portugal	✓	
	Spain	✓	

With the notable exception of Greece, Romania and Bulgaria, all Member States where offshore extraction activities take place are duly covered

Data sources

Data source by Member State	Link	Contact person and e-mail
France	Bureau de Recherches Géologiques et Minières	contact-brgm@brgm.fr
Croatia	Croatian Hydrocarbon Agency	barbara.doric@azu.hr
Denmark	Danish Energy Agency	rt@ens.dk
UK	Department of Energy & Climate Change	Phil.Harrison@decc.gsi.gov.uk
Ireland	Department of Communications, Energy and Natural Resources	padadmin@dcenr.ie
Portugal	Directorate General for Energy and Geology	Josemigueal.martins@dgeg.pt
Netherlands	Rijkswaterstaat Noordzee and TNO	rico.tonis@tno.nl
Montenegro	Geological Survey of Montenegro	jovanovic.b@geozavod.co.me
Spain	Geological and Mining Institute of Spain (IGME)	t.medialdea@igme.es
Germany	Landesamt für Bergbau, Energie und Geologie	Hans-Juergen.Brauner@lbeg.niedersachsen.de
1Latvia	Latvian environment geology and meteorology centre	klientu.serviss@lvgmc.lv
Malta	Ministry for Transport and Infrastructure - Continental Shelf Department	charles.a.galea@gov.mt
Italy	Ministry of Economic Development (MISE), Directorate-general for mineral and energy resources	nicola.santocchi@mise.gov.it
Cyprus	Ministry of Energy, Commerce, Industry and Tourism	snicolaides@mcit.gov.cy
Greece	Ministry of Environment, Energy	spyridonbellas@gmail.com

Data source by Member State	Link	Contact person and e-mail
	and Climate Change	
Norway	Norwegian Petroleum Directorate	FactWeb@npd.no
Poland	Polish Geological Institute	wpac@pgi.gov.pl

Accuracy of data

Data are collected by responsible authorities in each country. They are supposed to be reliable and accurate, although this cannot be validated by the Human Activities team. When abnormal data have been found, the Human Activities team has contacted the responsible authority.

Difficulties encountered

Collecting and harmonising data has been a very time consuming activity. Several sources still do not cooperate. For some of them it has been possible to collect data online (e.g. France, Denmark), while for some others data are still missing (Greece, Bulgaria, Romania).

International conventions (Barcelona, Bucharest, Helsinki, OSPAR)

Geographic representation

Format: vector

Type: polygon

Detailed description

This dataset visualises the marine areas covered by the Barcelona Convention, the Bucharest Convention, the Helsinki Convention and the OSPAR Convention

Data models

Barcelona Convention and Bucharest Convention

Fields	Data Type	Attributes
ID	Number (integer)	

Helsinki Convention

Fields	Data Type	Attributes
OBJECTID_1	Number (integer)	
OBJECTID	Number (integer)	

Fields	Data Type	Attributes
CODE	Number (integer)	
SHAPE_Leng	Number (real)	
Shape_Le_1	Number (real)	
Shape_STAr	Number (real)	
Shape_STLe	Number (real)	

OSPAR Convention

Fields	Data Type	Attributes
Id	Number (integer)	
Region	Text	I; II; III; IV; V
Area_LAEA	Number (real)	

Missing information

None

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Russia	✓	
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	
	Netherlands	✓	
	Belgium	✓	

Sea basin	Country	Data coverage	Notes
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain	✓	
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia	✓	
	Croatia	✓	
Black Sea	Bulgaria	✓	
	Georgia	✓	
	Romania	✓	
	Russian Federation	✓	
	Turkey	✓	
	Ukraine	✓	
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Greece	✓	
Aegean-Levantine Sea	Greece	✓	
Macaronesia	Portugal	✓	
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
Barcelona Convention	http://www.unep.ch/regionalseas/regions/med/t_barcel.htm	
Bucharest Convention	http://www.blacksea-commission.org/	
Baltic Marine Environment Protection Commission	http://www.helcom.fi/	
OSPAR Convention	http://www.ospar.org/content/	

Accuracy of data

The Barcelona Convention marine area shapefile was made by cutting out the "sea area" from a coastline polygon. The edges in the Gibraltar strait and Aegean Sea areas are based on agreed boundaries as defined by the Barcelona Convention.

The Bucharest Convention shapefile was locally created by cutting marine area of Black Sea and Sea of Azov.

Helsinki Convention: Shapefile downloaded from http://maps.helcom.fi/ArcGIS/services/DataDelivery/MapServer/WMSServer.

Difficulties encountered

None.

Lighthouses

Geographic representation

Format: Vector

Type: Points

Detailed description

Data have been collected from one single source: the Amateur Radio Lighthouse Society[1] (ARLS).

The dataset includes the name of lighthouse, its code in the ARLSH database, its geographical coordinates and the grid square within which it is located.

Data are harmonized by ARLS.

According to the source, coordinates are approximate for most of the lighthouses and would need to be refined in the future

Data model

Fields	Data Type	Attributes
NAME	Text	e.g. Burgas North Head Of Jetty
ARLS NUMBER	Text	Country code, Number (e.g.: BUL001)
STATUS	Text or unknown	Active / Removed, relocated or destroyed

[1] http://arlhs.com/

Fields	Data Type	Attributes
COUNTRY	Text	BE, BG, DK, DE, EE, IE, EL, ES, FR, IT, CY, LV, LT, ME, MT, NL, PL, PT, RO, SI, FI, SE, UK, NO, IS
GRIDSQUARE	Text or unknown	e.g. KN32rl
COAST_DISTANCE	Number	(in meters)

Missing information

Regarding the heritage value of some ancient lighthouses, it would be interesting to have the following information:

- Date of construction;
- Classification in national or international systems, such as monuments of heritage value

These data are available through other sources (not downloadable) and could be added to the dataset in the future.

Precise coordinates are also available through other sources. Requests for database extractions have been made, but responses are still pending.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Russia	✓	
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	
	Netherlands	✓	
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and	France	✓	

Sea basin	Country	Data coverage	Notes
Iberian Coast	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain	✓	
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia	✓	
	Croatia	✓	
Black Sea	Bulgaria	✓	
	Romania	✓	
	Russia	✓	
	Turkey	✓	
	Ukraine	✓	
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Malta	✓	
	Greece	✓	
Aegean-Levantine Sea	Greece	✓	
	Cyprus	✓	
	Turkey	✓	
Macaronesia	Portugal	✓	
	France	✓	
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
ARLS	http://wlol.arlhs.com/	***None (downloadable database)***

Accuracy of data

The position of points is approximate in ARLS database. Coordinates are rounded to a minute of longitude or latitude. Other sources could provide more accurate data (Lighthouses are US, Marine traffic etc.) but they have not responded to our requests at the time of writing.

Difficulties encountered

We encountered difficulties in getting in touch with websites managers and database owners for collecting precise coordinates of lighthouses.

Mariculture (finfish)

Geographic representation

Format: vector

Type: point

Detailed description

The dataset provides information about the location of seawater finfish farms.

There was no available European maps for fish farms but there is an obligation for MS to inventory all authorized sites under the Council Directive 2006/88/EC on animal health requirements for aquaculture animals.

The data to be provided by MS include site names:

- the name and addresses of the aquaculture production business;
- the registration number and particulars of the authorisation delivered;
- the geographical position of the farm;
- the purpose, type (i.e. type of culture system, or facilities such as land-based facilities, sea cages, earth ponds);
- the species of aquaculture animals reared at the farm;
- updated information on the health status.

Despite this obligation, the availability of data varies significantly among MS from no data available at all to a complete regularly updated dataset (only found in Scotland). Most MS with only a marginal finfish production are not able to provide a list with the geo-location of farms. In the main producer countries, there is usually a public list of authorized farms with geo-location data and sometimes information on the species. However the purpose and type of aquaculture is in most cases not available or largely incomplete.

In addition, there is no standard requirement in terms of the naming of the species nor for the geographical systems of reference used for the coordinates, which is usually not specified with the data.

There has been therefore a significant work of harmonization, in order to:

- Identify seawater farms in order to exclude land-based systems and freshwater farms (some sites located within the coastline remain for instance in estuaries or when the sites were explicitly identified as seawater sites, in that case it is indicated in the field POSITION_COASTLINE in order to interpret correctly the distance to the shore);
- Identify duplicates (same name and coordinates);
- Harmonise the species description;
- Harmonise the coordinate reference systems.

The dataset allows to locate seawater fish farms for the main producer MS in the EU.

Data model

Fields	Data Type	Attributes
COUNTRY	Text	AUSTRIA, BELGIUM, BULGARIA, CROATIA, CYPRUS, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, IRELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MALTA, NETHERLANDS, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, UNITED KINGDOM
COMPANY_NAME	Text or Unknown	
SPECIES	Text or Unknown	"Salmon, Trout, Tunas, Seabass, Seabream, Meagre, Mullet, Other." For harmonisation purposes, we have kept generic names (e.g. Salmon for Atlantic salmon), detailed names or scientific names can be found in the complementary tables for some countries. There may be more than one species by farm or production area, in that case names are separated by comas.
ID	Number	This field links to the complementary tables by country.
DISTANCE_TO_SHORE_M	Number	
POSITION_COASTLINE	Text	"At sea", "Within the coastline"

Missing information

Relatively important datasets are still missing for finfish farming concerning Croatia (ongoing data collection), Italy and France (pending data delivering). Other countries missing data are less important in terms of marine finfish farming production/number of farms.

The species, which is a valuable information is not always available by farm and therefore cannot always be shown on the map. For instance, we know that Finnish farms produce mainly rainbow trout (90% of the production according to the national authority) and that most Greek farms produce both seabass and seabream (95% of the production) but this information is only available in the metadata.

Other valuable information would be:

- The status of the site (active/inactive), which is only available in Scotland;
- The purpose of the farm (e.g. human consumption/research…), which is only very partially available;
- The existence of certification systems (not available at all and not asked in the current sources).

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden		No data but a very few marine farms for rainbow trout
	Finland	✓	No indication on species farmed but mainly rainbow trout
	Estonia		No data, maybe one farm existing (salmon and rainbow trout)
	Latvia		No marine finfish farms
	Lithuania		No marine finfish farms
	Poland		No marine finfish farming
	Germany		No data but very low production of salmonids (less than 10 tonnes)
	Denmark	✓	
Greater North Sea	Norway		
	Denmark	✓	
	Germany		No data but very low production of salmonids (less than 10 tonnes)
	Netherlands		Only land-based marine finfish farming (sole)
	Belgium		No marine finfish farming
	France		
	United Kingdom	✓	Only land-based marine finfish farming (trout)
	Sweden		No data but a very few marine farms for rainbow trout
Celtic Sea	United Kingdom		No marine finfish farming
	Ireland	✓	
Bay of Biscay and Iberian Coast	France		
	Spain	✓	
	Portugal		No data but a few farms at sea (low production of seabass and seabream)
Western Mediterranean	Spain	✓	
	France		

Sea basin	Country	Data coverage	Notes
	Italy		
Adriatic Sea	Italy		
	Slovenia		No data but maybe a very few seabass and seabream farms
	Croatia		No existing data
Black Sea	Bulgaria		Only one marine fish farm but land-based
Ionian Sea and the Central Mediterranean Sea	Italy		
	Malta		No data but a few marine farms existing
	Greece	✓	No indications on species farmed but 95% seabream and seabass
Aegean-Levantine Sea	Greece	✓	No indications on species farmed but 95% seabream and seabass
	Cyprus	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
Greece: Greek Ministry of Agriculture	http://www.minagric.gr/index.php/el/	***Mr.Perdirakis*** sperdikaris@minagric.gr
Poland: Veterinary services	www.wetgiw.gov.pl	***Wioleta Świerczewska*** wioleta.swierczewska@wetgiw.gov.pl
Ireland: Marine Institute		***Ayesha Power*** Ayesha.Power@marine.ie
Croatia: Veterinary Services		***Ivica Sučec*** ivica.sucec@mps.hr
Denmark: Ministry of Food, Agriculture and Fisheries		***Sten Mortensen*** STM@fvst.dk
Bulgaria: Veterinary Services		***Damyan Iliev*** damyan.iliev@bfsa.bg
Portugal: Veterinary Services		***Margarida Vieira*** mcvieira@dgav.pt
UK (Scotland): Scotland's Aquaculture	http://aquaculture.scotland.gov.uk	aquaweb.administrator@sepa.org.uk
Spain: Magrama	http://www.magrama.gob.es/es/ganaderia/temas/trazabilidad-	***Ms Carmen Gonzales*** gonzalezm@magrama.es

Data source by Member State	Link	Contact person and e-mail
	animal/infacuicultura16042015_tcm7-374338.xls	

Accuracy of data

The main issue with accuracy comes from the lack of update of the lists provided.

Difficulties encountered

Besides harmonization issues described above, the main difficulty has been to identify the relevant services in the national authorities to obtain the list of authorized farms in an electronic format (some lists were only available in pdf or not downloadable at all) and to obtain the information on the geographical system of reference used.

Mariculture (shellfish)

Geographic representation

Format: vector

Type: points

Detailed description

The 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.

The availability of data varies significantly among MS. Most MS with only a marginal shellfish production are not able to provide a list with the geo-location of farms. Among available datasets, information on species at the farm level is not available for Ireland, Denmark and the Netherlands.

Within the Euroshell project, geographical coordinates had been harmonized into one system of reference (WGS 84) but for data coming from the registered lists under Council Directive 2006/88/EC, geographical systems of reference vary amongst countries and are usually not specified in the datasets.

Harmonisation has mainly consisted in:

- Identifying duplicates (same name and coordinates);
- Harmonising the species description;
- Converting polygons into points;
- Harmonising the coordinate reference systems.

Data model

Fields	Data Type	Attributes
COUNTRY	Text	AUSTRIA, BELGIUM, BULGARIA, CROATIA, CYPRUS, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, IRELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MALTA, NETHERLANDS, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, UNITED KINGDOM
SITE_NAME	Text or Unknown	Company Name (IT,IRL), Farm name (UK-Scotland), Area name (FR, NL) or Registration Code (UK-England and Wales)
ITEM	Text	Specifies what the point represents considering that the nature of the data varies depending on the country : Production area, Farm (when it comes from professional sources) or Registered site (when the data come from the Public Register of Aquaculture Production Businesses);
SPECIES	Text or Unknown	For harmonization purposes, we have kept generic names (e.g. Oysters rather than Pacific Oysters), detailed names or scientific names can be found in the complementary tables for some countries. There may be more than one species by farm or production area, in that case the two names are separated by comas.
ID	Number	This field links to the complementary tables by country.
POSITION_INFO	Text	characterises the geographic data: Estimated, Polygon centroid, Original, Estimated polygon centroid
DISTANCE_TO_SHORE_M	Number	
POSITION_COASTLINE	Text	"At sea", "Within the coastline" (e.g. in Estuaries)

Missing information

Relatively important datasets are still missing for shellfish farming concerning Italy and Germany (mussel production). Other countries where data is missing or non-existent are less important in terms of marine shellfish farming production/number of farms.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden		No data but only a small mussel production
	Finland		No marine shellfish farms
	Estonia		No marine shellfish farms
	Latvia		No marine shellfish farms
	Lithuania		No marine shellfish farms
	Poland		No marine shellfish farms
	Germany		No data and significant mussel production
	Denmark	✓	
Greater North Sea	Norway		
	Denmark	✓	
	Germany		No data and significant mussel production
	Netherlands	✓	Production area data
	Belgium		
	France	✓	Production areas data
	United Kingdom	✓	
	Sweden		No data but only a small mussel production
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal		No data but very small production (clams, oysters)
Western Mediterranean	Spain	✓	
	France	✓	
	Italy		Data missing and relatively important mussel production
Adriatic Sea	Italy		Data missing and relatively important mussel production
	Slovenia		No data but a small mussel production
	Croatia		No existing data
Black Sea	Bulgaria		No existing shellfish farming
Ionian Sea and the Central Mediterranean Sea	Italy		Data missing and relatively important mussel production
	Malta		No existing shellfish farming
	Greece	✓	
Aegean-Levantine Sea	Greece	✓	
	Cyprus		No existing shellfish farming

Data sources

Data source by Member State	Link	Contact person and e-mail
France, Ireland, Italy, the Netherlands and UK (England): **Euroshell project** (led by IFREMER)	http://www.euroshell-fp7.eu/Mapping-with-Sextant/Catalogue	***Mr Jean Prou*** jean.prou@ifremer.fr
UK (Scotland): **Scotland's Aquaculture**	http://aquaculture.scotland.gov.uk	aquaweb.administrator@sepa.org.uk
Spain: **Magrama**	http://www.magrama.gob.es/es/ganaderia/temas/trazabilidad-animal/infacuicultura16042015_tcm7-374338.xls	***Ms Carmen Gonzales*** gonzalezm@magrama.es
Denmark: **Ministry of Food, Agriculture and Fisheries**		***Sten Mortensen*** STM@fvst.dk
Greece: **Greek Ministry of Agriculture**	http://www.minagric.gr/index.php/el/	***Mr Perdirakis*** **sperdikaris@minagric.gr**

Accuracy of data

For France and the Netherlands, points represent the centre of production areas as defined by professional organisations (polygon centroid calculated from the polygons provided by the Euroshell project).

Difficulties encountered

None

Maritime boundaries

Geographic representation

Format: vector

Type: line

Detailed description

These conventions 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 up to now.

Basic and additional information has been incorporated from additional data available in the original source (EEA).

Data model

Fields	Data Type	Attributes
MBLSZOTPID	Number (integer)	
LocalId	Number (integer)	
SiteName	Text	
legalFound	Date	
legalFou_1	Text	
country	Text	
nationalLe	Text	Bilateral; Unilateral; Multilateral
NUTScode	Text	BE; BL; CY; DE; DK; EE; ES; LB
mblsds_MBL	Text	

Missing information

None

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	

Sea basin	Country	Data coverage	Notes
	Netherlands	✓	
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain	✓	
	France	✓	
	Italy	✓	
Adriatic Sea	Italy	✓	
	Slovenia	✓	
	Croatia	✓	
Black Sea	Bulgaria	✓	
	Romania	✓	
Ionian Sea and the Central Mediterranean Sea	Italy	✓	
	Greece	✓	
Aegean-Levantine Sea	Greece	✓	
Macaronesia	Portugal	✓	
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
European Environment Agency (all EU MS)	www.eea.europa.eu	
Department of Communications, Energy and Natural Resources (Ireland) - Petroleum Affairs Division (UK, IE, FR)	http://www.dcenr.gov.ie/natural-resources/en-ie/Oil-Gas-Exploration-Production/Pages/Spatial-%28GIS%29-Data.aspx	Oonagh.OLoughlin@dcenr.gov.ie
Marine Regions (ES)	http://www.marineregions.org/downloads.php	

Accuracy of data

Accurate to the original source.

Difficulties encountered

Ireland, Spain and Italy have warned needs updating.

Ocean Energy Facilities

Geographic representation

Format: *vector*

Type: *point*

Detailed description

The geo-database on Ocean Energy projects in the EU was created in 2014 by AZTI-Tecnalia for the European Marine Observation and Data Network (EMODnet). It is the result of the aggregation and harmonization of datasets provided by several sources from all across the EU. It is updated every six months, and is available for viewing and download on EMODnet - Human Activities web portal (www.emodnet-humanactivities.eu). The database contains points representing Ocean Energy project sites in the following countries: Denmark, Estonia, Finland, France, Germany, Latvia, Lithuania, Poland, Portugal, Spain and Sweden. Each point has the following attributes: Id (Identifier), Position Info (Estimated, Original, Polygon centroid), Country, Sea basin, Location, Device/Project name, Start year, End year, Resource (Tidal currents, Tidal range, Wave, OTEC, Salinity gradient), Technology (Based on www.aquaret.com/; Wave: Attenuators, Point absorbers, Oscillating Wave Surge Converters (OWSC), Oscillating Water Columns (OWC), Overtopping devices, Submerged Pressure Differential Devices; Tidal: Horizontal Axis Turbines, Vertical Axis Turbines, Reciprocating Hydrofoils, Venturi Effect Devices), Project Scale (Test site, Commercial, Prototype, Array), Device scale (Full scale, prototype), Project capacity (KW), Distance to shore (Onshore, Nearshore, Offshore), Project promoter, Link to Web Sources, Web Page and Availability of metadata.

Data model

Fields	Data Type	Attributes
ID	Number + Text	- The considered human activity, OE: Ocean Energy. - Country, BE: Belgium; ES: Spain; UK: United Kingdom; FR: France, etc. - Consecutive number.
LAT	Number	
LONG	Number	
POSITION INFO	Text	E.g.: Estimated/Original/Polygon centroid
COUNTRY	Text	Denmark, Belgium, Italy, France, etc.
SEA_BASIN	Text	Greater North Sea, Celtic Sea, Bay of Biscay and

Fields	Data Type	Attributes
		Iberian Coast, etc.
LOCATION	Text	Specific site, e.g.: Costa Head (Orkney)
DEVICE/PROJECT_NAME	Text	Name of the devide/project
START_YEAR	Number	Start year
END_YEAR	Number	End year
RESOURCE	Text	E.g.: Tidal current, Tidal range, Wave, OTEC, Salinity gradient, etc.
TECHNOLOGY	Text	Based on http://www.aquaret.com
PROJECT_SCALE	Text	E.g.: Commercial, Test site, Prototype, Array, etc.
DEVICE SCALE	Text	E.g.: Full scale, Prototype, etc.
STATUS	Text	E.g.: Planned, Under construction, Operational, Decommissioned
Project capacity_KW	Number	E.g.: Project capacity in Kilowatts (KW)
Distance	Text	E.g.: Offshore, Nearshore, Onshore
PROJECT_PROMOTER	Text	
WEB PAGE	Text	
SOURCE	Text	E.g.: E-mail, web page, personal communication, etc.
SERVICE_OR_DATA_AVAILABLE	Text	E.g.: N/A (not available), pdf report, Excel file, Shapefile, WFS, ect.
LINK TO SOURCE	Text	E.g.: N/A (not available), web page link, shapefile link, pdf report link, WFS link, ect.
SOURCE_DETAILS	Text	E.g.: N/A (not availlable), Title of the pfd report, Consulted institution and contact person, web page, etc.
Date of last access	Number	Date of the last access to the source
Metadata available	Text	Yes/No
Metadata link	Text	

Missing information

None.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland		
	Estonia		
	Latvia		
	Lithuania		
	Russia		
	Poland		
	Germany		

Sea basin	Country	Data coverage	Notes
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany		
	Netherlands	✓	
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France	✓	
	Spain	✓	
	Portugal	✓	
Western Mediterranean	Spain		
	France		
	Italy	✓	
Adriatic Sea	Italy		
	Slovenia		
	Croatia		
Black Sea	Bulgaria		
	Romania		
Ionian Sea and the Central Mediterranean Sea	Italy		
	Greece		
Aegean-Levantine Sea	Greece		
	Cyprus		
Macaronesia	Portugal	✓	
	Spain	✓	
Barents Sea	Russia	✓	
Norwegian Sea	Norway	✓	

Data sources

Most of Ocean Energy information has been found from the following sources:

Source	Web page
SOWFIA Project Database	http://sowfia.hidromod.com/
TETHYS Database	http://mhk.pnnl.gov/
IEA-OES GIS Map of Ocean Energy Installations	http://www.ocean-energy-systems.org/ocean_energy_in_the_world/gis_map/
EMEC Orkney	http://www.emec.org.uk/marine-energy/wave-and-tidal-projects/;
The Crown Estate	http://www.thecrownestate.co.uk/energy-and-infrastructure/wave-and-tidal/

Other Member States were directly asked for Ocean Energy information. In the following table, only answered emails are included.

Data source by Member State	Link	Contact person and e-mail	Comments
OSPAR	http://www.ospar.org	***Sylvie Ashe*** sylvie.ashe@ospar.org	OSPAR does not collect wave, tide or current data
Marine Institute (Ireland)	http://www.marine.ie	***Trevor Alcorn*** Trevor.Alcorn@Marine.ie	License Agreement for Use of Digital Data
Estonian Renewable Energy Association, Estonia	http://www.taastuvenergeetika.ee	***Rene Tammist*** rene.tammist@taastuvenergeetika.ee	In Estonia there is very little research carried out on ocean energy. Current technology ocean energy has no perspective. There has been some research done on the potential of wave energy: https://www.ioc.ee/wiki/doku.php?id=en:strukt:wavelab
Klaipėda University, Lithuania	http://www.ku.lt/en/marine-science-and-technology-center/	***Marine Science and Technology Centre (MARSTEC)*** nb@corpi.ku.lt	There are no such activities launched or plan in Lithuanian part of Baltic Sea.

Accuracy of data

Most of the Ocean Energy projects (wave and tidal) were original geo-referenced *and were* represented as points. When the project site was not geo-referenced in the original dataset, coordinates were estimated based on the available information (e.g., the name of the area). Geo-referenced data are to be considered very reliable, because they come from national sources officially in charge for their collection.

Difficulties encountered

None

Protected areas

Geographic representation

Format: vector

Type: polygon

Detailed description

The dataset on marine and coastal protected areas in the EU was created in 2014 by Cogea for the European Marine Observation and Data Network. The dataset is entirely based on the European Environmental Agency's (EEA) datasets “Natura 2000” and “CDDA polygons” (i.e. nationally designated areas).

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 data set 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).EEA's data have been filtered by Cogea to show only maritime areas (i.e. areas entirely at sea), and coastal areas (internal areas that intersect and/or are tangent to the coast).This dataset cover the whole EU (except Croatia) in the case of Natura 2000 data , and Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Great Britain, Greece, Ireland, France, Germany, Iceland, Italy, Kosovo under UNSC Resolution 1244/99, Latvia, Liechtenstein, Lithuania, the former Yugoslav Republic of Macedonia, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden and Switzerland in the case of CDDA polygons.

Data model

Natura 2000

Fields	Data Type	Attributes
Member State	Text	
Release Date	Number	Date when the area was established under Natura

Fields	Data Type	Attributes
		2000
Site Code	Number	Natura 2000 code
Site Name	Text	
Site Type	Text	A (area classified as special protection site), B (site classified under the habitats directive), C (the area designated under the habitats directive is the same as the special protection site)

CDDA

Fields	Data Type	Attributes
Area (ha)	Number	
Country	Text	
IUCN Category	Text	
Site Code	Number	
Site Name	Text	
Title - English	Text	
Title - Original Language	Text	
Year	Number	Year when the area was established

Missing information

None.

Data coverage

Sea basin	Country	Data coverage – Natura 2000	Data coverage - Nationally Designated Areas	Notes
Baltic Sea	Sweden	✓	✓	
	Finland	✓	✓	
	Estonia	✓	✓	
	Latvia	✓	✓	
	Lithuania	✓	✓	
	Poland	✓	✓	
	Germany	✓	✓	
	Denmark	✓	✓	
Greater North Sea	Norway		✓	
	Denmark	✓	✓	
	Germany	✓	✓	

Sea basin	Country	Data coverage – Natura 2000	Data coverage - Nationally Designated Areas	Notes
	Netherlands	✓	✓	
	Belgium	✓	✓	
	France	✓	✓	
	United Kingdom	✓	✓	
	Sweden	✓	✓	
Celtic Sea	United Kingdom	✓	✓	
	Ireland	✓	✓	
Bay of Biscay and Iberian Coast	France	✓	✓	
	Spain	✓	✓	
	Portugal	✓	✓	
Western Mediterranean	Spain	✓	✓	
	France	✓	✓	
	Italy	✓	✓	
Adriatic Sea	Italy	✓	✓	
	Slovenia	✓	✓	
	Croatia		✓	
	Albania		✓	
Black Sea	Bulgaria	✓	✓	
	Romania	✓	✓	
Ionian Sea and the Central Mediterranean Sea	Italy	✓	✓	
	Greece	✓	✓	
Aegean-Levantine Sea	Greece	✓	✓	
Macaronesia	Portugal	✓	✓	
	Spain	✓	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
European Environment Agency (all countries)	European Environment Agency (EEA)	eea.enquiries@eea.europa.eu

Accuracy of data

The spatial data (borders of sites) submitted by each Member State are validated by the European Environment Agency (EEA) and linked to the descriptive data. Any problems identified during this process are brought to the attention of the concerned Member States.

Please note that some Member States have submitted sensitive information that has been filtered out of this database. The following Member States have submitted sensitive information: Austria, Finland, France,

Germany, Ireland, Italy, Latvia, Luxembourg, Poland, Spain and Sweden. This concerns mainly species associated to specific sites. All reference to these species has been removed from the related sites. If this sensitive information is necessary to your field of research, please contact the Member States' administrations individually.

EEA does not have permission to distribute some or all sites reported by Estonia, Romania and Turkey.

Difficulties encountered

None.

Submarine cables

Geographic representation

Format: vector

Type: line, point

Detailed description

The dataset on submarine telecom cables is made up of two different layers:

- 'Actual route locations' was created by Cogea in 2014 for the European Marine Observation and Data Network. 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).The database contains lines representing actual cable routes locations.
- 'Schematic routes (lines) and landing stations (points)' was created by Cogea in 2014 for the European Marine Observation and Data Network. The underlying data is property of Telegeography (www.telegeography.com) and is available online at https://github.com/telegeography/www.submarinecable.com/. The database contains lines and points representing cables and related landing points. Cables are represented as stylised paths, as actual cable routes locations are not available. The dataset covers the whole EU.

Data model

Actual route locations

Fields	Data Type	Attributes
Name	Text	Name of the cable

Schematic routes

Fields	Data Type	Attributes
Date	Number	Date when the cable was laid

Landing Points	Text	Names of the landing points
Name	Text	Name of the cable
Owners	Text	Owners of the cable
Source	Text	Name of the data source
Total Cable System Length (km)	Number	
URL	Text	

Landing points

Fields	Data Type	Attributes
Name	Text	Name of the landing point

Missing information

Actual cable routes are missing for most Member States. Furthermore the datasets currently cover only telecommunication cables, while it would be interesting to collect data on power cables.

Data coverage

Sea basin	Country	Data coverage – schematic routes	Data coverage – actual route locations	Notes
Baltic Sea	Sweden	✓		
	Finland	✓		
	Estonia	✓		
	Latvia	✓		
	Lithuania	✓		
	Russia			
	Poland	✓		
	Germany	✓	✓	
	Denmark	✓		
Greater North Sea	Norway	✓	✓	
	Denmark	✓	✓	
	Germany	✓	✓	
	Netherlands	✓	✓	
	Belgium	✓	✓	
	France	✓	✓	
	United Kingdom	✓	✓	
	Sweden	✓		
Celtic Sea	United Kingdom	✓	✓	
	Ireland	✓	✓	
Bay of Biscay and Iberian Coast	France	✓	✓	
	Spain	✓	✓	
	Portugal	✓	✓	
Western Mediterranean	Spain	✓		
	France	✓	✓	
	Italy	✓	✓	
Adriatic Sea	Italy	✓		
	Croatia	✓		

Sea basin	Country	Data coverage – schematic routes	Data coverage – actual route locations	Notes
Black Sea	Bulgaria	✓	✓	
	Romania	✓	✓	
	Turkey	✓	✓	
	Ukraine	✓		
	Russia	✓		
	Georgia	✓		
Ionian Sea and the Central Mediterranean Sea	Italy	✓	✓	
	Greece	✓		
	Malta	✓		
Aegean-Levantine Sea	Turkey	✓	✓	
	Cyprus	✓	✓	
	Greece	✓		
Macaronesia	Portugal	✓		
	Spain	✓		

Data sources

Data source by Member State	Link	Contact person and e-mail
1. Germany	BSH Contis	Bettina.Kaeppeler@bsh.de
2. UK, Ireland, Portugal, Spain, France, Belgium, Netherlands, Germany, Denmark, Norway, Iceland	Greg's Cable Map	greg@mahlknecht.co.za
3. France	SIG Cables, Orange ©	postmaster@sigcables.com
4. EU	TeleGeography	ovandenbussche@telegeography.com

Accuracy of data

Actual cable routes can be considered accurate. Schematic routes, on the other hand, are simply 'stylized paths' and do not represent the actual positions of cables. Landing points too are not geo-referenced.

Difficulties encountered

It seems particularly challenging to obtain reliable geo-referenced information on actual cable route locations. Typically this information is collected by different departments in each Member States, and is often not publically available, due to a number of reasons.

Knowing the exact positions of cables at sea is crucial for fisheries and shipping, and awareness should be raised to convince data owners to share their data.

Wind farms

Geographic representation

Format: vector

Type: polygons

Detailed description

The dataset includes information on the position and attributes of wind farms across Europe. Information has been collated from different sources, such as the OSPAR Commission, the Atlas of the Seas, the European Wind Energy Association, EnergiData (Denmark), and the Swedish Energy Agency.

When available, wind farms have been represented as polygons, since this gives a better idea of the spatial extent of a farm.

The attributes covered include: number of turbines, status of the farm (e.g. if it's operational or planned), Member State, year of installation, power (in mW) and distance from coast.

Data model

Fields	Data Type	Attributes
Name	Text	
N_Turbines	Text	
Status	Text	authorised; authorised, but court case in process; operational
country	Text	Belgium; Denmark; France; Germany; Ireland; Netherlands; Norway; Sweden; United Kingdom
YEAR	Number (integer)	
WEBSITE_	Text	
DistCst_km	Number (real)	
power_MW	Number (real)	

Missing information

Information is available only as points in most countries, although it would be more accurate to represent wind farms as polygons.

Data coverage

Sea basin	Country	Data coverage	Notes
Baltic Sea	Sweden	✓	
	Finland	✓	
	Estonia	✓	
	Latvia	✓	
	Lithuania	✓	
	Russia	✓	
	Poland	✓	
	Germany	✓	
	Denmark	✓	
Greater North Sea	Norway	✓	
	Denmark	✓	
	Germany	✓	
	Netherlands	✓	
	Belgium	✓	
	France	✓	
	United Kingdom	✓	
	Sweden	✓	
Celtic Sea	United Kingdom	✓	
	Ireland	✓	
Bay of Biscay and Iberian Coast	France		
	Spain		
	Portugal	✓	
Western Mediterranean	Spain		
	France		
	Italy		
Adriatic Sea	Italy		
	Slovenia		
	Croatia		
Black Sea	Bulgaria		
	Romania		
Ionian Sea and the Central Mediterranean Sea	Italy		
	Greece		
Aegean-Levantine Sea	Greece		
Macaronesia	Portugal		
	Spain	✓	

Data sources

Data source by Member State	Link	Contact person and e-mail
Atlas of the Seas (DG MARE) – all countries	http://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/	Jean Dusart Jean.dusart@ec.europa.eu
OSPAR Commission – OSPAR region	http://www.ospar.org/data	sylvie.ashe@ospar.org
EnergiData – DK	http://www.energidata.dk/	mrs@ens.dk
EWEA – all countries	http://www.ewea.org/	Andrew.Ho@ewea.org
Swedish Energy Agency - SE	https://www.energimyndigheten.se/en/	marten.thorsen@energimyndigheten.se

Accuracy of data

The data sourced from the Atlas of the Seas have been updated by EWEA. Data from Denmark have been updated by EnergiData. Data from Sweden have been updated by Swedish Energy Agency.

Difficulties encountered

None.

8. User Feedback

Date	Name	Organization	Type of user feedback	Response time to address user request
2015/03/04	Maria Olsson	Swedish Energy Agency	Technical	20 days
2015/03/17	Trevor Alcorn	Marine Institute	License Agreement for Use of Digital Data	1 day
19/05/15	Laura Robson	Joint Nature and Conservation Committee (UK)	The JNCC is currently looking into options for Data Archive Centres for human activities data. They wanted to explore existing DACs and establish whether it would be worthwhile setting up a DAC for these data in the UK. They wondered whether there is any scope for JNCC to support the data supply to this portal for the UK	Laura was contacted by telephone soon after she sent her e-mail.
24/06/15	Bernard Vanheule	International Association of Oil & Gas Producers	IOGP represents the oil and gas producers community world-wide and also at EU level. Their Marine & Environment Committee is working on various issues, mainly addressing offshore aspects. In that context they were thinking to make use of the Emodnet map showing the location of offshore oil & gas installations. They also noted that some boreholes in the Human Activities map are missing, and offered suggestions as to how to fill gaps. In addition, the IOGP offered to collaborate with the Human Activities team by connecting us with their associates in order to get data from industry for those countries that are not cooperating.	Bernard was contacted by telephone soon after she sent her e-mail.
01/07/2015	Arianna Azzellino	University of Technology, Milan	A PhD in Environmental Engineering, Arianna enquired on the scope of the project, since she was interested in using HA data to calculate pressure on the costal	An email was sent to Arianna the very next day, and she was then called on the phone the next week.

Date	Name	Organization	Type of user feedback	Response time to address user request
			environment from human activities	
14/08/2015	Frankie Peckett	Joint Nature Conservation Committee	Frankie has signalled an issue with Contact Form and with downloading the files for pipelines and cables.	Frankie has been contacted by e-mail the day after he signalled the problem. The problem was sorted out a few days later. In the meantime, Frankie was sent the data he couldn't download via email.

Furthermore, in February 2015 the North-sea Checkpoint produced a data adequacy report that included some remarks on the Human Activities portal. A series of factual inaccuracies were spotted, to which the Human Activities team replied as follows:

Data Adequacy Report – synopsis 2

(1) **Page 8**: There were cases of data being over-derived to increase ease of access, which led to the data becoming less useful. This was the case with some EMODnet human activity data where datasets have been compiled from a range of providers.

- This should be explained further, preferably with examples. EMODnet aims to "assemble existing data from public and private organizations relating to the state of sea basins; processing them into interoperable formats which includes agreed standards, common baselines or reference conditions; assessments of their accuracy and precision and creating data products as defined in this tender" . Does it mean that information is lost during a harmonisation process that leads to a lowest common denominator?

(1) ***Page 8****: Data such as licence areas, originally produced as vector polygons are provided as part of an EMODnet point data layer. In the case of the wind farm challenge, the data could not be used as existing licence areas extents need to be accurately known.*

- We don't understand this. EMODnet provides wind farm data in the North Sea as polygons. It needs to be clearer.

(2) ***Page 9****: Where EMODnet portals had received data from some National data providers and not others, the data downloaded covered only part of the project study area (Wind farm license areas, EMODnet Human activities portal) , or in some only provided data outside of the North Sea cases (dredge spoil dumping grounds, polygons, EMODnet Human Activities portal). Some of the data downloaded from the portals only covered parts of Europe.*

- To be fair, the human activities portal is still in its first phase. In fact they have gone beyond their first year obligation to provide data on the Bay of Biscay and Iberian Coasts, the Baltic Sea, and the Western Mediterranean. Nonetheless data on wind farms in the North Sea have been

available since September 2014. Human activities data is important for this challenge so this should be mentioned somewhere.

(3) ***Page 9****: In many cases, data providers sourced their data from different locations, leading to inconsistencies and uncertainty over the definitive versions of data. For example, munition dumping grounds provided by SeaZone's Hydrospatial Base were sourced from SHOM, while munition dumping grounds provided through the EMODnet Human Activities portal recorded OSPAR as the source. The SeaZone dataset was in this case used in the wind farm siting exercise as it appeared to contain all of the data in the EMODnet dataset as well as additional records.*

- This is useful information and has potential safety implications. The EMODnet team will check on this and include the SHOM data if necessary.

(4) ***Page 10****: The resolution and accuracy of some data has been reduced to integrate it into single larger datasets. A better quality of data would be maintained by delivery of data by source rather than as derived layers.*

- This is similar to point (1). We would be grateful if you could indicate which data this refers to.
- You point out that hydrocarbon extraction activities are only available as point data. Due to their limited footprints we believe that this is acceptable but would be grateful if you could indicate where they are handled better elsewhere.

(5) ***Page 10****: There is an assumption that data provided through the portals* ***will contain full coverage of EU waters****. Providing data by source would give the user a better understanding of the likely spatial coverage of the data before downloading it. This would also make the data updates easier to handle.*

EMODnet Human Activities:

- *Waste disposal, Dumped munitions areas: no data in Wind farm study area. Sources differ from SeaZone Hydrospatial Base;*
- *Wind farms: No data for North Sea or UK*

We are not sure what "*providing data by source*" means. Does it mean including the source as metadata, allowing the user to filter by source, or both?

As pointed out, the human activities portal is only in a first phase and they are not obliged to provide full coverage in the first period. This should be acknowledged.

Data on concerns waste disposal, dumped munitions areas, and wind farms have been available through EMODnet since September 2014.

The comparison with SeaZone is useful and will be investigated.

(6) ***Page 11****: Some of the data provided through the EMODnet portals were provided in a format which is less user-friendly than in other online locations. For example, the protected areas in EMODnet Human Activities is provided as a .csv, while the same data can be downloaded as a shapefile from the EEA website.*

A user who wishes to download the dataset on protected areas from Human Activities is redirected towards the EEA's website. This has been the case since the portal went live.

Finally, some feedback was provided by stakeholders during a conference call:

Map areas used for military purposes	The HA team is currently looking for this data
Try to include officially designated shipping routes	The HA team is currently looking for this data
Provide better information on data updates: make it easier to identify what's changed.	It has been addressed in the metadata. A change log is now provided every time a dataset is updated.
Be in touch with OSPAR to improve current information on certain data themes (dredging, ammunitions, etc.), based on their data. The same goes with Helcom	Done
Organise a meeting in Ispra with the JRC	Done in July
Liaise with Helcom to establish (where possible) WFS data transmission	Will be done during the third year with all data sources
Explore the feasibility to include new data themes such as Carbon Capture & Storage, natural gas storage, recreational areas / tourism	The HA team is currently looking for this data, although it is not included in the contract.
Waste disposal: include tonnage of waste in the information provided	The HA team is currently looking for this data
Make available AIS data	A meeting with the JRC was organised in July 2015. Negotiations are ongoing
Participate in the EMODnet – MSFD coordination meeting	Done

And some other feedback was provided by OSPAR during another conference call:

A first set of suggestions concerned the datasets for which OSPAR is a data source: dredging, aggregate extraction, dumped munitions, and wind farms. These datasets could be improved based on OSPAR data.	Done
OSPAR also invited us to check out their data on oil and gas platforms, marine protected areas, marine litter, and underwater noise.	Oil and gas platforms are now included in Human Activities. The HA team are investigating whether and how to include the other datasets
The OSPAR boundary layer currently shown on our website is not correct. It should be replaced with the correct one (on OSPAR website).	Replaced
The most important suggestion, however, concerned metadata. OSPAR noted that generally speaking the 'lineage' (quality & validity) section of our metadata is very poor, and doesn't tell much about the process history and/or overall quality of the spatial data set. More in detail, we should explain what we did to our	All metadata were made more explicative

data and how we harmonised it. For instance, OSPAR noted that some of their data we're showing on our website have fewer attributes than their original data. This is because we had to harmonise data coming from several sources, and thus some information had to be removed. OSPAR has no objections to this, but would like us to explain better what we have done.	

9. Outreach and communication activities

Date	Media	Title	Short description and/or link to the activity
03/10/2014	Skype	none	We introduced EMODnet project to EWEA and we agreed collaboration protocols for sharing information about new references on wind farms. They will try to send us more info about potential installation of wind farms if possible. We exchange data for their validation.
06/10/2014	PPT presentation	EurOCEAN 2014	Together with the other portals, it was presented how EMODnet fits in the wider marine data landscape in Europe and showcase new sea-basin level approaches to evaluate marine data availability and observation capacity from a use-perspective.
29/10/2014	PPT presentation	EuroGOOS 2014	EMODnet Human Activities was presented at EuroGOOS 2014.
16/01/2015	GoToMeeting	Coordination with key stakeholders	We opened an ongoing dialogue with key stakeholders (ICES, World Maritime University, JRC, Helcom, European Environment Agency, Wageningen University, The Crown Estate, Cefas, OSPAR) to better explain what EMODnet Human Activities is about and to coordinate with them. We collected useful feedback that helped us fine tune the portal.
27/02/2015	-	EMODnet – MSFD Coordination meeting	A demonstration of the portal was provided. Further to the discussion on metadata we had during the Coordination meeting, the “lineage” section has been expanded.
31/03/2015	GoToMeeting	Coordination with OSPAR	Main issues discussed: improvement of datasets based on OSPAR data; improvement of “lineage” (quality & validity) section of metadata on Human

			Activities; OSPAR also noted that it would be useful to provide a sort of a 'change log' to easily spot changes whenever a dataset is updated
28-29/05/2015	PPT presentation and paper posters	European Maritime Day 2015	Cogea had a booth at the EMD 2015 in Athens where users could ask information on EMODnet Human Activities. The project was also presented at a workshop organised by the Secretariat: !Marine data and information powering Blue Growth"
22/06/2015	Digital video (YouTube® channel)	What is EMODnet?	The promotional video of EMODnet is uploaded on the website of the PrimeFish (H2020 project): http://primefish.eu/content/what-emodnet

10. Updates on Progress Indicators

Indicator 1 - Volume of data made available through the portal

Activity		Type/format				
		Points	Lines	Polygons	Related tables/records	Raster tiles/cells
Cultural heritage						
Mariculture	Shellfish	1.288				
	Finfish	781				
Aggregate extraction		261			1 related table containing 835 records	
Dredging (e.g. navigational)		891			1 related table containing 3.884 records	
Ocean energy facility		121			1 related table containing 165 records	
Other forms of area management/designation			150	15		
Waste disposal (solids, including dredge material, dumped munitions, marine constructions)	Dumped munitions	98		159		
	Dredge spoil dumping	913		580		
Wind farms		28		137		
Fisheries	Fishery zones (FAO and ICES)			387		
	Fishery catches by FAO statistica area			135	5 related tables containing 76.749 records	
Hydrocarbon extraction	Boreholes	23.837				
	Active licenses			2.051		
	Offshore installations	1.721				
Pipelines and cables	Landing stations (cables)	466				
	Schematic cables		156			
	Actual route locations (cables)		202			
Environment	Protected areas			118.332		
	State of bathing waters	15.852				
Commercial shipping, recreational shipping						
Major ports		2.201			3 related tables containing 1.806.832 records	

Indicator 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).

Country	Name	Type
Greece	Hellenic Navy Hydrographic Service. (Ministry of Defense)	Government
Portugal	Direção de Serviços de Ambiente Marinho e Sustentabilidade. Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos	Government
Malta	Permanent Representation of Malta to the EU	Government
Italy	Hydrographic Institute-Ministry of Defence and Servizio emergenze ambientali in mare (SEAM)	Government
Bulgaria	Waste disposal in Bulgarian territorial waters	Government
Croatia	Ministry of Defence of the Republic of Croatia	Government
Cyprus	Department of Fisheries and Marine Research.	Government
Greece	Geographic Policy and International Affairs Office Hellenic Navy Hydrographic Service	Government
Ireland	Ireland maritime boundaries	Government
Sweden	Swedish Energy Agency	Government
United Kingdom	Department of Energy and Climate Change of the Office of Renewable Energy Deployment	Government
Denmark	Danish Energy Agency	Government
International	OSPAR	International Convention
International	EWEA	Industry
France	Naval Hydrographic and Oceanographic Service	Government
Spain	Ministry of Agriculture, Food and Environment	Government

Indicator 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.

Country	Name	Type of data	Reason why data has not been supplied
UK	Centre for Environment, Fisheries and Aquaculture Science (CEFAS)	Waste Disposal Data	The Marine Management Organization (MMO) is the regulator for these activities in England and therefore the owner of this type of data. Cefas acts as a technical adviser for the MMO only for projects on which consultation is required. In the case of UK and national institutions from Scotland, North Ireland and Wales, there was a kind of misunderstanding since some contacts refer to CEFAS as the key general institution for those marine data in British waters, but, at the same time, we received some communications from CEFAS telling that Marine Management Organization is the holder of those data. We are still waiting for formal communication from MMO reporting on the issue.
Spain	Ministry of Agriculture, Food and Environment	Waste disposal and Other forms of management/designation	The information is available but not in geo-referenced terms.
Croatia	Croatian Environment Agency	Waste disposal	In Croatia there is no systematic actions on marine litter issue and consequently gathering of these data. Additionally, according to the national regulations, such as Maritime Domain and Seaports Act (Official Gazette 158/03, 100/04, 141/06 and 38/09), it is prohibited to throw, dispose or discharge solid, liquid or gaseous substances which pollute the maritime domain; and according the Maritime Code (Official Gazette 181/04, 76/07, 146/08, 61/11 and

			56/13), competent harbor master office may allow sinking of the vessel that will not pollute the environment and will not interfere with the safety of navigation.
Republic of Slovenia	Ministry of Defence	Waste disposal	Concerning the inquiry about waste disposals at sea in Slovenia, the MINISTRY OF DEFENCE, DEFENCE AFFAIRS DIRECTORATE, informs us that they aren't any. The Republic of Slovenia has adopted harsh legislative environment protection measures.
Poland	Institute of Oceanology of the Polish Academy of Sciences	Waste disposal	Their database is still on construction. As soon it is finalized, we could establish the data transfer.
Norway	The Norwegian Mapping and Cadastre Authority, the Institute of Marine Research, the Norwegian Environment Agency	Waste disposal	They refer to OSPAR database

Indicator 4 -Volume of each type of data and of each data product downloaded from the portal

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

1st September 2014 to 31st August 2015

Dumped Munitions	31
Natura2000	31
CDDA	27
Shellfish Production	27
Wind Farms	26
Hydrocarbon Extraction	23
Telecommunication Cables (actual)	22
Advisory Councils	21
Dredging	21
Main Ports	21
Dredge Spoil Dumping	20
Aggregate Extraction	19

Maritime Boundaries	14
OSPAR Maritime Area	14
Ocean Energy Facilities	12
HELCOM Maritime Area	8
ICES Statistical Areas	7
Telecommunication Cables (schematic)	7
Telecommunication Landing Stations	5
Bucharest Convention	4
FAO Fishery Statistical Areas	4
Fish Catches	2
Barcelona Convention	1

Indicator 5 -Organisations that have downloaded each data type

Users are asked to volunteer their organisation name, sector and country when downloading data and/or requesting initial WFS (web feature services) information. Organisation name and country are not mandatory fields. Only those organisations that can be easily validated online as genuine are listed.

1st September 2014 to 31st August 2015

- 40South Energy (Energy), UK/IT
- Azores University (Research), PT
- Ca' Foscari University of Venice (Research), IT
- Cerema - Centre for Studies and expertise on risk, the environment , mobility and development (Energy), FR
- CIBIO (Research), PT
- CNA (Research), US
- CNR-ISMAR - The Institute of Marine Sciences / National Research Council of Italy (Research), IT
- DEA (Energy), DE
- Department of Environment – Northern Ireland (Environment), UK
- DNV GL (Energy), UK
- EC (Research), IT
- ERES (Mining), DE
- ETT (Other), IT
- European Environment Agency – EEA (Environment), DK
- Federal Grid Company (Energy), RU
- French Ministry of Fisheries (Fisheries and agriculture), FR
- Genesis Oil and Gas (Environment), UK
- Geo-Marine Technology (Research), US
- Ghent University (Research), BE
- GMT Research (Research), US
- GTK - Geological Survey of Finland (Environment), FI
- HELCOM (Environment), FI

- HR Wallingford (Environment), UK
- HRI (Other), NL
- Institute for Marine Resources & Ecosystem Studies (Research), NL
- Institute IMDEA Agua (Research), ES
- IOGP - The International Association of Oil & Gas Producers (Energy), BE
- Joint Nature Conservation Committee – JNCC (UK)
- Joint Research Centre – JRC (Research), IT
- Institute for Marine Resources & Ecosystem Studies (Research), NL
- Maersk Oil (Environment), DK
- Marine Hydrophisical Institute (Transport), UA
- Marine Institute (Research), IE
- MEDDE/DPMA (Fisheries and agriculture), FR
- MEP (Fisheries and Agriculture), UK
- Mercator Océan (Environment), FR
- Ministry of Infrastructure and Developemnt (Other), PL
- National ICT Australia – NICTA (Transport), AU
- National Institute of Geophysics and Volcanology (Research), IT
- Newcastle University (Education), UK
- Orange (Other), FR
- Plymouth University (Research), UK
- RAC/SPA - Regional Activity Centre for Specially Protected Areas (Environment), ES
- Universität Bremen (Research), DE
- University Ca' Foscari of Venice (Research), IT
- University of Ghent (Research), BE
- University of Hull (Education), UK
- University of Malaga (Research), ES
- University of Pennsylvania (Education), US
- University of South Wales (Education), UK
- University of Southampton (Education), UK
- University of the Highlands and Islands, (Environment), UK
- URS (Environment), ES
- Witt O'Brien's (Other), UK
- WWF Italy (Environment), IT

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

Statistics include all visitors including partners, and are gathered using Google Analytics.

View Data

Month	Unique Page Views	Avg. Time on Page (mm:ss)	Page Views	New Visitors	% New Visitors
Sep-14	144	02:09	198	76	52.78%
Oct-14	217	02:37	308	107	49.31%
Nov-14	148	02:02	205	89	60.14%
Dec-14	116	03:22	152	60	51.72%
Jan-15	165	02:20	245	87	52.73%
Feb-15	195	02:05	295	104	53.33%
Mar-15	223	02:36	315	115	51.57%
Apr-15	241	02:43	357	109	45.23%
May-15	209	02:22	312	91	43.54%
Jun-15	243	02:26	338	117	48.15%
Jul-15	249	02:12	335	113	45.38%
Aug-15	140	02:09	182	63	45.00%

Home

Month	Unique Page Views	Avg. Time on Page (mm:ss)	Page Views	New Visitors	% New Visitors
Sep-14	112	01:39	139	63	56.25%
Oct-14	190	00:47	231	90	47.37%
Nov-14	154	02:31	191	111	72.08%
Dec-14	179	02:22	203	125	69.83%
Jan-15	192	01:11	219	122	63.54%
Feb-15	146	00:49	216	91	62.33%
Mar-15	311	00:53	345	259	83.28%
Apr-15	344	01:02	435	291	84.59%
May-15	810	02:36	839	722	89.14%
Jun-15	895	01:58	921	811	90.61%
Jul-15	1122	02:49	1,155	1,038	92.51%
Aug-15	604	01:38	912	237	39.24%

Search Data

Month	Unique Page Views	Avg. Time on Page (mm:ss)	Page Views	New Visitors	% New Visitors
Sep-14	76	01:03	188	32	42.11%
Oct-14	105	01:23	171	31	29.52%
Nov-14	66	02:44	111	43	65.15%
Dec-14	44	01:39	73	24	54.55%
Jan-15	75	01:32	137	33	44.00%
Feb-15	70	01:38	204	34	48.57%
Mar-15	83	00:55	308	43	51.81%
Apr-15	126	02:51	308	45	35.71%
May-15	134	01:14	369	53	39.55%
Jun-15	129	01:55	260	62	48.06%
Jul-15	111	01:32	293	53	47.75%
Aug-15	56	00:50	203	33	58.93%

Indicator 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.)

1st September 2014 to 31st August 2015

Users are asked to select their sector of interest when downloading data or requesting initial WFS (web feature services) information. Sector is a mandatory field. Statistics exclude Human Activities and Central Portal partners.

Research	29.91%
Environment	24.78%
Fisheries and Agriculture	15.93%
Energy	11.33%
Other	4.07%
Mining	3.54%
Education	2.65%
Demography	1.77%
Physical Planning	1.77%
Transport	1.77%
Tourism	1.59%
Forestry	0.53%
Health	0.35%

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

The following web services are available as OGC compliant web feature services (WFS), version 1.1.0, in a WGS84 projection (EPSG:4326). Output is GML format (GeoJSON format has also been tested on request and a test link is available for Shellfish Production).

Advisory Councils

http://77.246.172.208/WFSadvisorycouncils?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=advisorycouncil

Aggregate Extraction

http://77.246.172.208/WFSaggregates?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=aggregates

Barcelona Convention

http://77.246.172.208/WFSbarcelona?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=barcelona

BSH CONTIS Cables

http://77.246.172.208/WFSbshcontiscables?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=bshcontiscables

Bucharest Convention

http://77.246.172.208/WFSbucharest?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=bucharest

Dredge Spoil Dumping (Points)

http://77.246.172.208/WFSdredgespoildumping?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=dredgespoil

Dredge Spoil Dumping (Polygons)

http://77.246.172.208/WFSdredgespoildumpingpoly?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=dredgespoilpoly

FAO Fishery Statistical Areas

Users are referred to original source:
http://www.fao.org/figis/geoserver/area/ows?version=1.0.0&typeName=area:FAO_AREAS

HELCOM Maritime Area

http://77.246.172.208/WFShelcom?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=helcom

ICES Statistical Areas

http://77.246.172.208/cgi-bin/mapserv.exe?map=E:/MS4W/ms4w/apps/mapfiles/WFSicesareas.map&SERVICE=WFS&VERSION=1.0.0&request=GetFeature&typeName=icesareas

Kis Orca Subsea Cables

http://77.246.172.208/WFSkisorcacables?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=kisorcacables

Landing Stations

http://77.246.172.208/WFSlandingstations?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=landingstations

Maritime Boundaries

http://77.246.172.208/WFSmaritimebnds?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=maritimebnds

Nationally Designated Areas

http://77.246.172.208/WFScdda?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=cdda

Natura 2000

http://77.246.172.208/WFSnatura2000?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=natura2000

Ocean Energy Facilities

http://77.246.172.208/WFSoceanenergy?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=oceanenergy

OSPAR Maritime Area

http://77.246.172.208/WFSospar?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=ospar

Shellfish Production

http://77.246.172.208/WFSshellfish?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=shellfish

(GeoJSON output)

http://77.246.172.208//WFSshellfishjson?SERVICE=WFS&VERSION=1.0.0&request=GetFeature&typeName=shellfish&OUTPUTFORMAT=geojson

SIGCables Submarine Cables Routes

http://77.246.172.208/WFSsigcables?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=sigcables

Telecommunication Cables (schematic routes)

http://77.246.172.208/WFScablesschematic?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=cablesschematic

Wind Farms (Points)

http://77.246.172.208/WFSwindfarms?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=windfarms

Wind Farms (Polygons)

http://77.246.172.208/WFSwindfarmspoly?SERVICE=WFS&VERSION=1.1.0&request=GetFeature&typeName=windfarmspoly

Attribute data for Main Ports and Fish Catches are complex and include many linked tables. It is under discussion with partners how practical/useful it would be to release full or restricted WFS for these layers.

Users are asked to volunteer their organisation name, sector and country when requesting initial WFS (web feature services) 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 WFS links from other sources (e.g. from a shared link). Organisations that have made initial requests for WFS links include the following:

- CNR-ISMAR - The Institute of Marine Sciences / National Research Council of Italy (Research), IT
- DEA (Energy), DE
- ETT (Other), IT
- Federal Grid Company (Energy), RU
- French Ministry of Fisheries (Fisheries and agriculture), FR
- Ghent University (Research), BE
- Institute for Marine Resources & Ecosystem Studies (Research), NL
- Joint Research Centre – JRC (Research), IT
- Marine Institute (Research), IE
- MEDDE/DPMA (Fisheries and agriculture), FR
- Orange (Other), FR

11. Additional User Statistics

Statistics include all visitors including partners, and are gathered using Google Analytics.

Traffic Acquisition

Direct (URL)	47.94%
Central Portal Referral	42.88%
Consortium Website Referral	3.60%
Search Engine	3.47%
Social Media	1.43%
Other EMODnet Portal Referral	0.25%
Other Referral	0.43%

Browser

Chrome	68.25%
Firefox	18.55%
Internet Explorer	8.41%
Safari	2.23%
Android Browser	0.21%
Opera	0.19%
Other / Not Set	2.16%

Visitor Location

United States	19.13%
United Kingdom	12.62%
Italy	11.45%
Spain	5.51%
Brazil	5.25%
France	3.25%
Belgium	3.19%
China	2.93%
Netherlands	2.23%
Germany	1.73%
Japan	1.46%
Russia	1.41%
Portugal	1.35%
Denmark	1.06%
Greece	1.03%
Other (EU)	5.27%
Other (Non-EU)	21.13%

Annex 1 – Overview of data collection

The table below provides an overview of data collection, also including recently collected datasets that have not been included in the data analysis section of the report.

	Aggregate extraction	Cables	Commercial recreational shipping	Cultural heritage	Dredging	Fish catches	Fishery zones	Hydrocarbon extraction (boreholes)	Hydrdocarbon active licences	Lighthouses	Main ports	Mariculture (shellfish)	Mariculture (finfish)	Ocean energy facilities	Offshore installations	Other areas	Pipelines	Protected areas	State of bathing waters	Waste disposal	Wind farms
BE	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No extraction	No extraction	Complete	Complete	No mariculture	No mariculture	Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete
BG		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No reply		Complete	Partial		No mariculture	No data		Complete	Awaiting reply	Complete	Complete	Complete	
CY		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete		Complete	Complete		Complete	No data		Complete	Awaiting reply	Complete	Complete		
DE	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Partial			No data	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete
DK	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Partial	Complete	Complete	Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete
EE		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No extraction	No extraction	Complete	Complete	No mariculture		No data	No extraction	Complete	Awaiting reply	Complete	Complete	Complete	Complete
EL		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Partial		Complete	Complete	Complete	Complete	No data		Complete	Awaiting reply	Complete	Complete	Complete	
ES	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete		Complete	Complete	Complete	Complete	Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete
FI	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No extraction	No extraction	Complete	Complete	Complete	Complete	No data	No extraction	Complete	Awaiting reply	Complete	Complete	Complete	Complete
FR	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete		Complete	Partial	Complete		Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Partial
HR		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	No data		Complete	Awaiting reply	Complete	Complete	Complete	
IE	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Awaiting reply	Complete	Complete		Partial
IT	Partial	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Incomplete		Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete
LT		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No extraction	No extraction	Complete	Complete	No mariculture	No mariculture	No data	No extraction	Complete	Awaiting reply	Complete	Complete	Complete	Complete
LV		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Partial		Complete	Complete	No mariculture	No mariculture	No data		Complete	Awaiting reply	Complete	Complete	Complete	Complete
MT		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete		Complete	Complete	No mariculture		No data		Complete	Awaiting reply	Complete	Complete	Complete	
NL		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Awaiting reply	Complete	Complete		Partial
PL	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	No data		Complete	Awaiting reply	Complete	Complete	Complete	Complete
PT	Partial	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Complete			Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete
RO		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No reply		Complete	Partial	No mariculture	No mariculture	No data		Complete	Awaiting reply	Complete	Complete		
SE	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No data		Complete	Complete			Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete
SI		Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	No extraction	No extraction	Complete	Complete			No data	No extraction	Complete	Awaiting reply	Complete	Complete		
UK	Complete	Complete	Awaiting reply	Awaiting reply	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Awaiting reply	Complete	Complete	Complete	Complete