



Towards a joint monitoring programme for the North Sea and the Celtic Sea

ACTIVITIES A AND B – Inventory and database of MSFD monitoring programmes and their methods in the North Sea and Celtic Sea



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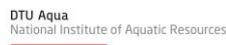
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1. Introduction

The Marine Strategy Framework Directive aims to achieve or maintain Good Environmental Status (GES) of the European marine waters by 2020. Member States must therefore develop and implement national Marine Strategies in order to protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected.

The MSFD specifically refers to regional cooperation across Member States sharing a same region or sub-region (Art. 6). Although such cooperation is already taking place through Regional Sea Conventions such as OSPAR for the North-East Atlantic or HELCOM for the Baltic Sea Area, there is still a strong need to minimise the fragmentation and duplication of monitoring activities taking place in the North Sea and Celtic Sea sub-regions.

The *Joint Monitoring Programme for the North Sea and Celtic Sea (JMP NS/CS)* project aims at developing a joint and integrated marine monitoring for the North Sea and Celtic Sea sub-regions, while meeting the monitoring requirements of the MSFD and supporting the management of anthropogenic activities at sea. In order to find ways to integrated monitoring efforts among partner organisation, synergies in existing monitoring programmes and cost-effective ways of maximising efficiency of existing resources (e.g. multi-use of existing monitoring platforms) need to be investigated.

To efficiently work towards joint monitoring it is of utmost importance to first identify and collate information on (1) the monitoring activities already taking place or considered to take place in the different Member States and (2) how these monitoring activities are or may be linked to environmental targets as reported by the different Member States to the European Commission (EC). This metadatabase should allow searching for possible connections, overlap, gaps, in the monitoring activities in the different Member States and would hence represent the *cards we have in hand to play with* when striving for joint monitoring. It would be the starting point to scope for possible collaboration.

The EC's Eionet database contains all information on environmental targets and monitoring programmes as reported to the EC by the Member States. The Eionet database however does technically not allow searching the data, neither was Eionet holding the data on monitoring programmes when the project started in 2013. We therefore decided to develop a database of our own, which was subject of the activities A and B.

This report explains the different work steps of the activities A and B development related to the inventory and analysis. More specifically, the purpose of activities A and B, as stated in the proposal, was:

- 1) To make an inventory of current marine monitoring programmes and their methods in the North Sea and Celtic sea sub-regions;
- 2) To assess the contribution of the current marine monitoring programmes to meeting MSFD needs for the North Sea region.

Due to the fact that lots of Member States were actively preparing their reporting on Art. 11 of the MSFD, activities A and B were conducted in two phases which are described here below.

2. First phase

At the time the database started to be developed (February 2014), the only functional specifications available were: to be able to provide search capabilities through an inventory of current marine monitoring programmes in the North Sea and the Celtic Sea sub-regions according to a list of criteria that could be combined logically (AND operator). The example of a similar web application developed by Germany, with a PHP Content Management System (Contao), was given to illustrate the objective to achieve.

In addition, Belgium foresaw to use the final tool to generate compliant XML files for the reporting of Art. 11 of the MSFD due for October 2014. However, technical documents describing the Eionet reporting environment were sparse at that time. The Eionet structure needed to be dissected in order to be able to export the expected information and many times we have had to implement assumptions.

The final product needed to contain metadata of the current marine monitoring programmes of all the partner countries: Belgium, Denmark, France, Germany, Ireland, Netherlands, Sweden, UK, and Norway. The JMP consortium was also interested to have an overview of the national environmental targets and indicators developed in the framework of the MSFD (Art. 10) and therefore this information was also included in the database.

2.1 Method

2.1.1 From a content point of view

From December 2013 to February 2014, partners were asked to provide metadata of the on-going monitoring programmes occurring in their part of the North Sea and Celtic Sea, this in order to have a complete inventory. Partners were free to deliver the required information either by completing a factsheet (Annex 1) provided for such purpose (structure based on the WG DIKE draft reporting package for Art. 11) or by providing an existing document where all the needed information could be (easily) found.

Additional information relevant for the project such as the seasonality of the sampling, the platform used or the contact information of the responsible was also requested.

Data on Art. 10 (indicators and environmental targets defined by Member States in 2012) could be easily retrieved from the Eionet website.

In addition, this information was analysed in parallel of the database development for comparison of the national targets and indicators between Member States. This analysis comparable to the ones made by OSPAR and by the EC for the Art. 12 assessment, allowed highlighting the targets/indicators most represented across the North Sea sub-region and helped in the selection of the case studies developed within the project.

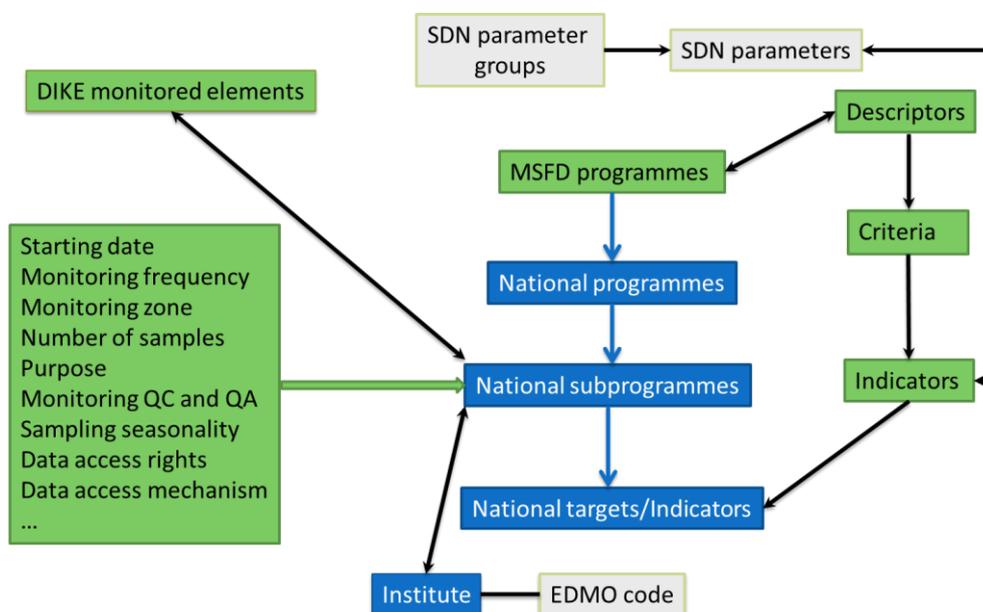


Figure 1. Simplified scheme of the structure of the JMP NS/CS database. “SDN” refers to the controlled vocabularies maintained by the SeaDataNet community. “EDMO” is the European Directory of Marine Organizations, also maintained by the SeaDataNet community.

A simplified schema of the content and how it is structured can be found in Figure 1. Each national sub-programme was linked to a national programme (as defined in the WG DIKE draft reporting package), a point of contact and one or several national environmental targets or indicators. The latter were themselves associated to MSFD indicators belonging to a specific MSFD descriptor. The metadata that were populated were those described in the WG DIKE package, except for the platform, the seasonality of the sampling and the additional information fields that were requested by the experts of the JMP NS/CS consortium. In this first implementation there was some confusion regarding the 'elements monitored' and the 'parameters'. Indeed, in the JMP data model, the three-columns table named "Parameters List" of WG-DIKE 2014 document was interpreted as the list of triples (topic, characteristic, monitored element), while the items of the SeaDataNet Parameter Discovery Vocabulary were used as the measured parameters. This was not quite consistent with MSFD schema: MSFD parameters must be interpreted as MSFD monitored elements and vice versa in the JMP data model.

2.1.2 From a technical point of view

The first JMP NS/CS database was designed in February 2014 as back-end to a web application that had to be developed and to be operational by the end of April 2014. We developed a relational database implemented with the Postgresql database management system, while the Eionet database is a native object oriented database implemented with ZODB. The JMP database was thus based on a relational schema that described its structure and some constraints of data integrity; every used codelist was stored in the database. The Eionet database relies solely on XML schema validation and encoded rules implemented at the application level. Codelists were encoded in a separated XML file used to build the WebForms. This document makes reference to specifications that are available on the Eionet reporting web platform of the European Environment Agency in the MSFD reporting resources. Especially, the document "*Marine Strategy Framework Directive (MSFD) Common Implementation Strategy - 12th Meeting of the Marine Strategy Coordination Group (MSCG) Support files for 2014 reporting on monitoring programmes under MSFD Article 11*" whose version of January 2014 was used as base reference in designing the data model of the JMP NS/CS Rich Internet Application ('RIA').

A real web application was developed with standard well proven stack of JAVEE technologies. The Primefaces library was used to develop the user interface. The admin interface used to encode the content of the database was not made public and could therefore be used by only one person. The reason of such restriction was the lack of time to test and validate the transactional features in a multi-users context and to implement a reliable user management system.

2.2 Results

2.2.1 Content and validation

We received metadata in different file formats (Word, Excel, pdf) from Belgium, the Netherlands, Ireland, UK, France, Germany, Sweden and Denmark.

Due to time constraints and the unstructured format of the documents provided, it was unrealistic to undertake the development of software that would import their content automatically into the database. Therefore, the only possibility was to develop rapidly an interface that would be used to populate the database by “copy/paste” the relevant information provided in the documents into the database. Given the fact that this was not the optimal way to proceed and that it could have led to mistakes, experts from each country were advised to check the content of the database once their data were uploaded.

The JMP NS/CS RIA was presented during the second all partner meeting in April 2014 and was populated focussing on data relevant from the case studies developed within the project (i.e. chlorophyll, benthos and fish). About 200 monitoring sub-programmes were encoded at that time. Information on environmental targets and related indicators was also fully catalogued into that database.

However, most of the associations presented in the previous section (e.g., national sub-programme – national environmental target) weren't mentioned in the submitted documents and were therefore created according to the expert judgement of the person performing the encoding. Again, experts were advised to make a validity check.

2.2.2 Use of the JMP database for MSFD Art. 11 reporting

After validation of the content by the Belgian experts, the JMP NS/CS database was used by Belgium to produce the XML files for the Art. 11 of the MSFD (sub-programme part). This functionality is available to any partner. Our experience has shown however that it sometimes requires some re-organisation of the content to adequately fit the MSFD reporting constraints.

2.3 Conclusions and recommendations

2.3.1 Need of a unique form to be completed

An appropriate and unique form should have been used in order to get only the required information, which could have been directly uploaded into the database. Instead, experts were allowed to deliver the required information either by completing the Word factsheet provided for such purpose (Annex 1) or by providing an existing document where it could be (easily) found. The result was that most of the information received was in Excel sheets or pdf files. The relevant information was therefore either lost among data that were not needed or missing, so the right information had to be extracted from those documents (often based on expert judgment which may not be that reliable).

2.3.2 Use of controlled vocabulary necessary

The choice of a list of controlled vocabulary should have been determined for fields such as ‘monitored elements’ or ‘platform’. Instead, fields were filled in with free text which is not optimal if proper queries need to be performed. It was afterwards decided within the Royal Belgian Institute of Natural Sciences (RBINS) to use some of the vocabulary lists of the SeaDataNet Parameter Discovery Vocabulary (available online via webservices), with only little assurance about the relevance of these lists within the JMP NS/CS framework. The choice was only guided by the fact that those concepts were linked to the MSFD indicators in the SeaDataNet thesaurus. No additional advice could be provided to build the relational model of the JMP database. It is only just before the reporting of Art. 11 that it was realised a set of other lists (habitats, species, P01) would have also been interesting within the JMP NS/CS – MSFD framework. However, these lists have been implemented in the final database version.

2.3.3 *Incomplete database and no quality check*

Due to the lack and/or incompatible information provided by some Member States, the first product (2014) was not accurately or easily searchable. This was mainly due to the fact that some Member States were already preparing their reporting for Art.11 and wanted to avoid duplication of work with the MSFD.

3. **Second phase**

Following the discussion that took place during the London meeting on 20–21 November 2014 on the fact that the database was incomplete and non-validated, the group proposed and agreed priority should be given to the upload of the sub-programmes that have been reported to the Commission in October 2014 (MSFD Art. 11). Indeed, the information existing on the Eionet website is made publicly available but is unfortunately not searchable. It was therefore decided to make the legal monitoring data searchable to the JMP NS/CS consortium but also to the external world.

The final ‘tool’ would be a unique opportunity to get a comprehensive overview of all the MSFD monitoring sub-programmes for the North Sea and Celtic Sea. Such overview allows evaluating compatibility of all monitoring programmes of all EU Member States, which is a prerequisite to scope for international harmonisation of and collaboration within the (sub-) regional MSFD monitoring programmes. This development also creates excellent opportunities for crossing bridges with (the outcomes of) IRIS-SES and BALSAM.

At first, partners found it important to have not only the official MSFD sub-programmes but also the ongoing MSFD-related ones previously encoded in the first JMP database. However, after thorough examination it was found that the import of the XML files from Eionet into the existing JMP NS/CS database was not feasible (incompatibilities in the structure). Therefore, a new database was developed.

3.1 *Method*

3.1.1 *From a content point of view*

XML files of the MSFD sub-programmes from BE, DE, DK, NL, SE and UK were uploaded into the new JMP NS-CS database. FR and IE have not reported their monitoring programmes yet and therefore do not appear in the new JMP NS/CS database.

A total of 237 legal sub-programmes for the North Sea and 48 for the Celtic Sea were uploaded. National environmental targets and indicators were added into the database.

3.1.2 *From a technical point of view*

Early in 2015 the need to overhaul the complete JMP NS/CS RIA architecture became obvious, keeping in mind the caveats we had experienced. This was decided because only this way major obstacles and blocks to further and easier development could be removed.

The final product is accessible at jmp.bmdc.be (username: jmpguest – password: jmpguest).

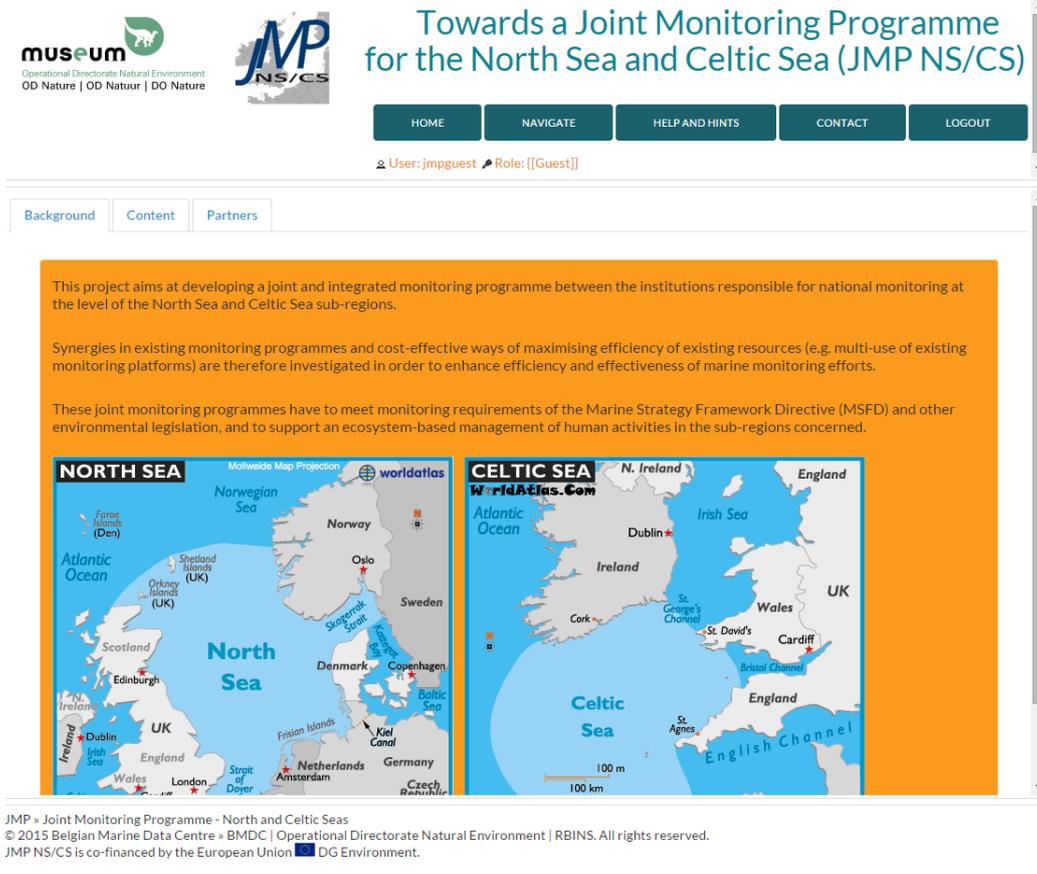
The Oracle database management system was used for creating a relational database. On top of that, we developed a Java Web Application that is running on a Glassfish server. The interface is very straightforward and can provide all the information mentioned under 3.2. Results can be filtered and sorted. All pages have export functionalities (XLS, CSV, XML). There is a login functionality that also allows to assign different roles, to allow specific users to add or update information. Figure 2 depicts the structure of the JMP NS/CS database.

The vocabulary lists of the SeaDataNet Parameter Discovery Vocabulary were implemented in a specific scheme in the final database version.

- QA/QC
- INSPIRE

The chosen sub-programmes can then be exported in different formats (XLS, CSV, XML).

Finally, there are 'External Links' to the other EU monitoring programmes (BALSAM, IRIS) and some other useful links (EU MSFD).



This project aims at developing a joint and integrated monitoring programme between the institutions responsible for national monitoring at the level of the North Sea and Celtic Sea sub-regions.

Synergies in existing monitoring programmes and cost-effective ways of maximising efficiency of existing resources (e.g. multi-use of existing monitoring platforms) are therefore investigated in order to enhance efficiency and effectiveness of marine monitoring efforts.

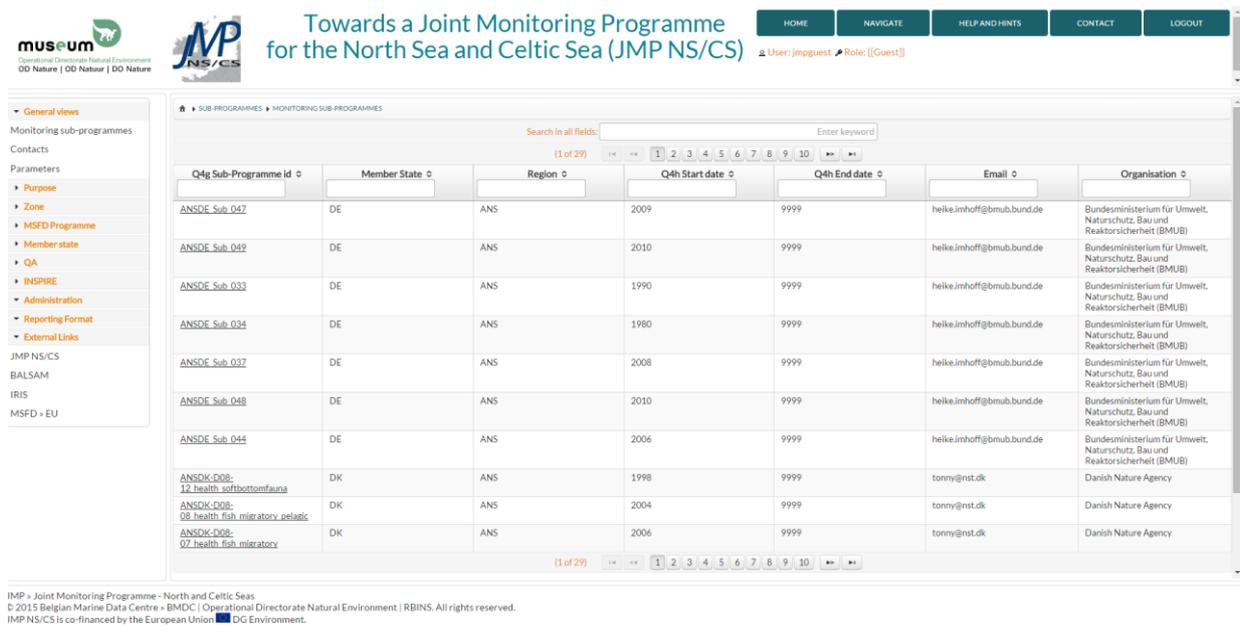
These joint monitoring programmes have to meet monitoring requirements of the Marine Strategy Framework Directive (MSFD) and other environmental legislation, and to support an ecosystem-based management of human activities in the sub-regions concerned.

NORTH SEA Molweide Map Projection worldatlas

CELTIC SEA WorldAtlas.Com

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Figure 3. JMP NS/CS home page.



Search in all fields: Enter keyword

(1 of 29) 1 2 3 4 5 6 7 8 9 10

Q4g-Sub-Programme id	Member State	Region	Q4h Start date	Q4h End date	Email	Organisation
ANSDE-Sub-047	DE	ANS	2009	9999	heike.imhoff@bmub.bund.de	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
ANSDE-Sub-049	DE	ANS	2010	9999	heike.imhoff@bmub.bund.de	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
ANSDE-Sub-033	DE	ANS	1990	9999	heike.imhoff@bmub.bund.de	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
ANSDE-Sub-034	DE	ANS	1980	9999	heike.imhoff@bmub.bund.de	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
ANSDE-Sub-037	DE	ANS	2008	9999	heike.imhoff@bmub.bund.de	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
ANSDE-Sub-048	DE	ANS	2010	9999	heike.imhoff@bmub.bund.de	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
ANSDE-Sub-044	DE	ANS	2006	9999	heike.imhoff@bmub.bund.de	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
ANSDIK-DOB-12 health_siltbottomfauna	DK	ANS	1998	9999	tonny@inst.dk	Danish Nature Agency
ANSDIK-DOB-08 health_fish_migratory_pelagic	DK	ANS	2004	9999	tonny@inst.dk	Danish Nature Agency
ANSDIK-DOB-07 health_fish_migratory	DK	ANS	2006	9999	tonny@inst.dk	Danish Nature Agency

(1 of 29) 1 2 3 4 5 6 7 8 9 10

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Figure 4. JMP NS/CS navigate pane with general information on the monitoring sub-programmes.

Total sub-programmes A

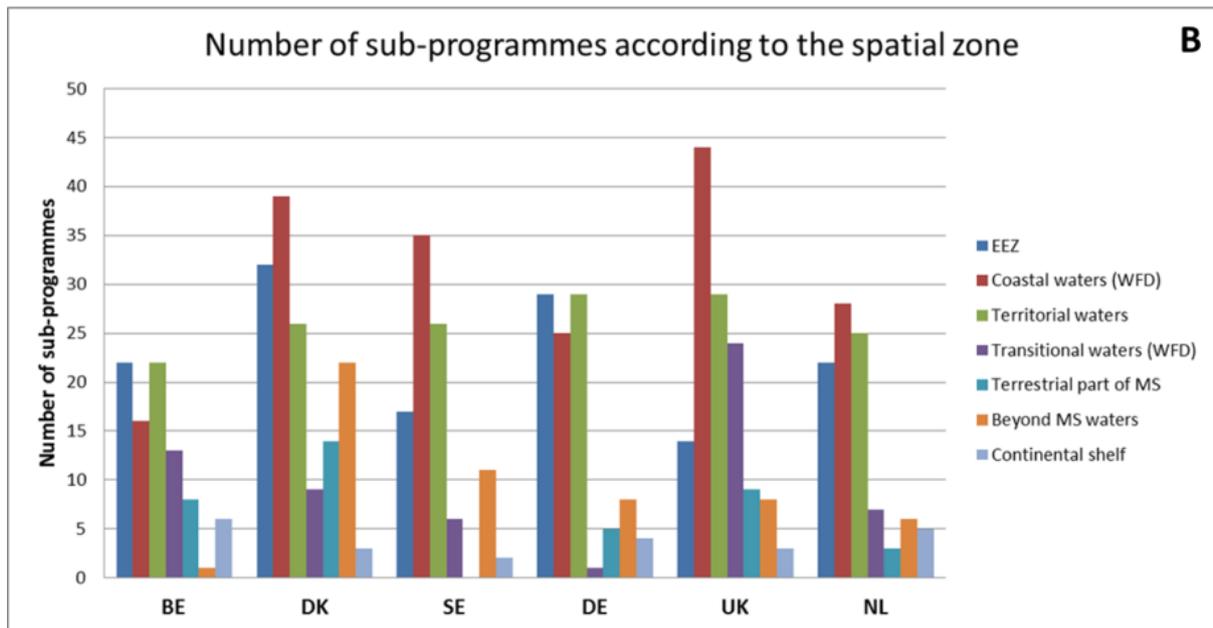
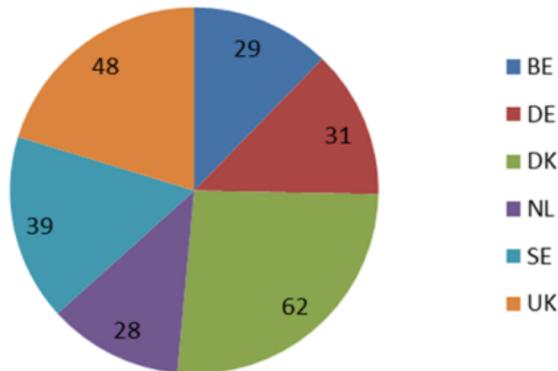


Figure 5. Examples of data visualisation produced with metadata from the JMP NS/CS database. A) Number of MSFD sub-programmes occurring in the North Sea and B) Number of sub-programmes according to the spatial zone.

3.3 Final conclusions and recommendations

3.3.1 Compatible with legal files

For the MSFD reporting, the EU Commission allows Member States to generate required data from their own databases. To the best of our knowledge, only Germany and Belgium used their own database to produce the xml files required under Art. 11. The metadatabase developed in this project offers Member States the possibility to enter the data needed for Art. 11 reporting, in a user-friendly manner and at the same time allows Member States to easily extract the data needed for reporting in the required xml format. The database has for example, already been used by Belgium when reporting on its monitoring programmes to the EC. This tool can hence be used also by other Member States in the next reporting phases. This would allow a more simplified and harmonised procedure for reporting and improve the comparability of assessments, which perfectly suits the “*report once, use many times*” concept.

Our tool must be seen as complementary to the Eionet repository, being two-way compatible (export to Eionet and import from Eionet) and offering extensible data query and analysis functionalities.

It is also possible to think of expanding the database to similar policy instruments such as the Water Framework Directive.

3.3.2 *Marine monitoring directory*

The database allows to easily find the contact information of the person responsible for a specific sub-programme, which is very useful if you want to get more detailed data than simple metadata. This information however wasn't requested in the Art. 11 reporting template (only the contact information of the person who made the reporting was requested). The existence of that information in our records should be part of the quality control process.

3.3.3 *Ways for upgrading the tool*

One of the best ways to get messages across is to use a visualisation to quickly draw attention to the key messages. It is quite possible to develop such visualisation tools by using the information from the JMP NS/CS database (Figure 2).

We hope that opportunities will exist to further work on this, possibly by integrating the work on data visualisation performed within the companion project IRIS SES.

Correspondingly, in order to foster synergy and avoid duplication of efforts, the conditions should be created to establish a link with the data base of research vessels used in HELCOM monitoring programmes developed by the other companion project "BALSAM".

Links can also be established with the ODIMS initiative of OSPAR and JPI-Oceans already expressed interest in having the knowledge base expanded with other policy relevant information (like the actual costs of the monitoring programmes).

On the other hand Belgium plans to investigate how to efficiently link the description of its monitoring sub-programmes in the JMP NS/CS RIA with the data resulting from the corresponding monitoring activities.

3.3.4 *Sustainability of the JMP NS/CS database*

The Belgian Marine Data Centre commits itself to keeping the JMP NS/CS RIA available throughout the first cycle of the MSFD monitoring programmes (2014–2020).

Keeping the content of the JMP NS/CS database up to date is of the utmost importance for the usefulness of the tool. We cannot however underestimate the efforts needed for doing this professionally. RBINS and other partners should investigate possible opportunities for supporting this work.

Annex 1: Factsheet Sub-programme level

Questions	Answers
Name of the programme	
<ul style="list-style-type: none"> • Full name 	
<ul style="list-style-type: none"> • Acronym 	
<ul style="list-style-type: none"> • Short abstract 	
<ul style="list-style-type: none"> • Any additional information (e.g. a web link) 	
Responsible authority	
<ul style="list-style-type: none"> • Full name of the service 	
<ul style="list-style-type: none"> • Address of the service 	
<ul style="list-style-type: none"> • Name of the contact person 	
<ul style="list-style-type: none"> • Tel. nr. of the contact person 	
<ul style="list-style-type: none"> • Email of the person 	
Metadata about the programme	
<ul style="list-style-type: none"> • Year started (or due to start) 	

Questions	Answers
<ul style="list-style-type: none"> Year ended (or on-going) 	
<ul style="list-style-type: none"> Monitoring zones 	<input type="checkbox"/> Terrestrial part of MS <input type="checkbox"/> Transitional waters (WFD) <input type="checkbox"/> Coastal waters (WFD) <input type="checkbox"/> Territorial waters <input type="checkbox"/> EEZ (or similar, e.g. Contiguous Zone, Fishing Zone, Ecological Protection Zone) <input type="checkbox"/> Continental shelf (beyond EEZ) <input type="checkbox"/> Beyond MS Marine Waters
<ul style="list-style-type: none"> Geographical coverage (if possible) via a GIS polygon or grid 	
<ul style="list-style-type: none"> Brief description of the rationale for the geographic scope of the programme (e.g. in relation to relevant environmental characteristics, to pressures or to relevant activities and measures) 	
<ul style="list-style-type: none"> What proportion of the geographic scope is covered by sampling (%)? 	

Questions	Answers
<ul style="list-style-type: none">• What is the approximate number of samples taken or expected to be taken (No/y)?	
<ul style="list-style-type: none">• Select the frequency of sampling?	<ul style="list-style-type: none"><input type="checkbox"/> every 6 years<input type="checkbox"/> every 2 years<input type="checkbox"/> annually<input type="checkbox"/> biannually<input type="checkbox"/> quarterly<input type="checkbox"/> monthly<input type="checkbox"/> fortnightly<input type="checkbox"/> weekly<input type="checkbox"/> daily<input type="checkbox"/> hourly<input type="checkbox"/> continual<input type="checkbox"/> one-off<input type="checkbox"/> as needed

Questions	Answers
	<input type="checkbox"/> irregularly <input type="checkbox"/> unknown <input type="checkbox"/> other
<ul style="list-style-type: none"> Select sampling seasonality 	<input type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/> Autumn <input type="checkbox"/> Winter <input type="checkbox"/> Every-season <input type="checkbox"/> Unknown
Purpose of the sub-programme	
<ul style="list-style-type: none"> Select all relevant purposes for which the programme is aiming at collecting data and information. 	<input type="checkbox"/> Environmental state and impacts <input type="checkbox"/> Pressures <input type="checkbox"/> Human activities causing the pressures <input type="checkbox"/> Effectiveness of measures
Elements monitored	
<ul style="list-style-type: none"> Which elements (ecosystem components, pressures from MSFD Annex III) are monitored? 	

Questions	Answers
<ul style="list-style-type: none"> • What parameters of the elements are measured? 	
Method of data collection	
<ul style="list-style-type: none"> • What is the method used for monitoring and, if appropriate, any subsequent laboratory processing ? 	
<ul style="list-style-type: none"> • Provide a reference to a published or publicly available document or web-site URL. 	
<ul style="list-style-type: none"> • Select the platform types used 	
QA en QC procedures	
<ul style="list-style-type: none"> • Specify which QA and QC procedures are being used. 	
<ul style="list-style-type: none"> • Select additional Quality Assurance used, if appropriate. 	<ul style="list-style-type: none"> <input type="checkbox"/> BEQUALM – Biological Effects Quality Assurance in Monitoring Programmes <input type="checkbox"/> COMBINE – Helsinki Commission Cooperative Monitoring in the Baltic Marine Environment manual of measurement protocols <input type="checkbox"/> ICES-ICES Data Centre Data Type Guidelines <input type="checkbox"/> IODE-IOC Manual of Quality Control Procedures for Validation of Oceanographic Data <input type="checkbox"/> JGOFSL1 – Joint Global Ocean Flux Study core measurement protocols

Questions	Answers
	<input type="checkbox"/> QUASIMEME – Quality Assurance of Information for Marine Environmental Monitoring in Europe <input type="checkbox"/> Specify any national standards : <input type="checkbox"/> Specify any other standards : <input type="checkbox"/> Unknown
<ul style="list-style-type: none"> Select what type of Quality Control is used. 	<input type="checkbox"/> Delayed mode validation on the data <input type="checkbox"/> No validation on the data <input type="checkbox"/> Real-time plus delayed mode validation on the data <input type="checkbox"/> Real-time validation on the data <input type="checkbox"/> Other type of QC (specify) : <input type="checkbox"/> Unknown
Data availability and access	To be completed by Serge
<ul style="list-style-type: none"> At which scale can the data from the sub-programme be aggregated for environmental assessments? 	<input type="checkbox"/> Subregion <input type="checkbox"/> Region <input type="checkbox"/> EU <input type="checkbox"/> Other (specify) <input type="checkbox"/> Unknown

Questions	Answers
<ul style="list-style-type: none"> • If 'other' is selected, describe the scale. • If the data cannot be aggregated (beyond the national scale), give reasons? 	
<ul style="list-style-type: none"> • Select the nature of data/information to be made available. 	<input type="checkbox"/> Unprocessed/raw data <input type="checkbox"/> Processed data sets <input type="checkbox"/> Data products <input type="checkbox"/> Simulated (modelled) data
<ul style="list-style-type: none"> • What method/mechanism will be used to make the data available? 	<input type="checkbox"/> Providing URL to view data <input type="checkbox"/> Providing URL to download data <input type="checkbox"/> Provide location of data in national data centre <input type="checkbox"/> Provide location of data in international data centre (e.g. RSC, ICES, EEA, EMODnet)
<ul style="list-style-type: none"> • Select the use rights for the data. 	<input type="checkbox"/> Open access for all data <input type="checkbox"/> Open access for a part of the data (specify) <input type="checkbox"/> Restricted access by specific licence (specify) <input type="checkbox"/> Data will not be available
<ul style="list-style-type: none"> • Which INSPIRE standard is/will 	<input type="checkbox"/> Hydrography

Questions	Answers
<p>be used?</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Protected sites <input type="checkbox"/> Agriculture and aquaculture facilities <input type="checkbox"/> Area management/restriction/regulation zones and reporting units <input type="checkbox"/> Environmental monitoring facilities <input type="checkbox"/> Geology <input type="checkbox"/> Habitats and biotopes <input type="checkbox"/> Land cover <input type="checkbox"/> Land use <input type="checkbox"/> Oceanographic geographical features <input type="checkbox"/> Sea regions <input type="checkbox"/> Species distribution
<ul style="list-style-type: none"> • When will the first data/results become available? 	