



INSPIRE

Infrastructure for Spatial Information in Europe

MIWP Action 2016.5: Priority list of data sets for eReporting

Progress status

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1. INSPIRE MIG MIWP Action 2016.5

The scope of this action under "Working area 2: End user applications" of the Maintenance and Implementation Work Programme 2017-2020 is to further develop a list of data sets related to environmental reporting and support Member States with making these data sets accessible through the European Spatial Data Infrastructure. The list also reflects the data gaps identified during the evaluation of the state-of-implementation and the fitness of the Directive for its intended purpose (a so-called REFIT evaluation).

The 5th meeting of the MIG in December 2016 has endorsed a mandate for this action further detailing the scope, tasks, expected outcomes and timeline. A subgroup was set up under the MIG to execute the tasks and the further maintenance of the list in collaboration with experts from the environmental thematic and reporting communities.

The action 2016.5¹ has following main tasks:

- Task 1: Manage and update the priority list
- Task 2: Make data available as is
- Task 3: Common and interoperable European data models
- Task 4: Monitoring the availability of pan-European data sets

The Work programme 2019-2020 is focused on:

- Make all data on the priority list of data sets for e-reporting available as-is: identify data sets, document metadata, make metadata and data available on the EU geoportal by providing network services;
- Awareness of development of common and interoperable European data models for reporting obligations/data flows and potential collaboration with the thematic and reporting communities;
- Monitoring the availability of data sets for creation of pan-European data sets and providing information and guidance on the implementation of the priority list both from a technical and an information perspective
- Further development of INSPIRE Geoportal on accessibility and usability of priority data sets through the Priority data set viewer.

¹

<https://webgate.ec.europa.eu/fpfis/wikis/display/InspireMIG/Action+2016.5%3A+Priority+list+of+datssets+for+e-Reporting>

2. Priority list of data sets for eReporting

The priority list of data sets for eReporting has been finalised as version 2.0. The priority list covers seven environmental domains, 22 EU environmental legal acts, 47 reporting obligations and identifies 89 different spatial data sets.

The following environmental domains are included in the priority list of data sets:

- Air
- Industrial accidents
- Industrial emissions
- Nature
- Noise
- Waste
- Water.

The following legal basis provides the source for 47 specific reporting obligations and corresponding data sets:

Environmental domain	Title of legislation	Legislation number	Acronym / abbreviation
Air	Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (including Implementing Decision 2011/850/EU)	2008/50/EC	AQD
Industrial accidents	Directive 2012/18/EU Seveso III	2012/18/EU	Seveso III
Industrial emissions	Regulation (EC) No 166/2006 of the European Parliament and of the Council concerning the establishment of a European Pollutant Release and Transfer Register.	166/2006	E-PRTR
Industrial emissions	Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast)	2010/75/EU	IED
Industrial emissions	COMMISSION RECOMMENDATION of 22 January 2014 on minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing (2014/70/EU)	2014/70/EU	2014/70/EU
Nature	EU Regulation (EU) No. 1143/2014 on Invasive Alien Species	1143/2014	IAS
Nature	Directive 2009/147/EC (Codified version) replacing Directive 79/409/EEC) on the conservation of wild birds	2009/147/EC	BIRDS

Environmental domain	Title of legislation	Legislation number	Acronym / abbreviation
Nature	Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora	92/43/EEC	HD
Nature	EIONET Core Data Flow - Nationally designated areas	CDDA	CDDA
Nature	National legislation - biogeographical regions	National - biogeographical regions	National - biogeographical regions
Noise	Directive 2002/49/EC relating to the assessment and management of environmental noise.	2002/49/EC	END
Waste	Council Directive 1999/31/EC on the landfill of waste	1999/31/EC	Landfill of waste
Waste	Directive 2006/21/EC on the management of waste from extractive industries and amending Directive 2004/35/EC	2006/21/EC	Waste - extractive industries
Waste	Regulation (EU) 2017/852 of the European Parliament and of the Council of 17 May 2017 on mercury, and repealing Regulation (EC) No 1102/2008 (on the banning of exports of metallic mercury and certain mercury compounds and mixtures and the safe storage of metallic mercury.	2017/852	2017/852
Waste	Council Directive 86/278/EEC on the protection of the soil, when sewage sludge is used in agriculture.	86/278/EEC	86/278/EEC
Water	Directive 2000/60/EC establishing a framework for Community action in the field of water policy (including Directive 2008/105/EC as amended by 2013/39/EU - surface water EQS and Directive 2006/118/EC - groundwater)	2000/60/EC	WFD
Water	Directive 2006/7/EC concerning the management of bathing water quality	2006/7/EC	BWD
Water	Directive 2007/60/EC of the European Parliament and of the Council on the assessment and management of flood risks.	2007/60/EC	FD
Water	Directive 2008/56/EC of the European Parliament and of the Council establishing a framework for community action in the field of marine environmental policy.	2008/56/EC	MSFD
Water	Council Directive 91/271/EEC concerning urban waste-water treatment.	91/271/EEC	UWWTD
Water	Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural source.	91/676/EEC	NiD

Environmental domain	Title of legislation	Legislation number	Acronym / abbreviation
Water	Council Directive 98/83/EC on the quality of water intended for human consumption.	98/83/EC	DWD

Table 1: List of legal basis for priority list of data sets

The priority list together with the correlated INSPIRE Priority data sets code list² are used to properly identify and describe the existing spatial data sets (provided “as is”) that are available through the INSPIRE Geoportal. Such data sets are required to be tagged in metadata with the dedicated keywords available in the INSPIRE Registry. Further guidance is available from the priority data set WIKI³.

After the proposal of a common methodology for monitoring progress of implementation of the priority list of data sets for e-Reporting at the INSPIRE MIG meeting in June 2019, the work of the MIG 2016.5 action included:

- Exploring ways to restructure the current priority list by reducing overlaps between unique data sets and references to those data sets and including additional information to clarify scope and content of data sets (e.g. responsibility for provision of data sets, expected reporting form and mapping to INSPIRE spatial data themes);
- Discussing proposed methodology and implementing targets, exchanging information from implementation practice (e.g. metadata for priority data sets) and proposing improvements;
- Disseminating information on activities for streamlining environmental reporting obligations with INSPIRE specifications and development of common European data models for reporting data; and
- Developing new functionalities of the INSPIRE Geoportal Priority data set viewer and statistics, e.g. implementation of spatial scope indicator (regional, national)⁴ and diverse filtered views (e.g. per environmental domain).

Chapter 4 includes the overview of the methodology and implementation targets, Annex 1 provides the methodology details and the following section summarises restructuring of the priority list of data sets for e-Reporting which is still in progress.

2.1. Restructuring priority list of data sets

The restructuring of the priority list of data sets will establish a list of unique data sets and references to those data sets from diverse reporting obligations, where applicable. References indicate streamlined reporting by reusing same data sets in different reporting obligations.

² <http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset>

³ <https://ies-svn.jrc.ec.europa.eu/projects/2016-5/wiki/>

⁴ http://data.europa.eu/eli/dec_impl/2019/1372/oj

The priority list of data sets version 2.0 includes seven cases of references to another data set in the priority list. By separating between the unique data sets and references to those data sets, the restructured priority list includes 89 unique data sets.

Out of 89 unique data sets, three data sets present reference geospatial data sets (data sources) which are not reported by MS / countries, however in most cases, needed for the preparation of reported data. The rest, 86 data sets are reported in different expected forms: mandatory or optional data sets, attributes inside data sets, references to spatial objects or other data sources, or in a form of documents (Table 2). All keywords from the INSPIRE priority data set code list can apply to original data set in a similar way as they have been used so far. The keywords can be used to describe:

- A legal basis and content of a data set
- References from other reporting obligations.

89	Entries in the list of PDS (unique datasets)		
	3	Reference datasets 7.02 Population - densely populated built-up areas 23.01 Biogeographical regions (pan-European dataset) 46.01 Biogeographical regions (national datasets)	
	86	Data for reporting obligation	
		61	Datasets - mandatory
		15	Datasets - optional in reporting obligation
		1	Dataset or reference 17.01 FD units of management or reference to WFD river basin districts
		5	Attribute (reported as attribute in another dataset when applicable)
		1	Document 37.01 Areas exempted from permission of dumping waste
3	Reference (to national published data) 16.01 FD flood risk zones low probability scenario 16.02 FD flood risk zones medium probability scenario 16.03 FD flood risk zones high probability scenario		

Table 2: Restructuring priority list of data sets for e-Reporting

The restructured priority list of data sets includes additional information for clarification of scope, reporting data structure and mapping to the INSPIRE spatial data themes, at least the following:

- Reported data or reference geospatial data

- Responsibility
- Expected reported form
- Reference from other legislation
- Mapping to INSPIRE spatial data themes
- Proposed mapping to the hierarchical INSPIRE code list for metadata keywords.

The priority list of data sets will be complemented by derogations in reporting obligations.

2.2. Updated methodology for monitoring progress of priority data sets

The proposed implementation targets (geographic coverage, time reference and INSPIRE data model harmonisation) are relevant. Measures for geographical scope will re-use the official indicators for number of spatial data sets, including the indicators on spatial scope relying on INSPIRE Geoportal statistics. The measure can be more detailed based on information on legal derogations that can be provided to the European Commission by a common template.

The INSPIRE implementation practice shows heterogeneity in providing temporal reference of datasets in metadata. Therefore, it will be more beneficial to provide clear guidelines on applying temporal reference for priority data sets. The guidelines can be used by providers of reported data and implementers of INSPIRE.

Disseminating information on INSPIRE data model harmonisation in the scope of the reporting obligations will expand by using already established means, MIG 2016.5 action wiki, INSPIRE Community Forum⁵ (e.g. INSPIRE & Environmental Policy section) and with the new functionalities of INSPIRE Geoportal Feature type viewer.

3. Availability of the data sets for eReporting through the INSPIRE Geoportal

The overviews of downloadable spatial data sets that have been identified as data sets for eReporting are available from the INSPIRE Geoportal Priority Data sets Viewer by:

- Countries
- Environmental domains or
- Environmental legislation.

In addition to this pre-selection functionalities, the INSPIRE Geoportal includes the possibility to search in the Resource Browser on all metadata available through the discovery services.

⁵ <https://inspire.ec.europa.eu/forum/>

3.1. Status and progress

The list of data sets that are a priority under environmental legislation was communicated to Member States by two letters and was also made available on the WIKI. The first letter was sent to all Member States on 21 December 2017 (ARES(2017)6316317) requesting them to allow access and download of priority data sets by 15 May 2018. The second letter was sent to all Member States on 25 July 2018 (Ares(2018)3946754) requesting them to inform the Commission of their priority data sets and where these data sets are accessible (i.e. a link to the respective view and download services) by 15 October 2018. The Commission based its assessment of the fulfilment of the requirements of data accessibility by using the INSPIRE Dashboard and the INSPIRE EU-geoportal (established under Article 15(2) of the INSPIRE Directive). Those tools ensure a precise and clear overview of the status of implementation on the main obligations under the Directive and related Regulations by each Member State. The available information on INSPIRE EU-geoportal showed that in begin of 2019 many Member States were still lagging behind with the implementation of the priority list of data sets and that some Member States showed no progress at all. Therefore, the Commission decided to issue letters of formal notice for those Member States that have shown no progress at all, in which it takes the view that the concerned Member States have failed to implement several provisions of the INSPIRE Directive and of the Metadata and Network Services Regulations in relation to the priority list of data sets for eReporting. Following their reply to the letter of formal notice, the Commission had a bilateral meeting with the respective Member States end of 2019. As a result of those meetings all four Member States prepared and shared an action plan to address the implementation gap. The Commission will continue this compliance promotion exercise and will decide on the next steps before summer 2020.

3.2. Country overview of downloadable priority data sets

Comparing the available downloadable priority datasets through the INSPIRE Geoportal between May 2019 and March 2020 shows a ca. 50% increase in the amount of metadata and a doubling of the download services. This continues the growth trend compared to earlier statistics. Since May 2019, many Member States have increased their number of deliveries. Bulgaria, Greece, Lithuania and Sweden have made a significant amount of data downloadable for the first time.

Still, half of the EU Member Countries (13) are not providing sufficient numbers of priority data sets. Most of the EFTA countries do not participate with the exception of Norway sharing a minor amount of data.

	27/05/2019		Trends since 27/05/2019*	16/03/2020	
Country	Metadata	Download services	Download services	Metadata	Download services
Austria	76	66	↑	92	87

	27/05/2019		Trends since 27/05/2019*	16/03/2020	
Country	Metadata	Download services	Download services	Metadata	Download services
Belgium	104	33	↑↑	164	99
Bulgaria	0	0	↑↑	121	84
Croatia	6	0	–	15	1
Cyprus	5	5	**	5	0
Czech Republic	39	4	↑↑	41	25
Denmark	38	1	↑↑	50	47
Estonia	21	1	–	21	3
Finland	19	7	↑	18	16
France	105	0	↑**	99	7
Germany	65	40	**	103	24
Greece	0	0	↑↑	54	54
Hungary	12	0	–	20	2
Iceland	2	2	–	2	2
Ireland	9	0	–	39	0
Italy	12	0	–	43	3
Latvia	0	0	↑	34	11
Liechtenstein	0	0	–	0	0
Lithuania	0	0	↑↑	75	66
Luxembourg	67	58	↑	77	77
Malta	54	50	–	54	54
Netherlands	41	12	↑	68	39
Norway	9	1	–	14	1
Poland	0	0	↑	46	6
Portugal	223	21	–	135	26
Romania	21	9	–	27	9
Slovakia	12	2	↑↑	52	20
Slovenia	4	1	↑	9	6
Spain	81	79	**	85	0
Sweden	24	0	↑↑	75	55
Switzerland	0	0	–	0	0
<i>Total</i>	<i>1049</i>	<i>392</i>		<i>1638</i>	<i>824</i>

Table 3: Progress in metadata and download service delivery

Legend:

- Metadata – number of metadata
- Download services – number of download services with proper service-data linking
- *trend: ↑↑ strong increase ↑ increase – stable (or small difference) ** figures show decreasing result which need further verification since they may be due to technical issues in harvesting national catalogues
- Member States marked in grey are only providing a very low amount of PDSs for download.

3.3. Overview of priority data sets by legislation

The overview of provided metadata for the priority datasets according to the EU environmental legislation shows progress.

Legislation	#Metadata 27.5.2019	#Metadata 16.3.2020	#Download services 27.5.2019	#Download services 16.3.2020	Key directive popular name
directive 1999/31/ec	5	12	1	4	
directive 2000/60/ec	359	433	128	192	Water Framework Directive
directive 2002/49/ec	250	314	89	214	Noise Directive
directive 2006/21/ec	2	1	7	4	
directive 2006/7/ec	20	12	21	12	
directive 2007/60/ec	208	265	71	75	Floods Directive
directive 2008/50/ec	76	96	19	31	Ambient Air Quality Directive
directive 2008/56/ec	24	59	13	37	
directive 2009/147/ec	58	77	38	47	Birds Directive
directive 2010/75/eu	15	31	2	12	
directive 2012/18/eu	12	17	4	9	
directive 86/278/eec	5	10	0	2	
directive 91/271/eec	67	91	18	50	Urban Waste Water Treatment Directive
directive 91/676/eec	29	38	13	20	
directive 92/43/eec	102	125	60	77	Habitats Directive
directive 98/83/ec	11	16	3	9	
EEA annual work programme	61	46	25	30	Largely Nationally Designated Areas CDDA
national legislation – biogeographical regions	15	17	7	10	
recommendation 2014/70/EU	4	5	1	1	
regulation (EC) 166/2006	21	52	6	28	
regulation (EU) 1143/2014	7	20	1	15	
regulation (EU) 2017/852	2	3	0	1	

Table 4: Metadata and download services per Member State and by legislation

The majority of the data is provided based on the legislation on nature and biodiversity, water, air and noise. There is a moderate overall increase on metadata and download services with a special dynamic in the Water Framework, Noise and Urban Wastewater legislation.

3.4. Example: Priority data sets related to the Habitats and Birds Directives

The MIG had agreed to focus the initial provision of (as-is) data on nature and biodiversity related reporting – in particular data that is needed to describe the Natura 2000 situation. The downloadable priority datasets established according to the Directive 92/43/EEC (Habitats Directive) and Directive 209/147/EC (Birds Directive) are listed below. The status from May 2019 is compared to March 2020. Overall there is a ca. 25% increase.

Country	Habitats Directive 27.5.2019	Habitats Directive 16.3.2020	Birds Directive 27.5.2019	Birds Directive 16.3.2020
Austria	10	14	9	11
Belgium	7	8	2	2
Bulgaria		6		3
Cyprus	1	-*		
Czech Republic	4	4	2	2
Denmark		3	2	4
Estonia		2	1	1
Finland	4	3	3	2
France		4		1
Germany	2	-*	2	-*
Greece		3		3
Iceland	1	1		
Latvia	1	2		1
Lithuania	1	2	1	1
Luxembourg	7	8	3	5
Malta	5	5	3	3
Netherlands	6	4	4	2
Poland		1		
Portugal	4	2	2	2
Romania	1		1	
Slovenia		1	1	1
Spain	4	-*	2	-*
Sweden		4		3
Total	60	77	38	47

Table 5: Natura 2000 related datasets for download (excluding WfD reporting on habitats and with a drop in number for 3 Member States () which could be due to data harvesting issues)*

In summary, by mid March 2020, 19 (+3) Member States (2 more than in 2018) have provided download services for the Habitats Directive and 17 (+3) (3 more) for the Birds Directive. This is good progress reaching to ca. two third of the Member States compared to half in 2019.

Technical recommendation: In providing this analysis, we discovered that further spatial data sets of Natura 2000 sites (part of data sets related to Habitats and Birds Directives) may be already available in the INSPIRE infrastructure but are not easily discoverable due to the quality of the applied metadata keywords from the INSPIRE Priority data set code list.

Therefore, we strongly recommend that:

- The most precise metadata keyword(s), indicating the content and purpose of the dataset, is applied, instead of more general keywords, e.g. legislation, and
- The identified priority datasets are indeed those that include authoritative data for the reporting obligation used in the reporting data flow.

4. Implementation Targets for the priority data sets (EEA)

A common methodology for monitoring progress of implementation of the list of priority datasets for e-Reporting would provide a basis for comparative and up-to-date information about the accessibility and readiness of INSPIRE data sets and services to be used in environmental reporting data flows and in the creation of pan-European spatial data sets. The proposed methodology relies on the harvested metadata records from the national discovery services which are available through the INSPIRE Geoportal to evaluate the progress towards a set of implementation targets. To do so, a series of proposed indicators provide information on the progress at different disaggregation levels, e.g. at EU level, by country, by legislation or by priority dataset keyword. These build on the regulatory INSPIRE monitoring indicators, and could be regularly updated and presented on a dashboard.

This section summarises the latest developments of the proposed implementation targets, while the draft document in Annex 1 “INSPIRE priority list of datasets for e-Reporting targets” provides detailed methodology and proposed actions to develop guidelines for priority data sets.

The following implementation targets are proposed:

- Geographic coverage,
- Time reference, and
- INSPIRE data model harmonisation.

4.1. Target 1: Geographic coverage

Target 1: Per each reporting obligation, their corresponding priority datasets should be made fully available through the INSPIRE Geoportal (i.e. with metadata and view and download services) **for all relevant Member States.**

Geographic coverage includes two aspects that have to be evaluated together for a reliable evaluation of this target:

- Information on spatial scope of dataset in terms of the new INSPIRE monitoring indicators used to measure the number of the spatial data sets that respectively cover regional or national territory⁶; and
- Information on legal derogations in providing data sets in environmental reporting obligations.

The first above-mentioned aspect is already substantially covered with the official INSPIRE monitoring indicators that can apply also for priority data sets. These information and statistics are already available through the functionalities of the INSPIRE Geoportal.

With regard to the second aspect, the analysis of the geographic scope (i.e. countries) per reporting obligation, flagging existing exceptions (i.e. exempted countries), will provide further tuning and the basis to assess the degree of achievement of this target. Therefore, the target will be evaluated by comparing the provision of priority data sets by country with regard to the expected geographic scope of the relevant reporting obligation. Exceptions in the reporting obligations can be established and synchronised with the Reporting Obligations Database (ROD)⁷.

Not all countries report on all entries of the list of priority datasets. The most obvious example is the Marine Strategy Framework Directive, which does not apply to landlocked countries. Some specific entries may not be either relevant for some countries (e.g. some countries do not report on the distribution of sensitive species, exception with regard the nitrate vulnerable zones under NiD).

To ensure and create the completeness of the geographic scope, it will be necessary to build on several information inputs:

- Content of the INSPIRE metadata for the datasets
- Analysis of the priority dataset and spatial scope keywords
- MS / country information on applied derogations in specific reporting data flows (important to look for synergies or re-use of ROD).

^{6 6} <https://inspire.ec.europa.eu/forum/hoepage> <https://inspire.ec.europa.eu/forum/homepage>

4.2. Target 2: Temporal reference

Target 2: Per each reporting obligation, all relevant Member States will ensure that the **most up-to-date** priority datasets are made fully available through the INSPIRE Geoportal (i.e. with metadata and view and download services).

Each reporting obligation has a well-defined frequency that determines when the relevant data (typically the most up-to-date) should be reported. The frequency can be continuous, annual, every 48 months or even every six years. The reporting deadline could therefore serve to evaluate the adequate provision of the priority datasets. The INSPIRE IR on interoperability establishes that the updates shall be made at the latest six months after the change was applied in the source data set (unless specified differently for INSPIRE spatial data themes). At the same time, the updates of the priority datasets should correlate with the reporting deadlines.

Another aspect to consider is a possibility of to re-submit the reported data during the reporting cycle itself or for previous reporting cycles, which should also be reflected in provision of priority data sets for e-Reporting. This target can be evaluated by using the existing metadata elements of INSPIRE Metadata Regulation. One of the main candidates is (mandatory) temporal reference of the dataset encoded in the INSPIRE metadata (and displayed in the INSPIRE Geoportal) to evaluate it against the reporting obligation deadline. The source of reporting deadlines should be the Reporting Obligations Database (ROD). However, discussion in the MIG 2016.5 action revealed that temporal reference is correctly implemented, however in diverse ways. To address this heterogeneity, clear guidelines on providing temporal reference in case of priority data sets and reporting obligations and cycles seems necessary. These guidelines can be used together with specific reporting guidelines, e.g. by experts preparing reported data and those providing data and metadata in the national spatial data infrastructures (INSPIRE).

4.3. Target 3: INSPIRE data model harmonisation

Target 3: All priority datasets should be made available **under harmonised conditions** (including relevant applications schemas and spatial object types).

By the upcoming deadline of the INSPIRE IR on interoperability, it is expected that all INSPIRE datasets will be provided under harmonised conditions, i.e. based on requirements corresponding to the applicable INSPIRE spatial data themes, using the corresponding application schemas and relevant spatial object types.

In case of most of the priority data sets, the mapping with the INSPIRE spatial data themes is carried out as a joint effort of reporting / thematic community involved in the development of reporting guidelines and the overall reporting data flow modelling process, which considers INSPIRE data specifications. Therefore, this target will be first focused on those data sets that are already provided according to INSPIRE aligned reporting data models (e.g. CDDA, EU Registry of Industrial Sites, Water Framework Directive). Based on harmonisation, for each priority dataset in scope it is then possible to extract the themes, spatial object types and application schemas used and compare them with those included in the INSPIRE IR.

One way of monitoring the progress of this target is through the proposed new functionalities of the INSPIRE Geoportal which could present such information on the level of spatial objects types included in the datasets and compared with the requirements of the IR on Interoperability. However, this task might become more demanding with implementation of different alternative encodings.

The EC and the EEA regularly inform the MIG 2016.5 group about the progress of alignment between reporting data flows (reporting data models) and INSPIRE data specifications. Additionally, this information is published on MIG 2016.5 WIKI and INSPIRE Community Forum in section INSPIRE & Environmental Policy. Another way of disseminating information could also be a INSPIRE Good practice document describing INSPIRE implementation in practical reporting data flows.

4.4. Guidelines and good practice documents

In order to ensure a proper implementation of priority data sets and facilitate progress, further guidelines and good practice documents could be provided.

1) Guidelines

The proposed guidelines to be developed by the MIG 2016.5 should cover the following identified issues:

- Documenting reporting obligation or cycle by INSPIRE metadata elements, e.g. temporal reference
- Use of keywords for data sets and references to data sets.

2) Dissemination of good practice: country-specific data organisation and management practice

The organisation of the same dataset may vary according to its final purpose, e.g. publishing data in the INSPIRE infrastructure might require a different approach than preparing the dataset to be officially submitted as part of a reporting obligation. Furthermore, the INSPIRE harmonised datasets might include several feature types from diverse applications schemas, or several thematic categories.

5. Actions taken by the Commission to support the implementation

The Commission is supporting MS with implementation in several ways:

- 1) Maintaining and developing the **Geoportal Priority Data Sets Viewer** – the single access point to PDS data sets - <http://inspire-geoportal.ec.europa.eu/>
 - Provision of MD of data sets not limited to individual countries, but the whole Europe (e.g. all data sets for individual env. legislation or env. Domain)
 - Deployment of the EU translation service (English) for titles and abstracts of MD of MS data sets
 - Including spatial scope coverage (national or regional territory) at country information level
 - Pre-defined grouping by environmental domains, including European or country view, and regional or national spatial scope

- 2) Maintaining and developing **the controlled vocabulary** (multilingual) for identifying the PDS data sets – <https://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/>

- 3) Providing and **on-line Help to MS via Geoportal Helpdesk** – <https://ies-svn.jrc.ec.europa.eu/projects/geoportal/issues> or general **help on the use of INSPIRE Registry** – jrc-inspire-support@ec.europa.eu

- 4) Technical Guidance – documentation: How to tag PDS data sets <https://ies-svn.jrc.ec.europa.eu/projects/2016-5/wiki/Implementation>

Annex 1 - INSPIRE priority list of data sets for e-Reporting targets (draft)

Abbreviations

Abbreviation	Name	Reference
AM	Area management/restriction/regulation zones and reporting units	https://inspire.ec.europa.eu/Themes/139/2892
BR	Bio-geographical regions	https://inspire.ec.europa.eu/Themes/145/2892
CDR	Central Data Repository	https://cdr.eionet.europa.eu/
EF	Environmental monitoring facilities	https://inspire.ec.europa.eu/Themes/120/2892
GCM	Generic Conceptual Model	
HH	Human health and safety	https://inspire.ec.europa.eu/Themes/119/2892
HY	Hydrography	https://inspire.ec.europa.eu/Themes/116/2892
IR	Implementing rules	
MIG	Maintenance and Implementation Group	
MIWP	Maintenance and Implementation Work Programme	
MS	Member State of the EU	
PDS	Priority dataset for eReporting	
PF	Production and industrial facilities	https://inspire.ec.europa.eu/Themes/121/2892
PS	Protected sites	https://inspire.ec.europa.eu/Themes/117/2892
REFIT	Regulatory fitness and performance (programme)	https://ec.europa.eu/info/law/law-making-process/evaluating-and-improving-existing-laws/refit-making-eu-law-simpler-and-less-costly_en
ROD	Reporting Obligations Database	https://rod.eionet.europa.eu/
TG	Technical guidelines	
TN	Transport networks	https://inspire.ec.europa.eu/Themes/115/2892
XML	Extensible Markup Language	

Introduction

The scope of the INSPIRE action MIWP 2016.5 under "Working area 2: End user applications"⁸ of the Maintenance and Implementation Work Programme 2017-2020 is to further develop a list of datasets related to environmental reporting and support Member States with making these datasets accessible through the European Spatial Data Infrastructure in a stepwise manner. The list also reflects the data gaps identified during the evaluation of the state-of-implementation and the fitness of the Directive for its intended purpose (a so-called REFIT evaluation).

The priority list of datasets for e-Reporting continues to be an important driver in the next INSPIRE Maintenance and Implementation Work Programme to improve access to environmental data through the European Spatial Data Infrastructure (INSPIRE). To keep this role, the priority list will be restructured to improve understanding and use, corrected and regularly updated to address new requirements in environmental policies and legislation.

The priority list of datasets for e-Reporting is a living inventory of environmental information needs and as such provides an instrument to:

- incrementally build comparable INSPIRE maturity across Member States for all INSPIRE components (metadata, services, interoperability, data sharing) based on a common setting;
- plan tangible and usable INSPIRE deliverables for e-Reporting;
- monitor progress on INSPIRE implementation in general and for the reporting use case in specific;
- promote the reuse of the INSPIRE infrastructure for reporting purposes.

A common methodology for monitoring progress of implementation of the list of priority datasets for e-Reporting would provide a basis for comparative and up-to-date information about the accessibility and readiness of INSPIRE datasets and services to be used in environmental reporting data flows and the creation of pan-European spatial data sets. The methodology is focused on the implementing targets proposed at the INSPIRE MIG meeting in June 2019⁹, considering also indicators under the Commission Implementing Decision (EU) 2019/1372 of 19 August 2019 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards monitoring and reporting¹⁰.

The realisation of the proposal for possible streamlining of reporting obligations and if applicable INSPIRE IRs/TGs is out of scope since this role is attributed to the Committee or the co-legislator if reporting obligations have to be amended in EU law. However, as a result of this work, suggestions can be made which will be transmitted to the relevant units in the Commission dealing with these issues. The MIG 2016.5 action is regularly updated on streamlining activities between reporting obligations and INSPIRE data specifications. The group is also interested to access technical documentation from this work and, if applicable, provide comments or share information from INSPIRE implementation

[epage https://inspire.ec.europa.eu/forum/homepage](https://inspire.ec.europa.eu/forum/homepage)
http://data.europa.eu/eli/dec_impl/2019/1372/oj

⁸ <https://webgate.ec.europa.eu/fpfis/wikis/display/InspireMIG/Action+2016.5%3A+Priority+list+of+datasets+for+e-Reporting>

⁹ https://webgate.ec.europa.eu/fpfis/wikis/display/InspireMIG/10th+MIG+meeting+2019-06-20?preview=/356262712/358257262/%5BDOC5%5D_MIG10_2016.5_Priority_%20list_data_sets.pdf

¹⁰ http://data.europa.eu/eli/dec_impl/2019/1372/oj

practice.

1. Priority list of datasets for e-Reporting implementing targets - overview

A common methodology for monitoring progress of implementation of priority list of datasets for e-Reporting provides a basis for comparative and up-to-date information about the accessibility and readiness of INSPIRE datasets and services used in environmental reporting data flows and in the creation of pan-European spatial data sets. The proposed methodology relies on the harvested metadata records from the national discovery services which are available through the INSPIRE Geoportal to evaluate the progress towards a set of implementation targets. It considers also the regulatory INSPIRE monitoring indicators that are regularly updated and presented on a dashboard.

The document “Methodology for evaluation of progress of INSPIRE priority list of datasets for e-Reporting”¹¹ discussed in the 2016.5 MIG subgroup already set the scene for this common methodology. Further on the implementing targets have been presented at the INSPIRE MIG meeting on June 2019¹². In parallel with these activities, the members of the MIWP 2016.5 raised several issues (e.g. unclear requirements, inconsistent statistics, and lack of reporting year information) and recommendations that would improve the discovery and usability of the datasets in environmental reporting data flows. These led to the proposal to reconstruct the priority list of datasets for e-Reporting and update the methodology for monitoring the progress towards the implementing targets.

The following implementation targets are proposed:

- Geographic coverage,
- Time reference, and
- INSPIRE data model harmonisation.

2. Target: Geographic coverage

Target 1: Per each reporting obligation, their corresponding priority datasets should be made fully available through the INSPIRE Geoportal (i.e. with metadata and view and download services) **for all relevant Member States.**

Geographic coverage includes two aspects that have to be evaluated together for a reliable evaluation of this target:

¹¹ <https://webgate.ec.europa.eu/fpfis/wikis/download/attachments/299729499/MIWP2016.5-PDSMethodology-V0.3.docx?version=1&modificationDate=1552309930603&api=v2>

¹² https://webgate.ec.europa.eu/fpfis/wikis/display/InspireMIG/10th+MIG+meeting+2019-06-20?preview=/356262712/358257262/%5BDOC5%5D_MIG10_2016.5_Priority_%20list_data_sets.pdf

- Information on spatial scope of dataset in terms of the new INSPIRE monitoring indicators used to measure the number of the spatial data sets that respectively cover regional or national territory¹³; and
- Information on legal derogations in providing datasets in environmental reporting obligations.

2.1. Geographic coverage – national or regional territory

The Commission Implementing Decision (EU) 2019/1372 of 19 August 2019 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards monitoring and reporting¹⁴ includes two new indicators to measure the number of the spatial data sets that respectively cover regional or national territory:

- a) the number of spatial data sets for which the metadata contains a keyword from a register provided by the Commission indicating that the spatial data set covers regional territory ('DSi1,4');
- b) the number of spatial data sets for which the metadata contains a keyword from a register provided by the Commission indicating that the spatial data set covers the national territory ('DSi1,5').

The spatial scope, i.e. national or regional territory, aspect will be monitored and measured by those two new indicators. They have been already implemented in the INSPIRE Geoportal (e.g. Thematic Viewer of priority dataset, Country view, Spatial scope coverage under each country overview) and will be visible in the INSPIRE indicators dashboard.

As outcome, datasets related to the priority list of datasets for e-Reporting will include information (keywords) of spatial scope, i.e. regional or national territory, that will be easy to detect in the INSPIRE Geoportal based on information in metadata harvested from the national discovery services.

2.2. Derogations

The second aspect of geographic scope target is related to the applicable derogations in reporting obligations of environmental legislation. Not all countries report on all entries of the list of priority datasets. The most obvious example is the Marine Strategy Framework Directive, which does not apply to landlocked countries. Some specific entries may not be either relevant for some countries (e.g. some countries do not report on the distribution of sensitive species, exception with regard the nitrate vulnerable zones under NiD).

This aspect will be evaluated by comparing the provision of priority datasets by country with regard to the expected geographic scope of the relevant reporting obligation.

¹³ http://data.europa.eu/eli/dec_impl/2019/1372/oj

¹⁴ http://data.europa.eu/eli/dec_impl/2019/1372/oj

The European Commission and the EEA continue to work on process for collecting information on derogations, however this might require participation from the MS / countries. They can provide derogation information by the common template¹⁵ to the European Commission, or references to the information that has been already provided. The collected information will complement priority list of datasets for e-Reporting for each Member State and could be used in the INSPIRE Geoportal presentation and statistics.

Later on, this information can be synchronised with the Reporting Obligations Database (ROD)¹⁶.

2.3. Reported data or reference data in the priority list of datasets

Not all the entries in the priority list of datasets for e-Reporting correspond to an actually reported dataset. In some cases, and as a result of a previous streamlining exercise, the reporting dataset only includes a reference to a geospatial data reported under other obligations (e.g. protected areas associated with water bodies). Other datasets are just used to create the reporting dataset, but are not effectively reported (e.g. biogeographical regions). Therefore, a case-by-case analysis may be necessary to clarify which entries in the priority list of datasets for e-Reporting should correspond to a separate dataset available through the INSPIRE infrastructure. These modifications have been supported at the MIWP 2016.5 meeting in November 2019 and will be considered for restructuring of the priority list of datasets for e-Reporting.

2.4. Proposed measures

The following measures are proposed:

- 1) Number of spatial datasets related to the priority list of datasets for e-Reporting:
 - According to the implementing act¹⁷, the INSPIRE monitoring indicator to measure the number of spatial data sets that are already used by the Member State for reporting to the Commission under the environmental legislation: the number of spatial data sets for which the metadata contains a keyword from a register provided by the Commission indicating that the spatial data set is used for reporting under the environmental legislation ('DSi1,3').
- 2) The number of the spatial data sets that respectively cover regional or national territory¹⁸:

¹⁵

https://webgate.ec.europa.eu/fpfis/wikis/download/attachments/420743455/PDS_Template.docx?version=2&modificationDate=1574781970377&api=v2

¹⁶ <https://rod.eionet.europa.eu/>

¹⁷ http://data.europa.eu/eli/dec_impl/2019/1372/oj

¹⁸ http://data.europa.eu/eli/dec_impl/2019/1372/oj

- the number of spatial data sets for which the metadata contains a keyword from a register provided by the Commission indicating that the spatial data set covers regional territory ('DSi1,4');
 - the number of spatial data sets for which the metadata contains a keyword from a register provided by the Commission indicating that the spatial data set covers the national territory ('DSi1,5').
- 3) Another potential measure could be completeness for creation of pan-European dataset. Such measure would consider priority dataset, spatial scope (national, regional) and derogation information. The measure can show a percentage of countries with available data with regard to the number of countries expected in the complete geographic coverage including derogations. However, this measure doesn't consider if the content of datasets is appropriate or complete to create harmonised pan-European datasets.

Those measures have to be adjusted with information on applied derogations, especially the third proposed measure.

3. Target: Temporal reference

Target 2: Per each reporting obligation, all relevant Member States will ensure that the **most up-to-date** priority datasets are made fully available through the INSPIRE Geoportal (i.e. with metadata and view and download services).

Each reporting obligation has a well-defined frequency that determines when the relevant data (typically the most up-to-date) should be reported. The frequency can be continuous, annual, every 48 months or even every six years. The reporting deadline could therefore serve to evaluate the adequate provision of the priority datasets. The INSPIRE IR on interoperability establishes that the updates shall be made at the latest six months after the change was applied in the source data set (unless specified differently for INSPIRE spatial data themes). At the same time, the updates of the priority datasets should correlate with the reporting deadlines.

Temporal reference includes several aspects for identifying and using datasets related to e-Reporting:

- Indication of the reporting year for which the dataset has been prepared, and
- Availability of datasets provided for reporting obligations in different reporting cycles (reporting years) and thus allowing time series assessments.

The following proposals have been discussed:

- (a) Temporal information according to the INSPIRE Metadata Regulation can be provided in different ways by providing at least one of the following elements: temporal extent, date

of publication, date of last revision or date of creation. Heterogeneous implementation of temporal references in metadata shows this information is not suitable to indicate the latest dataset related to the specific reporting obligation.

- (b) Another proposed approach was to extend the INSPIRE priority data set code list - keywords with the exact number of the reporting year. This approach includes exact information, however it will create additional burden on management of the code list (constant update of keywords based on deadlines of reporting obligations). Therefore, it was not considered as a final solution.
- (c) The INSPIRE IR on interoperability is specific on regular updates of datasets (Article 8, “1. Member States shall make available updates of data on a regular basis. 2. All updates shall be made at the latest 6 months after the change was applied in the source data set, unless a different period is specified for a specific spatial data theme ...”), however many environmental assessments and policy evaluations rely on spatio-temporal series of data including datasets provided in different reporting cycles. This would require additional promotion of keeping datasets from previous reporting years accessible in the INSPIRE infrastructure and not removing or replacing them with the latest datasets.

Discussion clearly revealed that several implementation solutions will co-exist, therefore a clear guidelines is needed on providing temporal extent in case of priority data sets and reporting obligations and cycles that will be used together with specific reporting guidelines, e.g. by experts preparing reported data and those providing data and metadata in the national spatial data infrastructures (INSPIRE).

The guidelines need to address the temporal reference and other above-described issues and options:

- **Metadata:**
 - Applicability of all relevant keywords of priority datasets for e-Reporting, including those representing content of the dataset and its known use in reporting obligations,
 - Use of temporal extent for documenting temporal reference. This appears as the most plausible candidate since this is the criteria addressed by the legislation and could cover time series of data covering different reporting years.
 - Providing other options, e.g. indicating reporting year in other metadata elements, e.g.:
 - Resource title
 - Resource abstract
 - Keyword, e.g. information on reporting obligations and deadlines in ROD or URL to ROD,
- **Mapping between the priority list of datasets and corresponding INSPIRE spatial data themes:**

- The mapping will be useful for providing metadata, and it could be extended to reflect more detailed information about expected INSPIRE application schemas or spatial object types in cases, where the harmonisation with INSPIRE data models has been concluded.

3.1. Proposed measures

The heterogeneity of ways how temporal references are provided in INSPIRE metadata for datasets and possibility to update datasets before or after the reporting deadlines show difficulties to define a measure that could accurately monitor availability of datasets used in the reporting obligation. On the other side, the reporting data flow process keeps time information of reported or resubmitted data.

Therefore, forming appropriate measures for temporal information needs further discussion.

However, it would be useful to develop guidelines (mentioned above) how to provide information about the reporting obligations and years in the INSPIRE metadata, and mapping between the priority datasets for e-Reporting and the INSPIRE spatial data themes. Such guidelines would be useful support to experts preparing reporting guidelines, reported data or making datasets available according to INSPIRE.

4. Target: INSPIRE data model harmonisation

Target 3: Priority datasets should be made available under harmonised conditions (including relevant application schemas and spatial object types).

By the upcoming deadline of the INSPIRE IR on interoperability, it is expected that all INSPIRE datasets will be provided under harmonised conditions, including the requirements corresponding to the applicable INSPIRE spatial data themes, using the corresponding application schemas and relevant spatial object types.

In most of the priority datasets, the mapping with the INSPIRE spatial data themes is carried out as a joint effort of reporting/thematic community and INSPIRE, since this need to be considered in the overall reporting data flow modelling process. Therefore, this target will be first focused on those datasets that are already provided according to INSPIRE aligned reporting data models (e.g. CDDA, EU Registry of Industrial Sites, Water Framework Directive). For each priority dataset in scope it is then possible to extract the themes, spatial object types and application schemas used and compare them with those included in the INSPIRE IR.

4.1. Proposed measures

Forming appropriate measures for monitoring INSPIRE data model harmonisation progress requires further discussion.

One way of monitoring the progress of this target is through the proposed new functionalities of the INSPIRE Geoportal which could present such information on the level of spatial objects

types included in the datasets and compared with the requirements of the IR on Interoperability. However, this task might become more demanding with implementation of different alternative encodings.