Status of implementation of the INSPIRE Directive – 2016 Country Fiches

COUNTRY FICHE Denmark

Introduction

The INSPIRE Directive sets the minimum conditions for interoperable sharing and exchange of spatial data across Europe as part of a larger European Interoperability Framework and the e-Government Action Plan that contributes to the Digital Single Market Agenda. Article 21 of INSPIRE Directive defines the basic principles for monitoring and reporting. More detailed implementing rules regarding INSPIRE monitoring and reporting have been adopted as COMMISSION DECISION regarding INSPIRE monitoring and reporting on the 5th of June 2009.

This country fiche highlights the progress of Denmark in the various areas of INSPIRE implementation and presents an outlook of planned actions for further improvement of the INSPIRE implementation. The country fiche includes information **until May 2016** as a summary of the information acquired through:

- the 2016 tri-annual INSPIRE implementation report,
- monitoring report in May 2016,

- a [bilateral meeting](#) on the implementation of the INSPIRE Directive between the Commission and Denmark representatives.

1. State of Play

A high-level view on the governance, use and impact of the INSPIRE Directive in Denmark. More detailed information is available on the [INSPIRE knowledge base.](#)

The content of the chapter is tagged according to 5 criteria of better regulation:

- **[Effectiveness]** How successful has the INSPIRE implementation been in achieving, progressing towards its objectives; progress made, gaps, what factors have influenced or why it has not yet been achieved regarding availability of services, data interoperability, sharing, data policy obstacles
- **[Efficiency]** Costs (numbers or difficulties to evaluate them); benefits (qualitative or quantitative) already visible.
- **[Relevance]** Is it still relevant to make data interoperable, remove obstacles of data sharing, drive collaboration between public services, necessary for National SDI, use cross-sector, requested by eGovernment, modernisation of public admin, etc.; support given by National Institutions for implementation
- **[Coherence]** Internal coherence of INSPIRE provisions proved by implementation; cross-border applications; coherence with other National and EU policies
- **[EU-added value]** Improvement of EU cross-border data management and use; use for environmental monitoring and reporting, use for and with Copernicus data; use cross-sector.

1.1 Coordination

- National Contact point

Name of the public authority	Styrelsen for Dataforsyning og Effektivisering Agency for Data Supply and Efficiency
Contact information:	
Mailing address	Rentemestervej 8 DK-2400 København NV
Telephone number	+45 7254 5500
Telefax number	
Email address	sdfe@sdfe.dk
Organisation's website URL	www.sdfe.dk
Contact person (if available)	Ulla Kronborg Mazzoli
Telephone number	+45 7254 5526
Email address	ukm@sdfe.dk
Contact person - substitute (if available)	Lars Erik Storgaard
Telephone number	+45 7254 5279
Email address	laers@sdfe.dk

- Coordination Structure
    - Minister for the Environment established the Coordinating Committee in 2010. The committee shall assist the Minister in the implementation of the INSPIRE Directive as well as recommend measures and initiatives to promote infrastructure for spatial information in Denmark.
    - The Coordinating committee consist of major public stakeholders both state, regional and local, research institutions, private sector, and other with an interest in NSDI.

- o The responsibility for the INSPIRE directive – hereunder the Coordinating Committee was transferred from the Minister for the Environment to The Minister for Energy, Utilities and Climate in 2015
      - o The Minister for Energy, Utilities and Climate appoints Committee members every 4 years. The committees meet approximately 3-4 times a year and discuss various strategic and political issues. They are also involved in the fulfillment of the monitoring and reporting obligation and in the preparation of mandate for the national delegation prior to e.g. Inspire Committee meetings.
  - Progress
    - o Since 2001 common public eGovernment/digitization strategies has framed and supported the development of the national infrastructure for geospatial information. The common digitization strategies commit the central government, regions and municipalities to develop eGovernment infrastructure and solutions based on a common framework and based upon agreed international standards. In the recent years cross-public sector initiatives have especially evolved in four key areas:
      - A shared digital infrastructure that is secure and sufficiently robust to meet future requirements
      - Effective and reliable sharing of basic data between authorities
      - Legislation adapted to the opportunities and challenges of a digitized society
      - Better coordination of public sector digitization.

1.2 Functioning and coordination of the infrastructure

- The INSPIRE infrastructure is not seen as an independent infrastructure but as a part of the national common public data infrastructure. The implementation of INSPIRE goes hand in hand with the realization of the common digitization strategy not the least in relation to the Basic Data Program (www.grunddata.dk) **[Coherence]**
  - o Several quality assurance project have been launched as part of the Basic Data Initiative as free and open data (and covers also INSPIRE themes), e.g.: Addresses, Topographic data, Geographical Names, Administrative Units, Cadastral Map, Digital Elevation Model, Common modelling rules (based on the INSPIRE modelling framework),Common distribution platform for basic data (including INSPIRE), see also http://datafordeler.dk/.
- All metadata falling under the INSPIRE directive have undergone a quality assurance process in order to ensure compliance with the INSPIRE metadata regulation and guidelines. **[Effectiveness]**
- During the survey period, Denmark with the Agency for Data Distribution and Efficiency participated in the European Location Framework Project (ELF) http://elfproject.eu/ **[EU-added value]**

1.3 Usage of the infrastructure for spatial information

- As a part of the Basic Data Program Denmark spatial data has been free and open since 2013. **[Effectiveness]** Open data has spurred a major increased focus on and use of the infrastructure for geographic information. Hereunder a couple of examples:
- GeoDanmark (http://www.geodanmark.dk/Service/In+English) is an association between the Agency for Data Supply and Efficiency, and all Danish municipalities which provides and maintain a unified public topographic mapping of Denmark – hereunder providing several INSPIRE datasets.
- The Danish Natural Environment Portal (http://www.miljoeportal.dk/English/Sider/default.aspx) is the place where the data of the Danish authorities concerning nature and the natural environment is collected, presented and shared between different agencies, private citizens, organizations and companies.
- The PPP developed "112 app" that based on the GPS coordinates sends location information to the emergency dispatch centre so it is easier and faster to locate callers even when they call from a location that do not have an address attached.
- Geodata-info.dk is the national discovery service and geoportal containing metadata for geospatial dataset and network services (http://www.geodata-info.dk/Portal/)

- The Data Distributor (Datafordeler) will provide a single point of access to all free and open basic data as part of the Danish Basic Data Programme – including several Annex 1 INSPIRE datasets. (http://datafordeler.dk/) **[Effectiveness]**
- The Map Supply (Kortforsyningen) is the key data distributor of free and open spatial data (https://kortforsyningen.dk/).
    - In 2015 OGC WMS/WMTS/WFS/WCS from Kortforsyningen served 2,75 billion requests (increase from 1,1 billion in 2013 and 2 billion in 2014) **[Relevance]**
- The Agency for Data Supply and Efficiency is representing Denmark in the initiative for the establishment of the Artic SDI including the Nordic countries, Greenland, Russia, Canada, and USA (see http://arctic-sdi.org/) **[EU-added value]**
- The PPP developed Brugstedet.dk (*Use the Location*) is an example portal for geographical information. It serves as a communication and marketing platform and gives everyone access to ideas, solutions and cases http://brugstedet.dk/

1.4 Data Sharing Arrangements

- As part of Denmark's eGOVERNMENT strategy 2011-2015, individuals, public authorities and private businesses have free access to retrieve and use all Basic Data. Local government and state has agreed to expand the agreement and since 2013 a wide range of spatial data is freely available for all, e.g. all topographic data (GeoDanmark), Cadastral information, and national Elevation model/ the digital terrain model. With very few exceptions, e.g. Nautical Charting, INSPIRE data is free and openly accessible in Denmark. **[Coherence]**

1.5 Costs and Benefits

- INSPIRE has been an important facilitator for the establishment of the Danish Basic Data program and the ongoing development of the national Spatial Data Infrastructure **[Relevance]**
- A Business Case estimates that free and open Basic Data will provide a total annual societal gain of 800 mill DKR of this 500 mil DKR within the private sector.
- A business case underlying the release of (all) spatial data estimated annual net gain to be averaging about 100 million. kr. annually until 2020 . The INSPIRE directive is a contributor to the removal of barriers concerning the use of geographic data [**Relevance**]

2 Key Facts and Figures

In addition to the above mentioned issues, the implementation of INSPIRE Directive requires Member States to take four main steps in relation to management of spatial datasets which fall under the Directive:

- Step 1: Identify spatial datasets
- Step 2: Document these datasets (metadata)
- Step 3: Provide services for identified spatial datasets (discovery, view, download)
- Step 4: Make spatial datasets interoperable by aligning them with the common data models.

The key facts and figures presented in this country fiche are based on the information provided by Denmark on the INSPIRE dashboard. **The provided statistics is not reflecting the data available on** INSPIRE geoportal. The INSPIRE geoportal is updated on a regular and ongoing basis, whilst the INSPIRE dashboard is typically updated after every reporting round, on a yearly basis.

The conformity of the implementation is assessed against the full set of legal specifications set out by the Directive and the Implementing Rules and the commonly agreed good practices set out by the technical guidelines.
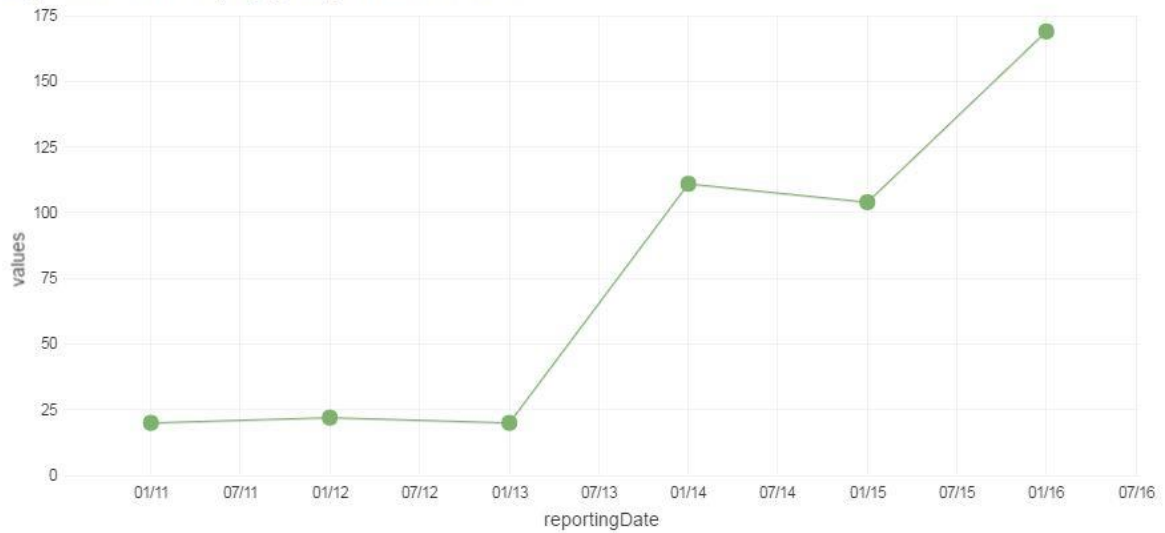
2.1. Identification of spatial data with relevance to the environment (step 1)

a. Evolution of the data offering
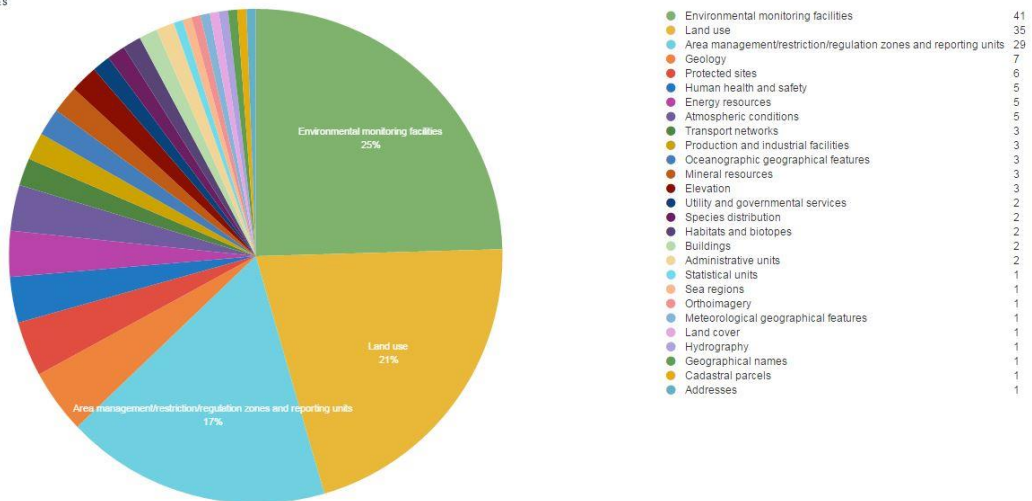
DSv_Num: number of spatial data sets for all Annexes

NUMBER OF SPATIAL DATA SETS FOR ALL ANNEXES (DSV_NUM)

● (6) indicatorValue values per **1y** | (6 Hits) | Time correction: browser

b. Data sets made available per INSPIRE theme in 2015

NUMBER OF RECORD PER THEMES

● Environmental monitoring facilities	41
● Land use	35
● Area management/restriction/regulation zones and reporting units	29
● Geology	7
● Protected sites	6
● Human health and safety	5
● Energy resources	5
● Atmospheric conditions	5
● Transport networks	3
● Production and industrial facilities	3
● Oceanographic geographical features	3
● Mineral resources	3
● Elevation	3
● Utility and governmental services	2
● Species distribution	2
● Habitats and biotopes	2
● Buildings	2
● Administrative units	2
● Statistical units	1
● Sea regions	1
● Orthoimagery	1
● Meteorological geographical features	1
● Land cover	1
● Hydrography	1
● Geographical names	1
● Cadastral parcels	1
● Addresses	1

c. Data sets per annex (Annex 1 & 2: spatial reference data; Annex 3: environmental spatial data)

MDv1.1 (green): number of spatial data sets for Annex I that have metadata

MDv1.2 (yellow): number of spatial data sets for Annex II that have metadata

MDv1.3 (blue): number of spatial data sets for Annex III that have metadata

NUMBER OF SPATIAL DATA SETS PER ANNEXES

● mdv11 (6) ● mdv12 (6) ● mdv13 (6)   indicatorValue values per **1y** | (**18** Hits) | Time correction: browser

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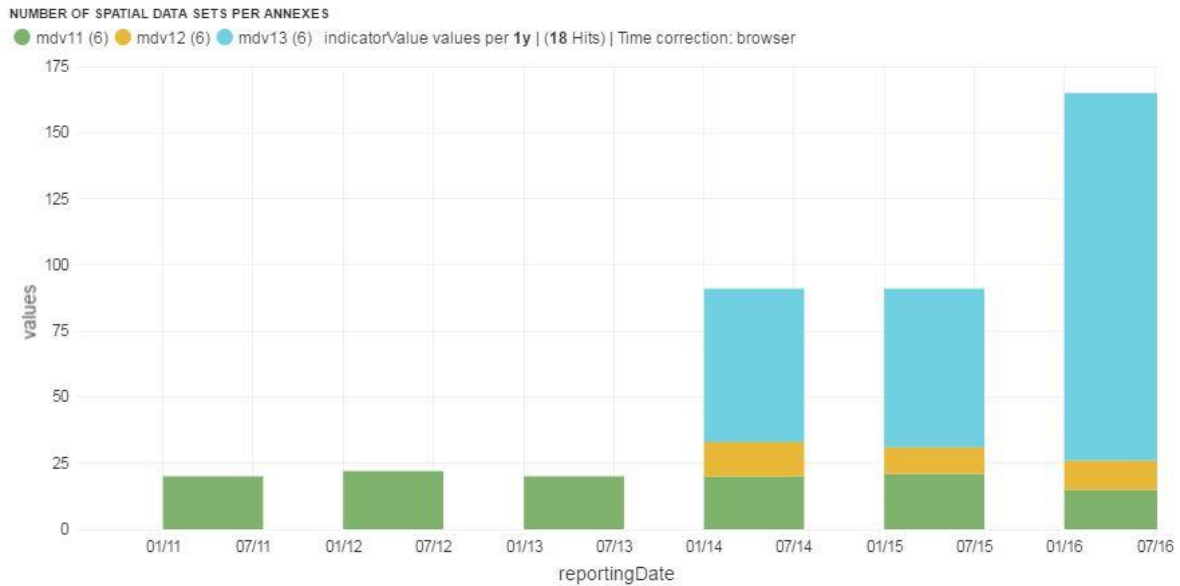
Evaluation of progress for step 1:

Denmark has identified a total of 169 spatial data sets with relation to the themes listed in the INSPIRE annexes.

Additional spatial data sets have been identified in period from 2013-2016, mainly under Annex II and III data themes. A lot of relevant spatial data sets have already been identified for the different data themes. However, the identification could further improve by identifying and documenting spatial data sets required under the existing reporting and monitoring regulations of EU environmental law.

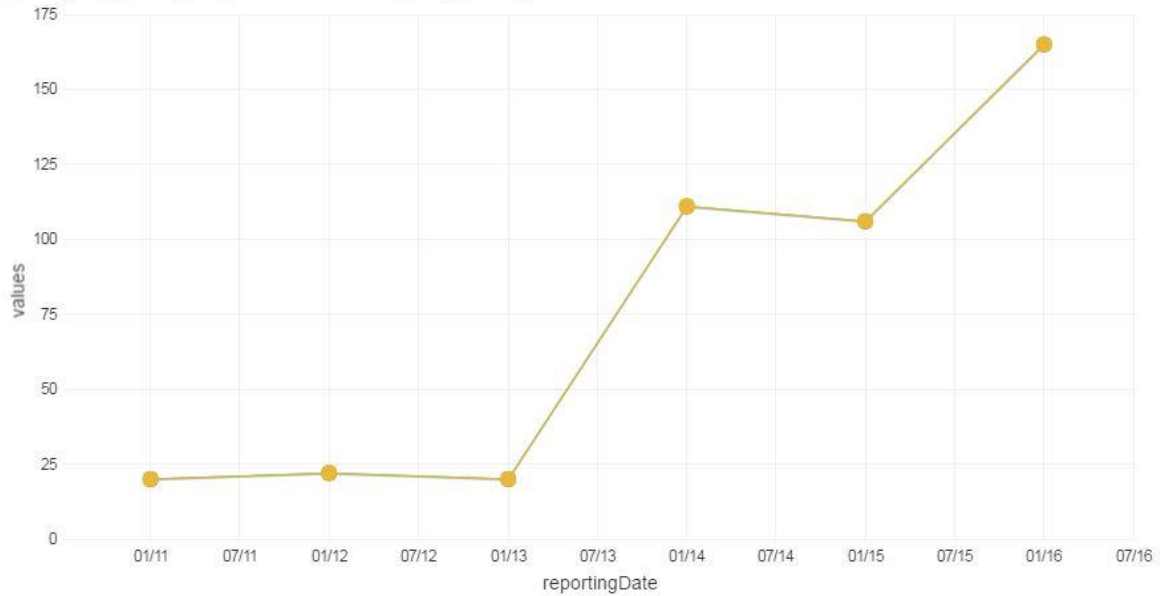## 2.2 Documentation of the data (metadata) (step 2)

a. Evolution of documented data and conformity of the documentation

MDv1_DS (green): number of spatial data sets for all Annexes that have metadata

MDv2_DS (yellow): number of spatial data sets for all Annexes that have conformant metadata

NUMBER OF SPATIAL DATA SET THAT HAVE METADATA (MDV1_DS) AND HAVE CONFORMANT METADATA (MDV2_DS)

● mdv1_ds (6) ● mdv2_ds (6)   indicatorValue values per **1y** | (**12** Hits) | Time correction: browser

b. Documented data per annex in 2015

MDv2.1 (green): number of spatial data sets for Annex I that have conformant metadata
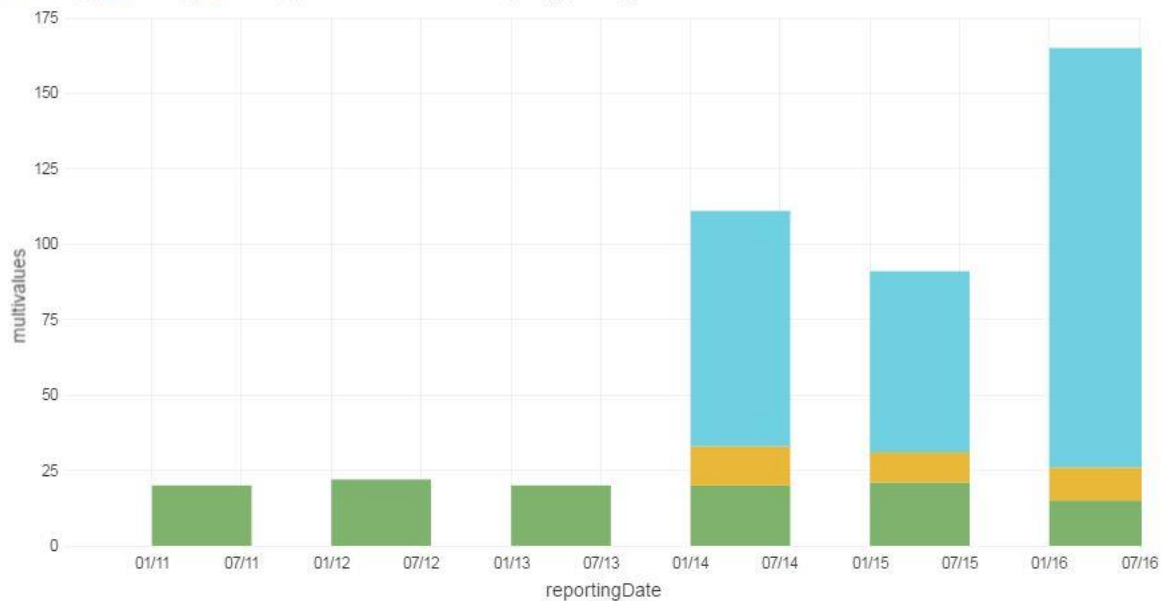
MDv2.2 (yellow): number of spatial data sets for Annex II that have conformant metadata

MDv2.3 (blue): number of spatial data sets for Annex III that have conformant metadata

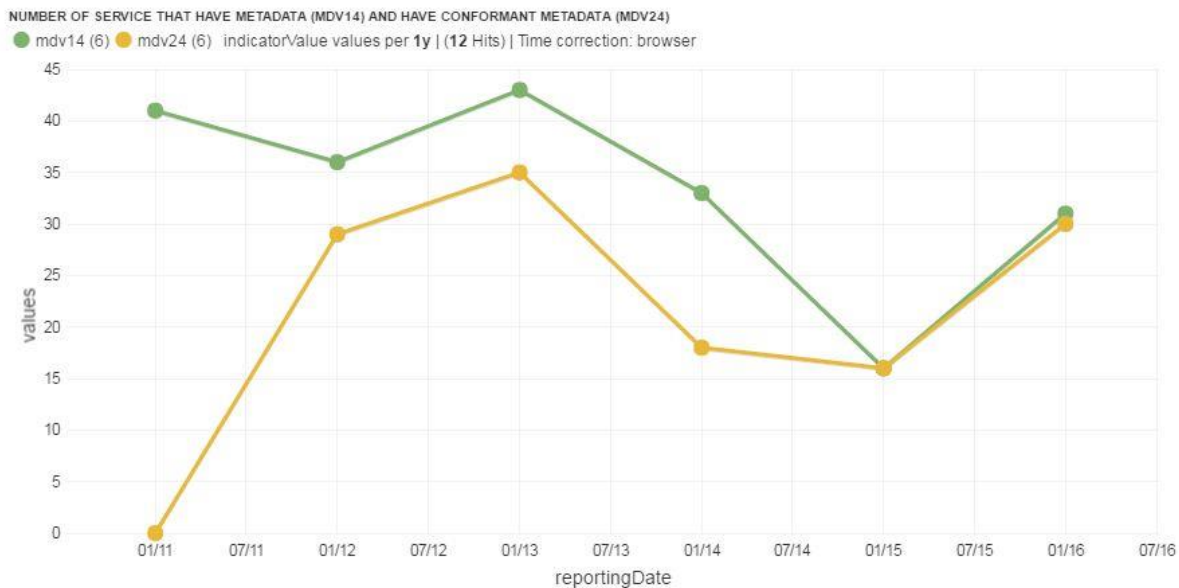NUMBER OF SPATIAL DATA SETS THAT HAVE CONFORMANT METADATA PER ANNEXES

● mdv21 (6) ● mdv22 (6) ● mdv23 (6)   indicatorValue multivalues per **1y** | (**18** Hits) | Time correction: browser

## c. Evolution of documented services and conformity of the documentation

MDv1.4 (green): number of spatial data services that have metadata
MDv2.4 (yellow): number of spatial data services that have conformant metadata

NUMBER OF SERVICE THAT HAVE METADATA (MDV14) AND HAVE CONFORMANT METADATA (MDV24)

● mdv14 (6) ● mdv24 (6) indicatorValue values per **1y** | (**12 Hits**) | Time correction: browser

d. Evolution of the overall conformity of the documented metadata

MDi2 = (number of spatial data sets for all Annexes that have conformant metadata + number of spatial data services that have conformant metadata) / (number of spatial data sets for all Annexes + number of spatial data services)

%AGE OF SPATIAL DATA SETS AND SERVICES WITH CONFORMANT METADATA (MDI2)

● mdi2 (6) indicatorValue values per **1y** | (**6 Hits**) | Time correction: browser
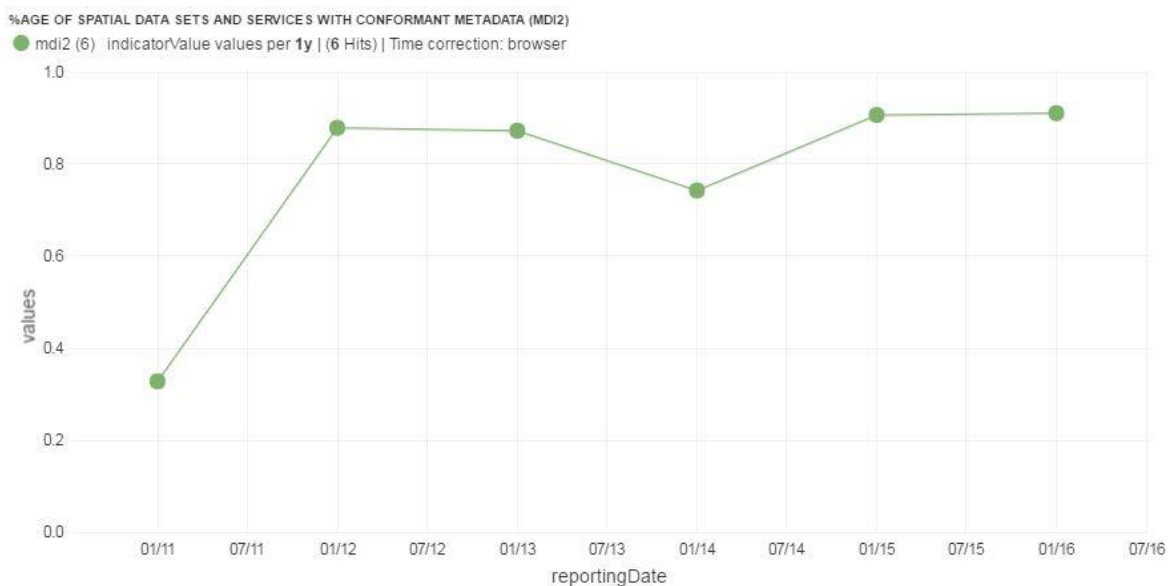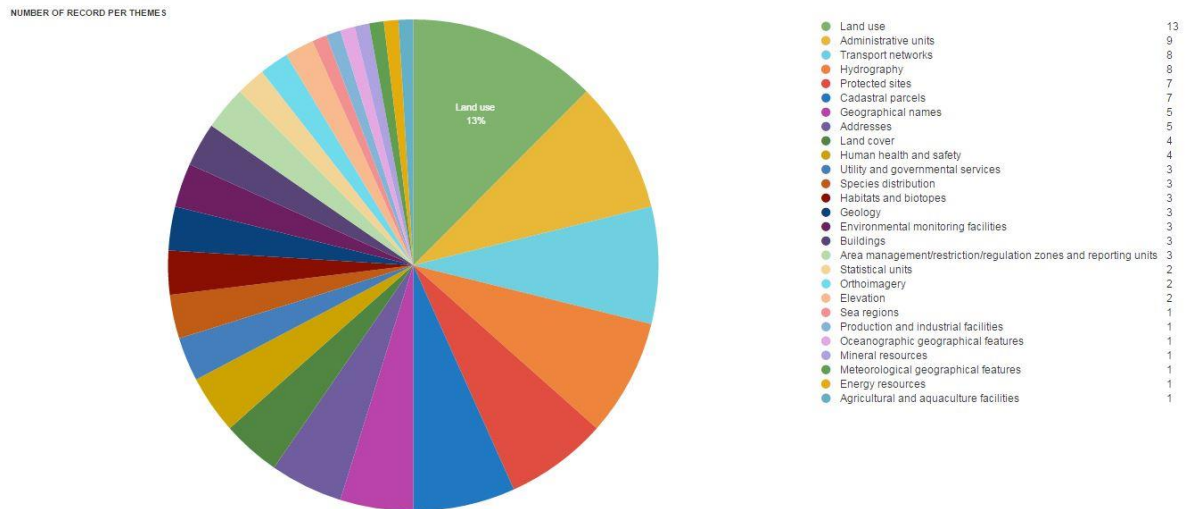

Evaluation of progress for step 2:
Denmark has documented and published metadata through a digital discovery service for 97,63% (165 out of 169) of the identified spatial data sets and 68,88% (31 out of 45) of the digital services. Overall, 91,12% of the metadata conforms to the INSPIRE metadata specifications.

It shows high level of maturity.

2.3. Accessibility of the data through digital services (step 3)

a. Digitally accessible spatial data per INSPIRE theme in 2015

Note: This figure reflects the amount of spatial data sets made available through a digital service, not the amount of available digital services. A digital service can make several spatial data sets available.

NUMBER OF RECORD PER THEMES

● Land use	13
● Administrative units	9
● Transport networks	8
● Hydrography	8
● Protected sites	7
● Cadastral parcels	7
● Geographical names	5
● Addresses	5
● Land cover	4
● Human health and safety	4
● Utility and governmental services	3
● Species distribution	3
● Habitats and biotopes	3
● Geology	3
● Environmental monitoring facilities	3
● Buildings	3
● Area management/restriction/regulation zones and reporting units	3
● Statistical units	2
● Orthoimagery	2
● Elevation	2
● Sea regions	1
● Production and industrial facilities	1
● Oceanographic geographical features	1
● Mineral resources	1
● Meteorological geographical features	1
● Energy resources	1
● Agricultural and aquaculture facilities	1

(Pie chart: Land use 13%)

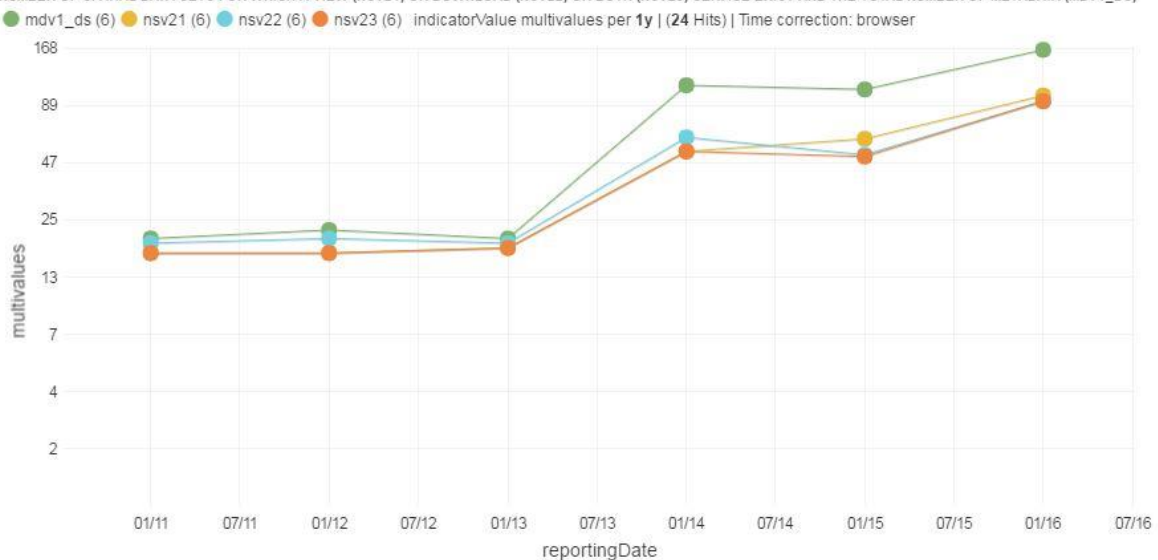### b. Evolution of spatial data made accessible through digital services

MDv1_DS (green): number of spatial data sets for all Annexes that have metadata
NSv2.1 yellow): number of spatial data sets for which a view service exists
NSv2.2 (blue): number of spatial data sets for which a download service exists
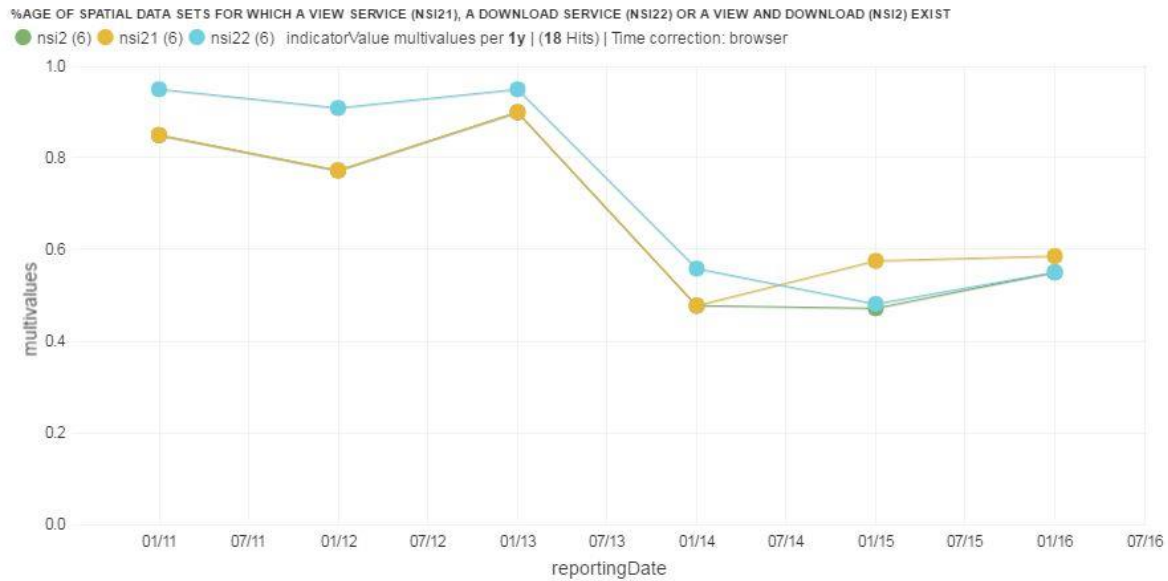NSv2.3 (orange): number of spatial data sets for which both a view and a download service exists

NUMBER OF SPATIAL DATA SETS FOR WHICH A VIEW (NSV21) OR DOWNLOAD (NSV22) OR BOTH (NSV23) SERVICE EXIST AND THE TOTAL NUMBER OF METADATA (MDV1_DS)

● mdv1_ds (6) ● nsv21 (6) ● nsv22 (6) ● nsv23 (6)   indicatorValue multivalues per **1y** | **(24 Hits)** | Time correction: browser

(Line graph: multivalues vs reportingDate from 01/11 to 07/16)

NSi2 (green) = number of spatial data sets for which both a view and a download service exists / number of spatial data sets for all Annexes

NSi2.1 (yellow) = number of spatial data sets for which a view service exists / number of spatial data sets for all Annexes

NSi2.2 (blue) = number of spatial data sets for which a download service exists / number of spatial data sets for all Annexes

%AGE OF SPATIAL DATA SETS FOR WHICH A VIEW SERVICE (NSI21), A DOWNLOAD SERVICE (NSI22) OR A VIEW AND DOWNLOAD (NSI2) EXIST

● nsi2 (6) ● nsi21 (6) ● nsi22 (6) indicatorValue multivalues per **1y** | (**18** Hits) | Time correction: browser

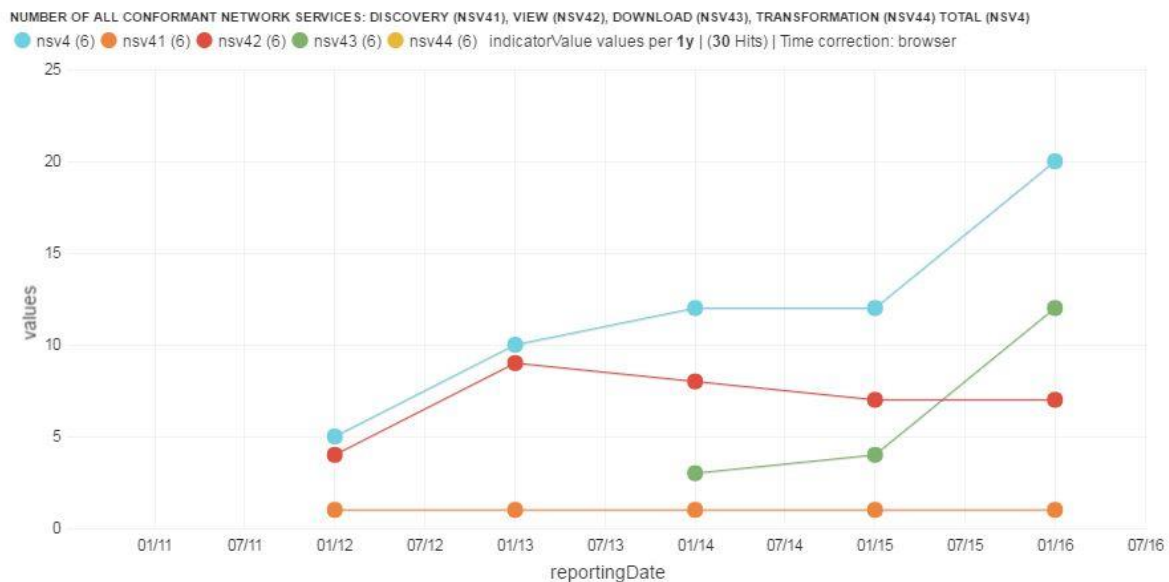## c. Evolution of the conformity of the digital services

NSv4 (blue): number of all conformant network services

NSv4.1 (orange): number of conformant discovery network services

NSv4.2 (red): number of conformant view network services

NSv4.3 (green): number of conformant download network services

NSv4.4 (yellow): number of conformant transformation network services

NUMBER OF ALL CONFORMANT NETWORK SERVICES: DISCOVERY (NSV41), VIEW (NSV42), DOWNLOAD (NSV43), TRANSFORMATION (NSV44) TOTAL (NSV4)

● nsv4 (6) ● nsv41 (6) ● nsv42 (6) ● nsv43 (6) ● nsv44 (6) indicatorValue values per **1y** | (**30** Hits) | Time correction: browser

Evaluation of progress for step 3:

Denmark has:

- 58,57% of its data sets accessible for viewing through a view service;

- 55,02% of its data sets accessible for download through a download service.

44,44% of the available digital services are conform to the INSPIRE network service specifications (20 out of 45).

Denmark shows that it has built the necessary capacity and competences to make data accessible through digital INSPIRE network services. The technical conformity of the available services with the INSPIRE network service should be improved.

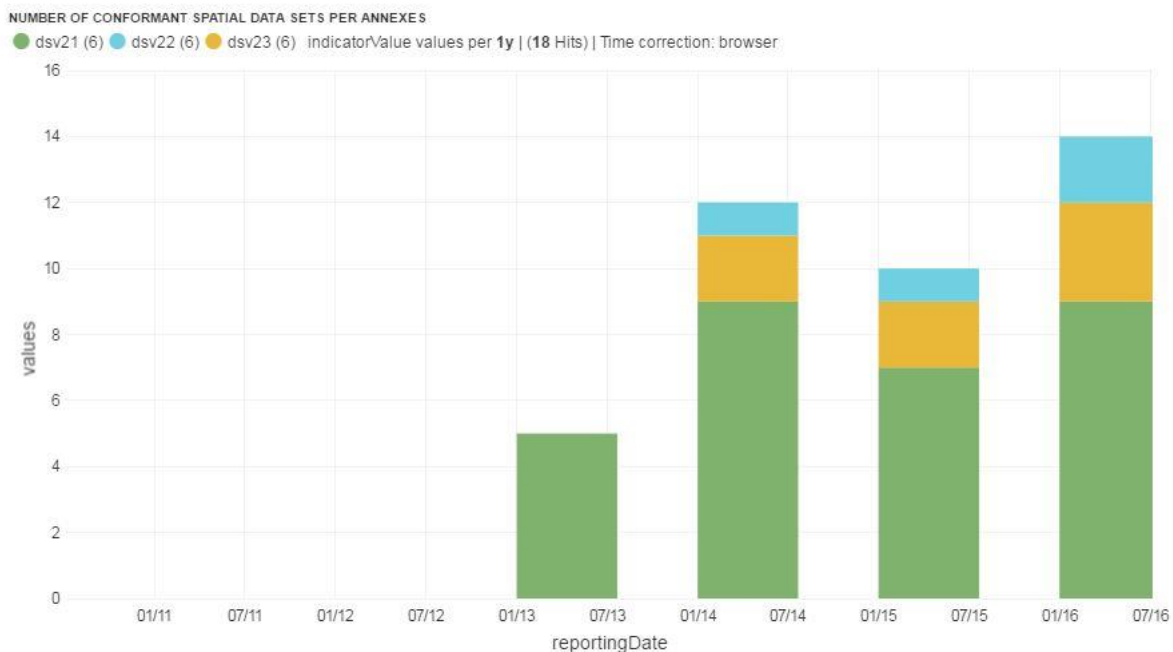## 2.4. Interoperability of spatial data sets (step 4)

The interoperability of spatial data sets is an outlook on the readiness of Member States to make their spatial data interoperable according to the interoperability specifications laid down in the INSPIRE interoperability implementing regulation (Commission Regulation (EU) No 1089/2010). The deadlines for implementation of the spatial data interoperability are in the future: 23/11/2017 for Annex I data and 21/10/2020 for Annex II and III data.

a. Evolution of the conformity with INSPIRE interoperability specifications for spatial data

DSv2.1 (green): number of conformant spatial data sets with conformant metadata for Annex I
DSv2.2 (blue): number of conformant spatial data sets with conformant metadata for Annex II
DSv2.3 (yellow): number of conformant spatial data sets with conformant metadata for Annex III

NUMBER OF CONFORMANT SPATIAL DATA SETS PER ANNEXES
● dsv21 (6) ● dsv22 (6) ● dsv23 (6) indicatorValue values per **1y** | (**18** Hits) | Time correction: browser

Evaluation of progress for step 4:

Denmark has reported 14 data sets to be conform to the INSPIRE interoperability specifications in 2015.

We can conclude that Denmark has started its preparations for the 2017/2020 data interoperability deadlines.

3. Outlook

Annex 1 INSPIRE data has been available in a harmonized format already for several years. However, Denmark has not detected one single user of these data – not Copernicus, EEA, DG ENV or any other national or international user. In the same period, the use of spatial data skyrocketed in Denmark e.g. the number of requests to the National Map Supply have increased from 2013 to 2015 by more than 100%. **It could seem as there is no demand for harmonized INSPIRE data but an increasing demand for national, standardized free and open spatial data.**

Denmark has reviewed their INSPIRE implementation and provided an action plan in 2016 to remediate existing implementation issues and further improve the overall conformity of the implementation.

The following actions are set up to directly address previously identified issues:

a. Coordination (1.1; 1.2)

- **No action foreseen**

b. Data sharing and exchange (1.4)

- **No action foreseen**

c. Metadata (2.2)

- **Continued improvement of metadata conformity and availability**
  - Collection of user needs via e.g. works shops
  - Analysis of existing solutions in EU and the Nordic countries
  - Solution design
  - Implementation

d. Network services (2.3)

- **Increased effort on making more INSPIRE datasets available as-is via network services**
  - A workshop (third of its kind) regarding setting up services – the experts from SDFE will give introduction, best practice and hands-on guidance.
  - In close collaboration with the relevant agencies start implementation by datasets available as-is on the basis of the national INSPIRE Monitoring and the eventual missing data set list (see action above). The implementation will be based on an agreed and prioritized plan and on clear agreements on:
    - Where in the NSDI will the services be established
    - Specification of services according to IR for Network services
    - Setting up services
    - Creating of metadata

e. Data Interoperability (2.4)

- **Review of identification of spatial data sets and priority setting.** A review of existing data set lists will be conducted in close collaboration with the INSPIRE responsible agencies as follows:
  - The Priority data set list it will be scrutinized and datasets already part of the Danish INSPIRE Monitoring will be eliminated from list
  - Regarding the remaining potential missing data sets we will analyze if:
    - These data exist in national infrastructure
    - If yes where can they be accessed
    - Draft a list over eventual missing datasets
  - Create and publish metadata for the possible missing data sets via the national Geoportal "Geodata-info.dk"

INSPIRE key obligation	Overall implementation status and trend	Outlook	Dashboard Legend
Ensure effective coordination	😊 ↗	🟢	**Implementation Status:** 😊: implementation of this provision is well advanced or (nearly) completed. Outstanding issues are minor and can be addressed easily.
Data sharing without obstacles	😊 ↗	🟢	😐: implementation of this provision has started and made some progress but is still far from being complete. Outstanding issues are significant and need to be addressed to ensure that the objectives of the legislation can still be reached by 2020.
Step 1: Identify spatial datasets	😐 ↗	🟢	☹: implementation of this provision is falling significantly behind or has not even started. Serious efforts are necessary to close implementation gap.
Step 2: Document datasets (metadata)	😊 ↗	🟢	**Trend:** ↗: the trend of the implementation is positive.
Step 3: Provide services for identified spatial datasets (discovery, view, download)	😐 →	🟢	→: the trend of the implementation is neutral. ↘: the trend of the implementation is negative.
Step 4: Make spatial datasets interoperable by aligning them with the common data models.	😐 →	🟢	**Outlook:** 🟢: clear and targeted actions have been identified which allow reaching the objectives of the legislation in an effective way. 🟡: No real progress has been made in the recent past or actions which have been identified are not clear and targeted enough to predict a more positive outlook. 🔴: no actions have been identified to overcome identified implementation gaps.

For each Member State, the accessibility of environmental data (based on what the INSPIRE Directive envisages) as well as data-sharing policies have been systematically reviewed.

Denmark has indicated in the 3-yearly INSPIRE implementation report that the necessary data-sharing policies allowing access and use of spatial data by national administrations, other Member States' administrations and EU institutions without procedural obstacles are available and implemented. Denmark is implementing a common public data infrastructure with common public data-sharing policies based on open data principles.

Assessments of monitoring reports issued by Denmark and the spatial information that Denmark has published on the INSPIRE geoportal indicate that not all spatial information needed for the evaluation and implementation of EU environmental law has been made available or is accessible. The larger part of this missing spatial information consists of the environmental data required to be made available under the existing reporting and monitoring regulations of EU environmental law.

Suggested action

- Identify and document all spatial data sets required for the implementation of environmental law, and make the data and documentation at least accessible 'as is' to other public authorities and the public through the digital services foreseen in the INSPIRE Directive.