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## 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 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 2019** as an update of the information acquired through:

- member states update,
- [monitoring report](#) in May 2019.

## State Of Play

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

### Coordination

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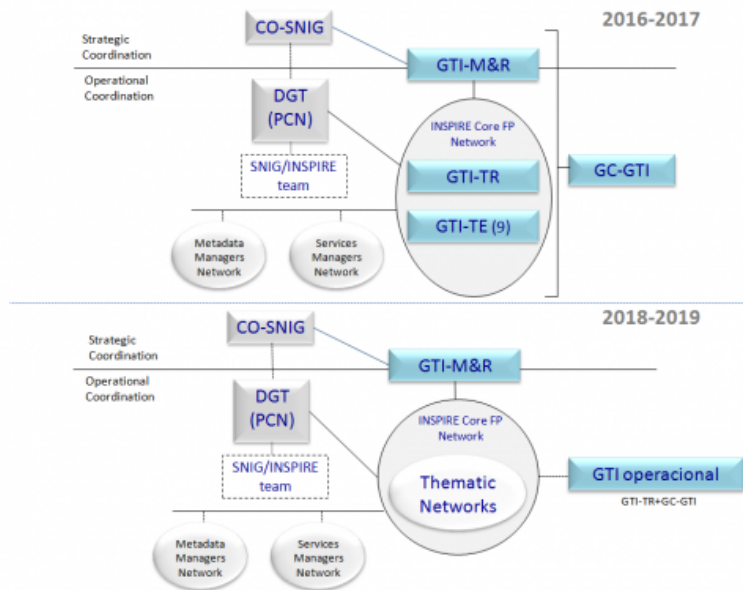
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### Coordination Structure & Progress:

- Coordination Structure
  - DGT represents Portugal at IC, MIG and MIG-T since the beginning. In 2018 these representations were enlarged to some other public authorities, namely Portuguese Environmental Agency (APA), National Statistics Institute (INE) and Azores Autonomous Region (RAA), that are now involved at MIG.
  - CO-SNIG (*Conselho de Orientação do SNIG*) has the strategic coordination of the National Spatial Data Infrastructure (NSDI), i.e. *Sistema Nacional de Informação Geográfica* (SNIG). In 2017 it was enlarged from 16 to 37 public authorities. This committee is chaired by DGT and co-chaired by APA.
  - Networks: SNIG Network (all public authorities producers and providers of geographic information data and private users registered at the geoportal); INSPIRE Focal Points Network (public authorities producing national data sets and services); INSPIRE Core Focal Points Network (a sub-set of the previous one with public authorities formally responsible for producing national datasets and services regarding the themes of the three INSPIRE Annexes); Network of Metadata Managers. In 2018 a Network of Spatial Data Services Managers was created.
  - Working Groups (WG): M&R WG (CO-SNIG sub-group dedicated to support INSPIRE monitoring and reporting, since 2010), 9 GTI-TE (Thematic WG aligned with the thematic clusters, 2016-2017), GTI-TR (Horizontal WG for horizontal issues, 2010-2017), GC-GTI (WG for the coordination of all groups, 2016-2017). In 2018, in order to make the working groups more efficient, CO-SNIG decided to convert the 9 GTI-TE in Thematic Networks and to create a single group, GTI-Op (GTI operational), involving the coordinators of the previous GTI-TE, the coordinators of M&R WG and GC-GTI and all the GTI-TR members.
  - A working group involving the municipality's communities, GT-Local, was recently approved by CO-SNIG and it will be part of the overall coordination structure.
- Progress
  - Revision of SNIG legislation in 2017 (DL 29/2017, August 7) to incorporate the required changes identified by the EC towards a correct INSPIRE Directive transposition (e.g. inclusion of the INSPIRE Annexes into the Portuguese legal act itself; make metadata characteristics explicit) and to include other relevant aspects to improve SNIG and INSPIRE implementation in Portugal, namely, the expansion of CO-SNIG to enclose all public entities responsible for the production of spatial datasets related to the INSPIRE Annex themes and the articulation of SNIG with thematic, regional and local SDI.
  - CO-SNIG, through its enlargement to 37 members, gained an increased role in the SNIG-INSPIRE development.
  - Since 2016, annual Action Plans for implementing SNIG 2020 (A vision for the national SDI for 2020), identifying the set of political, institutional, administrative and technical activities to be developed by all entities involved in the coordination, maintenance and operation of SNIG, are endorsed by CO-SNIG.
  - Progress on the availability of priority datasets (PDS) occurred through the work developed in the Thematic Working Groups (GTI-TE) – Portugal participated in the EC priority datasets voluntary effort to identify, tag and provide access through spatial data services to PDS in the INSPIRE Geoportal PDS viewer.
  - The Thematic Working Groups (GTI-TE) were also involved in filling the metadata missing information on data policy.
  - The creation of the Network of Spatial Data Services Managers allowed to significantly increase the publication of spatial data services.
  - An annual event on SDI, ENIIG - *Encontro Nacional de Infraestruturas de Informação Geográfica* (<http://eniig.dgterritorio.pt/inicio>), was created in 2016 to allow dissemination, sharing of knowledge and experiences, reflection and debate on the creation, articulation and use of national, regional, local and thematic spatial data infrastructures.
  - Articulation of SNIG with the open data portal, <https://dados.gov.pt/pt/>, has been started.
  - Actions launched with eGovernment and Academia, namely the involvement of the universities in the 1st ENIIG Scientific Committee as well as the participation of AMA (public administration modernization agency), which was responsible for one of the event sessions; the collaboration of DGT staff in activities with universities, e.g. teaching SDI issues in Master degrees (e.g.

Masters on Geospatial Information from University of Lisbon).

- Capacity building activities including: research, development and production of reports on horizontal issues (e.g. InspireId, atom download services, metadata for interoperable SDIs) as well as on spatial data and services harmonization; support documents and videos on good practices for data harmonization and services creation; workshops organized by DGT and other events involving the SNIG network entities for sharing knowledge and experiences including the annual event on SDI (ENIIG); Dissemination and use of GISIG on-line training modules, giCASES, supporting capacity building on SDI.
- Reinforcement of the cooperation with Spain: continued collaboration in the organization of the Iberian SDI event, JIIDE; participation in cross-border projects and initiatives.
- Increase of the Portuguese representativeness at European events on SDI and INSPIRE.
- Articulation of SNIG with thematic and regional SDIs (e.g. SNIG-SNIMAR and SNIG-IDEIA metadata catalogues harvesting process; creation of an article in the new SNIG legislation ruling this type of articulation).
- New technical specifications for the Portuguese reference cartography, taking into consideration the INSPIRE themes specifications.
- Promoting the involvement of the Local Data producers/Local SDIs in INSPIRE implementation and national SDI development – submission of joint proposals to financing programmes were prepared involving municipalities and DGT; ENIIG 2018 was entirely focused on the regional and local SDIs.
- The creation of a Working Group involving the municipality's communities, GT-Local, was endorsed by CO-SNIG.
- The integration of the regional and local level in all the SNIG and INSPIRE coordination activities is foreseen during the next implementation phase.

### Functioning and coordination of the infrastructure

- Creation of a prototype of the new geoportal to test the migration and enhancement of the SNIG platform into an Open Source solution, renewing the platform interface design, developing new functionalities and improving the existing ones, especially the National metadata catalogue. A participated process involving different types of stakeholders was adopted to obtain feed-back from the geographic information (GI) Community.
- Metadata revision by the INSPIRE Core Focal Points Network entities to improve search and access to the GI through the geoportal and to complete metadata with missing information (e.g. data policy).
- The 9 Thematic Working Groups (GTI-TE) (2016-2017) aligned with the EU thematic clusters, developed work mainly related to data harmonization according to INSPIRE data specifications, spatial data services creation and also the identification, characterization and metadata tagging of priority datasets. Following 2018, these activities have been carried out through the GTI Operacional (GTI-Op) and the Thematic Networks.
- The identification of Priority Datasets for e-Reporting was performed and its availability through the INSPIRE Geoportal Thematic Viewer was promoted, although several difficulties are still occurring related to spatial data services interoperability. PDS are identified in the INSPIRE Geoportal but not all are yet available through interoperable download services. Moreover, DGT and the Portuguese Environment Agency (APA) organized in June 2018 an event for INSPIRE focal points and national eReporting focal points aiming to promote articulation among both sectors.
- The considerable investment in the production of services was reinforced during the 2016 to 2018 period with very significant results (from 25% to 60% download services).
- Not all the services are accessible through the INSPIRE Geoportal due to interoperability problems involving both proprietary and open source solutions.
- New approach to INSPIRE monitoring process was started in 2016 implementing a new automatic method for collecting information directly from SNIG metadata, using the "INSPIRECORE" keyword filter.
- National geoportal, SNIG, has links with the geoportal of Spain ([www.idee.es](http://www.idee.es)).
- Creation of the inspire-pt blog (<https://inspireptblog.wordpress.com/>) in May 2017.
- Following ISA (Interoperability solutions for public administrations, businesses and citizens) developments to support the efforts for connecting with eGovernment.
- Three ENIIG editions were produced - ENIIG 2016 on public policies, administrative modernization, new paradigms and trends for spatial data, interoperability and technological solutions, ENIG 2017 focused on the availability of spatial data and the functionalities of the Portuguese spatial data infrastructures and ENIIG 2018 that was totally centered on the regional and local SDIs.
- Workshops (some with videos available on-line): SNIMar – National System on the Sea Information, EMEPC, JIIDE 2017, Nov. 2017; SNIAMb – National System on Environmental Information, APA, JIIDE 2017, Nov. 2017; Metadata Filling in the Metadata Manager GeMA, RAA, JIIDE 2017, Nov. 2017; SNIT – National System on Territorial Information, DGT, JIIDE 2017, Nov. 2017; Harmonization of geographic data sets – Theme cadastral Parcels, RAA, JIIDE 2017, Nov 2017; INSPIRE Datasets Harmonization Webinar, July 2017, RAA; 20 years National Permanent Stations Network (ReNEP) 28 June 2017; Session on SNIG/INSPIRE implementation in Portugal, DGT, 27 June 2017; INSPIRE Data Harmonization Workshop, DGT, 21 June 2017; Reference Systems, DGT, 25 May 2017; INSPIRE Spatial Data Services (GEOSERVER), DGT, SASIG 6 Edition, September 2016; Spatial datasets harmonization as part of the INSPIRE Directive implementation, DGT, July 2016; Metadata, DGT, June 2016; INSPIRE Directive Technical Sessions - RAA, May 2016; INSPIRE Directive - RAA, May 2016; INSPIRE Directive – State of Play and future development, DGT, June 2016; Creation of Spatial Data Services with Open Source software: visualization services (WMS) and download services (WFS), DGT, June 2016; INSPIRE data model RAA, May 2016; II.2. Land Cover – SRAA Data upload into the RAA INSPIRE data Model, RAA, May 2016; Creation of Spatial Data Services with Open Source software, II Geodecision National Conference, May 2016; SNIG 2020 Workshops on Metadata and Spatial Data services development (April-June 2016).
- Promotion of PT GI community involvement in the JIIDE 2016 (Barcelona); JIIDE 2017 (Lisbon); JIIDE 2018 (Menorca).
- Increased involvement of the global GI community on INSPIRE dissemination activities (INSPIRE 2016, 2017, 2018, JIIDE 2016, 2017, 2018, other).
- The principles of the INSPIRE Directive are an integral part of national strategies for managing spatial data, their use and their linking with other national data.
- Technical constraints - SDI development and INSPIRE implementation in Portugal have been constrained by several technical issues namely:

- Responsibilities on the provision of spatial data essential for the SDI are not clearly defined through the legislation;
- Articulation between the entities technical implementation departments and the entities Head Offices is not easy - awareness was and is still needed;
- The lack of qualified human resources in the public entities needed to cope with all the technical requirements involved in SDI & INSPIRE implementation: metadata creation, spatial data services development, data harmonization;
- Open source and proprietary software are not yet prepared to deal with some of INSPIRE interoperability specifications creating interoperability issues that generate problems on accessing data and services through the INSPIRE Geoportal (Thematic and Priority Datasets viewers);
- The harvesting procedures from INSPIRE Geoportal to SNIG should have been more frequent to allow testing of spatial data services access through the INSPIRE Geoportal Viewers and the solving of the remaining problems;
- Complexity of data harmonization specifications generate difficulties on using data harmonization tools to obtain validated harmonized datasets;
- The lack of articulation among EC DGs and with the European Environmental Agency (EEA) around INSPIRE issues, creates additional difficulties for INSPIRE implementation at the Member State level;
- The location of Azores, Madeira and Extension of the Continental Shelf Platform do not allow the use of the ETRS89, which conditions the existence of national spatial data sets;
- Some public entities do not have the information systems infrastructures (e.g. servers, software) to provide access to its data.
- Planned actions include:
  - Implementing and launching the new SNIG geoportal, usability testing and metadata improvements, namely in what concerns data policies clear identification;
  - Increase interoperable spatial data services availability and level of implementation, namely the interoperability with the INSPIRE Geoportal;
  - Continue to give special attention to PDS and its publication;
  - Promote data harmonization according to INSPIRE data specifications;
  - Increase articulation with eGovernment;
  - Increase the availability of data from regional and local public entities through SNIG;
  - Increase the use of the Linked Open data (LOD) approach to enrich the SDI data.

#### Usage of the infrastructure for spatial information

- Implementation of the Vision SNIG 2020 and Action Plan SNIG2020 (both created in 2015), increasing the involvement of data producers and users on the national SDI.
- Modernization of regional public administration, producing data and metadata according to INSPIRE specifications, improving the technological infrastructures (e.g. hardware, communication) available and increasing capacity building.
- Number of spatial data services providing access to spatial data usable for different applications registered a significant increase during the 2016-2018 period.
- Increment of the integration of several regional thematic issues.
- National SDI is providing relevant information to the development and monitoring of the National Program for Spatial Planning Policy (PNPOT).
- Participation at European projects related to SDI: IP-Sentinel, MARE and SNIMAR.
- Participation in cross-border projects: Cross-Nature and Cross-Forest (CEF-Telecom) involving linked-open data approaches and INSPIRE specifications and also OTALEX C - The First Cross-border SDI between Portugal and Spain (INTERREG).
- Practical examples of cross-border cooperation with neighboring country are being carried in the scope of geology, flood protection, biodiversity preservation and forest fires modeling and prevention;
- The event organized by DGT and APA in June 2018 involving the national focal points for eReporting, aimed also to promote the use of the NSDI among environmental users.
- ENIIG 2018 event evidenced the amount of spatial data available at the local level and the importance of promoting the development of regional and local level SDI articulated with SNIG.
- SNIG site has been used to provide different types of information to SNIG users and GI community (e.g. news on events, documents, technical sessions...).
- Planned actions include:
  - Support the use of INSPIRE spatial data sets for eReporting, increasing the communication between the INSPIRE and environmental reporting communities;
  - Promote the use of the national SDI by specific users and projects;
  - Promote the collaboration between public entities around the use of SNIG and its data, through specific activities of common interest;
  - Support/promote the use of INSPIRE spatial data sets for other uses and communities.

#### Data sharing arrangements

- Study on the legal framework and on national and international good practices and a survey to the institutions on existing data policies, use conditions and category of users, if applicable, was concluded in 2017. Main conclusions point to the existence of several agreements and protocols but most of the entities do not have a clearly defined data policy; the setting of agreements, followed by the creation of protocols for GI sharing are the more frequently used mechanisms; dissemination free of costs with license of use is very frequent, but 40% of the entities still sell data to other public entities; public entities also indicated that there is differentiation in the conditions of access according to the type of user. At the time of this study, data was still not yet frequently delivered through the use of spatial data services.
- In general terms, public entities agree that it is necessary to create a specific legal basis for Public Administration in Portugal establishing a simplified agreement for GI sharing, without access and use restrictions, free of costs, foreseeing the development of public nature tasks.
- License "Creative Commons" is in use by several institutions. The iGEO open data portal was integrated in SNIG contributing to

reinforce the open data approach in the national SDI.

- An effort to define data policies in the metadata was developed by the public entities.
- DGT started to provide access to Land Cover/Land Use (LC/LU) National data, free of charge. In 2018 DGT decided that the 2018 national coverage of orthophotos will also have an open data policy.
- Report "Evaluation and Assessment of INSPIRE Directive 2007/2/EC Data Sharing between Public Authorities and Public access and Use provisions" was used to promote the identification of data policies and its documentation in the spatial data metadata.
- A simplified license model for data sharing within SNIG was not yet adopted but discussion is foreseen at CO-SNIG during 2019.
- Communication/promotion actions were developed on best practices for data sharing policy and guidelines for production addressed to the managing authorities responsible for production of spatial data, namely at CO-SNIG meetings and during ENIIG events.
- DGT is signing several protocols with the Local Public Administration to ensure that the majority of the spatial data to be obtained in the future will have an "Open data policy" and are completely open to all users.
- In 2019, DGT will define the requirements for the implementation of a Cartographic National Database which will integrate all core spatial data produced at scales 1:10 000 and higher in Portugal. This database is part of a strategy for the development of a national infrastructure to assemble all core spatial information (e.g. hydrography, altimetry, transports, orthophotos) produced in Portugal in one single spot. The implementation of this infrastructure will be carried out in partnership with all national entities which produce core spatial data, mainly the local public administration. The governance of this infrastructure will be shared between DGT and other spatial data producers, ensuring an effective use of spatial data by all Portuguese public administration.
- Other planned actions include:
  - Complete metadata with missing information on data policy;
  - Discuss and adopt a simplified license model for data sharing within SNIG;
  - Promote the open availability of more datasets free of charge.

### Costs and benefits

- Diversity and heterogeneity on costs among public administration for set-up, implementation, conformity test of each component – Metadata production, data interoperability, services, coordination and horizontal measures; maintenance costs are more homogeneous. The obtainment of comparable and coherent values is still not possible. Nevertheless much more spatial data became available free of charge (e.g. LC/LU national data provided by DGT, orthophotos coverage...).
- Need for financing sources to support SDI development: an increased effort must be done to identify them and there is a GTI-Op activity that is focused on this issue. Nevertheless, since 2015 several activities developed by DGT are being financially supported by a project named DIPIGEO, funded by the Portuguese Agency for the Administrative Modernization (AMA). Other institutions (e.g. National Statistics Institute, Hydrography Institute, Azores Autonomous Region) also have projects funded by AMA to promote the development of spatial data infrastructures and to foster INSPIRE implementation.
- Not yet possible to present quantitative benefits, but INSPIRE is having an important role in the increased availability of spatial data and on the development/use of open data policy which is being promoted at CO-SNIG and through the INSPIRE Core Focal Points Network.
- Benefits on accessing/sharing duly documented data, between public administrations at all levels and across sectors, and also with Universities, Private sector & Citizens.
- Planned actions include:
  - Organize procedures in cooperation with the data producers to obtain financial support for the implementation of SNIG and for the activities of the network entities;
  - Discuss a framework to assess costs and benefits of SDI implementation & maintenance and start to implement it (both at horizontal and entities level).

### 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.

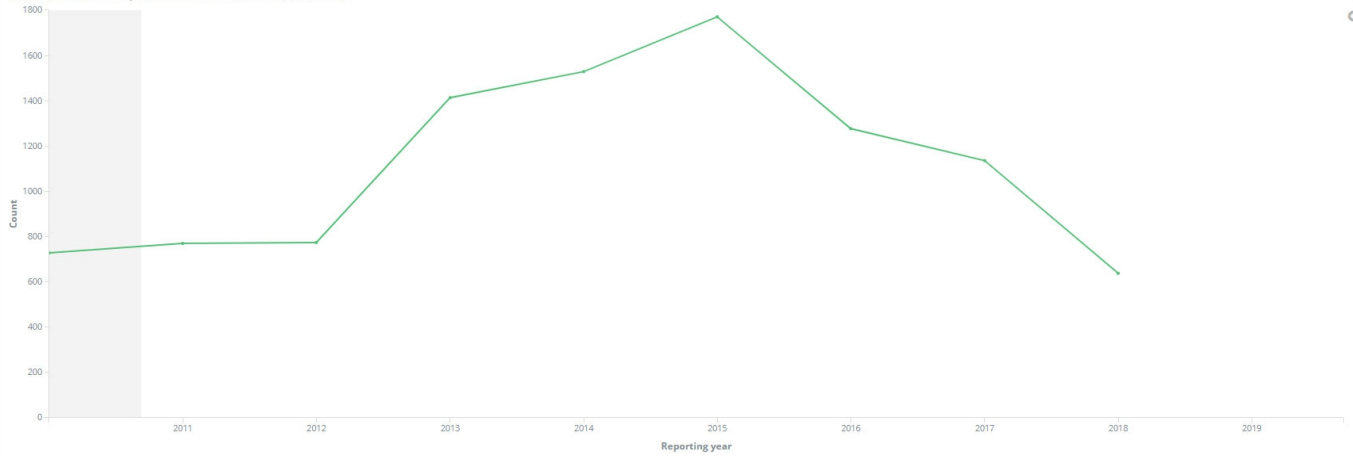
The key facts and figures presented in this country fiche are based on the information provided by Portugal on the [INSPIRE dashboard](#). **The provided statistics is not reflecting the data available on INSPIRE geportal.** The INSPIRE geportal is updated on a regular and ongoing basis, whilst the INSPIRE 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.



## Identification of spatial data with relevance to the environment (step 1)

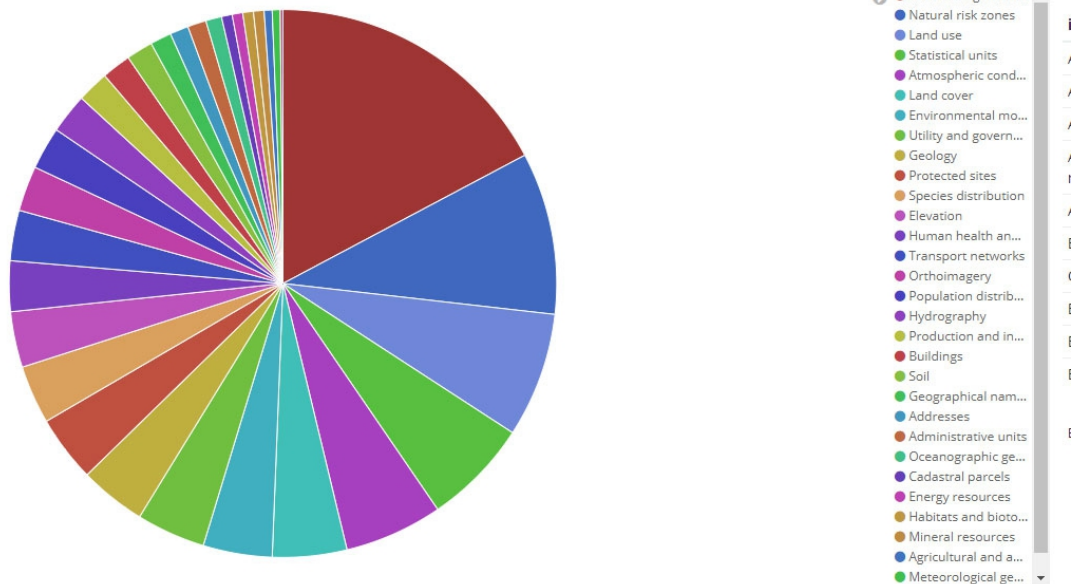
Indicator / Number of spatial data sets for all annexes (DSv\_Num)



Country fiche / datasets by annex

## Data sets made available per INSPIRE theme (reference year 2018)

INSPIRE Raw data (datasets) by themes



Country fiche / datasets by themes

## Data sets made available per INSPIRE theme

Indicator / Number of spatial data sets per annexes



Country fiche / Documentation of the data

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

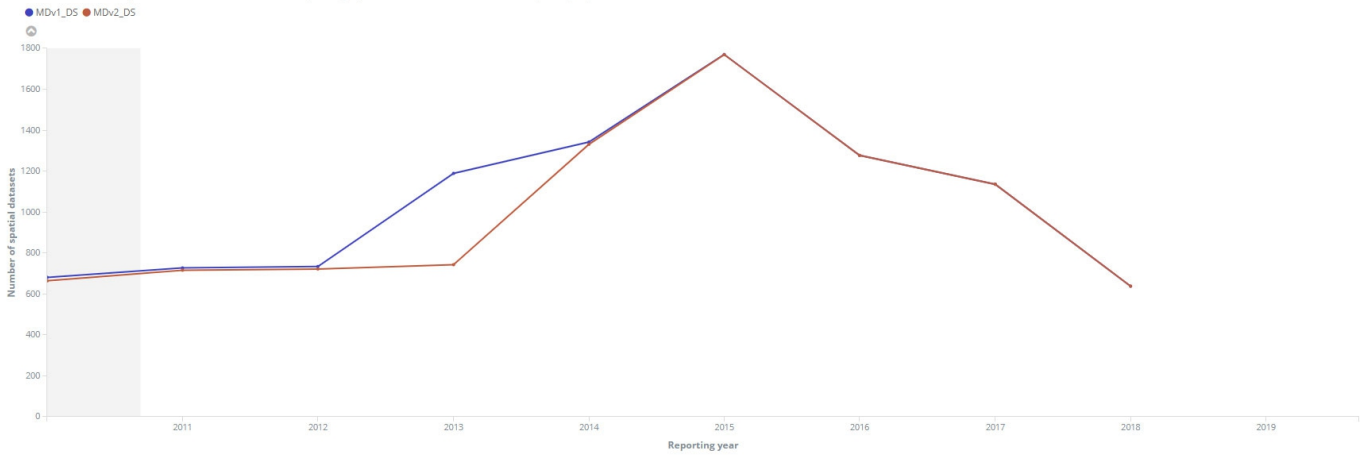
MDv1.2: number of spatial data sets for Annex II that have metadata

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

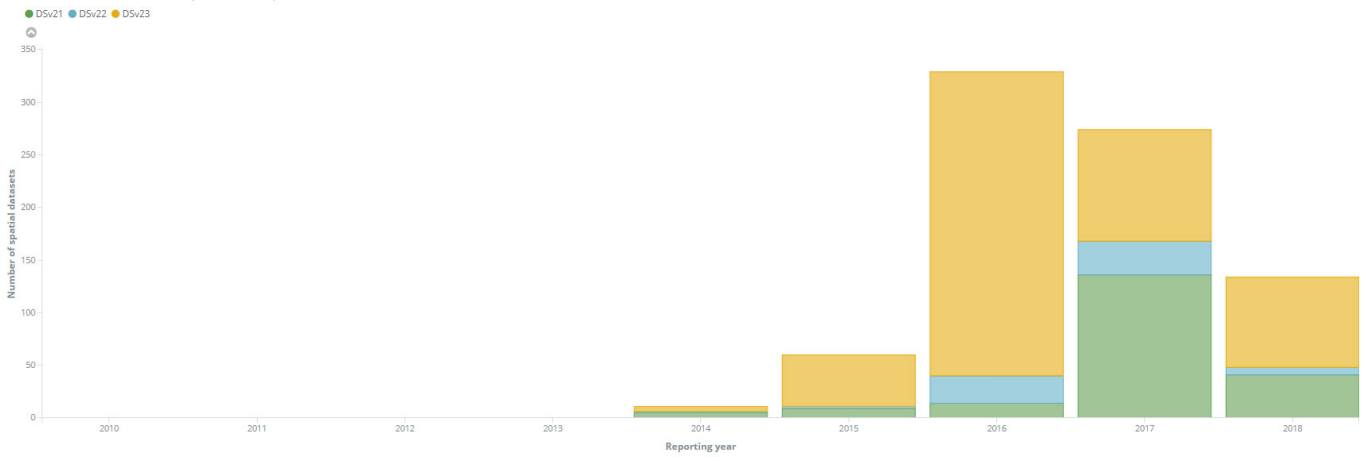
## Documentation of the data (metadata) (step 2)

### Evolution of documented data and conformity of the documentation

Indicator / Number of spatial data set that have metadata (MDv1\_DS) and have conformant metadata (MDv2\_DS)



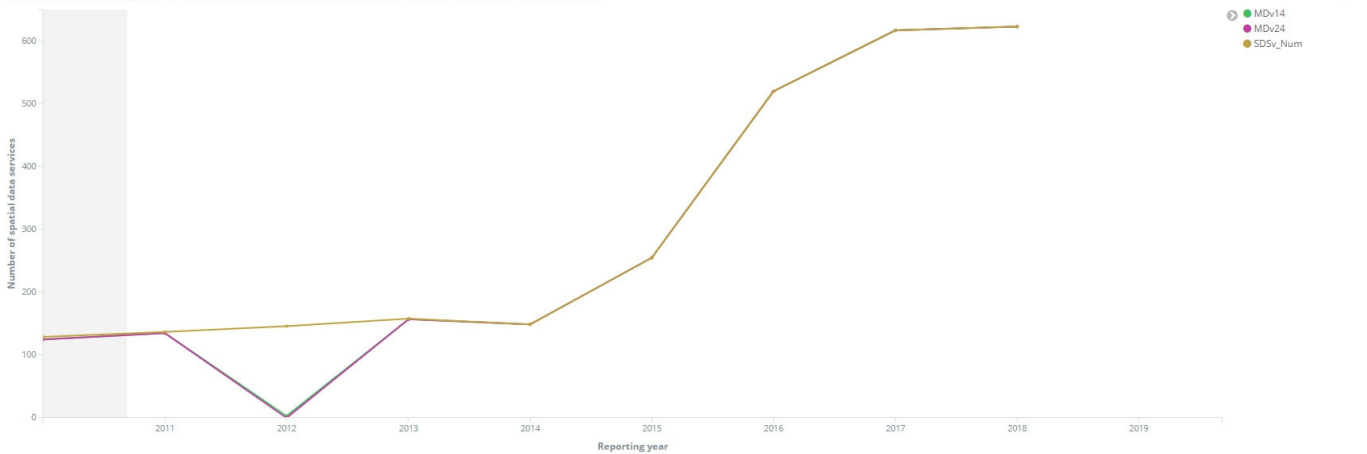
Indicator / Number of conformant spatial data sets per Annexes



Country fiche / Evolution of documented services and conformity of the documentation

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

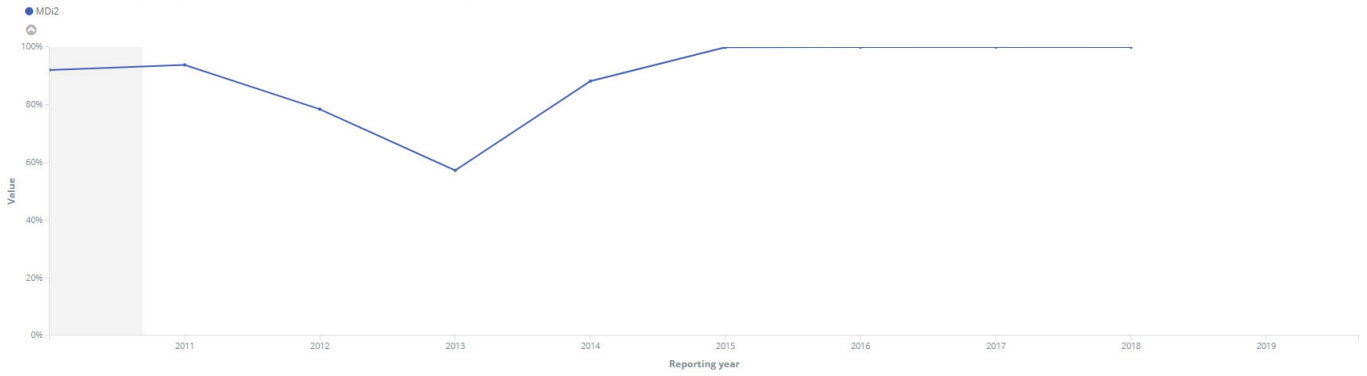
Indicator / Number of spatial data services (SDSv\_Num) with metadata (MDv14) and conformant metadata (MDv24)



Country fiche / Evolution of the overall conformity of the documented metadata

## Evolution of the overall conformity of the documented metadata

Indicator / Percentage of spatial data sets and services with conformant metadata (MDi2)

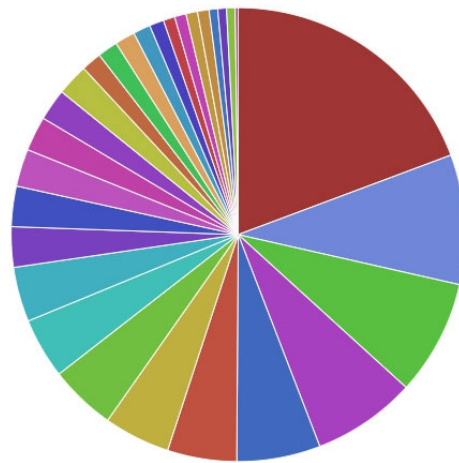


Country fiche / accessibility

## Accessibility of the data through digital services (step 3)

### Digitally accessible spatial data per INSPIRE theme (reference year 2018)

INSPIRE Raw data (datasets available through services) by themes

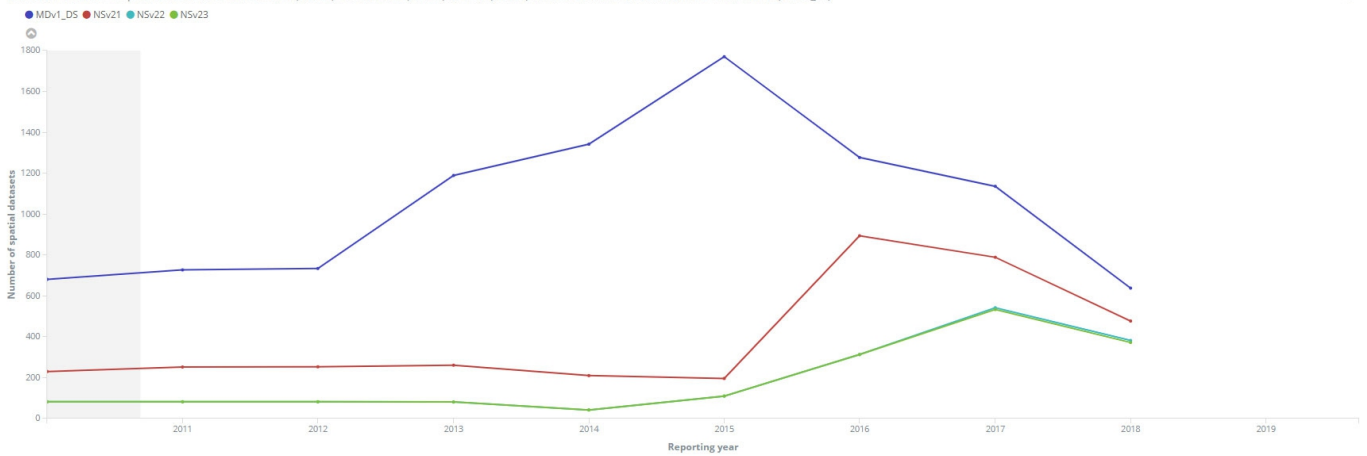


- Area management...
- Land use
- Statistical units
- Atmospheric cond...
- Natural risk zones
- Protected sites
- Geology
- Utility and govern...
- Land cover
- Environmental mo...
- Human health an...
- Transport networks
- Elevation
- Orthoimagery
- Hydrography
- Production and in...
- Administrative units
- Geographical nam...
- Species distribution
- Addresses
- Population distrib...
- Buildings
- Energy resources
- Habitats and bioto...
- Mineral resources

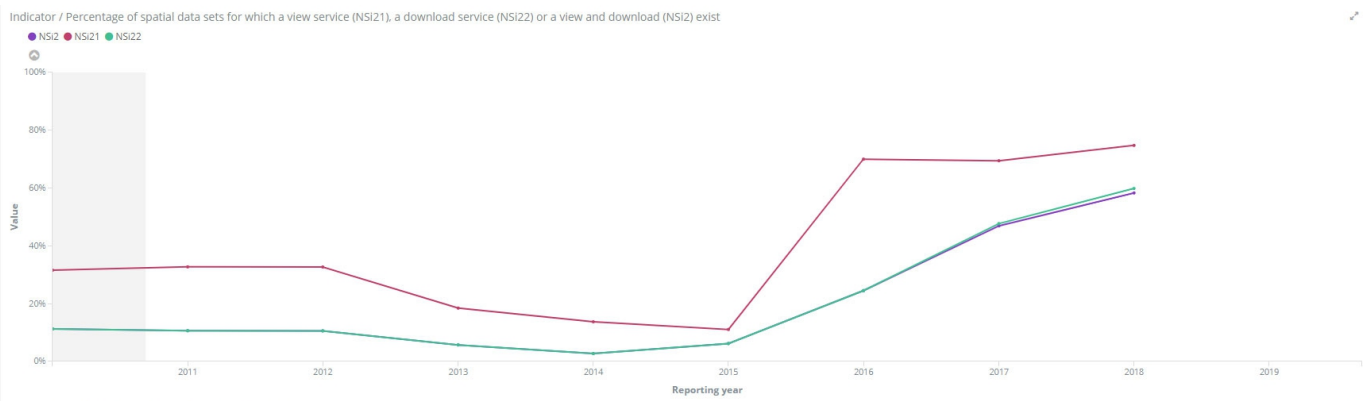
Country fiche / Evolution of spatial data accessible through services

## Evolution of spatial data made accessible through digital services

Indicator / 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)

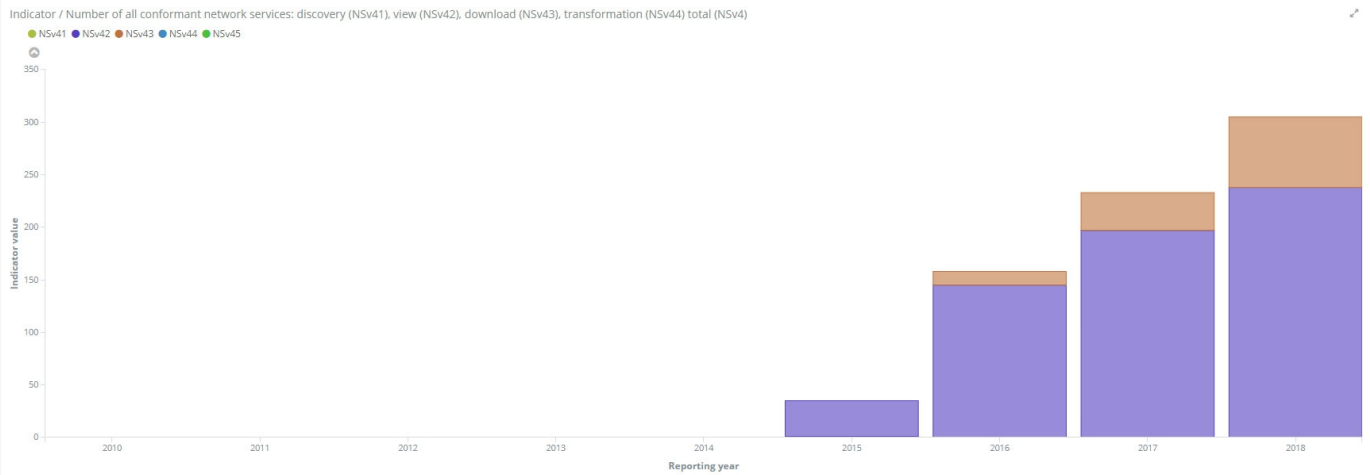






Country fiche / Evolution of the conformity of the digital services

### Evolution of the conformity of the digital services

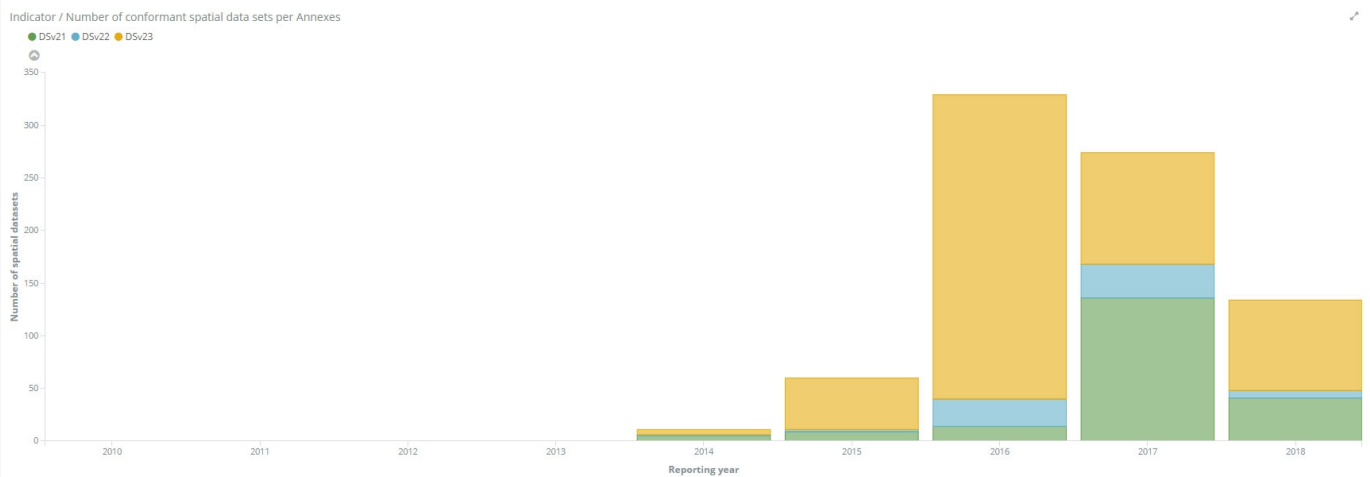


Country fiche / Interoperability

### 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 <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02010R1089-20131230&qid=1400675738563>). The deadlines for implementation of the spatial data interoperability are 23/11/2017 for Annex I data and 21/10/2020 for Annex II and III data.

### Evolution of the conformity with INSPIRE interoperability specifications for spatial data



DSv2.1: number of conformant spatial data sets with conformant metadata for Annex I

DSv2.2: number of conformant spatial data sets with conformant metadata for Annex II

DSv2.3: number of conformant spatial data sets with conformant metadata for Annex III