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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 Implementing Decision \(EU\) 2019/1372](#) on the 19th August 2019.

This country fiche highlights the progress in the various areas of INSPIRE implementation. It includes information on [monitoring 2020](#) acquired in December 2020 and Member States update.

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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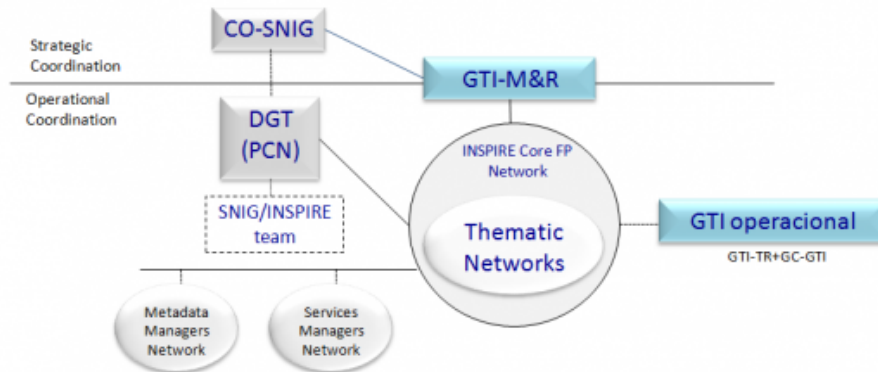
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Coordination Structure & Progress:

- DGT represents Portugal at IC, MIG and MIG-T since the beginning but since 2018 these representations were enlarged to some other public authorities, namely Portuguese Environmental Agency (APA), in MIG, National Statistics Institute (INE) and Azores Autonomous Region (RAA), in MIG-T.
- During 2020, National Institute for Statistics (INE) was nominated as representative in the Action 2017.4 (validation and conformity testing) and the Hydrographic Institute (IH) was nominated as representative in the Action 2020.1 (INSPIRE Download Services based on the “OGC API – Features” standard).
- CO-SNIG (*Conselho de Orientação do SNIG*) is responsible for the strategic coordination of the National Spatial Data Infrastructure (NSDI), i.e. *Sistema Nacional de Informação Geográfica* (SNIG). This committee is chaired by DGT and co-chaired by APA and includes all the entities identified as responsible for the datasets embraced by INSPIRE Directive.
- Networks: SNIG Network (the SNIG Network covers all public and private entities that produce and provide geographic data sets and services.); 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 the public authorities formally responsible for producing national datasets and services regarding the themes of the three INSPIRE Annexes); Network of Metadata Managers and Network of Spatial Data Services Managers.
- Working Groups (WG): M&R WG, a CO-SNIG sub-group dedicated to support INSPIRE monitoring and reporting, since 2010. GTI-Op, operational group that includes technicians from various entities with extensive experience in technical and thematic matters related to the INSPIRE directive, as well as the coordinator of the M&R WG. 9 Thematic Networks associated with the INSPIRE Themes clusters (the previous 9 GTI-TE).
- GT SNIG-Local, the most recent working group, involving the inter-municipality's communities (CIM).

Progress

- Annual Action Plans for implementing SNIG 2020 vision – during this year, entities continued to be dedicated to the creation and improvement of their metadata and creation/validation of spatial data services.
- Continue to increase the Portuguese representativeness at European events and meetings on SDI and INSPIRE (e.g. MIG and MIG-T meetings as well as in some of the sub-groups), by proceeding with the involvement of entities from INSPIRE Core Focal Points Network in European groups as well as their participation in capacity building events. This is the case of Action 2017.4 (validation and conformity testing) with the nomination of Francisco Caldeira from National Institute for Statistics (INE) and Action 2020.1 (INSPIRE Download Services based on the “OGC API – Features” standard) with the nomination of Paulo Nunes from Hydrographic Institute (IH).
- DGT participated in the Impact Assessment study on the list of High-Value Datasets to be made available by the Member States under the Open Data Directive (DIRECTIVE (EU) 2019/1024 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019) which included two validation workshops.
- DGT provided comments on the transposition of the Open Data Directive to national legislation.
- Due to the pandemic situation GTI-Op meetings did not occur during 2020. Nevertheless, information received by INSPIRE NCP was disseminated to GTI-Op.
- Organization of ENIIG 2020 - *Encontro Nacional de Infraestruturas de Informação Geográfica* (<https://www.dgterritoio.gov.pt/ENIIG-2020-0>), the annual event on SDI, which took place on December, 17, 2020, as a videoconference, addressing the topic “Future trends in the management and processing of geographic information”. This edition of ENIIG was based on the initial presentation of the United Nations document “Future Trends in geospatial information management: the five to ten year vision of the United Nations Committee of Experts on Global Geospatial Information Management (UNGIG)”. This document was used to launch the debate on future trends in the

acquisition, processing and availability of geographic information, through a round table involving specialists in these sectors of activity. Considering that the motivation for this ENIIG edition was to try to envision what the future holds, a session was also held dedicated to the presentation of innovative initiatives and applications that are currently being developed in Portugal. About 600 people attended the event, approximately 300 through the Zoom platform where this conference was held and 300 through DGT's YouTube channel, which broadcasted the event live.

- An assessment of SNIG 2020 vision accomplishment started to be discussed at CO-SNIG in the December 2020 meeting and an activity devoted to the definition of the strategy for SNIG evolution after 2020 will be developed during 2021.
- Capacity building activities provided at the European level were internally followed by PT INPIRE structures members namely: EuroGeographics: Creating seamless, high resolution height data; EuroGeographics: Data Producer; Eurogeographics: Quality in NMCAs; Eurogeographics: Maintaining official datasets; Eurogeographics: Spatial Data Quality; Eurogeographics: Implementation of Annexes II and III; EuroSDR: The Use of Volunteer Geographic Information for producing and maintaining Authoritative Land Use and Land Cover Data; ArcGIS Insights for Data Scientists.
- Cooperation with Spain: continued the collaboration on the organization of the Iberian SDI event, JIIDE, and the participation in cross-border projects and initiatives.
- JIIDE 2020 (<https://www.dgterritorio.gov.pt/jiide2020/Apresentacao.aspx>), the XI edition of this event, took place from 26 to 30 October 2020, organized as a videoconference due to the situation caused by the Covid-19 pandemic crisis, by Portuguese DGT and CNIG from Spain and was focused on the topic "Contributions to the development of a low carbon economy". The event included 10 Sessions, with around 66 presentations and 52 Portuguese and Spanish speakers, an invited speaker, three round tables and three workshops. In each session an average of 170 participants were attending simultaneously in all sessions.
- Articulation of SNIG with thematic and regional SDIs (e.g. SNIG-SNIAMB, and SNIG-IDEIA metadata catalogues harvesting process) proceeded during 2020.
- Promoting the involvement of the Local data producers/Local SDIs in INSPIRE implementation and national SDI development - the Working Group involving the municipality's communities, GT SNIG-Local, endorsed by CO-SNIG in 2019 and formally constituted, did not evolve during 2020 due to the sanitary crisis.
- Articulation of SNIG with the open data portal, <https://dados.gov.pt/pt/> was performed. DGT is already at the Portuguese Agency for the Administrative Modernization (AMA) Portal through SNIG. During 2020, DGT participated in a CEF proposal coordinated by AMA which included a module dealing with the SNIG/dados.gov.pt articulation.
- The collaboration of DGT staff in activities with universities continued, e.g. teaching SDI issues in Master degrees (e.g. Masters on Geospatial Information from University of Lisbon). An initial draft of a strategic document for the articulation of SNIG with the academic sector was produced.
- The new technical specifications for the Portuguese reference cartography, approved in 2019, are now being used on a regular basis.
- Two project applications were submitted and approved in 2020 by the SAMA 2020 programme (SAMA: *Sistema de apoio à modernização e capacitação da Administração Pública*): (1) SMOS – *Sistema de Monitorização de Ocupação do Solo*, a Land Use Land Cover monitoring System based on new digital Space Technologies and Artificial Intelligence aiming to support the integrated management of rural fires; (2) *Território Digital – Modernização, Cocriação e Partilha de Informação Geográfica, Cadastral e Territorial*, a system that is focused on the modernization, co-creation and sharing of Geographic, Cadastral and Territorial Information. The developments from these two projects, that will occur until the end of 2022, will have a positive impact in the INSPIRE SNIG implementation.

Functioning and coordination of the infrastructure

- The *Plano de Ação INSPIRE.PT 2020*, the action plan for INSPIRE in Portugal, defined as priority areas: (1) Make available, through visualization and download services, all reported SDS (starting by the PDS); (2) Ensure interoperability of the viewing and the download services; (3) Harmonize SDS (according to the capacity of each entity).
- During 2020 the INSPIRE Core Focal Points Network entities (INSPIRE CFPN entities) have been working on:
 - Proceeding with metadata revision to improve search and access to the GI through the geoportal and to complete metadata with missing information.
 - Making their spatial datasets metadata and spatial services metadata compliant with Metadata 2.0 and inserting the spatial scope keyword.
 - Increasing the spatial data services for the reported metadata.
 - Validating their spatial datasets and services using the INSPIRE Reference Validator
 - Validating interoperability (Resource linkages checker tool)
- The results achieved evidence the considerable investment in the production of services that continued during the 2020 period.
- In order to assist entities in converting metadata from version 1.3 to version 2.0, a "Guide for converting metadata from 1.3 to 2.0 using GeMA and INSPIRE validation" was prepared.
- INSPIRE CFPN entities continued working on priority datasets (PDS), although no global meetings on this issue took place. PDS identified in the INSPIRE Geoportal are not yet all available through interoperable download services due to interoperability issues.
- INSPIRE monitoring process in 2020 – The process automatically based on the information taken from the SNIG INSPIRECORE metadata, occurred in December 17, 2020. Entities have been working on metadata conversion to

Metadata 2.0 and on the creation and validation of spatial data services to allow improvement of monitoring results. Interactions with the entities occurred until the dead-line to support their effort towards metadata compliance and data and service interoperability. According to the EC these results were in fact improved (https://inspire-geoportal.ec.europa.eu/mr2020_details.html?country=pt).

- Effective creation of the group GT SNIG-Local occurred in the end of 2019, the working group involving the municipality's communities which creation was formally decided by CO-SNIG on the previous INSPIRE period. Nevertheless, the group did not become operational in 2020 as a result of the pandemic crisis.
- Connections with *Agência para a Modernização Administrativa (AMA)* have been explored in 2020 and a proposal to CEF programme, coordinated by AMA, was submitted having DGT as one of the partners, and included a module dealing with the SNIG/dados.gov.pt articulation.
- Following ISA (Interoperability solutions for public administrations, businesses and citizens) developments to support the efforts for connecting with eGovernment proceeded.
- LIFO – Location Interoperability Framework Observatory (LIFO), as in 2019 Portugal has participated in 2020 in the LIFO project, a tool to monitor and report on the state of play of location data in Member States' digital government programmes.
- A discussion on ways to promote SNIG within different audiences was started internally (SNIG & the public administration; SNIG & academia; SNIG & the groups of citizens)
- Organization of ENIIG 2020 - *Encontro Nacional de Infraestruturas de Informação Geográfica* (<https://www.dgterritorio.gov.pt/ENIIG-2020-0>), which took place in 17 December 2020, as a videoconference, centred on the topic "Future trends in the management and processing of geographic information".
- Participation in JIIDE 2020, also a virtual event, which focused on the contributions to the development of a low carbon economy. – referring to SNIG, DGT presented a communication: "O Registo Nacional de Dados Geográficos e o novo Geoportal do Sistema Nacional de Informação Geográfica"/"National Register for Geographic Data and the new SNIG geoportal" and participated also in some of the round tables. A presentation on Cross-Forest project evaluation procedures was also performed by DGT project team.
- Participation in the Eurogeographics Webinar, which took place in 2 July 2020, presenting "Increasing the use of spatial data in Portugal with user-friendly portal"
- Participation in Jornadas Hidrográficas presenting "O Registo Nacional de Dados Geográficos e o Novo Geoportal do Sistema Nacional de Informação Geográfica".
- The submission of abstracts to INSPIRE Conference 2020 occurred but the conference was cancelled due to the Coronavirus pandemic: Abstracts submitted "Access to Geographic Information in Portugal: INSPIRE Directive impact" and "The New Portuguese National Spatial Data Infrastructure Geoportal" as well as one on Cross-Forest project.

Technical constraints - SDI development and INSPIRE implementation in Portugal in 2020 continue to show the same type of technical constraints namely:

1. Articulation between the entities technical implementation departments and the entities Head Offices is not easy - awareness was and is still needed;
2. 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;
3. 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);
4. Complexity of data harmonization specifications generate difficulties on using data harmonization tools to obtain validated harmonized datasets;
5. 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;
6. Some public entities do not have the information systems infrastructures (e.g. servers, software) to provide access to its data.

Planned actions include:

- Define and implement INSPIRE-PT 2021 Action Plan;
- Continue to improve SNIG geoportal, considering technological evolution and user's feedback;
- Perform a revision of the National Register for Geographic Data (RNDG) records, to evaluate data and thematic gaps or unsuitable data;
- In spite of the registered progress, metadata completeness, namely in what concerns data policies clear identification and progressing in the adoption of the Metadata 2.0 regulation is still needed;
- Continue to 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;
- The increase of the availability of data from regional and local public entities through SNIG is a priority;
- SNIG Usability testing was not possible during 2020 so it continues to be one of the planned actions;

- The promotion of the use of SNIG geoportal, through the organization of sessions devoted to different types of users around the country, focusing on SNIG uses for different purposes remains one planned action as it was not viable in 2020;
- Data harmonization according to INSPIRE data specifications will continue according to the capacity of each entity;
- Follow-up MIWP 2020-2024 actions and disseminate relevant issues through portuguese networks and working groups;
- Increase the articulation with eGovernment;
- Study the potential use of the Linked Open data (LOD) approach to enrich the SDI data;
- Participate in JIIDE 2021, XII *Jornadas Ibéricas de Infraestructuras de Datos Espaciais* (JIIDE), that will take place in Spain, in the end of October.

Usage of the infrastructure for spatial information

- The national SDI data producers and users continued to collaborate in the NSDI development resulting on an increased number of metadata on officially approved cartography and territorial management instruments (IGT).
- The new SNIG geoportal interface facilitates the search and access to spatial data in Portugal and SNIG site is used to provide different types of information to SNIG users and GI community (e.g. news on events, documents, technical sessions.....).
- Modernization of regional public administration is occurring, producing data and metadata according to INSPIRE specifications, improving the technological infrastructures (e.g. hardware, communication) available and increasing capacity building.
- Increased availability of spatial data services providing access to spatial data usable for different applications.
- National SDI provides relevant information to the development and monitoring of the National Program for Spatial Planning Policy (PNPOT).
- Integration of several regional thematic issues.
- Participation in European projects related to SDI (e.g. IP-Sentinel; CEF-Telecom).
- Participation in cross-border projects: Cross-Forest (CEF-Telecom) involving DSI, linked-open data approaches and INSPIRE specifications.
- Practical examples of cross-border cooperation with neighbouring country continued to be carried in different scopes (e.g. JIIDE and other initiatives).
- ENIIG 2020, centred on the topic "Future trends in the management and processing of geographic information", registered a high number of participants (300 through the Zoom platform and 300 through DGT's YouTube channel) which reflects the interest of users in the future development of the NSDI.

Planned actions include:

- Support the use of INSPIRE spatial data sets for eReporting, continuing to increase the communication between the INSPIRE and environmental reporting communities;
- Define and apply strategies to promote SNIG within different audiences (SNIG & public administration; SNIG & academia; SNIG & the groups of citizens);
- Promote the use of the national SDI by specific users and projects, namely to support public policies and environmental directives application;
- Special sessions on SNIG for different audiences will be performed to promote the use of the National SDI;
- 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

- Promote the definition by public data producers, of a clearly defined data policy supported on the existing good practices.
- Promote the documentation of the spatial data – the effort developed by the public entities to include data policies in the metadata continued in 2020.
- The promotion of the open data approach was followed during 2020, as well as the delivery of data through spatial data services;
- Promotion of the open availability of datasets free of charge was performed although not many opportunities/events occurred.
- 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 will be completely open to all users.
- DGT open data such as Land Cover/Land Use (LC/LU) National data and the 2018 national coverage of orthophotos increased the demand on these data. Other entities also provided access to new data even if not yet following INSPIRE (e.g. a public viewer for the INFOsolo database (INIIV)).
- In 2019, DGT defined the requirements for the implementation of a National Cartographic Database which will integrate all core spatial data produced at scales 1:10 000 and higher in Portugal. This database, defined in DL 130/2019, 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. Besides the partnership with all national entities which produce core spatial data, mainly the local public administration, that guaranties a shared governance of

this infrastructure, the new projects SMOS and *Território Digital*, submitted and approved in 2020, will provide human and material resources to support the required developments.

Planned actions

- The study on the licensing model for SNIG to support the definition of a simplified license model for data sharing within SNIG continues to be an activity in 2021, as well as the discussion for the creation of 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.
- Continue to promote the open access to GI data free of charge.
- Proceed the development of the National Cartographic Database which will integrate all core spatial data produced at scales 1:10 000 and higher in Portugal.

Costs and benefits

No significant evolution occurred on cost/benefit analysis: obtaining comparable and coherent values from different public entities is still not possible.

- Diversity and heterogeneity is verified on the 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.
- Not yet possible to present quantitative benefits, but INSPIRE is having an important role on 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 are registered.
- Spatial data continues to become available free of charge. DGT made available three Sentinel-2 satellite images mosaics referring to Continental Portugal with 10 m resolution. Other entities also provided access to new data even if not yet following INSPIRE (e.g. the National Authority for Emergency and Civil Protection (ANEPC) provided access to around twenty new SDS through spatial data services; a public viewer of soil data from the INFOsolo database (INIAV) was produced).
- Need for financing sources to support SDI development: an increased effort must be done to identify them but GTI-Op activity did not proceed in 2020. Nevertheless, the two project applications to SAMA Programme (SMOS and *Território Digital*) will provide support to the GI & NSDI/INSPIRE development in Portugal.
- Project DIPIGeo, funded by the Portuguese Agency for the Administrative Modernization (AMA), will continue to support SNIG & INSPIRE activities at DGT.
- National Statistics Institute, Hydrographic Institute, Azores Autonomous Region are also developing projects funded by AMA to promote the development of spatial data infrastructures and to foster INSPIRE implementation.
- INE reached the approval for the development of the National Infrastructure for Addresses.

Planned actions include:

- Organize in 2021 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).
- Continue to explore DIPIGeo in new developments on INSPIRE and SNIG.
- Use the support of SMOS and *Território Digital*.

Key facts and figures

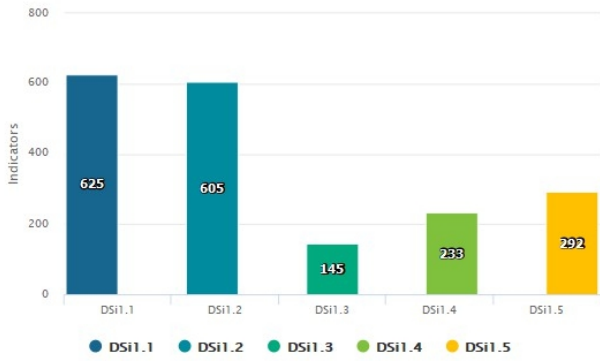
Portugal, Portuguese Republic

Indicators in support of [Commission Decision \(EU\) 2019/1372](#) implementing Directive 2007/2/EC (INSPIRE) as regards to monitoring and reporting

Graphs generated with data taken from: https://inspire-geoportal.ec.europa.eu/mr2020_details.html?country=pt

The date of harvest metadata: 17/12/2020

Monitoring of the availability of spatial data and service



Legend

Indicator	Definition
DSi1.1	The number of spatial data sets for which metadata exist
DSi1.2	The number of spatial data services for which metadata exist
DSi1.3	The number of spatial data sets for which the metadata contains one or more keywords from a register provided by the Commission indicating that the spatial data set is used for reporting under the environmental legislation
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 regional territory
DSi1.5	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 national territory

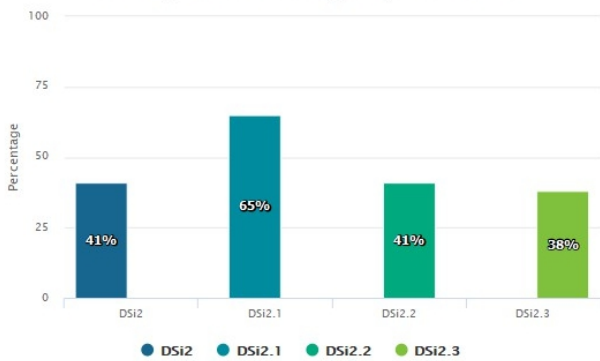
Monitoring of the conformity of metadata



Legend

Indicator	Definition
MDi1.1	Percentage of metadata for spatial data sets conformant with Commission Regulation (EC) No 1205/2008 as regards metadata
MDi1.2	Percentage of metadata for spatial data services conformant with Commission Regulation (EC) No 1205/2008 as regards metadata

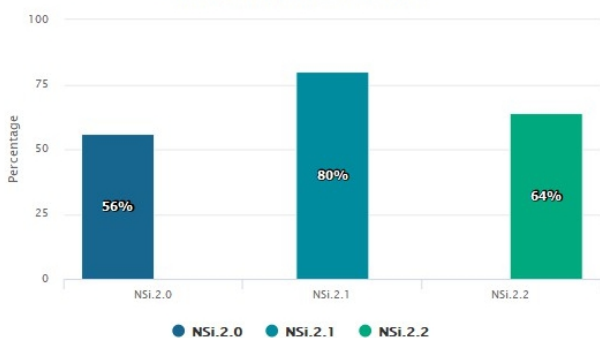
Monitoring of the conformity of spatial data sets



Legend

Indicator	Definition
DSi2	Percentage of spatial data sets that are in conformity with Commission Regulation (EU) No 1089/2010 as regards interoperability of spatial data sets
DSi2.1	Percentage of spatial data sets, corresponding to the themes listed in Annex I, that are in conformity with Commission Regulation (EU) No 1089/2010 as regards interoperability of spatial data sets
DSi2.2	Percentage of spatial data sets, corresponding to the themes listed in Annex II, that are in conformity with Commission Regulation (EU) No 1089/2010 as regards interoperability of spatial data sets
DSi2.3	Percentage of spatial data sets, corresponding to the themes listed in Annex III, that are in conformity with Commission Regulation (EU) No 1089/2010 as regards interoperability of spatial data sets

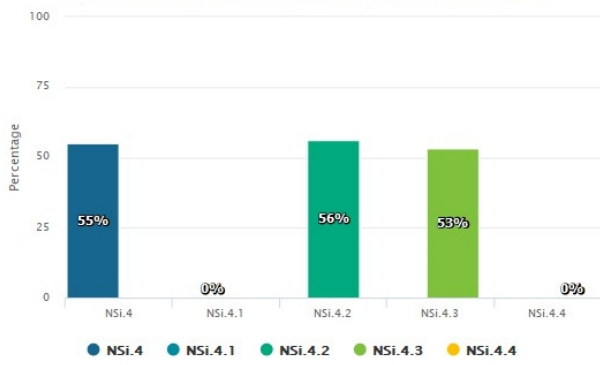
Monitoring of the accessibility of spatial data sets through view and download services



Legend

Indicator	Definition
NSi.2.0	The Percentage of spatial data sets that are accessible through view and the download services
NSi.2.1	The Percentage of spatial data sets that are accessible through view services
NSi.2.2	The Percentage of spatial data sets that are accessible through download services

Monitoring of the conformity of the network services



Legend

Indicator	Definition
● NSi.4	Percentage of the network services that are in conformity with Commission Regulation (EC) No 976/2009 as regards the Network Services
● NSi.4.1	Percentage of the discovery services that are in conformity with Commission Regulation (EC) No 976/2009 as regards the Network Services
● NSi.4.2	Percentage of the view services that are in conformity with Commission Regulation (EC) No 976/2009 as regards the Network Services
● NSi.4.3	Percentage of the download services that are in conformity with Commission Regulation (EC) No 976/2009 as regards the Network Services
● NSi.4.4	Percentage of the transformation services that are in conformity with Commission Regulation (EC) No 976/2009 as regards the Network Services