



INSPIRE
Infrastructure for Spatial Information in Europe

Member State Report: Italy, 2012

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1 INSPIRE Reporting – Overview of requirements

There are five topics addressed in the Reporting chapter of the IR:

1. Organisation, co-ordination and quality assurance

The first part of this section is concerned with the way in which the contact point and co-ordinating structure for the infrastructure for spatial information are organised – the body responsible, its associated co-ordinating structure and some information about how this works. The second part offers the MS the opportunity to report on quality assurance processes within the infrastructure for spatial information (as required by Art 21 of the Directive).

2. Contribution to the functioning and coordination of the infrastructure

The second section asks for information about the stakeholders involved in the infrastructure for spatial information – including a description of their roles, how they co-operate, how they share data/services and how access is made to services via the INSPIRE geo-portal.

3. Usage of the infrastructure for spatial information

Having some or all of the various components of the infrastructure for spatial information in place is important, but equally important is if, or how much, the infrastructure is being used. This part of the report is intended to give MS the opportunity to comment and explain the results of the indicators on the usage of the different services, and to describe how spatial data and services are being used by public bodies and if possible (because it is recognised that this is difficult to observe) how they are being used by members of the general public. Because of the environmental emphasis of the Directive MS are particularly encouraged to find and describe examples of use within the field of environmental policy. The report should also describe examples of cross-border usage, efforts to improve cross-border consistency and examples of the use of transformation services.

4. Data sharing arrangements

Chapter 5 of the INSPIRE Directive is concerned with data sharing. It has not been possible to derive adequate indicators to monitor data sharing – the subject does not lend itself to quantitative methods in a way that would provide meaningful output. It is a major part of the Directive however and so this Chapter is dealt with, in terms of monitoring and reporting, by asking MS to describe data sharing arrangements in their 3 yearly reports. MS are required to provide an “overview” of data sharing arrangements i.e. not all such agreements have to be listed and described (which would be very difficult and extremely onerous) – but MS are encouraged to provide sufficient description to enable readers to understand the main type or types of agreement that are used – both for sharing of data between public bodies in the MS and between those public bodies and the institutions of the EU. An important section also required is a description of known barriers that may be inhibiting the sharing of spatial data and services, and what steps the MS are taking to overcome those barriers.

5. Cost and benefit aspects

Finally, the Directive requires MS to quantify the costs and benefits involved in the establishment and maintenance of the infrastructure for spatial information *that are directly attributable to the implementation of the Directive*. The report should attempt to estimate the costs and to provide examples of benefits as described in the IR. As with other aspects of the report MS are responsible for deciding the depth/level of reporting that they find appropriate to satisfy the IR and to provide a suitable level of information for stakeholders.

2 How to use this template

This template provides a structure Member States can use to collect and transmit the reporting information to the EC.

This template mainly reflects the list of elements required by the Commission Decision 2009/442/EC on monitoring and reporting. These are the mandatory elements. For every chapter the relevant article of the implementing rules on monitoring and reporting will be reported.

Also some optional features, not strictly required by the relevant legislation, are included. These features can either contain a suggestion on what elements can be grouped under a certain topic foreseen by the legislation or they can contain additional elements that enhance the readability of the document. These features are optional.

You have full rights to deliver this report in your own language, we will then translate it internally. Of course if the report will be already in English, or accompanied by its English translation, that will be welcome.

Disclaimer: This document will be publicly available as a 'non-paper', as it does not represent an official position of the Commission, and as such can not be invoked in the context of legal procedures.

3 Executive summary

This is the second report from Italy on the activities carried out in the period 2010-2012 to implement Directive 2007/2/EC. The report was prepared by the Ministry for the Environment and Protection of Natural Resources and the Sea together with ISPRA (Institute for Environmental Protection and Research). This report outlines the activities carried out at national and regional level, with particular regard to the federated approach to the provision of environmental information and the establishment of a country-wide system for the distributed access to network services.

4 Abbreviations and Acronyms

ANCI	Associazione nazionale dei Comuni italiani [National Association of Italian Municipalities]
APPA	Agenzia Provinciale per la Protezione dell'Ambiente [Provincial Agency for the Protection of the Environment]
ARPA	Agenzia Regionale per la Protezione dell'Ambiente [Regional Agency for the Protection of the Environment]
CAD	Codice dell'Amministrazione Digitale [Digital Administration Code]
CIGA	Centro Informazioni Geotopografiche dell'Aeronautica [Centre for Aeronautical Geotopographic Information]
CNIPA	Centro Nazionale per l'Informatica nella Pubblica Amministrazione [National Centre for IT in the Public Administration]
CNITA	Consulta nazionale per l'informazione territoriale ed ambientale [National Council for Spatial and Environmental Information]
CNR	Consiglio Nazionale delle Ricerche [National Research Council]
CSW	Catalog Service for the Web
DigitPA	Ente nazionale per la digitalizzazione della Pubblica Amministrazione [National Public Body for Data-Processing in the Public Sector]
D.lgs.	Decreto legislativo [Legislative Decree]
DM	Decreto Ministeriale [Ministerial Decree]
DPCM	Decreto della Presidenza del Consiglio dei Ministri [Decree of the Prime Minister]
DPR	Decreto del Presidente della Repubblica [Presidential Decree]
EEA	European Environmental Agency
EIONet	European Environment Information and Observation Network
ESSI-Lab	Earth and Space Science Informatics – Laboratory
GN	Geoportale Nazionale [National Geoportal]
IGM	Istituto Geografico Militare [Military Geographical Institute]
IIM	Istituto Idrografico della Marina [Hydrographical Institute of the Navy]
INITMA	Infrastruttura Nazionale per l'Informazione Territoriale e del Monitoraggio Ambientale [National Infrastructure for Spatial Information and Environmental Monitoring]
INSPIRE Directive	Directive 2007/2/EC
ISPRA	Istituto Superiore per la Protezione e la Ricerca Ambientale [Institute for Environmental Protection and Research]
ISTAT	Istituto Nazionale di Statistica [National Institute of Statistics]
IT	Information Technology
L.	Legge [Law]
MATTM	Ministero dell'Ambiente e della Tutela del Territorio e del Mare [Ministry of the Environment and of the Protection of Natural Resources and the Sea]
MS	Member State
MSCP	Member State Contact Point
NCP	National Contact Point
PCN	Portale Cartografico Nazionale [National Cartographic Portal]
PFR	Punto Focale Regionale [Regional Focal Point]
RNDT	Repertorio Nazionale dei Dati Territoriali [National Registry of Spatial Data]
SEIS	Shared Environmental Information System

SDI	Spatial Data Infrastructure
SIG	Servizio Geologico d'Italia [National Geological Service]
SINA	Sistema Informativo Nazionale Ambientale [National Environmental Information System]
SINANet	Rete del Sistema Informativo Nazionale Ambientale [National Environmental Information System Network]
SPC	Sistema Pubblico di Connettività [Public Connectivity System]
UPI	Unione delle Province d'Italia [Union of the Provinces of Italy]

5 Introduction

- Background

Italy transposed **Directive 2007/2/EC** (INSPIRE) by means of Legislative Decree No 32 of 27 January 2010 - 'Implementation of Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)', approved by the Council of Ministers on 28 October 2009 and published in Official Gazette No 56 of 9 March 2010 (Ordinary Supplement No 47).

The Decree enables Italy to participate in the infrastructure for spatial information in Europe (INSPIRE) for the purposes of environmental policies and policies or activities that may have an impact on the environment, and sets out general rules for the exchange, sharing, access to and use of all the data necessary for that purpose in a manner integrated with regional and local authorities. The goal of the INSPIRE Directive is to enable the sharing of huge quantities of spatial data sets in multiple formats and from a variety of sources, in order to establish a single, Europe-wide spatial information infrastructure based on the national-level infrastructures. These are spatial data sets already produced or updated by the public authorities as part of their official activities: the Directive does not require collection of new spatial data sets and is only intended for the sharing and re-use of data already available in electronic format held by the authorities.

- Method used to compile the report

The MATTM prepares the report with ISPRA's support.

6 Co-ordination and quality assurance (Art. 12)

6.1 Coordination (Art. 12.1.)

6.1.1 Member State contact point

Art. 12.1. (a) the name, contact information, role and responsibilities of the Member State contact point;

Name and contact information

Member State Contact Point	
Name of the public authority	Ministero dell'Ambiente e della Tutela del Territorio e del Mare [Ministry of the Environment and of the Protection of Natural Resources and the Sea]
Contact information:	
Mailing address	Via Cristoforo Colombo, 44 - 00147 Roma
Telephone number	
Telefax number	
Email address	
Organisation's website URL	www.minambiente.it
Contact person (if available)	
Telephone number	
Email address	NCP.Inspire@minambiente.it
Contact person - substitute (if available)	
Telephone number	
Email address	

Roles and responsibilities

The **Ministry for the Environment and Protection of Natural Resources and the Sea** is the authority responsible for implementing Legislative Decree 32/2010 and is the **National Contact Point (NCP)**. The NCP has a network structure and is composed of representatives both of the MATTM and ISPRA.

The same Legislative Decree 32/2010 established within the MATTM the **National Council for Spatial and Environmental Information** which is to act as the liaising body between the public authorities that produce spatial data sets. The Council replaced the 'State-Region Coordinating Committee for the national environmental observation and information system', taking over its duties and opening to the participation of the representatives of the public authorities concerned. The Council serves both as the institutional link between the various authorities involved and as a technical advisory body supporting the Ministry's actions. The Council's operating rules are to be established by a specific **Decree of the Prime Minister (DPCM)**.

Under Legislative Decree 32/2010, the **National Geoportal (GN)**, managed by the MATTM, replaces to all intents and purposes the Cooperative Cartographic System - **National Cartographic Portal (PCN)**. The GN serves as a point of access to spatial data and allows wider use of spatial data sets and their associated services.

6.1.2 The coordination structure

Art. 12.1.

(b) the name, contact information, role and responsibilities, organisation chart of the coordinating structure supporting the contact point of the Member State

(c) a description of the relationship with third parties;

(d) an overview of the working practices and procedures of the coordinating body;

(e) comments on the monitoring and reporting process.

Name and contact information

Coordinating structure supporting the MSCP	
Name of the coordination structure	ISPRA
Contact information:	
Mailing address	Via Vitaliano Brancati, 48 - 00144 Roma
Telephone number	+39 06 5007 1
Telefax number	
Email address	
Organisation's website URL	www.isprambiente.it
Contact person (if available)	
Telephone number	
Email address	inspire@sprambiente.it
Contact person - substitute (if available)	
Telephone number	
Email address	
Date and period of mandate	

Roles and responsibilities

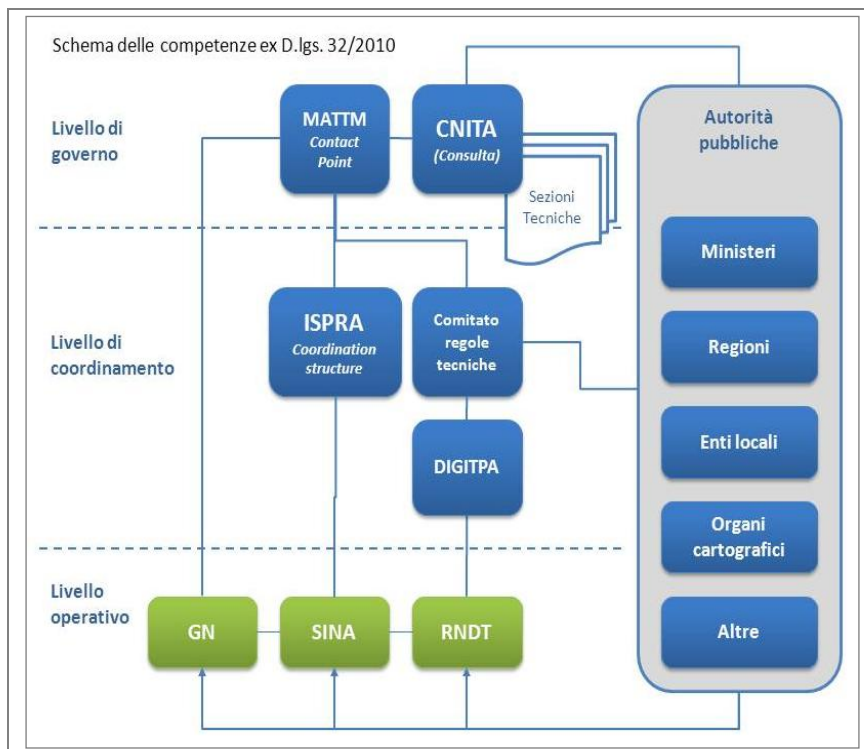
The National Contact Point is supported by the **Institute for Environmental Protection and Research (ISPRA)** acting as **coordination structure**.

Development of the GN by the MATTM does not involve the collection of spatial data sets, but provides for the GN to function as the access point to the network services, to the catalogues of the public authorities and to the **National Environmental Information System network (SINAnet)**, where the **spatial data sets** relating to INSPIRE **are progressively integrated** by ISPRA, to ensure the interoperability of the datasets and services, in accordance with the technical rules established by the Committee for technical regulations on the public authorities' spatial data sets. To date, this integration activity has been carried out by ISPRA, pending issue of the planned Decree of the Prime Minister on the National Council for Spatial and Environmental Information. Pending the start of operations by the Committee for technical regulations on the public authorities' spatial data sets, which is the body tasked with defining the technical rules for integration, the activity is being carried out by referring to the applicable EU Regulations. The approach has been to create a network of federated nodes, which has made it possible to handle a large amount of spatial information in an automated manner. The possibility of supplementing the information in real or quasi-real time is currently being assessed, also by relying on activities already developed to address emergency response requirements.

Law No 135 of 7 August 2012 has added more details on ISPRA's coordination role. Article 23(12-*quaterdecies*) provides: "...the cataloguing and collection of the geographical, spatial and environmental data generated by all the activities funded by public resources shall be handled by ISPRA" and: "...A Decree of the President of the Republic, based on an agreement between the Office of the Prime Minister - Civil Protection Department, the Ministry of Defence, the Ministry of the Environment and Protection of Natural Resources and the Sea, the Ministry of Education, University and Research and the Regions, adopted by the Standing Conference for relations between the State, Regions and the Autonomous Provinces of Trento and Bolzano, shall establish the methods for operating the platform and for the access, interoperability and sharing, also in real-time, of the data and information stored on the platform, as well as the disclosure and availability obligations in respect of the data acquired by all the entities engaged in such activity with full or partial public funding".

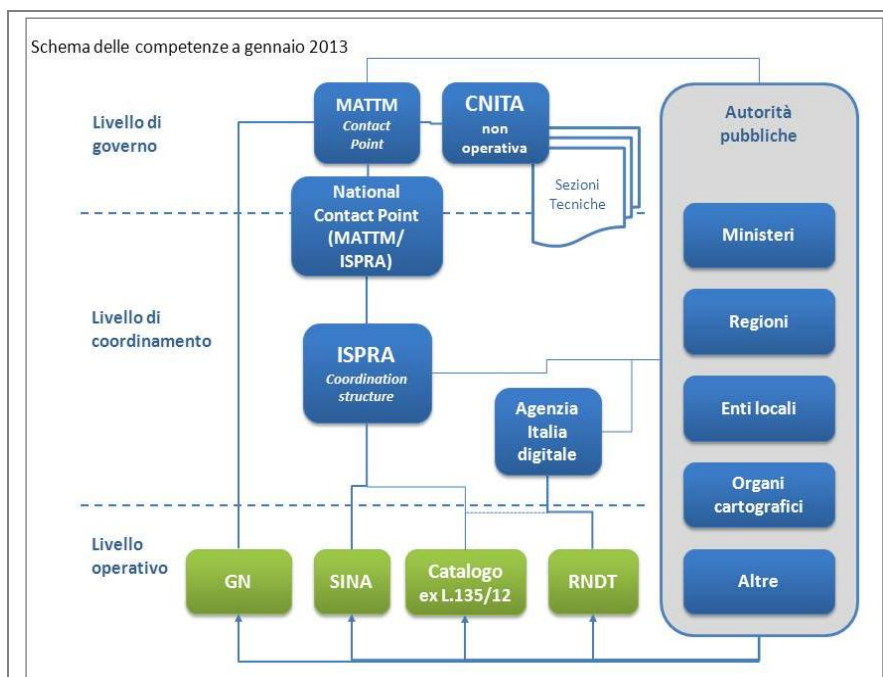
Organisation chart

The following two diagrams illustrate the development of the national organisational architecture.



Organisation chart pursuant to Legislative Decree 32/2010

Term	Translation	Term	Translation
livello di governo	government level	ministeri	ministries
livello di coordinamento	coordination level	regioni	regions
livello operativo	operational level	enti locali	local bodies
comitato regole tecniche	committee for technical regulations	organi cartografici	cartographic agencies
sezioni tecniche	technical sections	altre	others
autorità pubbliche	public authorities	(consulta)	(Council)



Organisation chart as at January 2013

Term	Translation	Term	Translation
livello di governo	government level	ministeri	ministries
livello di coordinamento	coordination level	regioni	regions
livello operativo	operational level	enti locali	local bodies
comitato regole tecniche	committee for technical regulations	organi cartografici	cartographic agencies
sezioni tecniche	technical sections	altre	others
autorità pubbliche	public authorities	non operativa	non operational
Agenzia Italia digitale	Agenzia Italia digitale [Agency for Digital Italy]	Catalogo ex L.135/12	Catalogue pursuant to Law No 135/12

Relations with third parties

Article 59 of the Digital Administration Code (*Codice dell'Amministrazione Digitale* - CAD, Legislative Decree 82/2005) established within CNIPA (later renamed DigitPA and since renamed *Agenzia per l'Italia Digitale*), the **National Registry of Spatial Data** (RNDD), in order to promote awareness of the data of public interest available from the national, regional and local public authorities. The public authorities supply their metadata to the Registry after obtaining a user account. The metadata, which must conform both to the national requirements and to the latest INSPIRE data specifications in force since 2012, may be created and uploaded in the RNDD or alternatively collected simply via catalogue service CSW-ISO.

The same Article established the **Committee for technical regulations on the public authorities' spatial data sets**, a horizontal/cross-cutting body composed of representatives of national, regional and local authorities, tasked with establishing and proposing technical rules concerning spatial data sets (data creation, documentation, usability and exchange) and the costs for their use. The Ministerial Decrees of 10 November 2011 of the Minister for Public Administration and Innovation, together with the Minister for the Environment and Protection of Natural Resources and the Sea (published in Official Gazette No 48 of 27 February 2012 - Ordinary supplement No 37), established the initial technical rules on spatial data defined by the Committee pursuant to Article 59 of the Digital Administration Code. The Committee for technical regulations on the public authorities' spatial data sets has been in abeyance since 2010.

A key role in implementing the Directive has been played by **CNR** (National Research Council) as supporting technical partner for the acquisition of spatial data and the transfer of environmental metadata. Cooperation at no cost between ISPRA and CNR has made it possible to create a federated network of data and information sources able to share a large amount of metadata, data and services, including information relating to the research areas addressed by CNR.

Overview of working practices and procedures

6.1.3 Comments on the monitoring and reporting process

As to monitoring activity, the Regions and the other public authorities identified pursuant to Article 12 of Legislative Decree 32/2010 have been invited to obtain access credentials from the NCP and to submit the information required. Much of the information contained in the INSPIRE monitoring exercise is available from the information resource network created by ISPRA. The national implementation process goes beyond the INSPIRE requirements, as the environmental information currently accessible also includes data themes not listed in the Annexes to the INSPIRE Directive. As to reporting, after receiving inputs from the regional and national authorities, the MATTM prepares the report and submits it to the competent authorities for any additions concerning networking activities carried out in cooperation with the regional and national partners.

6.2 Quality Assurance (Art. 12.2.)

6.2.1 Quality assurance procedures

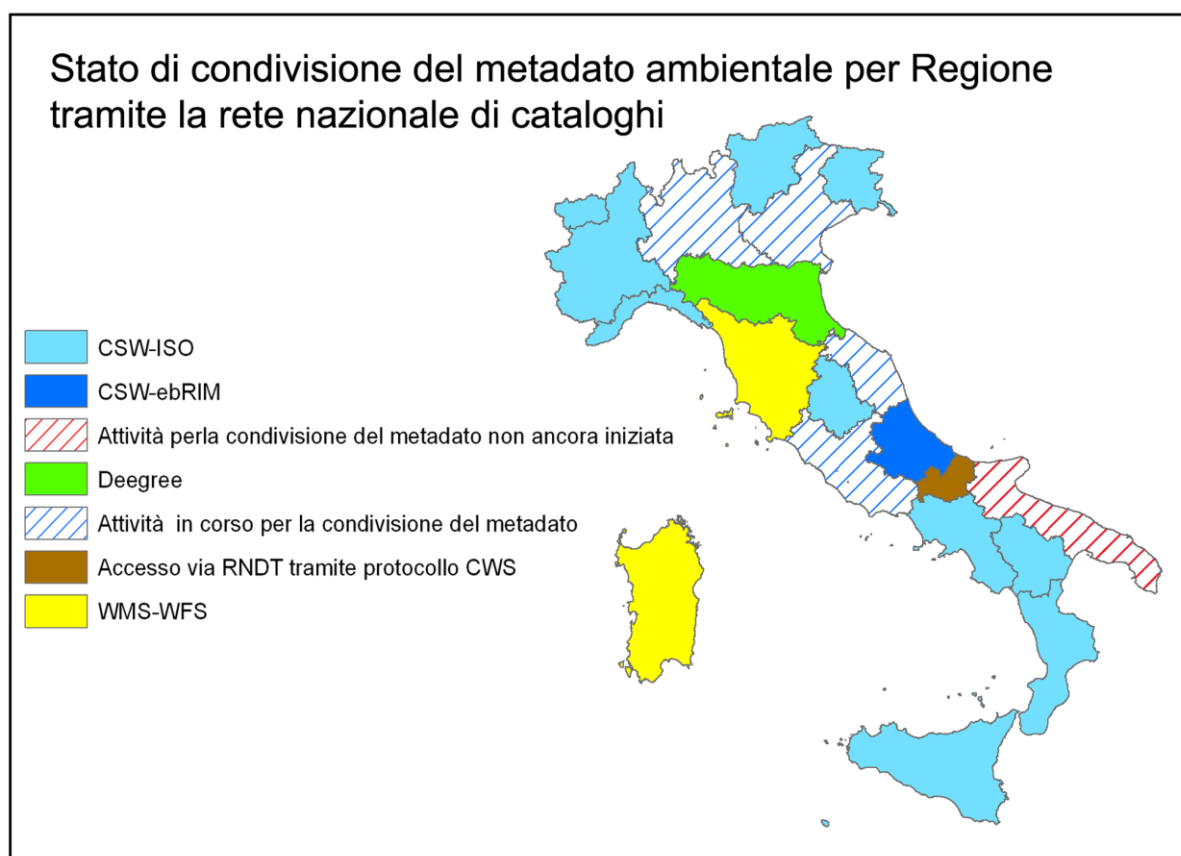
Art. 12.2. (a) a description of quality assurance procedures, including the maintenance of the infrastructure for spatial information

Metadata

The metadata's conformity with the INSPIRE standard is the responsibility of the data holder. The data holder must supply metadata conforming with the national standard. However, not all the metadata available at the different access points are conformant, because certain metadata were published before the publication of the INSPIRE Directive and the national decrees. Work to harmonise the metadata with the INSPIRE standard is still in progress.

Network

View, discovery and downloading services are as a rule made accessible via the OGC standard. Some Regions are not yet equipped with public standard interfaces for sharing environmental information. To fill these gaps, ISPRA, in agreement with the MATTM and with the cooperation of CNR-IIA, supports the Regions identifying and proposing viable solutions for the public use of search services. Nation-wide coverage should be achieved by the time of the next report.



National network of shared information resources (Source: ISPRA)

Term / phrase	Translation
Stato di condivisione del metadato ambientale per Regione tramite la rete nazionale di cataloghi	Status of environmental metadata sharing through the national catalogue network, by Region
CSW-ISO	-
CSW-ebRIM	-
Attività per la condivisione del dato non ancora iniziata	Data sharing activity not commenced yet
Deegree	-
Attività in corso per la condivisione del metadato	Activity for sharing metadata is under way
Accesso via RNDT tramite protocollo CWS	Access via RNDT through CSW protocol
WMS-WFS	-

6.2.2 Analysis of quality assurance problems

Art. 12.2. (b) an analysis of quality assurance problems related to the development of the infrastructure for spatial information, taking into account the general and specific indicators

The analysis has not yet been performed as it was not scheduled. In its next report, the National Focal Point will provide information on the quality of national implementation and any problems experienced. Nevertheless certain aspects impacting on the quality of the work done may be mentioned:

- 1) the failure to establish the National Council for Spatial and Environmental Information which should have coordinated the activities of the different authorities;
- 2) delay (2012) in harmonising the national metadata profile with the INSPIRE standard;
- 3) the failure, as at 2012 by certain regional and national authorities to expose standard catalogue interfaces;
- 4) the as yet incomplete conformity on the part of several public authorities with the standard for metadata produced in Italy;
- 5) lack of clarity in the legislation issued;
- 6) stakeholder identification activity still in the early stages.

6.2.3 Measures taken to improve the quality assurance

Art. 12.2. (c) a description of the measures taken to improve the quality assurance of the infrastructure

To respond at least in part to these problems and thus facilitate national implementation of the Directive, the legislative framework has been amended by Law 135/2012, already mentioned (see paragraph 6.1.2).

Furthermore, to streamline coordination activity in support of the MATTM, ISPRA has set up a technical task force comprising representatives of the State Surveying/Mapping Agencies, the MATTM and *Agenzia per l'Italia Digitale* in order to:

- Improve and strengthen technical coordination concerning the access, interoperability and sharing of environmental and spatial data at national level, taking account of the mechanisms existing for the certification of official data;
- Improve operational coordination at national, EU and international level, through the various fora addressing geo-spatial information (INSPIRE Directive, GMES/Copernicus, EEA, EuroGeographics, EuroGeoSurveys, UN Forum on Geospatial information management, GEOSS, etc.).

In the short term, the technical task force should open up to the participation of other national institutions and the Regions, to improve coordination and boost concerted efforts to achieve the above-mentioned priorities.

6.2.4 Quality certification mechanisms

Art. 12.2. (d) where a certification mechanism has been established, a description of that mechanism

No shared quality certification mechanisms are planned at present. However, quality certification schemes are embedded within the internal data certification processes and mechanisms implemented by the mapping agencies. The technical task force composed of the State Mapping Agencies (IGM, IIM, CIGA, SGI, the Revenue Agency), ISPRA, the MATTM and *Agenzia per l'Italia Digitale* is assessing the differences in the structure of certain datasets produced in Italy from the INSPIRE data structure.

7 Functioning and coordination of the infrastructure (Art.13)

7.1 General overview description of the SDI

- Vision / policy / strategy (where applicable, reference could be given to existing documents, as well as a short summary within the report)

Some time ago, Italy began various initiatives with the aim of sharing spatial and environmental data with the regions, provinces and municipalities, in distributed cooperation plans, which, in line with the principles underlying INSPIRE, to a certain extent foreshadowed the European infrastructure for spatial information (for example, the SINAnet network coordinated by ISPRA, and the National Cartographic Portal (PCN), conceived as a federated infrastructure for free access to information, developed by the MATTM with the involvement of the local authorities).

These initiatives provided the opportunity, in transposing the INSPIRE Directive, to define a model for the governance of spatial information to include the environmental monitoring data available through spatial and environmental information systems already in operation, and to clarify the roles which the various parties play in the implementation, operation and monitoring of the national infrastructure, by setting up appropriate supervision and coordination mechanisms and structures.

Integrating environmental data with spatial data is clearly a key step in the setting up of a knowledge base supporting environmental policies. From this viewpoint too, Italy's action is fully consistent with the SEIS Communication.

For these reasons, plans have been made to integrate the new infrastructure with the SINAnet network, by developing SINA functions and contents; in this way, ISPRA has achieved interoperability of the spatial data sets and environmental monitoring data and of the associated services.

In line with the pre-eminent environmental value of the Directive, the MATTM was chosen to act as the MSCP and as competent authority for implementation, monitoring and reporting. ISPRA was selected as the technical coordination structure supporting the MATTM, also for coordination with the EIONet network.

Lastly, the transposing decree provided that the official list of public authorities responsible for the availability of data and environmental information would be held by the MATTM, also to ensure the public's right of access to environmental information (Directive 2003/4/EC).

Based on ISPRA's tasks as laid down in Legislative Decree 32/2010 and in Law 135/2012, a network of spatial services supplied by national and regional authorities was set up, where the sharing of environmental and spatial information is supported by the brokering of the data sources distributed across the national territory. This activity, carried out using technology developed by the CNR, has made it possible to make available and supply more than 10 000 spatial data elements and their associated metadata, including those contained in the National Registry of Spatial Data.

As at 31 December 2012 the national network had federated 35 information sources comprising:

- five catalogues with CSW AP ISO 2.0.2 interface;
- two catalogues with CSW AP ISO 2.0.1 interface;
- eight catalogues with ESRI geoportal 10 interface;
- nine catalogues with Geonetwork interface, releases 2.2, 2.4, 2.6;
- one catalogue with Deegree 2.2 interface;
- one catalogue with CSW AP ebRIM 2.0.2 interface;
- more than 1 200 cartographic layers based on WMS 1.3.0;
- more than 200 cartographic layers based on WMS 1.1.0;
- two catalogues with SOS 1.0.0 interface.

The network set up by ISPRA was conceived to offer distributed access points for the discovery services exposed by the different information resources present on the national territory.

7.2 INSPIRE Stakeholders

Art. 13 (a) an overview of the various stakeholders contributing to the implementation of the infrastructure for spatial information according to the following typology: users, data producers, service providers, coordinating bodies

Stakeholders contributing to the implementation of the SDI could be classified according to the following typology: users, data producers, service providers, coordinating bodies)

Governance of the infrastructure is provided by the MATTM. The MATTM is supported by ISPRA also in its role as coordination structure for INITMA and the SINAnet network. *Agenzia per l'Italia Digitale* is tasked with the development and operation of the National Registry of Spatial Data (RNDD).

Preliminary stakeholder identification and classification were carried out by the MATTM, which is tasked with drawing up the official list of public authorities supplying environmental data and information, also to guarantee the right of access to environmental information by the public (Directive 2003/4/EC).

The decree implementing the Directive identifies the following institutions which participate in CNITA (without prejudice to the possibility that a future decree may add other relevant institutions, modify its structure or lay down specific operating rules):

- the State cartographic agencies
 - Military Geographical Institute (IGM)
 - Hydrographical Institute of the Navy
 - Centre for Aeronautical Geotopocartographic Information (CIGA)
 - Land Registry
 - National Geological Service
- the Regions and Autonomous Provinces
 - Abruzzo
 - Basilicata
 - Calabria
 - Campania
 - Emilia-Romagna
 - Friuli-Venezia Giulia
 - Lazio
 - Liguria
 - Lombardy
 - Marche
 - Molise
 - Piedmont
 - Puglia
 - Sardinia
 - Sicily
 - Tuscany
 - Umbria
 - Valle d'Aosta
 - Veneto
 - Trento
 - Bolzano
- Ministry of Defence
- Ministry of Education, University and Research
- Ministry of Infrastructure and Transport
- Ministry of Agricultural, Food and Forestry Policies
- Ministry of Cultural Heritage and Activities
- Ministry of Economic Development
- Ministry of Health

- Ministry of Public Administration and Innovation
- Ministry of Relations with the Regions
- ISPRA
- Civil Protection Department
- DIGITPA
- Union of the Provinces of Italy (UPI)
- National Association of Italian Municipalities (ANCI)

Other reference organisations are members of the SINAnet network including, in addition to ISPRA, 21 Regional Focal Points (PFR) which represent the Regions and the Autonomous Provinces of Trento and Bolzano, the National Institute for Statistics (ISTAT), the National Research Council (CNR) and other reference institutions. The network of environmental agencies (ARPA/APPA) is another fundamental component of the network of stakeholders, especially in the light of the strong emphasis placed on environmental data by the national transposing decree, in particular the importance assigned to environmental monitoring data within INITMA.

The first national INSPIRE seminar held in 2011 brought together all the stakeholders and offered the opportunity of identifying the main user groups and the best manner to engage with and consult them, with special regard to the general public, businesses and trade associations, scientific research centres and universities, non-governmental organisations etc.

7.3 Role of the various stakeholders

Art. 13 (b) a description of the role of the various stakeholders in the development and maintenance of the infrastructure for spatial information, including their role in the coordination of tasks, in the provision of data and metadata, and in the management, development and hosting of services

Agenzia per l'Italia Digitale is responsible for managing the National Registry of Spatial Data (RNDD) which collects the metadata relating to the spatial data and services available from the Italian national, regional and local public authorities. The RNDD is the national catalogue of metadata; it guarantees the operation of research services at national level and the integration of network services within the National Geoportal (GN). Twice yearly, the MATTM checks that the metadata development and population process proceeds consistently with the development of the national infrastructure (INITMA). The National Geoportal is managed by the MATTM. For public administrations and the private sector alike, the Geoportal is the national-level point of access to the network services and data sets covered by INITMA via the RNDD, to the public authorities' catalogues and to the SINAnet network.

Without prejudice to the rights and responsibilities of the data-owning authorities, ISPRA handles the gradual integration of the spatial data sets within SINA through the SINAnet network, and, based on the information made available by the public authorities, ensures the interoperability of the spatial and environmental datasets and services within the SPC, in accordance with the technical rules established by the Committee for Technical Regulations on the Spatial Data of Public Authorities. Accordingly, SINA's functionality and contents will be expanded by gradually integrating the spatial information and services catalogued in the RNDD. ISPRA also handles the cataloguing and collection of the geographical, spatial and environmental data generated by all the activities funded by public resources.

7.4 Measures taken to facilitate sharing

Art. 13 (c) a general description of the main measures taken to facilitate the sharing of spatial data sets and services between public authorities and a description of how sharing has improved as a result

The implementation of the INSPIRE Directive in Italy, as regards spatial and environmental information, falls within the general legislative framework already established by the Public Connectivity System (SPC) set up in 2005 (Legislative Decree 42/2005) subsequently included in the Digital Administration Code (CAD – Legislative Decree 82/2005). The general purpose of the Code is to promote the use of information technology in the public sector and to standardise the procedures for access, management, transmission, storage and use of digitised information by the State, the Regions and the local authorities. Accordingly, the Code provides the general framework for defining the data sharing practices to be applied by public administrations.

The SPC, managed by *Agenzia per l'Italia Digitale*, is the set of technology infrastructure and technical rules for the development, sharing, integration and dissemination of the stock of data and information held by the public administration, necessary to ensure the interoperability and application cooperation of information systems and data flows, guaranteeing data security and confidentiality, while safeguarding the integrity and autonomy of the datasets held by each public administration.

Thus the Digital Administration Code (CAD) is the basic framework for defining data-sharing policies. The roles of the coordination and management structures and instruments established by the Code (the National Registry for Spatial Data - RNDT, the Public connectivity System - SPC and the Committee for Technical Regulations on the Spatial Data of Public Administrations) are appropriately integrated within INITMA.

Measures taken to facilitate sharing include the following Ministerial Decrees, published in Ordinary Supplement No 37 to Official Gazette No 48 of 27 February 2012:

- a. Ministerial Decree of 10 November 2011- Technical rules for defining the contents of the National Registry of Spatial Data, and the manner of creating and updating the Registry.
- b. Ministerial Decree of 10 November 2011 - Technical rules for the creation, documentation and exchange of digital orthophotos at a nominal scale of 1:10000
- c. Ministerial Decree of 10 November 2011 - Adoption of the national geodetic referencing system
- d. Ministerial Decree of 10 November 2011 - Technical rules for defining the content specifications of geo-spatial databases.

Moreover, ISPRA cooperates with national and regional authorities to identify technologically sound and financially viable IT solutions and to improve discovery services also in order to populate the Registry (RNDT). In particular, with the support of the National Research Council (CNR), ISPRA has attempted to strike a balance between proprietary and open source solutions having regard to the know-how and budget of the authorities concerned.

From 19 March 2013 all the data and documents published by the public authorities in whatsoever manner, unless expressly accompanied by a use license, are considered to be released as open data by default.

In this regard, *Agenzia per l'Italia Digitale* is tasked with providing guidance and drafting the national guidelines for implementing the open data rules (Law No 221 of 17 December 2012) which amend Articles 52 and 68 of the Digital Administration Code (CAD), and which all public administrations are required to comply with. The document must include instructions on electronic access to the data and re-use rules.

The guidelines to be drafted by the *Agenzia* must include technical standards, procedures and implementing methods. To draft the guidelines, the *Agenzia* intends to set up a working group open to the public authorities.

7.5 Stakeholder cooperation

Art.13 (d) a description of how stakeholders cooperate

At central level, stakeholder cooperation is pursued by the network linking the various Department of the MATTM and ISPRA. This network engages with the other national and regional authorities via the NCP.

7.6 Access to services through the INSPIRE Geoportal

Art.13 (e) a description of the access to the services through the Inspire geo-portal, as referred to in Article 15(2) of Directive 2007/2/EC

In Italy, the access points to network services are the following:

- the National Registry of Spatial Data, which is the national catalogue of the metadata relating to spatial data sets and services;
- the ISPRA geoportal, giving access to the spatial data held by the public authorities to be integrated within the SINA via the SINAnet network;

- the National Geoportal of the MATTM, which must guarantee access to the National Environmental Information System and the RNDT. Note that pursuant to and for the purposes of Legislative Decree 32/2010, the National Geoportal is the national-level access point to:

- a) the network services referred to in Article 7, concerning the datasets referred to in Article 5(2), via the National Registry of Spatial Data;
- b) the catalogues of the public authorities referred to in Article 2(1)(l);
- c) the SINAnet network, for the purposes of Article 7(5).

8 Usage of the infrastructure for spatial information (Art.14)

8.1 Use of spatial data services in the SDI

Art.14 (a) the use of the spatial data services of the infrastructure for spatial information, taking into account the general and specific indicators

At both regional and national level, data on number of visits and on the use of information resources are incomplete; they are submitted in the annual reports. The variety of existing geospatial data management systems prevents uniform calculation of the number of visits, as users follow different paths depending on the system implemented. To obtain data on the usage of spatial data services, it would be useful to query users both at the start of the session about their reason for using the datasets and services, and at the end for feedback on the quality of the dataset/service received.

8.2 Use of the spatial datasets

Art.14 (b) the use of spatial data sets corresponding to the themes listed in Annexes I, II and III to Directive 2007/2/EC by public authorities, with particular attention to examples in the field of environmental policy and/or policies and activities which may have an impact on the environment (air and emission policies, waste related policies, inland-coastal-marine policies, biodiversity related policies, horizontal policies such as public access to environmental information, environmental liability, environmental and strategic impact assessments,...) – 'greening' of the Common Agricultural Policy, energy and transport policies, security policies with an environmental dimension (for example maritime security).

See our remarks in paragraph 8.1

8.3 Use of the SDI by the general public

Art.14 (c) if available, evidence showing the use of the infrastructure for spatial information by the general public (where possible with clear reference to applicable EU policies such as public access to environmental information, in the context of dissemination to – consultation of – the public as required in various environmental legal acts).

See our remarks in paragraph 8.1

8.4 Cross-border usage

Art.14 (d) examples of cross-border use and efforts made to improve cross-border consistency of spatial data sets corresponding to the themes listed in Annexes I, II and III to Directive 2007/2/EC. Examples with regard to policies requiring cross-border collaboration and information exchange are of particular interest (floods, marine strategy directive, water framework and daughter directives, etc.)

There are instances of cross-border cooperation, mainly between some Italian Regions (e.g. the RiskNat project, in which Piedmont, Valle D'Aosta and Liguria are cooperating with the Swiss and French authorities to mitigate natural hazards in border areas).

One example of pan-European cooperation between 20 European Geological Services is the OneGeology-Europe project. Largely based on the INSPIRE data model, this project has proven to be an effective tool for sharing common terms and harmonising geological content. The project is currently being followed up by the Geological Services drawing on their own budgets, and is widening its European reach, extending to a further 13 European countries application of the guidelines for the creation of metadata and services, including the new INSPIRE specifications. This project supports policies for the prevention and analysis of natural hazards and environmental impacts in border

regions, allowing definition of the basic geological theme in the border regions straddling France, Switzerland, Austria and Slovenia.

8.5 Use of transformation services

Art.14 (e) how transformation services are used to achieve data interoperability

No data are available for 2012.

9 Data sharing arrangements (Art.15)

9.1 Data sharing arrangements between public authorities

Art.15 (a) requests an overview of data sharing arrangements that have been, or are being, created between public authorities inside the country.

The mapping agencies' task force mentioned earlier on is carrying out pilot studies and case studies also with a view to identifying data sharing methods and proposing them for national-level implementation.

9.2 Data sharing arrangements between public authorities and Community institutions and bodies

Art.15 (b) requests an overview of data sharing arrangements that have been, or are being, created between public authorities and Community institutions and bodies, including examples of data sharing arrangements for a particular spatial data set.

No developments in these activities were reported for the year 2012.

9.3 Barriers to the sharing and the actions taken to overcome them

Art.15 (c) requests a list of barriers to the sharing of spatial data sets and services between public authorities and between public authorities and the Community institutions and bodies, as well as a description of the actions which are taken to overcome those barriers.

No official list is available of the public authorities and the spatial and environmental datasets they hold (there are almost 10 000 public authorities in total, considering the various government levels). Spatial and environmental datasets, especially those with partial coverage, in many cases cannot be aggregated together even though they have congruent themes, owing to different data structuring.

Commission Regulation (EU) No 26/2010 – on spatial data sets and services – again provides additional context. It requests an overview of procedure to provide the conditions applicable to the Community institutions and bodies in compliance with this Regulation in metadata element 8.1, referred to in part B of the Annex to Commission Regulation (EC) No 1205/2008¹ (procedure for updating metadata for spatial data sets and services). We strongly encourage providing related information in this section of the country report.

In addition to the above, we recommend including an overview of other ways how and where the Community institutions and bodies can access up-to-date information on data sharing arrangements between public authorities and Community institutions and bodies.

¹ COMMISSION REGULATION (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata.

10 Cost / Benefit aspects (Art.16)

10.1 Costs resulting from implementing INSPIRE Directive

Art.16 (a) requires an estimate of the costs resulting from the implementation of Directive 2007/2/EC for the period 2010-2012.

ISPRA

IT Infrastructure (Hardware and core software components)

The ISPRA architecture is based on a number of machines and virtual disks saved on a NAS (Network-Attached Storage). All critical nodes have been clustered (this configuration has allowed several instances to appear as a single system), or replicated. Access is via a load-balancing system. ISPRA also provides several services published using ArcGIS for Server and ArcGIS for INSPIRE and a DB PostGreSQL cluster. This component uses a compatible, ready-for-use database based on Annex I to the INSPIRE Directive, to simplify the effort needed to publish and manage INSPIRE network services, including multilingual functionalities.

- *Set up costs (one-off costs) – EUR 100 000 + 6 man months*
- *Maintenance (recurrent yearly costs) - 12 man months per year*

Metadata for data and services falling under INSPIRE Directive and that are indicated in the Monitoring Tables.

For metadata management, ISPRA uses two types of open-source technology. The ESRI Geoportal has been selected as user interface and to compile the environmental metadata according to the RNDT model. In addition to the RNDT profile, the Geoportal supports compilation of the ISO-19115/19119 and of the INSPIRE profiles. The Geoportal accesses GI-cat via a discovery service, while GI-cat operates in harvesting mode towards the national and regional nodes. GI-cat is a GPL v.3 IT development with source code available from the National Research Council's (CNR) Earth and Space Science Informatics – Laboratory (ESSI-Lab). The Geoportal Server (ESRI) is a FOSS (Free and Open Source Software) product, released under Apache 2.0 licence (<http://sourceforge.net/projects/geoportal>).

- *Set up costs (one-off costs) – in total EUR 5 000 plus 9 man months*
 - *Software (adapting OS softwares) – EUR 5 000*
 - *Production*
 - *Creation of metadata for discovery - 2 man months*
 - *Creation of metadata for evaluation and use (new metadata elements required by Data Specifications Implementing Rules) - 1 man month*
 - *Testing for compliance 1 man month*
 - *Participation of national experts into INSPIRE development process - 2 man months*
- *Maintenance costs (recurrent yearly costs) – in total 3 man months*
 - *Software (adapting software, creating new software, setting catalogues)*
 - *Production - 1 man month (CNR)*
 - *Maintenance of metadata for discovery MD - 1 man month*
 - *Maintenance of MD for evaluation and use - 1 man month*
 - *Testing for compliance - 1 man month*

Data interoperability/harmonisation for data falling under INSPIRE Directive and that are indicated in the Monitoring Tables

- *Set up costs (one-off costs) – EUR 18 000 for upgrading the mapping scheme plus 7 man months*
 - *Development (mapping of concepts, setting up tables, setting up registries)*
 - *Software (adapting software, creating new software) for data transformation*
 - *Production*
 - *Creation of INSPIRE compliant dataset and related support services - 6 man months*
 - *Testing for compliance - 1 man month*
 - *Participation of national experts into INSPIRE development process 1 man month*
- *Maintenance (recurrent yearly costs) - in total 3.5 man months*
 - *Software for data transformation including maintenance of registries - 1 man month*

- *Production*
 - Maintenance of INSPIRE compliant dataset and related support services - **2 man months**
 - Testing for compliance - **1/2 man month**
 - Maintaining coherence cross domains that evolve - **2 man months**

Network services falling under INSPIRE Directive and that are indicated in the Monitoring Tables

- **Set up costs (one-off costs) – in total 8 man months**
 - *Development Software (adapting software, creating new software) for network services (Discovery, view, Transformation, Download, Invoke) Adapting software - 2 man months*
 - *Production:*
 - Set up of INSPIRE compliant services - **1 man month**
 - Testing for compliance - **1 man month**
 - Participation of national experts into INSPIRE development process - **2 man months**
- *Maintenance (recurrent yearly costs) of INSPIRE compliant network service - 2 man months*

Monitoring and reporting

Development: refining of tools e.g. online tools, registries etc. - 1 man month

Production: Collection of monitoring data and filling of templates by stakeholders - 2 man months

Reporting: Coordination activities to collect examples of good practice and as well as difficulties in implementation, cost and benefit consideration, assessment together with stakeholders - 2 man months

Coordination and horizontal measures

Setting up coordination structures, national contact point activities

Activities that relate to the data and service sharing obligations

Supporting activities:

- Training and education organised by different stakeholders in the public and private sectors.
- Development of Guidance document to support implementation of INSPIRE and use.
- Participation in INSPIRE-related workshops/seminars/standardisation activities. **2 man months**
- Coordinating mechanisms at different levels of government. **2 man months**
- Outreach, Counselling and Support.
- Awareness rising in the private sector and at different levels of government. **1 man month**

10.2 Benefits observed

Implementation of INSPIRE has made it possible to make available at national level a large amount of environmental information. This process has been aided by IT developments which have enabled the various data sources distributed across the national territory to interoperate through established standards. The accessibility of the data will enable to an increasing extent public and private stakeholders to use the datasets produced by the public administrations and to be informed about their location. At the present time, it is difficult to give a monetary value to the benefits of implementing the Directive, given the current impossibility of tracking the data, their actual uses and the impacts of those uses. A more precise assessment would require feedback especially from private users, as we do not yet have information on the spinoffs generated by implementation of the Directive.

The economic benefits of creating an integrated infrastructure for spatial and environmental data include in particular the rationalisation of financial investments and operating expenses, obtained by eliminating the duplication of infrastructures, and the possibility of achieving significant economies of scale. Specifically, the infrastructure currently being developed will benefit from the huge investments made to develop both the PCN (since renamed GN - the National Geoportal) and spatial structures and networks belonging to the National Environmental Information System (SINA), which has been in operation for about fifteen years, thus also ensuring the necessary involvement of the local authorities through the Regional Focal Points (PFR). As already shown, ISPRA foreshadowed the approach of the INSPIRE Directive and the SEIS Communication, setting up, through the SINA, a distributed network covering the principal holders of spatial and environmental data and information.

11 Conclusions

As shown by this Report, substantial advances have been made in implementation of the INSPIRE Directive in the three years since the first report. Nevertheless, barriers at the governance level persist, especially in the current legal framework, where the designation of roles can be unclear. The allocation of duties and tasks is still in many cases hazy, leading to overlapping competences even among the main players tasked with implementing the Directive (e.g. ISPRA, RNDT and the National Geoportal). It is hoped that the forthcoming Presidential Decree pursuant to Law 135/2012 will dispel these uncertainties, enabling the national INSPIRE architecture to become leaner, but also to take into account sub-regional authorities and their significant sets of spatial and environmental information and data.

12 Annexes

12.1 List of organisations – names and contact details

12.2 List of references for the compilation of the report