



Spatial Data Infrastructures in Greece: State of play 2011



SPATIAL APPLICATIONS DIVISION
K.U.LEUVEN RESEARCH & DEVELOPMENT

Celestijnenlaan 200 E, BE-3001 LEUVEN
TEL.: 32 16 32 97 32 FAX: 32 16 32 97 24
URL: <http://www.sadl.kuleuven.be>



Report meta-information

Title	Spatial Data Infrastructures in Greece: State of Play 2011
Creator	Danny Vandembroucke & Dimitrios Biliouris (SADL)
Date Issued	2010-09-01
Subject	INSPIRE State of Play
Publisher	K.U.Leuven (SADL + ICRI)
Description	This report is summarizing the review of SDI in Greece
Contributor	Danny Vandembroucke & Catharina Bamps (SADL), Katleen Janssen (ICRI), Joep Crompvoets (OE)
Previous Contributor	Jos Van Orshoven, Danny Vandembroucke (SADL); Peter Beusen, Katleen Janssen (ICRI); Mrs. Homata (GR), Dimitrios Biliouris (SADL)
Format	MS Word 97/2000
Audience	INSPIRE stakeholders
Identifier	rcr09GRv92.doc
Language	EN
Coverage	Summer 2010 – Spring 2011

Version number	Date	Modified by	Comments
1.0	2002-12-05	Jos Van Orshoven (SADL) & Peter Beusen (ICRI)	First version
2.0	2002-12-20	Jos Van Orshoven (SADL)	Completion & harmonization with 31 other country reports
3.0	2003-08-12	Jos Van Orshoven (SADL)	Integration of comments by Mr. <i>Marinos Kavouras, Coordinator of geoinfo-soc committee</i> ; Addition of executive summary, abbreviations and acronyms; Harmonisation with 31 other country reports
4.0	2004-06-22	Katleen Janssen (ICRI)	General review, correction and update of legal framework
5.0	2004-07-05	Jos Van Orshoven (SADL)	Integration of information from limited review of web sites. General review, correction and update.

			Addition of table pointing to changes with regard to Version 3
6.0	2005-06-01	Mrs Homata (GR)	Update status 2005
6.1	2005-07-25	Katleen Janssen (ICRI)	General review, correction and update of legal framework
6.2	2005-08-05	Danny Vandenbroucke	Review of the update 2005 and consolidation
7.0	2006-12-22	Katleen Janssen (ICRI)	General review, correction and update of legal framework
7.1	2006-12-31	Danny Vandenbroucke	Review of the update 2006 and consolidation
8.0	2008-03-27	Katleen Janssen (ICRI)	Correction and update legal and organizational framework
8.1	2008-07-23	Danny Vandenbroucke (SADL)	Metadata and final changes
9.0	2010-04-06	Dimitrios Biliouris (SADL)	Review of the 2009 update
9.1	2010-04-09	Katleen Janssen (ICRI)	2009 update of the legal framework
9.2	2010-09-06	Dimitrios Biliouris	Update information from Greek MR and personal communication with NCP Dr. K. Nedas
10.0	2011-10-05	Catharina Bamps	Restructure, correction and update of status 2010
10.1	2011-10-06	Danny Vandenbroucke	Final check, change scoring PPP

This document does not represent the position of the Commission or its services. No inferences should be drawn from these documents as to the content or form of the current and future proposals to be presented by the Commission.

This document does neither represent the position of the Member States and countries under study.

Executive summary

The Electronic Government framework – Digital Strategy 2006-2013 – aims to effectively support e-Government at Central, Regional and Local level and to contribute in achieving interoperability at the level of information systems, procedures and data (e-Gov Interoperability Framework).

In September 2010, the INSPIRE Directive was transposed into national law. Law 3882/2010 aims to create the "National Infrastructure for Geospatial Information", a system of institutional, organizational, and technological interoperability for the country-wide available geoinformation in order to save resources, protect the environment and encourage investment initiatives.

The governance and technical supportive measures necessary for the effective implementation of the law include the establishment of a framework of harmonized administrative, legal and technological principles and procedures and a new administrative structure comprising:

- a) a supreme political body responsible for the design of the National Policy for Geoinformation (NPG) and National Interoperability Framework for GeoInformation and Services (NIFGIS): the National Committee for Geoinformation (HNC);
- b) an executive and operational authority for the development and operation of the NSDI; the Hellenic Mapping and Cadastral Organization (HEMCO or OKXE in Greek);
- c) a permanent steering committee to support the work of the NMA: Focal Points of Contact (KOSE) with representatives of each Ministry, Decentralized Administration, Region and Municipality;

So, HEMCO (OKXE), as the coordinating organization, is responsible for the development and maintenance of the National Geoportal (NG) and is also the national technical and coordinating body in charge of the preparation of the NPG and NIFGIS for the Committee.

The Act mandates the obligatory free sharing of spatial data and services within the public sector as well as to the public for non-commercial uses. The national geoportal (geodata.gov.gr - betaversion) currently provides free access to 200 datasets from public administrations, WMS and WFS services.

The main public data providers are the Ministry of Environment, Energy and Climate Change, the HEMCO and Ktimatologio S.A. (Hellenic Cadastre), a State owned company mandated by Law to develop the Hellenic National Cadastre and the Hellenic Military Geographical Service (HMGS) which produces and provides the main geographical reference base maps.

The Greek Free/Open Source Software Community (ELLAK) promotes the open geodata project/portal and reaches out for the GI community.

Parallel to the efforts of the public sector, private companies are developing data products which may be of relevance for the NSDI.

From 1 January 2011, the Kallikratis reform is in force (Law 3852/2010 on the reorganization of local government). It enables the decentralization of governance, devolving powers and responsibilities to the regions and municipalities. Within this reform, the ownership and responsibility for spatial data, its collection, sharing and updating, as well as the ownership of spatial data services is in turmoil. Moreover, the administrative boundaries themselves are being revised, thus posing technical barriers regarding the spatial dataset coverage and completeness.

Table of Contents

EXECUTIVE SUMMARY	1
TABLE OF CONTENTS	3
ABBREVIATIONS AND ACRONYMS.....	4
1. GENERAL INFORMATION.....	6
1.1 METHOD.....	6
1.2 THE GI- AND NSDI-SCENE IN GREECE	6
2 DETAILS OF THE NSDI-SITUATION IN GREECE - THE NATIONAL GEOSPATIAL INFORMATION INFRASTRUCTURE (EVGEP).....	9
2.1 GENERAL INFORMATION	9
2.2 COMPONENT 1: COORDINATION AND ORGANIZATIONAL ISSUES	9
2.3 COMPONENT 2: LEGAL FRAMEWORK AND FUNDING	12
2.4 COMPONENT 3: DATA FOR THEMES OF THE INSPIRE ANNEXES	17
2.5 COMPONENT 4: METADATA	22
2.6 COMPONENT 5: NETWORK SERVICES	23
2.7 COMPONENT 6: THEMATIC ENVIRONMENTAL DATA	27
2.8 STANDARDS	28
2.9 USE AND EFFICIENCY OF THE NSDI.....	28
3 ANNEXES	30
3.1 LIST OF SDI ADDRESSES / CONTACTS FOR GREECE.....	30
3.2 LIST OF REFERENCES FOR GREECE	30

Abbreviations and acronyms

CSFIII	3rd Community Support Framework
CAT	CATalog Service
CT	Core Thematic Data
DA	Public Authorities
DSM	Digital Surface Model
DTM	Digital Terrain Model
ELLAK	Greek Free/Open Source Software Community
EIONET	European Environment Information and Observation Network
ETRS	European Terrestrial Reference System 1989
EVGEP	National Geospatial Information Infrastructure
FIR	Further Investigation Required
FOI	Freedom Of Information
GI	Geographical Information
GINIE	Geographic Information Network in Europe
GPS	Global Positioning System
HC	Hellenic Cadastre
HellasGIS	Hellenic Geographic Information Society
HellaSDI	Hellenic Spatial Data Infrastructures
HEMCO	HEllenic Mapping and Cadastral Organization (HEMCO: OKXE in Greek)
HEPOS	Hellenic POsitioning System
HGRS	Hellenic Geodetic Reference System (HGRS: EGSA in Greek)
HMGS	Hellenic Military Geographical Service
HNC	National Committee for Geo-information
HTRS07	Hellenic Terrestrial Reference System 2007
IMIS	Institute for Management and Information Systems
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
IS	Information System
ISO	International Organization for Standardization
KOSE	Focal Points of Contact
MEECC	Ministry of Environment, Energy and Climate Change
MRDF	Ministry of Rural Development and Food
NaGii	National Geographic Information Infrastructure
NG	National Geoportal
NGO	Non-Governmental Organisation
NIA	No Information Available

NIFGIS	National Interoperability Framework for GeoSpatial Information and Services
NMA	National Mapping Agency
NSDI	National Spatial Data Infrastructures
OGC	Open Geospatial Consortium
OPIS	Operational Program – Information Society
PPP	Public-Private Partnerships
PSI	Policy and legislation on access to public sector information
REF	Reference data
SDI	Spatial Data Infrastructures
SPEK	Hellenic Cadastre IT System
WFD	Water Framework Directive
WFS	Web Feature Service
WG	Working Groups
WMS	Web Map Service

1. GENERAL INFORMATION

1.1 Method

This report is summarizing the SDI review for Greece, and aims at reflecting the degree to which the SDI situation in Greece is similar to the ideas set out in the INSPIRE position papers¹ and to the more recent INSPIRE scoping documents.

For the 2010 update the survey questionnaire was used, along with various web sources, publications, the 2009 monitoring report and the geoportal. In this version obsolete information was removed.

1.2 The GI- and NSDI-scene in Greece

1.2.1 The National Geospatial Information Infrastructure (EVGEP)

In 2000, the Hellenic Mapping and Cadastral Organization (HEMCO)² proposed the development of the Hellenic SDI, called **Nagii or NaGi²: National Geographic Information Infrastructure**.

In Spring 2004, the Ministerial Council established the Information Technology Committee responsible for developing Greece's Digital Strategy for the period 2006-2013, as well as for the coordination of the public institutions' actions and interventions concerning the use of new technologies and e-governance. In 2005 the Committee developed an integrated Digital Strategy for the period 2006 – 2013. The cornerstone of the Digital Strategy 2006-2013 is the National Framework of e-Government and more specifically, the Greek e-Government Interoperability Framework (e-GIF) which shapes the overall design of the Greek Public Administration for the provision of e-Government services to public bodies, businesses and citizens. The Electronic Government framework aims to support effectively e-Government at Central, Regional and Local level and to contribute in achieving interoperability at the level of information systems, procedures and (spatial) data.

In September 2010, the INSPIRE Directive was transposed into national law³: F: "National Infrastructure for Geospatial Information" - Compliance with Directive 2007/2/EC (INSPIRE). The aims of the Act are:

- development and operation of an NSDI: the National Geospatial Information Infrastructure (EVGEP), a system of institutional, organizational, and technological interoperability for the country-wide available geo-information in

¹ INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).

² OKXE in Greek

³ The INSPIRE Directive was transposed in September 2010 (Legal act: Νόμος, number: 3882; Official Journal: Εφημερίς της Κυβερνήσεως (ΦΕΚ) (Τεύχος Α), number: 166, Publication date: 22/09/2010, Page: 03436-03481, Entry into force: 22/09/2010; Reference: (MNE(2010)55989)

- order to save resources, protect the environment and encourage investment initiatives;
- establishment of general principles, rules, measures and procedures at administrative, legal and technological level for the organization of uniform management practices;
 - equal access to geospatial data and services for all citizens and Public Administration bodies;

The law sets up a new administrative structure and structure for management of geo-information in Greece:

- a) it establishes the National Committee for Geo-information (HNC) as the supreme political body responsible for the design of the National Policy for Geo-information and National Interoperability Framework for Geo-Information and Services (NIFGIS).
- b) it appoints the Hellenic Mapping and Cadastral Organization (HEMCO (OKXE)) as the executive and operational authority for the development and operation of the NSDI;
- c) it defines the establishment of a permanent steering committee called Focal Points of Contact (KOSE) in each Ministry, Decentralized Administration, Region and Municipality.

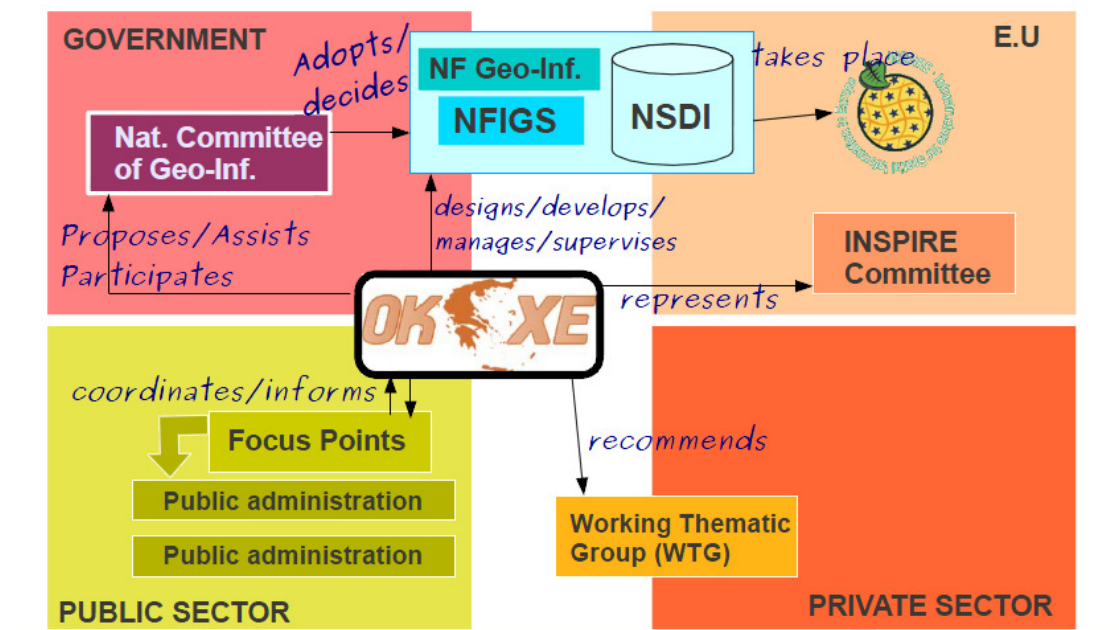


Figure 1: Administrative Structure and Value stakeholders in EVGEP
 Source: A. Deleurme, ERFC – June 2011

Until 2010, it was general common practise for public authorities to sell their data. The national geoportal geodata.gov.gr (open source, still in beta-version) is the first attempt to make geospatial data freely available (open data) to all public authorities and to all citizens. It currently provides access to about 200 geospatial data sets through WMS and WFS.

1.2.2 Other initiatives

Ktimatologio S.A. (Hellenic Cadastre) is a State owned company mandated by Law to develop the Hellenic National Cadastre. The sole shareholder of the company is the Ministry of Environment, Energy and Climate Change. It establishes the Hellenic National Cadastre, provides technical and legal support of the cadastre, operates the Hellenic Positioning Service (HEPOS), compiles large scale colour orthophoto maps and provides free on-line access to the viewing service (WMS) of the aerial and satellite images of 2007-2009 covering the whole of Greece excluding some restricted areas, and operates the Hellenic Cadastre IT System (SPEK) which contains all legal and spatial cadastral information.

The Hellenic Geographic Information Society (HellasGIS - <http://www.hellasgi.gr/>) is the Greek national GI association (<http://www.hellasgi.gr/>). The Greek Association of Geographic Information Systems is a non-profit organization of professionals from the public, private and academic sector involved in GI. Main activities concern the organisation of conferences and seminars.

The Greek Free/Open Source Software Community (ELLAK) <http://ellak.gr/>, actively promotes the open spatial data project/portal and the FOSS community and GI community reach out for each.

The Hellenic Military Geographic Service (HMGS) produces, manages and provides geographical data. The HMGS projects are carried out every year, based on an annual programme approved by the Hellenic Army General Staff covering the entire Hellenic region and neighbouring countries including Geodetic – geophysical projects, aerial photographs, cartographic projects, boundary surveying, production of digital geographical data, provision of support to the Hellenic Armed Forces, provision of services to the Public Organisations and the citizens. The portal of the HGMS (http://web.gys.gr/GeoSearch_EN/) provides user services to search and order geographical data produced and managed by HMGS in digital and analogue format.

The EC-funded research project IDE-UNIVERS, offers a Thematic SDI with the aim to encourage access, exchange and interoperability of spatial information produced by Universities and Research Centers within their projects and activities. IDE-UNIVERS is built with an architecture compliant with the INSPIRE guidelines and standards: e.g. metadata follow ISO 19115 and ISO 19139 standards. Access to data is granted through a Geo-portal. A Catalog Service (CAT) compliant with OGC offers searching facilities in the metadata, while data themselves are published through OGC Web Map Services

(WMSs) and Web Feature Services (WFSs). For Greece the University of the Aegean coordinates 13 collaborators.

2 Details of the NSDI-situation in Greece - the National Geospatial Information Infrastructure (EVGEP)

2.1 General Information

In 2000, HEMCO (OKXE in Greek) was the first to concretely propose the development of the Hellenic SDI. HEMCO's purpose, as described in its founding law 1647/1986, is the creation, maintenance and update of a cadastre for Greece, the geodetic coverage and the mapping of the country, the assessment and mapping of the natural resources, and the creation of a land and environment database.

Until 2010, the responsibility for the coordination and management of spatial information in Greece was fragmented within different Ministries, Public Authorities and organizations. The Ministry of Environment, Energy and Climate Change (MEECC), while charged with the overarching responsibility of the transposition of the INSPIRE Directive, assigned HEMCO as the INSPIRE national contact point and its responsibilities are detailed in the national law that transposed the INSPIRE directive including - representing Greece in the INSPIRE Committee.

Law 3882/2010⁴ which transposes the INSPIRE Directive establishes a new administrative structure and structure for management of geo-information in Greece.

2.2 Component 1: Coordination and organizational issues

Due to the complexity and the fragmentation of responsibilities regarding spatial information in Greece, it became clear that the existing coordination structure would hinder any activity of the MEECC and its appointed contact point HEMCO (OKXE) to ensure the implementation of the INSPIRE Directive throughout the public sector alone, since many of the decisions involved went beyond their legal jurisdiction and responsibilities. Also, the multidisciplinary nature of the annex themes together with the complex and unclear ownership status of spatial datasets and services in Greece, indicated the need for the involvement of representatives from different Ministries and organizations. Based on this rationale, the coordination structure foreseen in Law 3882/2010⁵ involves the establishment of a National Committee for Geo-information (HNC), answerable to the Prime Minister, chaired by the Minister of MEECC, and whose

⁴ Law 3882/2010 (Government Gazette 166 A) "National Infrastructure Geospatial Information - Compliance with Directive 2007/2/EC of the European Parliament and the Council of 14 March 2007 and other provisions. Amendment of Law 1647/1986 "Organization Hellenic Mapping and Cadastral (specific maps) and other provisions".

⁵ Law 3882/2010 (Government Gazette 166 A) "National Infrastructure Geospatial Information - Compliance with Directive 2007/2/EC of the European Parliament and the Council of 14 March 2007 and other provisions. Amendment of Law 1647/1986 "Organization Hellenic Mapping and Cadastral (specific maps) and other provisions".

members include the General Secretaries of the most relevant Ministries regarding the implementation of this Directive.

So, the National Committee for Geo-information (HNC) is defined by Law 3882/2010 as the highest political body with decisive, introductory and advisory responsibilities accountable for

- the design and formulation of the National Policy for Geo-information as well as the National Interoperability Framework for Geo-Information and Services (NIFGIS).
- the necessary coordination of all public sector bodies to achieve the objectives of the Act by ensuring a higher political level;

Given the scattered use of geospatial data in the Public Administration and the need of production and use by all ministries, the HNC is defined as inter-ministerial body with direct affiliation to the Prime Minister. The HNC is assisted by HEMCO (OKXE) which is responsible for the creation and management of the NSDI. HEMCO (OKXE), the Hellenic Mapping and Cadastral Organization is a Public Entity (legal) supervised by the MEECC. HEMCO (OKXE) is responsible for the land registration of Greece, the geodetic coverage and mapping of the country, inventory and mapping of natural assets and the creation and maintenance of digital geospatial data and data environment and the system in coordination and dissemination geo-information.

HEMCO (OKXE) is the official point of information and communication infrastructure for the National Geospatial Infrastructure (EVGEP) and represents Greece in the INSPIRE committee. The responsibilities of HEMCO (OKXE) in the EVGEP include all the necessary technical and organizational measures and interventions for the:

- (A) implementation of the INSPIRE Directive regarding the sharing of geospatial data between the Public Authorities and the EU;
- (B) the design, development, organization operation, management and supervision of the EVGEP.

So, HEMCO (OKXE), as the coordinating organization, is responsible for the development and maintenance of the National Geoportal (NG) and is also the national technical and coordinating body in charge of the preparation of the NPG and NIFGIS for the Committee.

In support of the coordinating work of HEMCO (OKXE), each ministry, established a focal point and a supporting coordinating structure for the implementation of the law.

The Focal Points of Contact (KOSE) is the steering committee representing a specific number of Public Authorities, ensuring that every public authority is represented by KOSE. As the EVGEP involves all Public Authorities (DA) producing and using geo-information, a management structure like KOSE is supposed to enable communication and cooperation with all Public Authorities.

The KOSE is authorized to record and ensure the requirements of Law 3882/2010 for the supply, maintenance and updating of all geospatial data and services representing the Public Authorities.

Also, where appropriate, the HEMCO (OKXE) has the right to recommend unpaid Working Groups (WG) involving in the case of KOSE other DA representatives, scientists and specialists in geoinformatics, producers, representatives of Non-Governmental Organisations (NGOs) or other organisations and individuals with proven project and activity on issues addressed by the Law 3882/2010.

Finally, as to the actions of the European Union (EU) with regard to ensuring interoperability in the management of geo-information on the protection and management of the environment, the Minister of Environment, Energy and Climate Change represents the country in the Council of Ministers EU Environment and EVGEP as part of the European Infrastructure for Spatial Information.

2.2.1 Conclusions of Component 1

The Greek SDI approach is truly national. Some SDI building blocks have reached a significant level of operability. In September 2010, the INSPIRE Directive was transposed into national law: Law 3882/2010⁶: "National Infrastructure for Geospatial Information". The law sets up a new administrative structure and structure for management of geo-information in Greece. The Hellenic Mapping and Cadastral Organization (HEMCO (OKXE in Greek)) is appointed as the executive and operational authority for the development and operation of the NSDI;

Based on these conclusions we score the indicators as follows:

- The approach and territorial coverage of the SDI is truly national
- One or more components of the SDI have reached a significant level of operability (Partially, 2)
- The officially recognised or de facto coordinating body of the SDI is a NDP, i.e. a NMA or a comparable organisation
- The officially recognised or de facto coordinating body for the SDI is an organisation controlled by data users (No)
- An organisation of the type 'national GI-association' is involved in the coordination of the SDI
- Producers and users of spatial data are participating in the SDI (partially)
- Only public sector actors are participating in the SDI

⁶ Law 3882/2010 (Government Gazette 166 A) "National Infrastructure for Geospatial Information - Compliance with Directive 2007/2/EC of the European Parliament and the Council of 14 March 2007 and other provisions. Amendment of Law 1647/1986 "Organization Hellenic Mapping and Cadastral (specific maps) and other provisions".

2.3 Component 2: Legal framework and funding

2.3.1 Legal framework

The founding law of the Hellenic Mapping and Cadastral Organization (HEMCO) (law no. 1647/1986) deals with the use, dissemination of personal data and general national security issues.

Law 3882/2010 FEK 166A on the creation of the National Geospatial Information Infrastructure (EVGEP) is the law that transposes the INSPIRE Directive. The Law was adopted on September 22, 2010 and aims to ensure equal access to geospatial data and services for all citizens and Public Administration.

The Law is the answer to the need to:

- a) establish harmonized practices and standards for the collection, production, procurement, management, sharing and distribution of geospatial data and
- b) comply with Directive 2007/2/EC (INSPIRE), which provides a framework of technical specifications for interoperability to enable the automated sharing of geospatial data in the environment (e.g. areas NATURA 2000) at national and European level.

2.3.2 Public-private partnerships (PPPs)

The Hellenic Mapping and Cadastre Organization was created in 1986 and is the official cartographic agency in Greece operating under the Ministry of Environment, Energy and Climate Change. One of the responsibilities include the establishment of the National Cadastre system.

In July 1994, the HEMCO started with the preparation for the building of the Hellenic Cadastre. For this purpose, a company was created: "Ktimatologio S.A.", a Legal Entity of Private Law with the mission to study, develop and operate the Hellenic Cadastre. The company was founded with a joint decision of the Minister of Economy and Finance and the Minister of Environment, Physical Planning and Public Works (Decision 81706/6085/6-10-1995/Government Gazette 872B/19-10-1995). Ktimatologio S.A. operates according to the rules of private finance and the provisions of article 5 of Law 2229/1994, of the coded Law 2190/1920, of Law 2308/1995 and Law N.2664/1998, as these stand today. Furthermore, the company does not fall under the class of organizations and businesses of the broader state sector; regulations that concern companies directly or indirectly owned by the State do not apply to Ktimatologio S.A. The sole shareholder of the company is the Ministry of Environment, Energy and Climate Change. However, since there is no private capital involved, it is not considered as a true PPP.

Both the HEMCO and Ktimatologio S.A. (Hellenic Cadastre) are members of EuroGeographics.

2.3.3 Policy and legislation on access to public sector information (PSI)

The main laws regulating and facilitating access to the information maintained by the Public Sector are:

1. Law 2690/1999 “Hellenic Code for Administrative Procedure” (especially article 5) which replaced law 1599/1986 “State–Citizen Relations”. It is a new freedom of information act that gives citizens the right of access to the administrative documents created by government agencies.
2. Law 3448/2006 “Reuse of public Sector Information, Local authorities Affairs etc” through which PSI Directive 2003/1998 was transposed into national law.
3. The Common Ministerial Decision No 11764/653 of 17th March 2006 by a joint Ministerial Decision (Minister of Interior, Public Administration and Decentralization, the Minister of Economy and Finance, the Minister of Environment, Energy and Climate Change and the Minister of Justice), through which the European Directive 2003/4/EC concerning the access to environmental information was transposed into national law.

2.3.4 Legal protection of GI by intellectual property rights

In the past decade Greece has rapidly caught up with the rest of Europe by introducing modernized laws in the area of intellectual property. The Greek Copyright Act (Law no. 2121/1993) was a landmark in the legal history of copyright in Greece. However, the copyright legislation is still considered to be inadequate for the development of an NSDI. This is partly covered by the transposition of the 2001 directive on copyright in the information society.

Directive 96/9 of the European Parliament and the Council of 11-3-1996 concerning the Legal Protection of Databases and other Regulations on the legal protection of databases was implemented in Greece by specific legal provisions (art. 7 of Law 2819/2000).

Article 2 of the Copyright Act stipulates that the protection afforded under this Law shall not apply to official texts expressive of the authority of the State, notably to legislative, administrative or judicial texts.

The Hellenic Military Geographical Service has set restrictions to the access to spatial datasets and services due to National Defense for classified areas. Law 3257/2004 “Regulation of the Armed Forces Staff Affairs” and especially article 11, which amended article 13 of the Legislative Decree 1013/1971, refers to the protection of intellectual property rights of the Hellenic Military Geographical Service in cases of use by the public or private sector of the geographical data produced and maintained by this Service, while an approval by the same Service is required before any production, dissemination or circulation of high resolution (i.e., higher than 1 meter) geographical data or imagery acquired from any source. With regard to the protection of national defense within the

HNC, high-level representation of the Ministry of Defense ensures that, for what concerns policy on spatial information sharing arrangements, decisions will not compromise national security. With regard to international relations, the Ministry of Foreign Affairs has an important role in collaboration with the ministry of Defense.

Map production in Greece is considered as *work*, that is, original intellectual scientific creation related to geography, surveying, architecture and science in general. As *work*, it is protected by Greek legislation and especially law 2121/1993 “*About Intellectual Property and Related Rights*”. The Hellenic Military Service is the Greek authority that produces and provides topographic maps in Greece. These maps are used as reference base maps by most public authorities. However, until 2010, the data sharing arrangements and intellectual property right restrictions for the use and reproduction of these maps posed significant barriers, both economic and practical, with regard to the development and data sharing of spatial information generated from the use of those, such as geological maps.

The INSPIRE-Law for the "National Geospatial Information Infrastructure" mandates the obligatory free sharing of spatial data and services within the public sector as well as to the public for non-commercial uses. The establishment of the catalogue of existing datasets and services and their metadata within the national geoportal, following the determination of focal points and establishment of datasets owners, provides the necessary technical and governance supportive measures to enable the effective implementation of the law.

As a result, the data of the governmental bodies are becoming freely available for the public through geodata.gov.gr (open data) which offers open data on the background of Google maps, open street map and LandInc accordingly their specific simplified and standardized data and license agreements. Other geospatial data are provided using the specific terms of the Greek license Creative Commons Attribution (CC BY V.3.0) as specified in detail in the relevant license. This means that it is sufficient to indicate the source, i.e. geodata.gov.gr.

2.3.5 Restricted access to GI further to the legal protection of privacy

During the last decade, Greece harmonized its legislation to the one in force in the European Union by introducing modern laws for the protection of intellectual property but also of privacy. More specifically:

1. Law 2472/1997: “*Protection of the Individual from the Processing of Personal Data*” (http://www.dpa.gr/legal_eng.htm) that follows the provisions of European Directive 95/46/EC concerning the protection of personal data.
2. Law 2915/2001 and especially article 34: “*Amendment of Law 2472/1997 - Protection of the Individual from the Processing of Personal Data*”
3. Law 3057/2002 and especially article 81: “*Harmonization with Directive 2001/29/EC of the European Parliament and the Council of 29-5-2001 for the Harmonization of Certain Aspects of the Creator and of Related Rights to the Information Society and other Regulations*”.

4. The Presidential Decree No 131/2003: “*Adaptation to Directive 2000/31/EC of the European Parliament and the Council concerning Certain Legal Aspects of the Information Society Services, especially Electronic Commerce, in the Internal Market*”.

5. Law 3471/2006: “*Protection of Personal Data and of Private Life in the Electronic Communications Sector and Amendments to Law 2472/1997*” through which Directive 2002/58/EC of the European Parliament and the Council of 12-7-2002 on privacy and electronic communications has been transposed into Greek law.

2.3.6 Licensing framework

Until the new law ‘National Infrastructure for Geospatial Information’, a clear and harmonized licensing national policy concerning spatial datasets and services, either among public authorities or for public access did not exist. Law 3882/2010⁷ creates the National Geospatial Information Infrastructure which includes the establishment of general principles, rules, measures and procedures in administrative, legal and technological level for the organization of uniform management practices, availability and sharing of geospatial information.

2.3.7 Funding model for SDI and pricing policy

Funding

There is no specific, dedicated funding resource. In general, public administrations invest in terms of staff allocation, time resources, capacity building by the different public administrations. Law 3481/2006 ensures the financing of the Hellenic Cadastre.

From 1 January 2011, the Kallikratis plan is in force (Law 3852/2010 on the reorganization of local government). It enables the decentralization of governance, devolving powers and responsibilities to the regions and municipalities: decentralized administrations (7), regions (13) and municipalities (325). This has administrative, technical, legal but also financial (funding) consequences e.g. revision administrative boundaries, e.g. ownership of and responsibility for collection, sharing and updating of spatial data.

Pricing policy

Until 2010, there was no clear and harmonized pricing national policy regarding spatial datasets and services, either among public authorities or for public access. Pricing schemes varied widely among public bodies and also within the private sector. There was no homogeneous method for determining the price of various forms of spatial data and there was no overall official policy on the commercialization of public sector information.

⁷ Law 3882/2010 (Government Gazette 166 A) "National Infrastructure Geospatial Information - Compliance with Directive 2007/2/EC of the European Parliament and the Council of 14 March 2007 and other provisions. Amendment of Law 1647/1986 "Organization Hellenic Mapping and Cadastral (specific maps) and other provisions".

The new 'INSPIRE' law provides a common policy regarding data sharing arrangements by defining that spatial data are provided for free by designated owners through the Geoportal for public sector use.

2.3.8 Conclusions of Component 2

The INSPIRE Directive was transposed into national law. Law 3882/2010⁸ creates the National Geospatial Information Infrastructure which includes the establishment of general principles, rules, measures and procedures in administrative, legal and technological level for the organization of uniform management practices, availability and sharing of geospatial information. The INSPIRE-Law for the "National Geospatial Information Infrastructure" mandates the obligatory free sharing of spatial data and services within the public sector as well as to the public for non-commercial uses. The establishment of the catalogue of existing datasets and services and their metadata within the national geoportal, following the determination of focal points and establishment of datasets owners, provides the necessary technical and governance supportive measures to enable the effective implementation of the law.

Based on these conclusions we score the indicators as follows:

- There is a legal instrument or framework determining the SDI-strategy or – development
- There are true PPP's or other co-financing mechanisms between public and private sector bodies with respect to the development and operation of the SDI-related projects (No)
- There is a freedom of information (FOI) act which contains specific FOI legislation for the GI-sector (No Information found)
- GI can specifically be protected by copyright (partially)
- Privacy laws are actively being taken into account by the holders of GI (No Information found)
- There is a framework or policy for sharing GI between public institutions (partially)
- There are simplified and standardised licences for personal use (partially)
- The long-term financial security of the SDI-initiative is secured (No)

⁸ Law 3882/2010 (Government Gazette 166 A) "National Infrastructure Geospatial Information - Compliance with Directive 2007/2/EC of the European Parliament and the Council of 14 March 2007 and other provisions. Amendment of Law 1647/1986 "Organization Hellenic Mapping and Cadastral (specific maps) and other provisions".

- There is a pricing framework for trading, using and/or commercialising GI (No)

2.4 Component 3: Data for themes of the INSPIRE annexes

2.4.1 Data sets of different resolutions covering the INSPIRE and other themes

The main public bodies in Greece that produce, manage and provide geographical information are:

- Ministry of Environment, Energy and Climate Change (MEECC) (<http://www.ypeka.gr/>) is responsible for providing environmental data (e.g. protected areas, vegetation, flora, fauna, air pollution etc). The national network for environmental information (EDPP) is part of the European Environment Information and Observation Network EIONET.

- HEMCO and KTIMATOLOGIO S.A. (Hellenic Cadastre)

- 1:100.000: CORINE Land Cover
- 1:250.000: A/D-converted topographic maps 1:250.000 (DB250K);
- 1:50.000: A/D converted topographic maps 1:50.000 (DB50K);
- Cadastral data and maps: cadastral diagrams, the corresponding cadastral tables; layers include Fields, squares, parcels, buildings, Axes and Numbering Streets, islets - Sidewalks, Building Blocks, Signs Distribution EGSA'87 1:1000 scale (cadastral 1992), Trigonometric Network and Network Temporary Polygonometriko cadastral 1992.
- Orthophotographs
- Local government administrative boundaries.
- Aerial photography B&W, Colour – various scales (400.000)
- Geodetic data

The Hellenic Military Geographical Service (HMGS) is the Greek authority that produces and provides geographical data which are used as reference base maps by most public authorities:

- aerial photography
- DEMs
- historical maps
- cartographic base maps of various scales (large, medium and small) either in analogue format or in digital vector or raster (scanned) format

- topographic diagrams of 1:5.000 scale in analogue or digital vector format, elevation contour lines in digital format, and Digital Terrain Model (DTM) in digital format covering the whole country.
- established and maintains the National Trigonometric Network which includes appr. 27.000 trigonometric control points, and the National Levelling Control Point (repere) Network which includes 11.000 points.
- established and maintains the national gravimetric and magnetic declination measurement networks, with 12.280 and 108 stations respectively.
- publishes and supplies the Placename Gazetteer of Greece (Hellas) in 3 volumes, the Index of 1:5.000 mapsheet boundaries and the Coordinate Transformation Coefficient Book for transforming coordinates from Bessel to WGS84

The private company Geodata S.A. advertises at its website <http://www.eranet.gr/geodata/en/eproducts.html> following nation-wide (inc. the islands) geodatasets:

Scale 1:200.000: The HELLAS-product as derived from the 1:200.000 maps of the National Statistical Service:

- Official Latin naming convention
- Coastline
- Road network
- Regions boundaries
- Prefectures boundaries
- Municipalities boundaries (2001)
- Municipalities capitals
- Settlements (12,000 points)
- Postal code boundaries
- Railroad network
- Hydrological network
- Population by postal code
- Demographics by municipality
- This product is available at Country, Region or Prefecture level.

Scale 1:5.000. The Cities-product: digital maps of the cities of Greece (500) containing the following levels of information:

- road network with street names
- street numbering
- traffic flow directions
- census blocks
- demographics
- postal codes
- neighbourhoods
- points of interest

Geographic database of postal code boundaries covering the whole of Greece. Scale 1:200.000 – Road Network

This road network is derived from orthophotos of scale 1:20,000. All roads of the national and main community network are included in this dataset; The dataset matches seamlessly with the more detailed road network at scale 1:5000, which already exists for many urban areas and towns.

2.4.2 Scale 1:5.000 - Digital Elevation Models, source: ortophotos 1:5.000

Regarding the three INSPIRE annexes addressing the 34 spatial data themes, Greece is providing discovery and view services for some of them while a number of them can be also downloaded

Accordingly the INSPIRE 2010 MR306 data sets have been reported most of which belong to Annex III (189) (56 and 61 belong to Annex I and Annex II, respectively)

2.4.3 Geodetic reference systems and projections

Name and nature of the geodetic coordinate system (Greek National System): HGRS87 - (EGSA 87 in Greek) - Hellenic Geodetic Reference System 1987; Transverse Mercator (UTM); GRS80 (in generalized use since 1990)

- Ellipsoid: GRS80
- Geodetic Datum: none
- Map projection: Transverse
- Xshift 0.0000
- Yshift 0.0000
- Parameters :
 - 0.99960 /* scale factor at central meridian
 - 24 0 0.000 /* longitude of central meridian
 - 0 0 0.000 /* latitude of origin
 - 500000.00000 /* false easting (meters)
 - 0.00000 /* false northing (meters)

Algorithms and transformation parameters are available to convert from WGS84 and from systems previously in use in Greece to HGRS'87 and vice versa.

The HGRS87 (EGSA87) was established by the HEMCO and is being used by all public administrations to manage geospatial data.

The new Hellenic Terrestrial Reference System 2007 or HTRS07 has been specified for the Hellenic Positioning System (HEPOS) project. It is GPS based and is compatible with European Terrestrial Reference System 1989 (ETRS89). HTRS07 is currently used for the cadastral surveys. The Hellenic POSitioning System (HEPOS), available since 2008, is a system that provides real-time positioning services using GPS. It has been designed and developed by KTIMATOLOGIO S.A. in order to improve, homogenize and facilitate the cadastral survey activities in Greece. The system allows for the determination of high precision and homogeneous coordinates throughout the whole country. The HEPOS system consists of 98 permanent GPS reference stations distributed all over Greece, a control centre and communication lines (main and backup) that support data transfer between the reference stations and the control centre (Rokos et al., 2010). HEPOS supports all common GPS techniques for post-processing and real-time surveying.

HEPOS is establishing a highly homogeneous nation-wide geodetic reference frame.

At the same time, HEPOS modernizes the geodetic infrastructure of the country by introducing a new geodetic reference frame as a realization of ETRS89. The new system is named HTRS07 (Hellenic Terrestrial Reference System 2007) and aspires to become the new national reference system. Towards this direction, a two-way transformation model between HTRS07 and HGRS87 has been established. To accomplish this, approximately 2470 trigonometric points, evenly distributed all over Greece, have been measured in a national GPS measuring campaign (Rokos et al., 2010).

2.4.4 Quality of the data

The Law 3882/2010 established the HEMCO as the sole National Quality Assurance Body for spatial datasets and services, responsible for the setting up of the quality assurance framework for the NGHC, herein supported by the network of focal points. As the HEMCO is responsible for the development and maintenance of the national geoportals through which it tries to exercise these quality assurance procedures.

Data produced by the private company Geodata S.A. is said to be produced and maintained under a Quality System, annually certified by the Hellenic Organization of Standardization since 2003, as conforming with the requirements of the standard EN ISO 9001:2000 in the field of Development & Distribution of Geographic Digital Data.

2.4.5 Interoperability

The NGHC formulates and monitors the National Interoperability Framework for Geo-information and Services including the technical measures and specifications to ensure interoperability of datasets and services.

Data catalogues and services are required to comply with the National Interoperability Framework and the INSPIRE Implementing Rules before inclusion in the geoportals.

The geoportal geodata.gov.gr provides

- the geospatial data in WGS84. Shapefiles are provided in EGSA87, KML and GML files are in WGS84;
- the archives of the geospatial data in GML and KML are encoded UTF-8 character to ensure maximum compatibility with all possible applications and services;
- shapefiles are encoded ISO-8859-7; due to many requests from users experiencing problems in reading SHP files encoded with UTF-8

2.4.6 Language and culture

Metadata and accompanying documents are provided in Greek and generally not translated in other languages. However some websites are available in English too.

2.4.7 Geographical names

Geographical names are managed in Greek.

2.4.8 Conclusions of Component 3

Geodatasets exist which provide a basis for contributing to the coverage of pan-Europe for the INSPIRE-selected data themes and components while the geodetic reference system and projection systems are standardised, documented and interconvertable.. The main language used is Greek.

Based on these conclusions we score the indicators as follows:

- Geodatasets exist which provide a basis for contributing to the coverage of pan-Europe for the INSPIRE-selected data themes and components
- The geodetic reference system and projection systems are standardised, documented and interconvertable
- There is a documented data quality control procedure applied at the level of the SDI (No Information found)
- Concern for interoperability goes beyond conversion between different data formats (partially)
- The national language is the operational language of the SDI
- English is used as secondary language (Partially)

2.5 Component 4: Metadata

2.5.1 Availability

Metadata will have to be created for a significant proportion of the available datasets.

The hydroscope website gives access to Hydrological, meteorological, hydrogeological and geographical data in Greece. For these data, INSPIRE-compliant metadata were created and are available as XML-files. <http://www.hydroscope.gr/geodata.html>

The thematic SDI, IDE-UNIVERS aims the sharing of spatial data and services produced by Universities and Research Centers and is built with an architecture compliant with the INSPIRE guidelines and standards: e.g. metadata follow ISO 19115 and ISO 19139 standards. A Catalogue Service (CAT) compliant with OGC offers searching facilities in the metadata.

The MR 2010 reports on the existence of metadata for 55% of the datasets, while the percentage of conformant metadata accounts for only 8% of the datasets.

2.5.2 Metadata catalogues availability + standard

The HEMCO is responsible for the management of the national geoportal which includes

- providing technical tools for automated compliancy testing of the metadata with the requirements of the INSPIRE IRs and the NIFGIS;
- assisting the public bodies for the production of metadata.

Currently, the national geoportal does not contain yet an established metadata catalogue.

2.5.3 Metadata implementation

The HEMCO (OKXE) website provides direct access to the European Open Source Metadata Editor (EUOSME), a web application to create INSPIRE-compliant metadata in any of 22 European languages. It has been developed by the Joint Research Centre as part of the EuroGEOSS project.

<http://213.16.130.11:9090/EUOSMEGWT/?!locale=en>

2.5.4 Conclusions of Component 4

Metadata will have to be created for a significant proportion of the available datasets. The HEMCO is responsible to provide support to the public bodies to produce INSPIRE and NIFGIS-compliant metadata e.g. access to the EUOSME metadata editor.

Based on these conclusions we score the indicators as follows:

- Metadata are produced for a significant fraction of geodatasets of the themes of the INSPIRE annexes (Partially)
- One or more standardised metadata catalogues are available covering more than one data producing agency (No Information found)
- There is a coordinating authority for metadata implementation at the level of the SDI (partially)

2.6 Component 5: Network Services

2.6.1 Geoportal

The national geoportal is the first attempt to give free access to the geospatial datasets provided by different public administrations, to all public bodies and the public. The open data are made available at (<http://geodata.gov.gr/>) (beta-version). The website is continually updated with data from more and more operators of Public Administration.

Current Public Authorities that provide access to their data:

Greek Statistical Authority
 Centre for Renewable Energy Sources and Saving Energy
 Information Society SA
 Mortgage Service Evros prefecture
 Piraeus Real Estate Service
 Land SA
 Athens Urban Transport Organization
 Agency Hellenic Mapping and Cadastral
 Agency Planning and Environmental Protection of Athens
 Region Continent
 Association 'Bowl'
 Ministry of Interior & eGovernment
 Ministry of Education, Lifelong Learning and Religion
 Ministry of Environment, Energy and Climate Change
 Ministry of Citizen Protection

The geoportal lists the spatial datasets alphabetically, by keyword, organisation, and thematic category. It provides a viewing service with cartographic background of google maps (satellite images), OpenStreetMap (maps) or either the LandRegistry Inc. (Aerial).

The portal is using Open Source software (e.g. Joomla, PostGIS, MapServer, OpenLayers, MapFish, GeoNetwork) while the databases are derived from Google Maps, OpenStreetMap and Ktimatologio.gr (orthophotos). It offers (<http://www.geodata.gov.gr/maps/>) WMS and WFS services in which data are offered as WGS84 (KML, GML) and HGRS'87 in case of shapefiles. Currently it holds 200 data sets, and is constantly updated, such as:

- Train network;
- Corine 2000;
- Hydrographical network;
- Municipality borders;
- Administration boundaries;
- Coastlines;

2.6.2 Network services

KTIMATOLOGIO S.A. (Hellenic Cadastre) has set up state-of-the-art data centres (primary and disaster recovery) with high availability (99, 99%), modern networking, security and backup mechanisms and high storage capacity (120 TB in each), where all its data and applications reside (central storage).

A series of applications have been developed:

Such as:

Services to citizens

Online internet applications have been developed to declare property to the Cadastre during a cadastral survey study. Through this application a user can online:

- declare all the information necessary to register his/her property to the Cadastre,
- identify the location of the declared real property on orthophotomaps,
- pay the cadastral fee using his/her credit card,
- send scanned copies of the deeds that support his/her declaration,
- print a receipt

Services to legal persons

For the legal persons that have a great number of rights to declare, KTIMATOLOGIO S.A. developed a special application to allow them to produce a database with all the information about their real property rights, and submit it electronically to the Cadastre. This application has been used in the cadastral survey projects that were initiated in 2008 by most of the banks operating in Greece.

Services to KT contractors of cadastral surveys

For the contractors carrying out the cadastral survey projects applications developed to receive, register and geo-locate on orthophoto maps all the declarations that were

presented in the cadastral survey offices. The application allows, among other things, uniform codification of all the information registered, online checks that prohibit a number of mistakes during data entry, computation of the corresponding cadastral fee for each declaration, real time monitoring of the progress of the work and real time access to all the declaration data from KT's headquarters (Rokos et al., 2010).

The access to these services is possible in two ways:

a) Through the webpage

<http://gis.ktimanet.gr/wms/ktbasemap/default.aspx>

or through the official site of Ktimatologio S.A. www.ktimatologio.gr

b) Through a WMS (Web Mapping Service), version 1.1.0, at the geographic system WGS84. This service is available at the web address: <http://gis.ktimanet.gr/wms/wmsopen/wmserver.aspx>

2.6.3 Discovery services

Hydroscope is a national repository for hydrological and meteorological data of Greece maintained by the Special Secretariat for Water of the Ministry of Environment Energy and Climate Change. The Geoportail contains metadata of the Special Secretariat for Water spatial data under the Water Framework Directive Implementation and INSPIRE: <http://thyamis.itia.ntua.gr:8080/geoportail/catalog/main/home.page>

2.6.4 View services

The GeoIndex of the HGMS (http://web.gys.gr/GeoSearch_EN/) provides viewing service to search and order geographical data produced and managed by HMGS in digital and analogue format.

INSPIRE-compliant OGC-WMS services are available on the thematic SDI-website Ide.Univers for universities and research centres, by the University of the Aegean: <http://geo-ellanikos.aegean.gr:8080/geonetwork/srv/en/main.home>.

The Hellenic Cadastre offers a free on-line access to a viewing service (WMS) of the aerial and satellite images of 2007-2009 covering the whole of Greece excluding some restricted areas. The spatial analysis of these photographs is 20cm for urban areas and 50cm for the other areas of the country. <http://gis.ktimanet.gr/wms/ktbasemap/default.aspx>

The National Information System for Energy of the MEECC provides access to view and discovery service for Energy items. <http://195.251.42.2/cgi-bin/nisehist.sh?objtype=xardyn>

The National Environmental Information Network and Electronic Environment is an integrated online information system that includes the procedures and tools for collecting, managing and disposing of assets and exchanges of information of the environment. (<http://amappl1.e-per.gr/what.html>). It provides various view services on several themes and datasets.

The National Hydrological and Meteorological Information bank of Greece (<http://www.hydroscope.gr/geodata.html>) provides access to hydrological, meteorological, hydrogeological and geographical data via OGC-Web Map Services like Topographic Background WMS, WMS of Meteorological and hydrometric stations in Greece, WMS, Map Satellite Image.

2.6.5 Download services

Datasets can be downloaded from the Hydroscope geoportal, a national repository for hydrological and meteorological data of Greece.

<http://thyamis.itia.ntua.gr:8080/geoportal/catalog/quicklink/quicklink.page>
http://thyamis.itia.ntua.gr/Hydro_Base/

The National Hydrological and Meteorological Information bank of Greece (<http://www.hydroscope.gr/geodata.html>) provides access to a Geophysical Map of Greece – WFS.

2.6.6 Transformation services

The download section of HEPOS provides a transformation tool for conversion between the HEPOS reference system (HGRS87) and another GRS. (<http://www.hepos.gr/>).

2.6.7 Invoking services

No information found.

2.6.8 Conclusions of Component 5

The majority of spatial data services and datasets have been created on an ad hoc basis, to fulfil differing needs of the public sector, as well as to comply with different EU Environmental Directive requirements. Information regarding usage does not exist, since the NSDI itself is not in place yet. Similarly no transformation services exist and there is still a lack of data sharing agreement among the different public authorities and each public authority is producing and maintaining spatial data defines its own policy for providing access to data and services. The fragmentary efforts have resulted in heterogeneous view services of different technical specifications and, consequently, of varying degrees of quality. The same holds for download and discovery services, albeit their number is considerably smaller than that of the view services. The <http://www.geodata.gov.gr/maps/> offers view to 34 data themes. Users can download data from the National Environmental Information Network and Electronic Environment at

[http://amagis1.e-per.gr/PublicUK_App/mapviewer.jsf?width=1293&height=982&sid=pca7n0jn3aitdcb43mhk7hq976&appl=&rid=.](http://amagis1.e-per.gr/PublicUK_App/mapviewer.jsf?width=1293&height=982&sid=pca7n0jn3aitdcb43mhk7hq976&appl=&rid=)

Based on these conclusions we score the indicators as follows:

- There are one or more discovery services making it possible to search for data and services through metadata (partially)
- There are one or more view services available for to visualise data from the themes of the INSPIRE annexes
- There are one ore more on-line download services enabling (parts of) copies of datasets
- There are one or more transformation services enabling spatial datasets to be transformed to achieve interoperability (partially)
- There are middleware services allowing data services to be invoked (No)

2.7 Component 6: Thematic environmental data

The main environmental area covered by the Ministry of Environment, Energy and Climate change concern Air Quality, Air Emissions, Water Quality, Waste, Nature and Biodiversity, Noise and Industries, hydrological data etc. The National Environmental Information Network includes measurements from monitoring stations for Air and Water quality, sites of NATURA2000, position of main Industries and Installations, position of main constructions, maps of noise. The system also contains digital geographic background in three scales (1:1.000.000, 1:250.000 and 1:50.000) with information of transport and hydrographic networks, administrative units, DTM, geographical names and land cover for all the country terrain. Environmental data are available on the web site of the Ministry of Environment, Energy and Climate Change..

Furthermore, the National Hydrological and Meteorological Information bank of Greece (<http://www.hydroscope.gr/>) provides access to hydrological, meteorological, hydrogeological and geographical data in Greece via its portal which hosts 2613 stations, 10058 instruments and 6303 time series of data. The Hydroscope geoportal contains metadata of the Special Secretariat for Water spatial data under the Water Framework Directive Implementation and INSPIRE. At <http://thyamis.itia.ntua.gr:8080/geoportal/catalog/search/search.page> 24 datasets like transport network, administrative borders, river basins can be discovered while a number of GML files can be downloaded.

2.7.1 Conclusions of Component 6

There is an increased effort to depict and provide environmental data and information on the web. . However the extent of this effort is not clear yet.

Based on the information provided on the previous paragraph we score the indicator as follows:

- Thematic environmental data are covered by the described SDI-initiative or there is an independent thematic environmental SDI (Partially)

2.8 Standards

Greece is complying where available with the common standards of ISO/TC211 and OGG.

2.8.1 Conclusions of Component 7

Based on these conclusions we score the indicator as follows:

- The SDI-initiative is devoting significant attention to standardisation issues (No Information found)

2.9 Use and efficiency of the NSDI

Medisolae-3D (<http://www.medisolae-3d.eu/>) is a European Consortium of 14 partners, from 7 Member States, representing 100+ islands with expertise ranging from INSPIRE, Spatial Data Infrastructures (SDI), GIS & WebGIS technologies, geo-portal expertise and technologies assisting island authorities to capture geodata and 3D images towards providing geospatial information for the project portal services.

MedIsolae-3D will first deliver partnerships between public data owners and private companies, dissemination and promotion of the island digital content, a 3D flying-over simulation, linkage to geo-based Internet platforms and transfer of knowledge in SDI technology to islands.

In terms of interoperability the Santorini island example is given:

The following interoperability test has been implemented: for the Santorini SDI map services the WMS (Web Mapping Services) capability has been enabled. Any GIS client/viewer supporting the WMS capability (such as Quantum GIS, udig, ArcGIS

Explorer and many others, most of them freely available) can access the island SDI spatial datasets at:

<http://93.63.59.107:8399/arcgis/services/Santorini/MapServer/WMS/Server/>

and

<http://93.63.59.107/Santorini/SantoriniVE.htm>

The number of recorded data services is quite smaller than that of the recorded datasets. The vast majority of the data services are *view services*, implemented separately from various stakeholders, either on own initiative, in order to fulfil their needs and support their infrastructure and working processes, or in order to comply with the requirements of several environmental programs of the EU.

The fragmentary efforts have resulted in heterogeneous view services of different technical specifications and, consequently, of varying degrees of quality. The same holds for download and discovery services, albeit their number is considerably smaller than that of the view services. The corresponding indicators for the spatial data services and the network services reveal an almost complete lack of conformity to INSPIRE IRs for network services.

3 Annexes

3.1 List of SDI addresses / contacts for Greece

Table: SDI contact list			
	Web address	Organisation l mailing address	Over-all contact person: tel./fax/e-mail
National			
Hellenic Mapping and Cadastral Organization	http://www.okxe.gr/ http://www.nls.fi/	Timoleon Vassou 11-13, ATHENS 11521, Greece	hemcosup@otenet.gr Konstantinos A. Nedas +30 210-6443583 knedas@okxe.gr Konstantinos Stefanakis +30 210-8643783 k.stefanakis@dpers. minenv.gr

3.2 List of references for Greece

Table: list of references used to compile the Country Report	
Web sites:	
	http://www.hellasgi.gr
	http://www.minenv.gr/#
	http://www.ktimatologio.gr/ktima/
	http://www.vterrain.org/Locations/gr/
	http://www.ntua.gr/ontogeo/nagii/NAGII.htm
	http://geo-ellanos.aegean.gr/ideunivers/
	http://www.hepos.gr/hepos/HEPOS_faqs_v1_0_eng.pdf
	http://www.erfc.gr/
	http://www.inspire.okxe.gr
	http://geodata.gov.gr/geodata/

	http://www.slideshare.net/deleurme/situation-of-the-gis-and-sdi-market-in-greece
	http://www.hellasgi.gr/
	http://www.infosoc.gr/infosoc/en-UK/sthnellada/committee/default1/top.htm
	http://www.inspire.okxe.gr/index.php?option=com_content&view=frontpage&Itemid=1
	Greek e-Government Interoperability Framework http://www.e-gif.gov.gr/portal/page/portal/egif/
	IDE-Univers http://geo-ellanikos.aegean.gr/ideunivers/en/inici.html http://geo-ellanikos.aegean.gr:8080/geonetwork/srv/en/main.home
	Digital Strategy 2006- 2013: http://www.infosoc.gr/infosoc/en-UK/sthnellada/committee/default1/top.htm

Publications:	
	GINIE: Geographic Information Network in Europe. Spatial data infrastructures: Country Reports FINAL D 5.3.2(b). September 2002
	GINIE - GI in the Wider Europe Complete Book, October 2003
	Dimopoulou, E., T. Labropoulos, V. Nikolaidou and P. Zentelis, 2003. Comparative Analysis of NSDI policies in Greece and Cyprus: Two different systems within the EU. Paper presented at the 2nd FIG Regional Conference, Marrakech, Morocco, 2-5 december 2003.
	C., Tsadilas, S., Theocharopoulos and F., Gerouki. Brief presentation of the Greek EIONET members Organizations as related to soil data and information in Greece. EIONET workshop on soil Ispra 2009.
	G., Martirano, M., Bonazountas and V., Gagliardi. The Challenge of a Spatial Data Infrastructure for the Mediterranean Islands. NATO Science for Peace and Security Series C: Environmental Security , 377-386, 2009.
	D., Rokos, K., Kyriazis and P., Lolonis. Setting Up the Infrastructure for Improving the Development of Cadastre in Greece. FIG Congress 2010 Sydney, April 2010.
	HELLENIC MAPPING AND CADASTRAL ORGANIZATION GIS PORTAL – TOWARDS GREEK SDI, International Conference SDI 2010 http://sdi2010.evkartenn.com/pdf/Vakkas_Tzotsos_Petrogonas.pdf