



Spatial Data Infrastructures in Turkey: State of play Autumn 2006

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Change matrix 2006 versus 2005

Paragraphs in which information is reported which deviates in a significant way from what was reported in the Spring 2005 version of this country report are listed in the below table. **They are indicated in red.**

Paragraph	Type of change
All	Restructure and reword to bring the report more in line with INSPIRE
Executive Summary	Modify to reflect changes since 2005
1.1	Modify to reflect the 2006 update
2.2	New section on coordination and organizational issues
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2.5	Modify to reflect the 2006 update, new information

Executive summary

Based on the website of the Turkish Military Mapping Agency, the GISEE-study and information provided by Prof. Coskun of the Istanbul Technical University, it can be stated that at in Turkey a coherent vision is being developed and related legal initiatives are being prepared to better coordinate production of GI with a view to better satisfy public user needs at all administrative levels. The term SDI is frequently used in the mentioned information sources.

Currently, the Military Mapping Agency is the main data producer, has the most visible internet presence offering limited metadata for its own products. The military character of the agency remains visible in the permits required for using the GI it produces.

Cadastral and other large scale geodata are produced by the (civil) General Directorate of Land Registry and Cadastre. Details on products and services of this Directorate could however not be found.

There are several persisting problems in the field of GI: lack of coordination between institutions; no standardization with regard to the reference system, the data quality or exchange of data; data duplication; the majority of large scale data not in digital format; interoperability does not (yet) exist; lack of expert personnel and budget; and a lot of difficulties to share data.

Expectations with the INSPIRE Directive are high: definition of a national strategy becomes possible; hiring experts and institutional redefinition; use of common data models and GML for data exchange; creation of metadata portals & catalogues; and better data sharing is envisaged. Responsibilities for development of data (themes) has been fixed.

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Abbreviations and acronyms

ARIP	Agricultural Reform Implementation Project
CT	Core Thematic Data
GCM	General Command of Mapping
GDLRC	General Directorate of Land Registry and Cadastre
GDRS	General Directorate of Rural Services
GI	Geographical Information
GIS	Geographical Information System
GISEE	GIS Technology and Market in South Eastern Europe
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
MPWS	Ministry of Public Works and Settlement
NSDI	National Spatial Data Infrastructures
PSI	Policy and legislation on access to public sector information
PPP	Public-private partnerships
REF	Reference data
SDI	Spatial Data Infrastructures
SIS	State Institute of Statistics
TABIS	Disaster Information System of Turkey
TABKIS	Turkey's Land Registry and Cadastre Information system
TUTGA	National Primary GPS Network of Turkey
UVDF	National Spatial data Exchange Standard

1. GENERAL INFORMATION

1.1 Method

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

The report provides general information only which was retrieved from the limited English portion of a number of websites and readily available documents (see Section 3.2 for the list of references). The technical issues have been elaborated to a very limited extent due to lack of accessible information. Some feedback from a Turkish expert was received for the 2004 version of the report. Also the GISEE-final report on the SDI in Turkey was consulted. Both sources of information are rather confusing however. The update of 2005 was based on screening of new information on the legal issues only. **The update for 2006 was based on information obtained from presentations at the workshop “Preparing the National INSPIRE Information Days” (organized by JRC for the new and candidate Member States).**

1.2 The GI- and SDI-scene in Turkey

SDI-like activities at the national level are mainly with the General Command of Mapping, depending of the Ministry of National Defense (GCM). A condensed version in English of the GCM web site is available at <http://www.hgk.mil.tr/english/english.htm>. GCM produces a variety of topographic map products at scales 1:25.000 and smaller, aerial and orthophotographs. It is in the process of converting them to digital form. It is expected that GCM will be turned into a civil national mapping agency. GCM is the Turkish member of Eurogeographics.

For scales 1:25.000 and larger scaled mapping, an important role is played by the General Directorate of Land Registry and Cadastre (GDLRC) (<http://www.tkgm.gov.tr/tapunet/atkgmgovtr/index.htm>) and by the General Directorate of Provinces (<http://www.ilbank.gov.tr/>). GDLRC is developing Turkey’s Land Registry and Cadastre Information system TABKIS. Progress is however not report. TABKIS programs the development of an on-line data portal.

All provinces and many municipalities have a presence on the internet. They are users and producers of GI.

The private sector is mainly active in contracting work for municipalities for large scale mapping

An important actor in the research/service sector includes the Istanbul Technical University (<http://www.itu.edu.tr>) which provides Satellite data as SPOT and RADARSAT and operates a Satellite Ground Receiving Station.

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

NTGIS, is the recent national association for GI. It will cover the whole GI community. It will adopt the role to open up a discussion forum for various national and international GI topics and to promote SDI.

We further describe the possible Turkish NSDI from the perspective of GCM.

2 Details of the GI-sector in Turkey

2.1 General information

In 1999 a governmental commission presented a vision paper for the National Geographic Information Infrastructure of Turkey, and there has been further updates of this document. Now the Prime Ministry State Institute of Statistics is in the process to develop an NSDI project plan. The purpose of the plan will be to identify the basic geographic datasets and to formally coordinate the production of these datasets to ensure their availability. GCM has a crucial role in this plan (Coskun, 2003).

2.2 Component 1: coordination and organizational issues

There are two primary governmental organizations working on the Turkish NSDI at the national level: the Coordination and Planning Committee for Map Works among Ministries and the Prime Ministry State Planning Organization – Information Society Department.

The lack of coordination between institutions is one of the problems for the development of the SDI.

Therefore, the organizational infrastructure will get a lot of attention. One of the ideas is to put in place an Independent National Committee for NSDI, and a Unit within the National Mapping / Cadastre who will be the technical focal point.

2.3 Component 2: Legal framework and funding

2.3.1 Legal framework

According to GISEE (2004), a national commission is now working on a proposal for law on the organization of an NSDI.

A number of strategy documents and action plans were prepared by the Coordination and Planning Committee in order to prepare the NSDI:

- National Symposium & Panel on Coordination GIS Activities at National Level (Feb 4, 1999, General Command of Mapping, Ankara);
- “Policy & Strategy for a National GIS –Draft Document”(Apr 9, 1999);
- Legal & Institutional Framework for a NSDI –Draft Document” (Mar 27, 2003 – Mar 28, 2005);
- Updating the ToR of this Coordinating & Planning Committee to cover GI works at National Level (Mar 28, 2006 – Mar, 2007).

The Prime Ministry State Planning Organization has proposed a number of Action Items in the course of the e-Transformation Turkey Initiative:

- Action Item 47 (-Action Item 47(A Preliminary Work to setup the National GIS / NSDI) (Dec 4, 2003 –Feb 2005): this action item included a survey of stakeholders, the identification of problems and recommendations.
- Action Item 36(Policy& Strategy Document of the National GIS/NSDI) (May 2005 –Feb 2006)

This action item led to the following SDI vision: “to allow geospatial data users in our country on-line access to quality and up-to-date geospatial information they need for their geo-related decision support processes, projects and applications”. It identified responsibilities for the different data categories, and gave recommendations on standards and metadata.

It proposed an independent national Committee for NSDI, and a special SDI unit within the National Mapping and Cadastral Agency. A strategy in 6 stages was proposed:

- STAGE 1: Realize legal regulation covering Policy, data content and organizational responsibilities for the NSDI.
- STAGE 2: Develop the National Spatial data Exchange Standard (UVDF) in compliance with ISO standards.
- STAGE 3: Let the institutions prepare geospatial metadata for their area of responsibility and present at their metadata portals.
- STAGE 4: Let the NSDI Organizational Infrastructure (e.g. Committee or Unit) prepare geospatial data standards according to the NSDI policy and strategy document (i.e. Action Item 36 –Report)
- STAGE 5: Let the institutions prepare geospatial data for their area of responsibility.
- STAGE 6:Let the institutions present their data their data portals according to the legal framework defined at Stage 1.

Action Item 75 (Creating National GIS Infrastructure/ NSDI) - (Jul 2006 –Dec 2007)

2.3.2 Public-private partnerships (PPP's)

PPPs between the public and the private sector for the operation of the cadastre are accepted in theory, but are not fully operational yet.

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

The Turkish law on the right to information dates from October 9, 2003. The object of the law is to regulate the procedure of the right to information according to the principles of

equality, impartiality and openness that are the necessities of a democratic and transparent government.

2.3.4 Legal protection of GI by intellectual property rights

Turkey has had a modern copyright law since 1951. It was amended in 1995 in order to harmonize it with European Union copyright principles. The amended Copyright Law contains a number of significant improvements: expanding the term of protection to 70 years, broadening coverage to include software, and sharply increasing penalties for infringement. However, further amendments are needed to bring the law into compliance with TRIPs, Berne. In 2001, the Copyright law was amended in order to make it more compliant with international conventions.

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

Section Five of the 1982 Turkish Constitution is entitled “Privacy and Protection of Private Life”. Article 20 of the Turkish Constitution deals with the “Privacy of the Individual’s Life”, whilst article 22 deals with the “Secrecy of communication”. The Turkish Ministry of Justice has been working on data protection legislation for several years without success. In the summer of 2000 a working party was established to facilitate this effort. In mid 2003, the draft law on the protection of personal data (Kisisel Verilerin Korunmasi Kanunu Taslagi) was completed. It is based on the 1981 Council of Europe Convention and Directive 95/46 on the protection of personal data. The draft law has not been finalized yet.

2.3.6 Licensing framework

GISEE (2004, p.30) states that the use of small and medium scale data (presumably the data provided by the GCM) requires permission from the military.

2.3.7 Funding model for the SDI and pricing policy

Funding of data production and related services is mainly by the central government and, to a limited extent, by international donors (GISEE, 2004).

2.4 Component 3: Data for themes of the INSPIRE annexes

2.4.1 Scale and Resolution

GCM produces topographic maps and related digital raster and vector products at scales 1:25.000, 1:50.000, 1:100.000, 1:250.000, 1:500.000 and 1:1.000.000 .

The National Work Program foresees to determine the national status of data production. 23 answers were received from organizations and municipalities.

2.4.2 Data by resolution or scale range for the INSPIRE themes

The GCM website announces following digital geodatasets:

- 1 : 25 000 Scale Digital Elevation Maps (YUKPAF25)

- 1 : 250 000 Scale Digital Elevation Maps (YUKPAF250)
- 1 : 25 000 Scale Raster Maps (RHEG25)
- 1 : 50 000 Scale Raster Maps (RHEG50)
- 1 : 100 000 Scale Raster Maps (RHEG100)
- 1 : 250 000 Scale Raster Maps (RHEG250)
- 1 : 500 000 Scale Raster Maps (RHEG500)
- 1 : 1 000 000 Scale Raster Maps (RHEG1000)
- 3" x 3" Digital Terrain Data (DTED1)
- 1" x 1" Digital Terrain Data (DTED2)

The 1:25.000 scale digital elevation maps contain the contour lines (5 meter interval), elevation points and their heights as derived from the 1:25.000 topographic maps. The spatial coverage is not clear ([populating database about to start](#)).

The 1" x 1" Digital Terrain Dataset comprises the terrain elevations defined by points in intervals of 1" latitude and 1" longitude, as derived from the contour lines and elevation spots at the 1:25.000 topographic map. Again spatial coverage is not specified.

According to GISEE (2004), few geodatasets have complete national coverage.

Topographic Database at scale 1:25.000 (CGM): vector data collection, approximately 60% of Turkey completed. **Topographic Database at scale 1:250.000 (CGM):** vector data collection completed. Derived from VMAP-1. Data dissemination at map sheet level; e-commerce starts in 2006. National feature attribute catalogue for both products. A gazetteer and place names database is completed for the whole of Turkey.

Work is going on in the following fields, of which several are themes of the annexes of the INSPIRE Directive:

- **Land Registry & Cadastre Information System (TAKBIS)** by General Directorate of Land Registry and Cadastre: <http://www.tkgm.gov.tr/tapu/takbis.html>;
- **Agricultural Reform Implementation Project (ARIP)** by General Directorate of Land Registry and Cadastre: <http://www.tkgm.gov.tr/turkce/dosyalar/diger/proje12.doc>;
- **National Topographic Databases (vector, raster, gazetteer)** by General Command of Mapping): <http://www.hgk.mil.tr/english/english.htm>;
- **e-Commerce of Geospatial Information** by General Command of Mapping: <http://www.hgk.mil.tr/english/english.htm>;
- **International e-Roads, Trans European South-North Motorway Project, Trans Turkey Highway Project** by General Directorate of Highways: <http://www.kgm.gov.tr/indexe.htm>;
- **Geologic Data Bases (vector)** by General Directorate of Mineral Research & Exploration: <http://www.mta.gov.tr/english/>;
- **Biological Diversity & Natural Resource Management Project** by General Directorate of Environmental Protection & National Parks: <http://www.gef-2.org/tr/index.asp>;

- **Forest Resource Information System** by General Directorate of Forestry: http://www.ogm.gov.tr/birim12_2.htm;
- **National Information System and Statistical Development Project** by Turkish Statistical Institute: <http://www.die.gov.tr/PROJECTS/NIS/nis.html>;
- **Soil & Water Resources National Information Centre** by General Directorate of Rural Services: <http://www.khgm.gov.tr/nic.htm>;
- **Turkey Flood and Earthquake Recovery Project** by General Directorate of State Water Works: http://www.pub.gov.tr/TEFER_PROJECT.html;
- **Disaster Information System of Turkey (TABIS)** by General Directorate of Disaster Affairs: <http://www.depem.gov.tr/indexen.html>.

The majority of the large scale maps ($\leq 1:5.000$) are not in digital format.

Responsibilities for the different data themes:

Feature Category	Feature(s)	Responsible Institution(s)
Geodetic data	National Networks	General Command of Mapping
	Densification Networks	General Directorate of Land Registry and Cadastre
	Densification Networks	İller Bankası
Topography	Physiography	General Directorate of Mineral Works
	Hypsography (1:5.000 and greater)	General Directorate of Mineral Research & Exploration
	Hypsography (1:25.000 and smaller)	General Command of Mapping
	Physiography	General Directorate of Land Registry and Cadastre
	Hypsography(1:25.000 and smaller)	İller Bankası
	Bathymetry	Ministry of National Defense

Feature Category	Feature(s)	Responsible Institution(s)
Vegetation	Agricultural	General Directorate of Agriculture & Rural Affairs
		General Directorate of Rural Services
	Non-Agricultural	General Command of Mapping
		General Directorate of Land Registry and Cadastre
		General Directorate of Forestry
		General Directorate of National Properties
		General Directorate of Building Lands
Hydrography	Hydrography Hydrographic structures	General Directorate of State Water Works
		General Directorate of Rural Services
		General Directorate of Land Registry and Cadastre
		General Directorate of Highways
Population	Open Areas	
	Buildings	

Feature Category	Feature(s)	Responsible Institution(s)
Transportation	Highways Highway Structures	General Directorate of Highways
		General Directorate of Land Registry and Cadastre
		General Directorate of Rural Services
		Municipalities
	Railroads	General Directorate of Railways
	Maritime lines	General Directorate of Maritime Transportation
	Air lines	General Directorate of State Airports Administration
Administrative Areas	Administrative units Administrative boundaries	General Directorate of Cities Administration
		Governorships
Properties	Properties	General Directorate of Land Registry and Cadastre
Address Data	Address Data	Municipalities
Orthoimages/ Orthophotos	Orthoimages/ Orthophotos	General Command of Mapping

Feature Category	Feature(s)	Responsible Institution(s)
Planning & Project Regions	Region Plan	General Directorate of Forestry
	Environment Plan	Special Environment Protection Committee
	City Environment Plan	Governorships, Municipalities
	Public Works Plan	
Restricted & Security Areas	Restricted Areas Security Areas	Ministry of National Defence
Protected Areas	Urban Protected Areas	General Directorate of Environmental Protection & National Parks
	Special Environmental Protected Areas	
	Historical – natural Protected Areas	
	River Basin Protected Areas	General Directorate of Water Works, Municipalities

Feature Category	Feature(s)	Responsible Institution(s)
Infrastructure Networks	Drinking Water Network	General Directorate of Agriculture & Rural Affairs, Municipalities
	Sewerage Network	ILLER BANKASI, Municipalities
	Communication Network	TURK TELEKOM, General Directorate of Wireless, PTT
	Electricity Network	TEDAS
	Geothermal Water Network	General Directorate of Mineral Research & Exploration
	Petroleum Pipe Network	General Directorate of Petroleum Works
	Natural Gas Network	Ministry of Energy and Natural Resources
Geologic Data	Underground Resources	General Directorate of Mining Affairs
	Geologic Formations, Faults	General Directorate of Mineral Research & Exploration
	Tectonic movements	General Directorate of Disaster Affairs

Collaboration in international projects: VMAP Level 1, SABE, EuroGlobalMap, GeoNames.

2.4.3 Geodetic reference systems and projections

There are three different types of reference frames: Local, ED-50, TUTGA (National Primary GPS Network of Turkey).

2.4.4 Language and culture

Web sites are in Turkish language. Only the GCM-web site was found to contain a summary in English.

2.5 Component 4: Metadata

The GCM website <http://www.hgk.mil.tr/english/english.htm> provides a description of the offered analogue and digital products.

According to GISEE (2004), metadata are available for a significant part of the major geodatasets. These are however mostly not according to some standard. Few are available on-line.

2.6 Component 5: Network Services

The GCM website <http://www.hgk.mil.tr/english/english.htm> provides a description of the offered analogue and digital products. GISEE mentions this web site as the most comprehensive geo-portal in Turkey.

A web portal will be created to enable governmental institutions to present the geospatial information via a common infrastructure. To start in autumn 2006.

2.7 Component 6: Thematic environmental data

No consistent information has been found nor provided.

3 Annexes

3.1 List of SDI addresses / contacts for Turkey

Table: SDI contact list			
SDI Name (full)	Web address	Organisational mailing address	Over-all contact person: tel./fax/e-mail
National			
General Command of Mapping (GCM)	http://www.hgk.mil.tr/	htastan@hgk.mil.tr	Hayati TASTAN
Prime Ministry State Institute of Statistics (SIS)	http://www.die.gov.tr/ENGLISH/index.html		
General Directorate of Cadastre and Land Registry (GDCLR-	http://www.tkgm.gov.tr/tapune/atkgmgovtr/index.htm		
Ministry of Public Works and Settlement (MPWS)	http://www.bayindirlik.gov.tr		
SAGRES under Istanbul Technical University ITU .	www.itu.edu.tr		

3.2 List of references for Turkey

Table: list of references used to compile the Country Report	
Web sites:	
	http://www.privacyinternational.org/survey/phr2002/phr2002-part3.pdf
	http://test.ddl.org/figtree/events/fig_2002/fig_2002_abs/Ts8-1/TS8_1_turk_abs.pdf
	http://www.toprak.org.tr/isd/isd_02.htm
	http://www.lmu.jrc.it/ginie/doc/ginie_book.pdf
Publications:	
	M. Craglia and J. F. Dallemand: Geographic Information and the Enlargement of the European Union. EUROGI-European Commission Workshop. Brussels, 16-17/11/2000. Technical Report. EUR 19824 EN http://www.ec-gis.org:8080/wecgis/docs/F22346/IMPAGINATO.PDF

	Spatial Data Infrastructures in South East Europe, Country Report Turkey (GISEE deliverable D 4.2.1TR), GISEE Consortium, May 2004

Other possible information sources	Web sites:
	http://www.privacyinternational.org/survey/phr2002/phr2002-part3.pdf
General Command of Mapping (GCM): Topographic Databases (1:25.000, 1:250.000, 1:1 million)	http://www.hgk.mil.tr/
Mine Technical Resource General Administration MTA: Geologic Maps (Geologic Databases)	http://www.mta.gov.tr/jeoloji/RS/urunler.html
Ministry of Agriculture, GIS and RS Center: Turkish Agriculture Information System Project.	http://www.tarlabitkileri.gov.tr/english/cografi_bilgi_s.htm
General Directorate of Cadastre and Land Registry (GDCLR): Cadastre and Land Registry Information System Project	http://www.tapu.gov.tr/tapu/takbis.html
Prime Ministry: National Information System	http://www.bybs.gov.tr/kitap/ubs_kitabi/index.htm
Ministry of Internal Affairs (MIA): Turkish Disaster Information System (TABİS)	www.icisleri.gov.tr/strateji/download/diger/genelge.htm
General Directorate of Forestry (GDF): Source of Forestry Information System	http://www.ogm.gov.tr/birim12.htm
General Directorate of Highway: Highway GIS	http://www.netas.com.tr/cs_NNN_turk_4.html
General Directorate of Village, Source of Soil and	http://www.tb-yayin.gov.tr/turktarim/sayi144/kapak08.htm

Water National Information Center: Soil Database (1:25.000), Rural and Agriculture Infrastructure Database (1:250.000), Turkish General Soil Map (1:1 million), Land Cover and Land Use Database (1:25.000)	
General Directorate of National Property National Property Automation Project	http://www.milliemlak.gov.tr/projelerimiz/meop/meop.htm
Ministry of National Defense Property Information System	http://www.msb.gov.tr/Birimler/InsEmlD/InsEmlDEmlIskanFaal.htm
Ministry of Environment (ME) National Environment Database	http://www.tai.com.tr/homepage.swf
	http://test.ddl.org/figtree/events/fig_2002/fig_2002_abs/Ts8-1/Ts8_1_turk_abs.pdf
	http://www.toprak.org.tr/isd/isd_02.htm