THE ROLE OF SDI IN SPATIAL PLANNING

Ebru Alarslan
Çetin Cömert

INSPIRE Conference 23-27 June 2012, İstanbul
OUTLINE

- Importance of SDI
- Dynamics of NSDI
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- The State of Play in Turkey
- Effectiveness in Spatial Planning Requires SDI
- Guidance by Inspire Directives
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- Overall Assessment & Recommendations

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IMPORTANCE of SDI

In modern cities, SDI is inevitable in sustainable urban management with a view to supplying rapid, high quality, and efficient services.

DYNAMICS of NSDI

- NSDI can be described as an infrastructure to enable the interoperability among public institutions, private companies, local authorities, and all relevant users of SDI as well as to provide the easy and quick access to data and services for the citizens and aforementioned groups.

- Interoperability requires communication and interaction among various systems having different hardware and software installations.

- NSDI Actors/Stakeholders can be grouped into suppliers and users, e.g. The General Command of Mapping is an supplier, Universities are users, Municipalities are both suppliers and users.

- Services of NSDI are main procedures for process, analysis, and provision of spatial data.

- In NSDI, there is no central unit for data generation and distribution. All actors/ stakeholders are responsible for generating and updating their own relevant data and services as well as providing them via NSDI.

(Comert & Sahin, 2012, "Urban Information Systems")
SDIs can be managed by various sets of spatial data at the local (urban), marine, and national levels. Each set represents an individual SDI which covers sub SDIs.


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The NSDI scene in Turkey has been fragmented for a long time.

While various institutions have been producing spatial data, only some of them contribute to the spatial data infrastructure in Turkey.

Over the past years, several initiatives were taken to develop components of the NSDI and to implement INSPIRE.

More recently, the Ministry of Environment & Urbanization began coordinating the implementation of the INSPIRE Directive & SDI at the national level.

The Ministry runs two main projects: Turkish NSDI and Urban Information Systems.
A CASE STUDY: Yalova

POPULATION: 202,531
AREA: 847 km²
LOCATION: A coastal city at the Marmara Sea
WELL KNOWN AS: Touristic & thermal facilities

(Alarşlan, 2009, “Disaster Resilient Urban Settlements”)
Why Yalova as a Case Study?

- Lessons learnt after 1999 earthquakes
- Willingness of local authorities for the revival of Yalova
- Variety of spatial plans such as master plans, coastal plans, natural conservation area plans
- A need for a Disaster Mitigation Plan
SPATIAL PLANNING PROFILE OF YALOVA-I

- **1982:** Cinarcik-Yalova-Karamürsel Master Plan, 1/25 000 scale, approved by the Ministry of Public Works & Settlement
- **2002:** The plan was cancelled on the ground that it no longer responded to needs of the settlement.
- **2002:** The Ministry approved a frame of principles to provide guidance to municipalities in preparing spatial plans in Yalova (which explains principles and standards of spatial plans).
- **After 1999 earthquakes:** 1/5000 and 1/1000 scale plans were prepared by the Ministry for new settlements areas for citizens who were prone to the disaster.

**After 2004:**
- **8.6.2007:** 1/25 000 scale plan was approved in coordination with the Municipality of Yalova and the Provincial General Council.
- **8.8.2008:** The Ministry of Public Works & Settlement also prepared and approved 1/50 000 scale plan for Yalova and the Izmit Gulf area. The plan was prepared with a view to the concept of Integrated Coastal Zone Management along Izmit Gulf and Yalova coastal areas. It sets out main policies and principles for land uses in the region concerned (PLAN IS CANCELLED IN ACCORDANCE WITH THE COURT DECISION).

- The Ministry of Public Works and Settlement was responsible for organizing temporary and permanent housing works in the wake of the 1999 earthquakes. Thus, the Ministry also approved the relevant implementation plans in 1/5000 & 1/1000 scales.
The Ministry of Public Works & Settlement approved various coastal area plans (including quays, naval docks, marinas) in 1/1000 scale on the basis of its authority under the Coastal Law (Law No.3621).
CHAOS IN SPATIAL PLANNING AMONG THE CENTRAL INSTITUTIONS:

- Authorities obtained new planning authorities by the Law Provincial Special Authority (Law.No. 5302 issued in the official gazette of 4.3.2005, no. 25745).


- The Ministry of Culture & Tourism has obtained new planning authorities by an amendment of the Law of Promotion of Tourism (Law.No. 2634) in 24.7.2003. By this amendment, the Ministry of Culture & Tourism now has a planning authority for “tourism centers” and “regions for protection and development of tourism”. In Yalova, two areas were declared as tourism centers by the Ministry of Culture & Tourism via official gazette of 16.12.2006, no.26378. These tourism centers are “Yalova (Center) Thermal Tourism Center” and “Yalova-Armutlu Thermal Tourism Center”. The Ministry of Culture & Tourism approved two tourism master plans in these two tourism centers in 25.12.2006.

As the oldest planning authority, the Ministry of Public Works & Settlement published a circular in 2008 to provide guidance to central and local planning authorities in the case of confusion about plan changes or preparations.
PROBLEMATIC AREAS OF SPATIAL PLANNING IN YALOVA

- **P1:** Time consuming planning processes
- **P2:** Litigations
- **P3:** Conflicts among various planning authorities
- **P4:** Difficulties in bringing local plans in complying with larger scale plans
- **P5:** Implementation and Control
- **P6:** Difficulties to integrate risk mitigation methods
WHAT CAN SDI PROVIDE FOR SPATIAL PLANNING?

- **S1:** Saving time and relevant resources in preparation, ratification, and announcement processes of spatial plans
- **S2:** A reliable spatial data archive for updating & exchanging the data
- **S3:** Interoperability among various planning authorities requires a standard for metadata
- **S4:** Minimizing problems in implementation of plans
- **S5:** Better opportunity to control and audit developments
- **S6:** Providing opportunity to integrate disaster mitigation issues into spatial plans
IS THE INSPIRE DIRECTIVE ABLE TO HELP?

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GUIDANCE BY INSPIRE METADATA & INTEROPERABILITY REGULATIONS-I


- Identification (resource)
- Classification of spatial data & services (topic, service type)
- Keyword
- Geographic Location
- Temporal Reference (date of publication, revision, creation)
- Quality & Validity
- Conformity
- Constraint related to Access & Use
- Responsible Organization
- Metadata of Metadata
GUIDANCE OF THE INSPIRE METADATA & INTEROPERABILITY REGULATIONS-II


- The technical arrangements for interoperability of spatial data sets, including the definition of code lists to be used for attributes and association roles of spatial object types and data types.

- The Ministry of Environment & Urbanization initiated a study on developing and updating of legends for spatial plans at the country level. This study should be synthesized with the requirements of above directive (2010).
INTEGRATION OF DISASTER MITIGATION ISSUES INTO THE SPATIAL PLANS VIA SDI

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EARTHQUAKE RISKS IN YALOVA-I

Seismic Risks

- Relatively short reoccurrence period
- Plenty of fault lines (in the system of North Anatolian Fault Line)
- Soil liquefaction and land amplification factors

Source: (Earthquake Hazard Map of Turkey) Turkish Ministry of Public Works & Settlement-General Directorate of Disaster Affairs

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EARTHQUAKE RISKS IN YALOVA-II

Urban Risks

- Land-use and building norms
- Inaccurate implementations of developers and building contractors
- Misapplication of local authorities
- Inadequacy in institutional and public awareness


2505 casualties and 5937 injuries was recorded in the Eastern Marmara Earthquake on 17 August 1999 with a 7.4 magnitude.
After the 1999 Earthquake, the earthquake risk maps were prepared based on the satellite image of Yalova.
The 3D terrain modelling based on satellite image will especially be helpful in the coastal monitoring in Yalova.
DISASTER MITIGATION IN YALOVA BY USING GI TECHNOLOGY -III

The Tsunami Risk Map is recently prepared by using ASTER GDEM data (with an assumption of 6m-height-wave)

- ZONES
- Red: Heavily affected
- Orange: Moderately affected
- Yellow: Slightly affected
- Green: Safe zones with a minimum effect

SOURCE: Prepared by GGS GmbH

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OVERALL ASSESSMENT & RECOMMENDATIONS

1. Preparing reliable analytical maps before the preparation of the plan
2. Defining clearer boundaries of various land-use areas
3. Facilitating integration of disaster mitigation issues into the spatial plan such as micro-zoning
4. Providing a clear base map to monitor and control the development in the settlement
THANKS FOR YOUR INTEREST
&
WELCOME YOUR COMMENTS
CONTACTS

- Prof. Dr. Çetin Cömert
  The Technical University of Blacksea, Graduate School of Geodesy and Photogrammetry Engineering, Trabzon, TURKEY
  E-mail: ccomert@ktu.edu.tr

- Dr. Ing. Ebru Alarslan
  The Ministry of Environment & Urbanization, Ankara, TURKEY
  E-mail: ebrua@csb.gov.tr, ebrualarslan@yahoo.com

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