Importance of a real estate cadastre as the basic, reference public register in the sustainable country development

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POLAND
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Substantial and legal modifications of Spatial Information Systems in Poland

Public administration bodies, which maintain public register are obliged to commence the following services:

- searching
- reviewing
- collecting
- processing
- dissemination

All of services must be activated using electronic data
Regulation of the Polish Government, on April 12, 2012 – National Interoperability Frameworks specified:

- the National Interoperability Frameworks;
- the minimum requirements for public registers and exchange of information in electronic form;
- the minimum requirements for tele-information systems.

Following the Act on the Spatial Information Infrastructure of 2010, which is the Polish implementation of the INSPIRE directive:

“interoperability of data files and spatial data services is understood as the possibility to combine spatial data files and co-operation of spatial data services, without the repeated manual intervention, leading to the coherence of results and the increased added value of spatial data files and services”
Interoperability in new legal regulation

**Interoperability** should be achieved through:

- **unification**
  (utilisation of compatible standards, norms, procedures performed by public tasks)

- **exchangeability**
  (possibility to substitute a product, a process or services without disturbing information exchange between entities, which perform public tasks)

- **compliance**
  (usefulness of products, processes or services dedicated to common utilisation, under specific conditions, which ensure the achievement of important requirements, with the lack of unexpected impacts)

Cadastral Parcel in Polish National Interoperability Frameworks

**Cadastral parcels** (and the address point) are the basic spatial reference object for public registers.

- these both objects have been legally defined in the Law of Geodesy and Cartography, being the basic legal act in the field of geodesy and cartography.

- such regulations existing in the legal acts stress the high importance of geodesy and cartography, increase professional prestige of surveyors and cartographers.
Responsibility of surveyors and cartographers in new legal regulation

Geodesy and cartography in Poland is responsible for:

1. Coverage of the country by land and buildings registers databases (EGiB)
2. Uniformity of the existing cadastral databases
3. Meeting the accuracy criteria of the existing cadastral databases
4. Quality of the existing cadastral databases
5. Reliability of the existing cadastral databases
6. Timeliness of the existing cadastral databases
7. Interoperability of the cadastral databases
### General data about Poland

<table>
<thead>
<tr>
<th>List</th>
<th>No.</th>
<th>Cities</th>
<th>Rural areas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of register units</td>
<td>3</td>
<td>925</td>
<td>2175</td>
<td>3100</td>
</tr>
<tr>
<td>Number of register districts</td>
<td>4</td>
<td>11250</td>
<td>42726</td>
<td>53976</td>
</tr>
<tr>
<td>Number of cadastral parcels</td>
<td>5</td>
<td>7359788</td>
<td>28010249</td>
<td>35370037</td>
</tr>
<tr>
<td>Number of land register units</td>
<td>6</td>
<td>4302503</td>
<td>10111032</td>
<td>14413535</td>
</tr>
<tr>
<td>Size in hectares register</td>
<td>7</td>
<td>2156870</td>
<td>29086990</td>
<td>31243960</td>
</tr>
<tr>
<td>Size in hectares surveyed</td>
<td>8</td>
<td>2127819</td>
<td>29109918</td>
<td>31237737</td>
</tr>
<tr>
<td>Estimated number of buildings</td>
<td>9</td>
<td>5583598</td>
<td>11769519</td>
<td>17353117</td>
</tr>
<tr>
<td>Estimated number of premises</td>
<td>10</td>
<td>4523727</td>
<td>703155</td>
<td>5226882</td>
</tr>
</tbody>
</table>

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**Modernisation of land and buildings cadastre - statistical data**

**Complete information on lands, buildings and premises - descriptive part, as on December 31, 2010 and December 31, 2011**

**Cartographic part of documentation of the land and buildings register - statistical data**

<table>
<thead>
<tr>
<th>No.</th>
<th>Data file which characterises current development of the land and buildings register</th>
<th>Urban areas</th>
<th>Rural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A vector cadastral map, complete content, containing: borders of cadastral parcels, outlines of land use fields, classification complexes, outlines of buildings</td>
<td>91 %</td>
<td>60 %</td>
</tr>
<tr>
<td>2</td>
<td>A vector cadastral map, incomplete content, containing: borders of cadastral parcels, outlines of land use fields, classification complexes</td>
<td>1 %</td>
<td>10 %</td>
</tr>
<tr>
<td>3</td>
<td>A raster map, amended in the process of updating with vector data</td>
<td>2 %</td>
<td>10 %</td>
</tr>
<tr>
<td>4</td>
<td>Analogue map</td>
<td>6 %</td>
<td>20 %</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>100 %</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

Source: GUGiK: Report on the real estate cadastre and its modernisation, GUGiK 2011

**Financial means for cadastral data**

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From the state budget [zł]</td>
<td>From the district own funds [zł]</td>
<td>From other funds [zł]</td>
<td>Total financial inputs incurred on modernisation within the reporting year 2011 [zł]</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>25,047,237</td>
<td>39,998,076</td>
<td>20,698,938</td>
<td>85,744,251</td>
<td></td>
</tr>
</tbody>
</table>

Source: GUGiK: Report on the real estate cadastre and its modernisation, GUGiK 2011
2. Uniformity of the existing cadastral databases

The land and buildings registers are maintained in Poland by 438 administration bodies, including:

- 378 starosts (heads) of districts and mayors of cities with rights of districts,

- 60 mayors or presidents of cities.

Based on the same legal acts but partly they are maintained not in uniform way.
### Diversity of IT system of land and buildings register

- About 10 systems are used to maintain the **descriptive** parts;
- About 10 systems are used to maintain the **graphical** parts;
- The systems for **descriptive and graphical parts are seldom integrated**.
- In majority of cases **two separate systems** are used for the descriptive and the graphical parts.
- Those two systems are often developed and delivered by various software developers.
- Data exchange between the systems is difficult, although the legally issued standard of data exchange (SWDE) exists.

### Integrated Real Estate Information System (ZSIN) - new legal regulation

#### The ZSIN system it to ensure:
- **maintenance** of the central repository of backup files with land and buildings register data;
- **monitoring** - at the national and voivodship levels - the coherence and the quality of land and buildings register data;
- **data exchange** in the form of electronic documents, **between the land and buildings register and other public registers**;
- **verification of the compliance** of land and buildings register data with data included in property registers and other public registers;
- **dissemination** of integrated land and buildings register data to administrative bodies, among others for the needs of economic planning, spatial planning, the environment, for fiscal purposes, for state inspections, fighting against corruption and internal security.

*Maybe it will be solution of the problems listed*
Accuracy criteria of the cadastral databases

According to the law, geodetic topographic surveys are performed in such a way that location of a topographic point, considering the closest points of a horizontal network and a measurement network is specified with the accuracy not lower than:

- 0.10 m - in the case of terrain details of the I group;
- 0.30 m - in the case of terrain details of the II group;
- 0.50 m - in the case of terrain details of the III group.

The majority of objects of the cadastral documentation are included in the I group, including terrain details, which are explicitly identifiable in the field, which preserve permanent shapes and locations, in particular:

- symbols and border points,
- geodetic marks,
- constructions and building installations,
Accuracy criteria of the cadastral databases

Cadastral databases does not reflect the level of achieving the accuracy criteria, concerning the spatial location of particular objects.

Cadastral databases are:

- the result of many public procurements,
- implemented for various purposes
- many databases have been created as a result of vectorisation of existing analogue databases and not as a result of modernisation works, with consideration of accuracy criteria concerning the spatial locations of cadastral objects

The exchange of such objects is required in the course of modernisation of cadastral documentation, what could lead to such situation when those objects would meet the accuracy criteria, specified in regulations.

Without the deep analyses of the existing databases and the resources stored at Geodetic and Cartographic Documentation Centres it is very difficult to estimate the percentage of databases, which are maintained in the vector form and which meet the accuracy criteria.
QUALITY OF THE EXISTING CADASTRAL DATABASES

The quality of the existing databases is related to the achievement of uniformity and accuracy criteria.

- The high accuracy should not be expected for databases, which are not uniformly maintained and which do not meet the accuracy criteria.

All modernisation works, performed recently, which are often covered by the EU funds, pay much attention to the accuracy criteria.

- Projects concerning modernisation of the land and buildings register documentations are well prepared nowday;

- they are focused on the accuracy of locations of spatial cadastral objects and on the achievement of legal requirements concerning cadastral objects. Legal status of real estate is also settled in this process.
Data from the land and buildings register is the **basis for the national spatial information infrastructure**.

The land and buildings register is also permanently updated, including 100% of the **descriptive part** of the documentation of the land and buildings register.

What refers to the **cartographic part** of the cadastral documentation, reliability of cadastral data should be considered as data of limited reliability, due to the above mentioned reasons (the accuracy, quality, timeliness, etc.).
6. Timeliness of the existing cadastral databases

<table>
<thead>
<tr>
<th>Timeliness of the Existing Cadastral Databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to the Regulation on cadastral, the documentation of the land and buildings register is updated through introduction of documented changes to the cadastral databases.</td>
</tr>
</tbody>
</table>

This documentation is updated in order to:

- **disclose** new legal and real status,
- **eliminate erroneous data**, which are incompliant with the real status,
- **substitute data which does not meet the accuracy criteria and standards**, with data which is compliant with standards and accuracy requirements.
TIMELINESS OF THE EXISTING CADASTRAL DATABASES

- The majority of bodies which maintain the documentation of the land and buildings register updates this documentation immediately after receiving appropriate documents.

- Such updating usually concerns the descriptive part of the cadastral documentation.

- The cartographic part is permanently updated for analogue maps, if it is has not been computerised and if it is not maintained in the digital form.

- If it is maintained in the digital form, it is permanently updated in the case of utilisation of integrated systems for maintaining the cadastral documentation, since the permanent updating is usually forced by such systems.

- In the case when integrated systems are missing, data from the descriptive and the graphical parts of the cadastral documentation is often incompetent.

- The lack of complete and legally binding computerisation of the cadastral documents does not allow for keeping it updated on official and legally accepted portals, such as GEOPORTAL.

- Data acquired once has not been accepted by the bodies which maintain the cadastral documents to the resources, and therefore, it has not been updated by those bodies.

There is no possibility to update most of the cadastral data, until it is modernised.
Databases are updated and maintained in such a way that the interoperability of data files stored in these databases and related services are ensured, as it is understood by the act of March 4, 2010 on the spatial information infrastructures.
In this section, we discuss the interoperability of the cadastral databases. The main focus is on the Land and building register (estate cadastre) and its various users and sources.

- **Mortgage deeds**
- **Property register**
- **Surveys**
- **Public statistics**
- **Interested individuals**
- **Ministries**
- **Real estate management**
- **Institutions** (including ARiMR)
- **Legal entities** (PKP, GDDKiA, others)
- **Aerial and satellite images**
- **Laser scanning**
- **Municipalities**
- **Other sources** (including AMMA)

**Land and building register (estate cadastre)**

**Public statistic**

**Users of the cadastre**

**Remaining…**

**Spatial planning**

**Taxes**

**Surveyors**

**Real estate taxation**

**Agency for Restructuring and Modernisation of Agriculture**

**DVM source (cadastral data, orthophotomap, topographical data)**
INTEROPERABILITY OF THE CADASTRAL DATABASES

Own source (cadastral data, orthophotomap, topographic data)

Source GUGiK
It is because:

- objects are not integrated in particular databases
- databases were created in various time, basing on various source data, technical conditions, projects, demands etc.,
- spatial objects (such as rivers, roads) has changed their natural routes with respect to periods when the cadastral documentation was developed,
- objects were generalised at the database level; their geometric descriptions were changed, what results in creation of an object which spatial description varies from the original.
The basic obstacle for modernisation works is connected with:

- **insufficient** amount of funds
- **legal and technical difficulties** (e.g. cadastre after partitioning of the country)
- **source data of poor quality**, concerning the register of land and buildings, which exist in various parts of the country
- data included in public registers, also in the documentation of the land and buildings registers, is **not fully interoperable and integrated**

Complex modernisation of the cadastral documentation, as the basic public register, should be urgently performed.

**The cadastral register may be the basis for the spatial information infrastructure only when it is computerised and meets the legal requirements.**

The only possible way to achieve the full functionality of the land and buildings register, which would become the updated, reliable and interoperable register, meeting the technical requirements of the public register, is to **perform its complex modernisation.**
The following elements are required for integrating the land and buildings register with other public registers and for ensuring their interoperability:

- organisational changes
- time
- funds

According to the report of GUGiK:

-due to insufficient funds, which may be used by district authorities,
-wide scope of tasks which should be solved by these authorities

The date of completion of the process of modernisation of the land and buildings register for the entire country may be delayed without the financial support from the state or from the EU funds.

This will have the negative impact on those sectors of economy which utilise data from the cadastral databases.
Thank you for your attention

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