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Current status of real estate cadastre in Poland with reference to historical conditions of different regions of the country

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Abstract

The objective of the paper is summarizing the present state of the real estate cadastre in Poland, based on three examples of three voivodeships (provinces): Małopolska (Lesser Poland), Dolny Śląsk (Lower Silesia) and Podlasie. These voivodeships represent these areas of Poland, in which historic resource of surveying and cartography was made according to three different principles. These principles were connected with the state of the partition of Poland between three neighbouring countries, because of that, in Poland we can talk about the former partition of Austria, Prussia and Russia. This way the Małopolska voivodeship is the former areas of Austria, Dolny Śląsk – Prussia, while the Podlasie voivodeship represents the former Russian partition.

In recent years one of the most important tasks carried out by surveying and cartography services is complex modernization of the inventory of land and buildings (Polish abbreviation: EGiB), carried out in a digital. In the article the selected surveying documents making base for the modernization of EGiB, are discussed. They are used to solve the implementation and legal problems of real estate cadastre. Legal conditions were discussed. Since the end of the World War II these conditions changed dynamically in Poland.

The significant element of the article is comparing the results of the data in numbers and data in percentage, characterizing the state of the advancement of modernization of real estate cadastre in particular voivodeships, representing the areas of three partitions.

The comparison of these results enabled the formulation of the relationship between the present state of advancement in the modernization of the inventory of land and buildings in the voivodeship, and geographic and historical conditions of the regions, for which the data was collected.

Keywords: Real estate cadastre; vector cadastral map; modernization of the register; history of the cadastre in Poland.

1. Introduction

According to the International Federation of Surveyors (FIG) and their definition formulated in 2011 at the Third Cadastral Congress “Cadastral in the sustainable management of space”, cadastre is an up-to-date land information system based on parcels, containing a record of property rights to land. It usually includes a geometric description of parcels of land in connection with other registers describing the nature of these rights, as well as frequently the values of the plots and their changes.

In the Polish legislation, the Geodetic and Cartographic Law [1] in article 2 clause 8, land and buildings register (EGiB) is considered to be the same as real estate cadastre, which terms are defined therein as “*EGiB (real estate cadastre) - a uniform for the country, regularly updated set of information about the land, buildings and dwellings, their owners and other natural or legal persons in possession of this land, buildings and dwellings*”. The provisions of article 53a of the Geodetic and Cartographic Law state that: “*until the conversion of the land and buildings register into the real estate cadastre, by the term “cadastre” this register is meant*”.

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After Poland regained its independence in 1918, there existed two main land cadastre systems on its territory, as shown in Figure 1. In western and northern territories it was the Prussian cadastre, and in the southern territories – the Austrian cadastre. Both of these systems occupied about 54% of the country, including 14% of the Austrian cadastre (green in Fig. 1), and 40% of the Prussian cadastre (blue in Fig. 1). On the territory of the former Russian annexation sector presented in Figure 1 in white, there was no record or cadastral system, whatsoever.

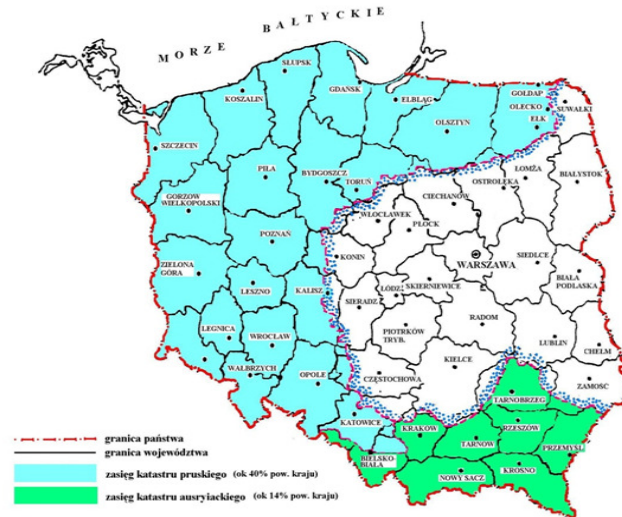


Fig. 1. Historical cadastral systems in Poland

Cadastral maps and registers of both of these cadastral systems have been used in a variety of surveying works, and above all, for the establishment of post-war uniform land records. They were used as source documentation or as technical support materials. Both in the Prussian and Austrian cadastres there existed a compliance of the real estate data with its land and mortgage registers (KW). There was, however, a different nomenclature system. In the Prussian cadastre, the basic unit for which data was entered was – as currently in Poland – a plot, whereas in the Austrian cadastre it was a “parcel”, which corresponds to the contemporary usable land in the plot. Therefore, if within a plot were several usable lands, such as a forest and a meadow, those lands in the Austrian cadastre made up two parcels, had their distinct numbers and areas shown in the cadastre.

2. History of legal acts related to real estate cadastre in Poland

Since the end of World War II in Poland there have been numerous mandatory legal acts regulating the running of the real estate cadastre. They will be presented in the order of their appearance:

- Decree of 30 March 1945 on the measurements of the country and the organization of metrology [2]. The works on running the land cadastre were entrusted to the appointed Head National Measurement Office, whose first president was Jan Piotrowski.
- Decree of 24 September 1947 on the cadastre of land and buildings [3]. This decree introduced a unified cadastre of land and buildings across the whole country, using the existing materials, including land registry documents from the former annexations.
- The Regulation of the Minister of Construction of 6 December 1950 on the procedure for organizing, establishing and running the cadastre of land and buildings. [4].
- Decree of 2 February 1955 on land and buildings register [5]. Pursuant to this decree, land and buildings register was established. The basic element of this register was a plot, for which it was necessary to determine: location, boundaries, area, types of land and classes and the possessor. The Decree of 1955 imposed an obligation to update the maps and documents that were approved to establish land records. The process of updating was carried out by means of field measurements, an accurate examination of the possession status, as well as conducting and taking into account soil classification. This Decree entrusted the task of establishing the register to the ministers of agriculture and public utilities.
- Regulation of the Minister of Agriculture and Public Utilities of 20 February 1969 on the land records [6].
- The Act of 26 October 1971 on regulating the ownership of farms [15].

In 1975, the responsibility for any matters relating to land records was taken over by Head Office of Land Surveying and Cartography (GUGiK). An analysis and assessment of the existing land records was conducted, which were established for about 91% of the cities, but their degree of economic usefulness was varied. The process of modernization of land records was continued for the urban areas, in order which was dependent mainly on the basic map updates.

Currently, the legal basis for running the register of land and buildings (the real estate cadastre) is the Act of 17 May 1989, the Geodetic and Cartographic Law (PgiK) [1].

The first secondary legislation to the Geodetic and Cartographic Law was the Regulation of the Ministers of Spatial Planning and Construction, as well as of Agriculture and Food Economy of 17 December 1996 on the register of land and buildings [7], issued on the basis of article 26 section 2 clause 1 of the Pgik. This Regulation was innovative and formed the first step towards the establishment of the real estate cadastre in Poland.

The secondary legislation to Pgik, which is currently in force, is the Regulation of the Minister of Regional Development and Construction of 29 March 2001 on land and buildings register (Polish abbreviation: EGiB) [8], amended by the Regulation issued on 16 December 2013 by the Minister of Administration and Digitization, amending the Regulation on the register of land and buildings [9].

The issues related to the running of the real estate cadastre in Poland are also included in the Regulation of the Council of Ministers of 17 January 2013 on the Integrated Real Estate Information System (ZSIN) [10].

3. Real estate cadastre as an object - relational database

It should be noted that in 2010 Poland changed its approach to the running of EGiB, due to the introduction of the provisions of the Law on Spatial Information Infrastructure (IIP) [11] and the Regulation of the EU Commission No. 1089/2010 of 23 November 2010 on implementing the Directive 2007/2/WE of the European Parliament and of the Council, regarding the interoperability of the sets and services of spatial data [12].

Then, in article 4 of the Geodetic and Cartographic Law, section 1a appeared, which specified that database was set up and run in the ICT system for the whole country. The database includes spatial data sets of spatial information infrastructure regarding, inter alia, the register of land and buildings (the real estate cadastre).

The register of land and buildings plays a key role in the spatial information infrastructure; its main purpose is to combine sets of spatial data collected by various public entities for common use by various public authorities. It covers the whole country, but the basic area objects, or cadastral units, cadastral areas, precincts and cadastral parcels, fill in the whole area of the country in a topologically consistent manner. EGiB is kept in an electronic form, in a formalized way, by public authorities. Register database resources are constantly updated. Spatial data sets contained in EGiB, including collections of data on parcels of land, as well as buildings and dwellings, form the basis for creating and managing other databases, such as the State Register of Borders (PRG), Records of Towns, Streets and Addresses (EMUiA), Topographic Objects Database (BDOT10k, BDOT 500), Geodetic Register of Utilities Networks (GESUT), and ultimately the Register of Real Estate Prices and Values (RCiWN).

3.1. The current role of the real estate cadastre in Poland

Data contained in the register of land and buildings (the real estate cadastre), in accordance with article 21 section 1 of the Pgik, form the basis for economic planning, spatial planning, assessment of taxes and benefits, designating real estate in land and mortgage registers, public statistics, real estate economy and records of farms.

The elementary structural object of the existing model of the real estate cadastre in Poland is a parcel of land, as defined in § 9 section 1 of the Regulation on the cadastre of 2001, which has remained unchanged in the currently amended regulation as *“a continuous area of land situated within one cadastral unit, homogeneous in legal terms, separated from the surrounding area by means of boundary lines”* [8].

The parcel is treated as an identifiable cadastral object, the external unique identifier of which can not be changed during the life cycle of the spatial object. Thus the parcel forms the basis for all relations built in the register, both simple and complex ones, between subject and object data collected in the real estate cadastre. It is the notion of the cadastral parcel which associates other information and data relating to the description of the subject itself, property rights, as well as data relating to the individuals who are entitled to those rights. Cadastral parcel is therefore an identifiable unit of the area, to which certain characteristics have been assigned, and also a set of record data has been described, defining these features. These data are called attributes.

3.2. The quality of the real estate cadastre in Poland

Real estate cadastre is seen as an institution that aims to ensure legal order of land, in particular to the extent necessary to unambiguously determine the scope of rights, as well as give a sense of security, resulting from the fact of subject entries revealed in the register, and the opportunity to assert claims in the course of registration proceedings. Social expectations associated with the institution of the cadastre, unfortunately, do not mean that this register actually fulfills the functions which are attributed to it. The quality of the data collected in the cadastre, resulting both from the adopted legal and technological solutions, verifies this assumption. A common inability to unambiguously identify in the field the extent of the rights to subdivided cadastral parcels which are revealed in the cadastre, remains incomprehensible for the public and makes the institution of real estate cadastre lose its significance.

4. The progress in EGİB modernization on the example of three provinces

The progress in EGİB modernization in the analyzed provinces will be presented against the background of national data. Due to some restrictions as to the volume of this study, a comparison will be limited to a graphical part of the land and buildings register, or the cadastral map. As it has been shown in Table 1 and Figure 2, there is substantial variation between urban and rural areas. In urban areas, the status of modernization is far greater. This trend applies both to the entire territory of Poland, as well as to individual provinces.

Table 1. Cadastral map in Poland

Graphical part of the cadastre	Urban areas	Rural areas
Cadastral map in vector format	92%	72%
Cadastral map in raster format	2%	8%
Cadastral map in analog format	6%	20%

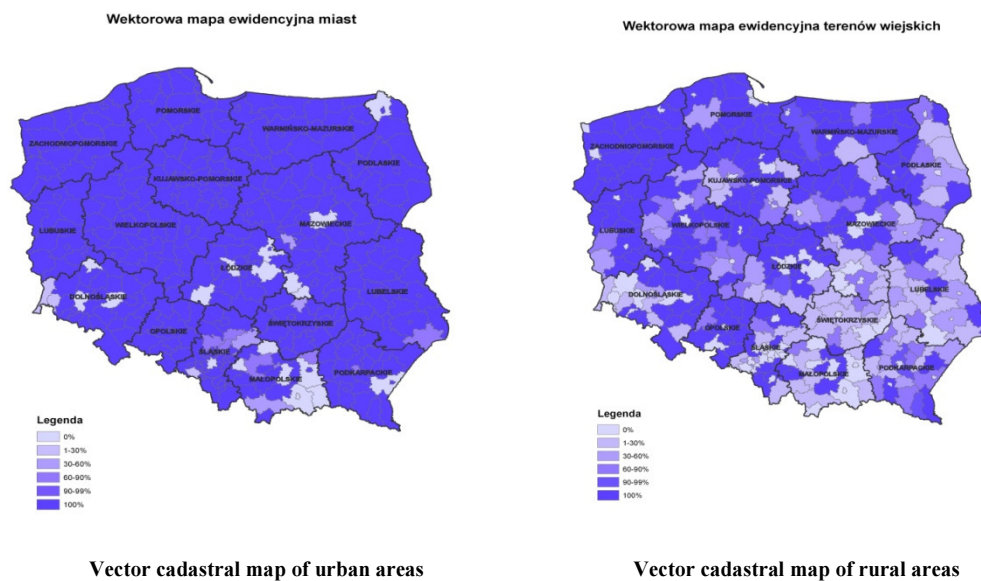


Fig. 2. Degree of coverage with vector cadastral map in Poland

Figure 3, in the form of a diagram, illustrates the results from Table 1 for the rural areas in Poland.

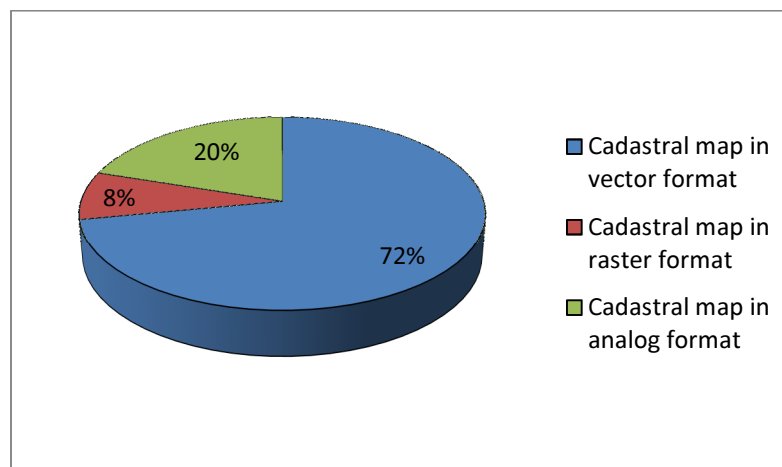


Fig. 3. Degree of coverage with vector cadastral map in rural areas in Poland

4.1. The province of Lower Silesia

After Poland regained independence in 1918, in the western and northern territories there existed the Prussian cadastre. It was established in the years 1861–1864, under the tax laws of 1861. To prepare cadastral maps, maps from the classification surveys conducted in the years 1785–1794, from the surveys of forests, as well as from regulation surveys conducted in the years 1810–1860 were used. Prussian cadastral survey consisted of the cartographic part (including cadastral preliminary sketches and supplementary maps) and of the descriptive part (including the register of parcels, land tax matrix, cadastral records).

The register of land and buildings in the province of Lower Silesia was established and run taking into consideration the output documentation of the former Prussian cadastre, due to the high accuracy represented by the materials of this cadastral system. Only the boundaries of real estate, which also served as the boundaries of cadastral units, and the boundaries of the state-owned agricultural and forests land (except for land of the State Land Fund), were the subject of determining the boundaries by their delimitation or restoration. The boundaries of the remaining land were subject to measurement for the purpose of the cadastre, according to the factual circumstances existing in the field at the time of the measurement, without carrying out delimitation. This was a direct measurement with the orthogonal method, method of line continuation or angular intersection method, using the detailed surveying control, established with the methods of technical polygonization.

The documents, which were used to establish the modern cadastre in the province of Lower Silesia, drawn up in the 60's of the 20th century, include:

- preliminary sketch from the measurement of ownership status at the scale of 1:5000 (on the German cadastral map),
- cadastral map, which was prepared on the basis of the preliminary sketch from the measurement of ownership status (the scale of 1:5000) – redrawn to the preliminary sketch film,
- survey report including, among others: index of the parcels, calculation of their areas, calculation of the areas of classes and usable land in plots, survey-classification record of the existing ownership status, field sketches from the measurement of the ownership status.

In 2013, in the province of Lower Silesia, the coverage with a numerical vector cadastral map was 88%, with a raster map 1%, while the analogue map occurred in the area of 11% of the province – Figure 4.

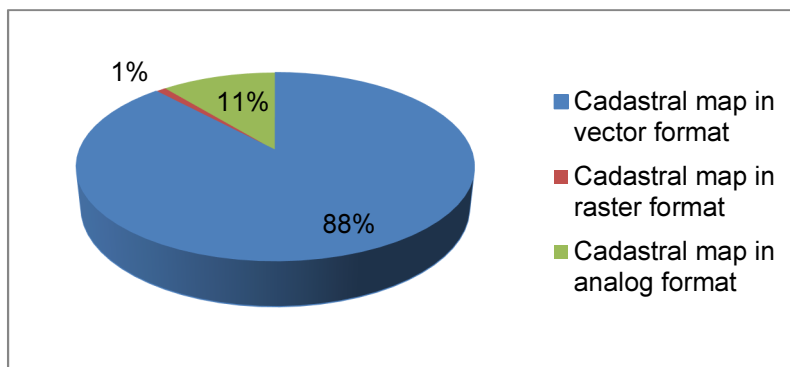


Fig. 4. Degree of coverage with vector cadastral map in the province of Lower Silesia

This situation stems from the fact that the four districts, marked in Figure 5 in red, do not have a full coverage with a numerical cadastral map.

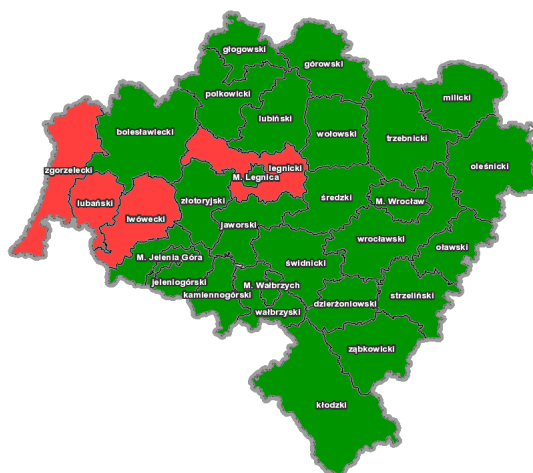


Fig. 5. Degree of coverage with vector cadastral map in Lower Silesia

4.2. The province of Malopolska

In the south-east Poland, during the Austrian annexation, cadastral maps were created at the scale of 1: 2880. The Austrian cadastre was run in the system of parcels. A parcel meant a continuous part of the cultivation (usable land) or tax-free land, found in the same possession. In addition, there were the then land and mortgage registers governing the legal status, defined by the mortgage list number (lwh). On the basis of the cadastral maps at the scale of 1:2880, in the 70's of the twentieth century, register maps at the scale of 1:2880 were created. They served to enfranchise the land under the Act of October 26, 1971 on the regulation of farm ownership [15]. Under this Act, a document was issued called the act of land ownership (AWZ), through which a person by virtue of law became the owner of the real estate. Supporting documents when regulating the legal status of a real property are also parcel protocols, property sheets, archive site plans.

In the province of Malopolska, as shown in Figure 6, the coverage with vector cadastral map is just 34%, and 66% of the province is still only covered by an analog map, of which 15% is covered with the cadastral map at the scale of 1:2880, which a remnant of the Austrian annexation [14].

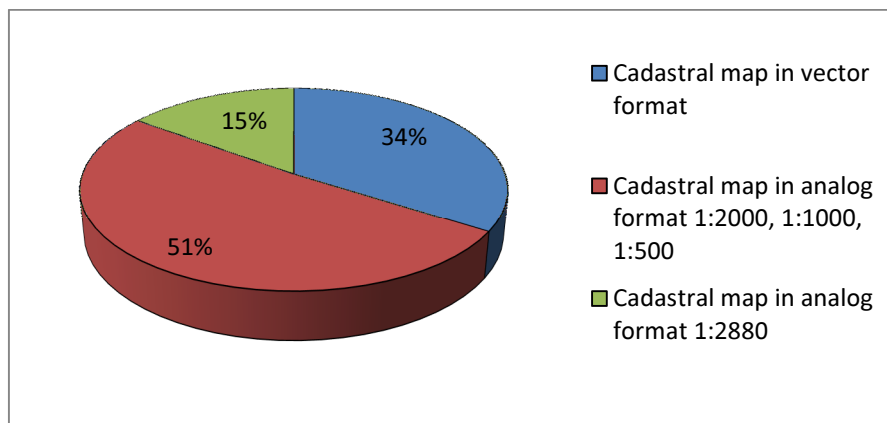


Fig. 6. Degree of coverage with vector cadastral map in the province of Malopolska

Figure 7 presents a map of the Malopolska province, with the districts marked in navy blue and with a specified number of cadastral units where the analog cadastral map at the scale of 1:2880 is still used as a basis for surveying works. This phenomenon should be considered a threat to computerization, as due to the quality and accuracy of these maps, they should not be the basis for carrying out EGIB modernization, whatsoever.

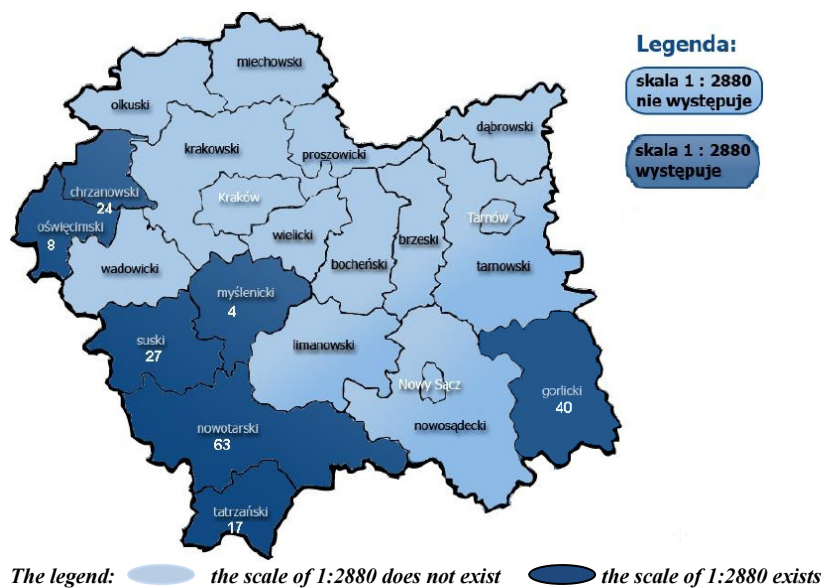


Fig. 7. Districts with the analog cadastral map at the scale of 1:2880 in the province of Malopolska

4.3. The province of Podlasie

The province of Podlasie is located in the north-eastern part of Poland. In the absence of any cadastral material from the period before the war, the contemporary land records here were established in the years 1957–1962 from the state of zero. The following materials were used:

- land consolidation plans created after the consolidation works covering 728,876 ha, which accounted for over 36% of the province,
- Felczak's measurement outlines executed in the years 1936–1937 for a part of the city of Lomza,
- surveys conducted in 1949 for the urbanized part of the city of Augustow,
- photomap at the scale of 1:5000,
- the so-called “pin copies” and “tax copies”.

The pin copies were created by placing tracing paper on the land consolidation plan and puncturing the turn points of parcel boundaries, and then drawing them. These copies did not include the figures from the land consolidation plans. The tracing papers are partially missing or have been physically damaged due to the passage of time. From the pin copies, ozalid copies were made, called the “tax copies”. They were made for tax purposes in the years 1935–1936 in accordance with the former Taxation Act. These copies contained the classification of land, usable land was measured, and the figures associated with the outline of the cadastral units (angles and distances) were included. The tax copies, based on the pin copies, were used to establish the current land records, and on a large area of the province of Podlasie they are the only source material today, based on which the legal status of real estate can be regulated.

In spite of the source material being with so little value in terms of precision, the province of Podlasie today has the cadastral map in vector format for 100% of the urban areas. For the rural areas, the advancement of the cadastral map in vector format was 60% in 2012 [13], as shown in Figure 8.

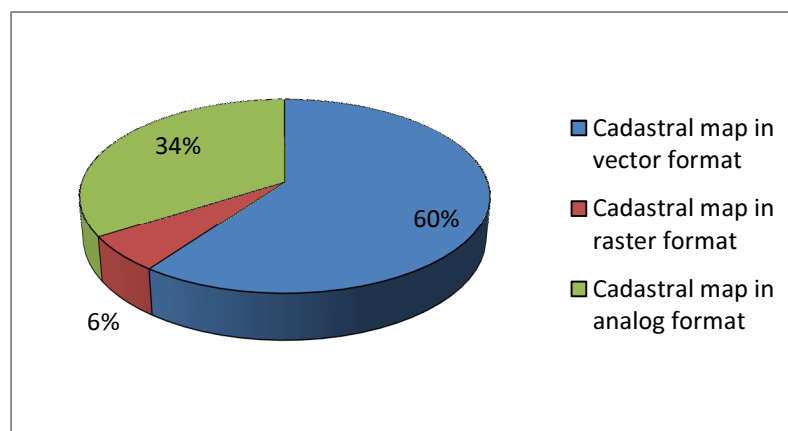


Fig. 8. Degree of coverage with vector cadastral map in the province of Podlasie

5. Summary

In conclusion, it should be emphasized that the progress of the modernization of the cadastre in Poland is diversified. Additionally, analyses are made difficult by the fact that at the national level and at the level of the provinces, summary reports are not regularly updated, with the exception of those which are run by the Central Statistical Office, of little use in terms of surveying.

Considering one of the elements of the modernization of the real estate cadastre, which is the vector cadastral map, it can be noticed that the degree of advancement in its development for individual provinces, representing various historical regions of Poland, is varied. In this comparison, the province of Lower Silesia of the former Prussian annexation sector has the highest score, as this cadastre was of high quality. Next comes the province of Podlasie, situated on the territory of the former Russian annexation sector, where due to lack of cadastral materials, there was an urgent need for creating records after World War II. The least advanced modernization works are in the province of Malopolska, the heirs of the former Austrian cadastre. An additional difficulty for conducting EGiB modernization works in the province of Malopolska is a huge fragmentation of holdings, illustrated by the greatest number of plots per surface area of the province.

When currently defining the concept of a real estate cadastre model, it should be looked at in a broader context, related to data infrastructure, embedded system services enabling the creation of mutual relations (interactions) between particular classes and attributes of the registered objects, as well as administrative services that make them available.

If the real estate cadastre is to be one object-oriented base, but with a number of suppliers of information, then the adopted solutions should be standardized, including, in particular, developing and applying common concepts that define individual cadastral objects subject to registration, as well as assigning to them identifiers of codes and meanings. The unification of the adopted model solutions, also leading to standardization in the field of terminology, should serve to eliminate the currently existing problems of communication between the existing scattered databases, in the scope of making it possible for them to be combine and analyzed in such a way that in this process the added value of the data set was created, and the user had the opportunity to study the mutual relations between the specific objects making up the register.

The contemporary real estate cadastre should take into account the issues related to the modeling of data, including spatial data of the cadastral objects, as well as the attributed rights.

In Poland, the Integrated Real Estate Information System (ZSIN) is being built where, in addition to the parameters defining the extent of the rights, the right itself and the duration of the rights to a real property will be defined as well. Only such a complete public register, which will be built as a central repository by merging the existing records of land and buildings with land and mortgage registers, with an option to supplement data from other public records, should be called the real estate cadastre. The cadastral system defined in that way should also meet interoperability criteria adopted in the legislation of the European Union, which enable the exchange of data and information among the member countries.

These activities will contribute to the improvement of the processes related to keeping public records of real property (register of land and buildings, land and mortgage register, tax registry), and they shall ensure access to reliable and updated information about the real estate collected in these public records, as well as they will reduce their management costs.

Acknowledgements

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