



COMPARATIVE ANALYSIS OF THE CADASTRAL AND SPECIALIZED MAPS AND REGISTERS

Andrey I. Ivanov¹, Mirem E. Niyazi-Yusuf²

¹DEPARTMENT OF GEODESY, FACULTY OF TECHNICAL SCIENCES, KONSTANTIN PRES LAVSKY UNIVERSITY OF SHUMEN, SHUMEN 9700, 115 UNIVERSITSKA STR.,
E-MAIL: 2271990022@shu.bg

²DEPARTMENT OF GEODESY, FACULTY OF TECHNICAL SCIENCES, KONSTANTIN PRES LAVSKY UNIVERSITY OF SHUMEN, SHUMEN 9700, 115 UNIVERSITSKA STR.,
E-MAIL: m.niyazi@shu.bg

ABSTRACT: *The present article examines the essence, functions, and interrelations between the cadastral and specialized maps and registers in the Republic of Bulgaria. It analyzes their common characteristics, differences in content, purpose, and legal status, as well as their role in the development of the national spatial data infrastructure. The article emphasizes the importance of the cadastre as a foundation for legal certainty and spatial management, and of the specialized maps as instruments for the administration of sectoral policies and resources.*

KEY WORDS: *Cadastral map, Cadastral register, Specialized map, Spatial data, Cadastre, GIS (Geographic Information System).*

1. Introduction

Spatial information constitutes a strategic resource for the effective management of territory, property, and natural resources. Contemporary geoinformation technologies enable the creation and maintenance of digital maps and registers, ensuring accuracy, transparency, and institutional coordination [1].

Among the key components of the national geoinformation system are the cadastral map and cadastral register, on the one hand, and the specialized maps and registers, on the other. Although these systems are interrelated, they differ in purpose, structure, and function. The objective of the present study is to analyze their commonalities and distinctions, emphasizing their respective roles in spatial governance and sustainable development.

2. The cadastral map and cadastral register – nature and purpose

The cadastral map and cadastral registers constitute a fundamental component of the cadastral-administrative information system of the Republic of Bulgaria. They are legally regulated by the Cadastre and Property Register Act (CPRA), adopted in 2000 and subsequently amended multiple times to meet contemporary technological and legal requirements. According to Article 2 of this Act, the cadastre is defined as a set of essential data concerning the location, boundaries, and dimensions of land parcels, buildings, independent objects within them, and other property units, as well as the rights associated with them. This definition clearly highlights the dual nature of the cadastre—it combines spatial (cartographic) and descriptive (registry) information, providing a comprehensive and accurate representation of real estate and property rights.

The cadastral map reflects the spatial characteristics of immovable properties across the country. It contains information on the boundaries, area, location, shape, and identifiers of land parcels, buildings, and independent units within them. The data in the cadastral map are collected through geodetic surveys, photogrammetric imagery, and analysis of existing plans and ownership documents, in accordance with Ordinance No. RD-02-20-5 of 2016. The map is created and maintained in digital form, using the unified geodetic coordinate system (BGS2005), which ensures high precision, interoperability, and compatibility with other information systems. Each parcel, building, or separate unit is assigned a unique identifier that enables an explicit link between the spatial and textual data contained in the cadastral register.

The cadastral register represents the descriptive and legal component of the cadastral system. It contains data on property owners and holders of other real rights, on the type of ownership—state, municipal, or private—as well as on the permanent use and designated purpose of the properties according to the spatial development plan. The register also includes information on ownership documents, land use restrictions, administrative addresses, and surface areas. The connection between the cadastral map and the cadastral register is realized through the unique property identifier, which allows simultaneous visualization and textual description of every real estate object. This integration is of particular importance, as it guarantees the accuracy and completeness of data required for notarial transactions, administrative procedures, and judicial processes.

The Geodesy, Cartography and Cadastre Agency (GCCA), a specialized governmental body under the Ministry of Regional Development and Public Works, is the primary institution responsible for the creation, maintenance, and updating of the cadastral map and registers. The GCCA manages and develops the electronic Cadastral-Administrative Information System (CAIS), which provides access to cadastral data for institutions, municipalities, businesses, and citizens. Through this system, users can obtain official references, sketches, and

property certificates in real time, significantly improving the efficiency and transparency of administrative processes.

The main function of the cadastre is to ensure legal certainty in real estate transactions by providing precise and up-to-date information about property boundaries, area, and ownership. Furthermore, the cadastre plays a vital role in territorial and urban planning, as it serves as a spatial foundation for the preparation of detailed development plans, zoning schemes, and infrastructure projects. Cadastral data are also utilized for economic purposes—such as property valuation, investment analysis, and in the activities of banks, insurers, and public institutions.

The cadastre also performs an analytical function, as it provides a spatial and legal foundation for the creation of specialized maps and registers—such as those for agricultural lands, forest territories, protected areas, engineering infrastructure, and others. In this respect, it represents the primary spatial layer upon which thematic and sectoral information systems are built. Owing to its accuracy and standardized structure, the cadastral map is integrated into the National Spatial Data Infrastructure (NSDI), established in compliance with the European INSPIRE Directive (2007/2/EC). This integration ensures interoperability between national and European databases and facilitates the exchange of spatial information at the international level.

The cadastral map and cadastral register are of fundamental importance for the management of territory, property, and investment processes in Bulgaria. They provide a unified, accurate, and legally reliable database on real estate, thereby establishing the prerequisites for sustainable development, effective spatial planning, and the protection of the rights of both citizens and the state. Through their implementation, transparency, legal stability, and integrated management of spatial information are achieved—key factors for modern public administration and the digital transformation of state governance.

3. Specialized maps and registers – nature and purpose

Specialized maps and registers are thematic geographic and informational products created on the basis of the cadastral map, containing supplementary data that reflect the specific characteristics of particular territories, objects, or activities. They complement and expand the cadastral data by introducing sector-specific features related to particular fields of management—such as agriculture, forestry, environment, infrastructure, water resources, cultural heritage, and others. By their nature, specialized maps and registers have an analytical and managerial rather than a certifying function, as they are not used to establish property rights but to maintain and analyze spatial information necessary for decision-making and the implementation of sectoral policies.

According to Article 16 of the Cadastre and Property Register Act (CPRA, 2000), specialized maps and registers are prepared by the competent public

authorities—ministries, agencies, and municipalities—for the purposes of managing their respective activities and sectors. This legal provision emphasizes their role as instruments for implementing state policy in various areas of public life. Their creation and maintenance are further regulated by Ordinance No. RD-02-20-12 of 2012, which defines the rules concerning the content, structure, and technical specifications of specialized maps, as well as the procedures ensuring their compatibility with the cadastral map. In accordance with the ordinance, all specialized maps must be created in a unified coordinate system (BGS2005) and use cadastral data as the primary geospatial layer, thereby ensuring precision, interconnection, and data interoperability among institutions.

In Bulgaria's administrative and professional practice, a wide variety of specialized maps and registers have been developed to meet the needs of different governmental bodies. The most significant among them include:

- The Map of Agricultural Lands and Permanent Land Use – maintained by the Ministry of Agriculture and Food, it contains information on land use, soil category, and parcel boundaries. This map is used for the administration of land relations, determination of rents and subsidies, and implementation of the Common Agricultural Policy of the European Union.

- The Map of Forest Territories – developed and maintained by the Executive Forest Agency, it provides spatial data on the distribution and condition of forest masses, tree species, age composition, and levels of degradation. It supports forest management, natural resource monitoring, and the planning of afforestation and conservation activities.

- The Map of Protected Areas and the Natura 2000 Network Zones – prepared by the Ministry of Environment and Water, this map contains information on reserves, parks, protected sites, and Natura 2000 zones under the European nature conservation directives. It supports the management of environmentally sensitive areas, environmental impact assessment, and regulation of human activities within them.

- The Register of Engineering Infrastructure and Underground Communications – maintained by the Ministry of Regional Development and Public Works, it includes spatial data on roads, pipelines, power lines, telecommunications networks, water supply, and sewerage systems. This register is essential for investment planning, construction, urban development, and the safe operation of infrastructure facilities.

All these maps and registers are created in compliance with standardized technical specifications that ensure their compatibility with the cadastral map and their integration into the National Spatial Data Infrastructure (NSDI). This corresponds to the requirements of the INSPIRE Directive (2007/2/EC), which aims to establish a unified infrastructure for spatial information across the European Community. As a result, specialized maps enable the efficient

exchange of spatial data between institutions and administrative bodies while providing accessibility and transparency of information to the public.

The primary purpose of specialized maps and registers is to support processes of analysis, planning, and management across different areas of socio-economic activity. They serve as a foundation for informed decision-making, the formulation of sustainable development strategies, the control of natural resource use, and environmental protection. Furthermore, these maps provide valuable information for scientific research, education, and technical design. Although they do not have the legal status of the cadastral map, they play an essential role in the development of sectoral policies and in achieving an integrated approach to territorial management.

Specialized maps and registers can thus be viewed as a thematic extension of the cadastral map. They transform spatial data into an effective tool for management, planning, and control, ensuring institutional coordination and greater transparency in public administration. Through their application, spatial information becomes a strategic resource for the sustainable development of the country and its integration into the European spatial information framework.

4. Common characteristics and differences between the cadastral and specialized maps and registers

The cadastral and specialized maps and registers form an integral part of the national spatial information system. They are built upon a common geodetic and cartographic foundation and are governed by shared principles and standards ensuring the accuracy, reliability, and currency of data. Although created for different purposes and by different institutions, they share a number of common characteristics that guarantee their interoperability and coordination within the framework of the National Spatial Data Infrastructure (NSDI).

4.1. The common characteristics between the cadastral and specialized maps and registers can be summarized as follows:

- Unified geodetic framework – Both types of maps are produced and maintained within the national coordinate system (BGS2005), using common geodetic and cartographic methods for determining the location and boundaries of spatial objects. This ensures accuracy, comparability, and the possibility of integrating data into a unified database.

- Digital format and integration into Geographic Information Systems (GIS) – Both the cadastral and specialized maps are maintained in digital form, which enables their combination, analysis, and visualization through modern information technologies [8].

- Regulatory framework and technical standards – Both types of maps are subject to specialized legal regulation derived from the Cadastre and Property Register Act (CPRA, 2000). The content, creation, and maintenance of the cadastral map and registers are governed by Ordinance No. RD-02-20-5 of

2016, while the specialized maps are regulated by Ordinance No. RD-02-20-12 of 2012.

- Institutional integration and data exchange – Both systems are part of the national policy for digital territorial management and provide access to spatial information for administrative, scientific, and public purposes. Data are shared among institutions through electronic services and GIS platforms, thereby ensuring transparency and efficiency in public administration.

- Applicability in spatial planning and management – The cadastral map provides the basic spatial framework for planning and regulation, while the specialized maps add analytical and thematic value necessary for the management of specific resources or activities. Both types of maps support territorial planning processes, resource assessment, environmental monitoring, and strategic decision-making.

- Maintenance of accuracy and currency – The cadastral and specialized maps are regularly updated to reflect changes in ownership, land use, and territorial conditions. This guarantees their reliability and practical applicability.

The common feature of the cadastral and specialized maps is their mutual interdependence and complementary nature. The cadastral map serves as the fundamental spatial layer upon which the specialized maps and registers are built, while the specialized systems contribute to the enrichment and updating of the cadastral database through thematic data.

4.2. Main differences between the cadastral and specialized maps and registers

Although the cadastral and specialized maps share many similarities, they differ significantly in their purpose, content, institutional responsibility, and legal status. The main differences can be summarized as follows:

Criterion	Cadastral Map and Register	Specialized Map and Register
Purpose	Identification and legal registration of real properties	Management and analysis of specific resources, activities, and territories
Competent authority	Geodesy, Cartography and Cadastre Agency (GCCA)	The respective sectoral authority – e.g. Ministry of Environment and Water (MoEW), Ministry of Agriculture and Food (MAF), Ministry of Regional Development and Public Works (MRDPW), Executive Forest Agency (EFA), etc.
Data	Geometry, boundaries,	Thematic data – agriculture, forestry, infrastructure, environment, water

Criterion	Cadastral Map and Register	Specialized Map and Register
	identifiers, ownership, land use designation	resources
Legal status	Official and certifying – has legal force in property transactions	Analytical and administrative – used for management and policy analysis
Source of information	Geodetic surveys, cadastral plans, notarial deeds, and administrative acts	Data derived from the cadastre, field observations, institutional databases, and research studies
Function	Provides a legal and spatial foundation for ownership and regulation	Complements and develops thematic information for specific sectors and activities

Therefore, the cadastral map possesses a universal, official, and legally binding status, serving as the cornerstone of legal and spatial security in the country. The specialized maps, in contrast, have a more analytical and managerial orientation, focusing on specific sectors and public needs. While functionally dependent on the cadastre, they perform an autonomous role in the implementation of state policies related to sustainable development, natural resource protection, and the effective use of national territory (MRDPW, 2023).

5. Conclusion

The cadastral and specialized maps and registers are interrelated and mutually complementary components of the national spatial data system. The cadastre ensures legal, geometric, and identification accuracy, while the specialized maps add thematic and analytical depth.

Their interaction is crucial for the establishment of a modern, integrated, and efficient system of territorial management.

In the context of digitalization and European integration, the development of these systems should be regarded as a strategic priority for the sustainable development of Bulgaria.

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