

УДК 349.41(477)

DOI <https://doi.org/10.24144/2788-6018.2023.04.38>

## LEGAL ISSUES OF INFORMATION INTERACTION BETWEEN THE STATE LAND CADASTRE AND THE NATIONAL SPATIAL DATA INFRASTRUCTURE

**Кондратенко Д.Ю.,***кандидат юридичних наук, асистент**кафедри земельного та аграрного права**Національний юридичний університет імені Ярослава Мудрого*ORCID ID: <https://orcid.org/0000-0001-8197-8032>**Станіславський В.П.,***кандидат юридичних наук, доцент**кафедри земельного та аграрного права**Національний юридичний університет імені Ярослава Мудрого*ORCID ID: <https://orcid.org/0000-0001-6487-416X>

### **Кондратенко Д.Ю., Станіславський В.П. Правові питання інформаційної взаємодії Державного земельного кадастру та Націо- нальної інфраструктури геопросторових да- них.**

В Україні активно провадяться етапи становлення земельної реформи у поєднанні з реформою децентралізації влади, в рамках яких місцеві органи влади отримали повноваження і території для управління у межах новоутворених територіальних громад, їм надано можливість повноцінно розпоряджатись власними ресурсами та визначати їх подальшу долю, забезпечуючи контроль та ефективно управління земельними ресурсами громади. За цих обставин постало вирішення нагальних питань щодо відсутності та розпорошеності інформації про стан цих земельних територій, про ефективність ведення реєстраційної системи із чітко визначеною законодавством процедурою і доступним механізмом отримання та використання зацікавленими суб'єктами інформації, також актуалізувалась необхідність інформаційної взаємодії Державного земельного кадастру та Національної інфраструктури геопросторових даних, від чого залежить як вирішення питань просторового розвитку територіальних громад, так і функціонування Держгеокадастру. Беручи до уваги Концепцію реформування місцевого самоврядування і територіальної організації влади в Україні, запозичений в країнах Європейського Союзу досвід використання земельно-майнових ресурсів та просторового розвитку є особливо важливим для України в цілому та особливо для організації функціонування територіальних громад. Дані зміни є надзвичайно актуальним у контексті перспективи євроінтеграції України. Зміни здійснення повноважень у частині просторового розвитку та земельних відносин, їх розпорошеність та неузгодженість суттєво вплинуло на необхідність

створення Національної інфраструктури геопросторових даних та змін взаємодії та оновлення функціонування Держгеокадастру у бік переорієнтації формату бек-офісу, що забезпечуватиме адміністрування земельного кадастру та суміжних баз даних.

**Ключові слова:** Національна інфраструктура геопросторових даних, Держгеокадастр, територіальна громада, земельні відносини, геопросторові дані, просторовий розвиток.

### **Kondratenko D.Y., Stanislavskiy V.P. Legal issues of information interaction between the State Land Cadastre and the National Spatial Data Infrastructure.**

In Ukraine, the stages of land reform are actively being carried out in conjunction with the decentralization of power, within which local authorities have been granted powers and territories for management within newly formed territorial communities. They have been given the opportunity to fully dispose of their own resources and determine their future fate, ensuring control and effective management of community land resources.

Under these circumstances, urgent issues arose regarding the lack and fragmentation of information about the state of these land territories, the efficiency of the registration system with a clearly defined legislative procedure, and an accessible mechanism for obtaining and using information for interested parties. Additionally, there is a need for information interaction between the State Land Cadastre and the National Spatial Data Infrastructure, as it is crucial for both the spatial development of territorial communities and the functioning of the State Geocadastre. Taking into account the adopted Concept of local self-governance and territorial power reforming in Ukraine, borrowing experience from European Union countries in the use of land

and property resources, and spatial development is particularly important for Ukraine as a whole and especially for the organization of the functioning of territorial communities. These changes are extremely relevant in the context of Ukraine's prospects for European integration. The changes in the exercise of powers related to spatial development and land relations, their fragmentation, and lack of coordination have significantly influenced the need to establish the National Spatial Data Infrastructure and amend the interaction and update the functioning of the State Geocadastre to reorient the back-office format, which will provide administration of the land cadastre and related databases.

**Key words:** National Spatial Data Infrastructure, State Geocadastre, territorial community, land relations, geospatial data, spatial development.

**Problem Statement.** In the current context of technological progress, Ukraine has made significant strides in recent years in creating an electronic land cadastre system, which has facilitated the organization of geospatial information about existing land plots and further development of the State Land Cadastre of Ukraine (SLC) – transforming and interacting with the National Spatial Data Infrastructure (NSDI). This has provided access to up-to-date data on land plots and contributed to the proper functioning of land management organizations, territorial communities, and individual citizens interested in obtaining such data. The changes brought about by land reform and decentralization of power have led to a redistribution of powers among authorities at various levels and necessitated the inventory of land, creation, and organization of an effective NSDI, directly impacting the spatial development of territories and obtaining a true picture of the state and territory of the lands transferred to the responsibility of territorial communities, as well as the functioning of the SLC. Furthermore, there is currently an issue regarding the relevance of the data used by territorial communities to fulfill their functions and duties in the sphere of spatial development and land relations. In this regard, the establishment of the National Spatial Data Infrastructure, in conjunction with effective interaction with registration systems, plays a significant role.

**The state of research** on the management of the State Land Cadastre in Ukraine is covered in the works of domestic scientists such as O. Bondar, D. Dobriak, D. Busuiok, Y. Hutsuliak, D. Kondratenko, A. Martyn, O. Petrakovska, T. Terekhova, A. Tretyak, etc.

The issues of developing theoretical and practical foundations for the functioning of the geospatial data infrastructure system and land relations are addressed in the works of O. Sakal, V. Dankevych, S. Havrysh, N. Hrabovets, M. Marusenko, I. Karakash, N. Kobetska, A. Kulinish, etc.

However, it is worth noting that the conceptual principles of the legal information interaction between the State Land Cadastre and the National Spatial Data Infrastructure in Ukraine are not fully disclosed.

**The purpose of the article** is to investigate the legal regulation and interaction between the State Land Cadastre and the National Spatial Data Infrastructure in Ukraine, as well as the main features of their functioning and the possibility of providing up-to-date information in the context of land reform and decentralization of power.

**Exposition of the main material.** Taking into account the adopted Concept of local self-governance and territorial power reforming in Ukraine, the experience gained from countries in the European Union in utilizing land and property resources and spatial development is particularly important for Ukraine as a whole, especially for its regions.

The current changes in the exercise of powers related to spatial development and land relations, their fragmentation, have significantly highlighted the necessity of creating the National Spatial Data Infrastructure. This matter is closely related to the functioning of the State Land Cadastre in Ukraine [1]. The effectiveness of cadastre-registration systems solely depends on the legal mechanism defined by the state. By observing certain European countries, it becomes evident that these systems function reliably both when managed by a specific designated state authority and when jointly managed by multiple authorities within their respective competencies. This position is achieved through the concentration of efforts by government bodies to establish a comprehensive regulatory framework for the full implementation of an efficient registration system.

The main factor in the effectiveness of the cadastre registration system is a clearly defined by legislation simple and accessible mechanism for obtaining and using information about land plots by interested parties, which, in turn, ensures proper functioning and development of land legal relations. However, the ability to ensure the proper execution of functions at the local level and transition to online resources, replacing the traditional paper-based record and personal decisions made by State Registrars responsible for land data entry and management, presents a rather acute challenge.

The effectiveness of making managerial decisions regarding the regulation of land relations in Ukraine depends on the information support system, which should be contained within a unified database of land information in accordance with the current legislation of Ukraine – the State Land Cadastre. This information and analytical support should also be accessible to territorial communities, businesses, investors, and research institutions. The State Land Cadastre of Ukraine is held

by the central executive authority responsible for implementing the state policy in the field of land relations – the State Service of Ukraine for Geodesy, Cartography, and Cadastre. Its administrator is the state-owned enterprise “State Land Cadastre Centre”, which operates under the supervision of this service. Article 1 of the Law of Ukraine “On the State Land Cadastre” defines “the State Land Cadastre as the single state geoinformation system of land information located within the state borders of Ukraine, their designated purpose, restrictions on their use, as well as data on the quantitative and qualitative characteristics of lands, their assessment, and the distribution of lands among owners and users” [2]. Objects of the State Land Cadastre are defined by law as follows: 1) lands within the state borders of Ukraine; 2) lands within the boundaries of administrative-territorial units; 3) restrictions on land use; 4) land plots. Since 2013, the land cadastre in Ukraine has been maintained on a modern information-technological platform, and important elements of it are available in open access in the form of a public cadastral map. The system is based on open-source software and includes hundreds of geospatial and attributive modules and objects, such as Web, GIS, WMS, NSDI, relational databases, geoservers, analytical tools, spatial modeling, and more. The organizational and programmatic cadastre system has a modern, extremely high level of protection of information and information processes. Since its launch, it has registered tens of millions of land plots and changes to them. At present, the system handles over one million queries daily.

The establishment of the National Spatial Data Infrastructure (NSDI) should become one of the most effective ways to meet citizens’ needs in all types of geographic information, enhance efficiency in using geospatial data and geoinformation technologies in decision support systems for public administration, emergency management systems, as well as in economic, social, defense, environmental, and scientific domains. As the orientation towards digitization and the service function of the State Land Cadastre is a future priority, the creation of a geospatial data infrastructure that aligns with the best European practices is a relevant issue. In this context, it is worth mentioning the report by the UN Committee of Experts on Global Geospatial Information Management entitled “Future trends in geospatial information management: the five to ten year vision”, which was published in July 2013. The document presents a comprehensive structure of both the subject matter – geospatial information, and all the phenomena that affect it and shape the infrastructure of geospatial data. The main outcome of this report was the formulation of the ideology for the development of trends and the future in creating data for all countries worldwide. The lack of de-

tailed and reliable information about territories and objects during globalization processes, coupled with the development of IT technologies, significantly influenced the decisions of the United Nations, the European Commission, and the European Parliament regarding the position on global geospatial information management (Decisions on the implementation of INSPIRE).

The resolution related to the discussed issue includes, for example, Resolution 70/1 of the United Nations General Assembly titled “Transforming our World: the 2030 Agenda for Sustainable Development”, adopted on 25th September 2015, and the Resolution of the UN Economic and Social Council on “Strengthening institutional arrangements on geospatial information management”.

Additionally, significant initiatives such as “Digital Earth”, Smart Cities, UN General Assembly resolutions, and the establishment of UN expert committees, UN-GGIM, and continental committees for managing global geospatial data have been taken into account [3, 4].

Based on the recommendations of the United Nations expert committee and other international organizations, geospatial data management has been commercialized and ensures not only the maintenance of geospatial databases but also the updating of the data itself. Some countries, as new members of the EU, in their efforts to quickly establish a legislative framework for the development of National Spatial Data Infrastructure, apply the INSPIRE recommendations at the level of national legislative acts.

Ukraine has already gained experience in global initiatives related to geospatial data and geoinformation systems. Nevertheless, despite the results of international technical assistance programs and pilot projects, the State Geocadastre has maintained its position regarding the creation and formation of the National Spatial Data Infrastructure (NSDI), advocating for the establishment of an administrator that would be a subordinated state unitary enterprise responsible for actions related to the establishment and implementation of the relevant NSDI software [5]. This entity should also be responsible for the technical and technological support, as well as for the preservation and protection of the data within the system.

The activities related to the formation of the NSDI in Ukraine have become more active, as evidenced by the working group meeting on August 12, 2020, which included representatives of the State Geocadastre and subordinate enterprises, as well as invited representatives from relevant Ministries of Ukraine. During the meeting, the draft resolution “On the procedure for the functioning of the NSDI” was discussed, developed by the Prime Minister’s assignment, as well as the Law of Ukraine “On the National Spatial Data

Infrastructure”, which came into force in 2021. This Law lays down the legal and organizational foundations for the establishment, functioning, and development of the NSDI, aimed at ensuring effective decision-making in the field of territorial planning and land use, in order to meet social needs in all types of geographic information. Furthermore, it will facilitate integration into the global and European geospatial data infrastructure. The Law introduces amendments to the Land, Water, Subsoil, and Forest Codes of Ukraine, as well as to the laws of Ukraine “On topographic, geodetic, and cartographic activities”, “On nature reserve fund of Ukraine”, “On state land cadastre”, “About local self-government in Ukraine”, “On radioactive waste management”, etc. The Law aims to create and operate a single geospatial data portal within the NSDI, which will unite all geospatial databases from both the public and private sectors, covering infrastructure, statistics, and natural resources [6].

At present, in Ukraine, the position is that different geospatial data are created and administered by various entities, including government authorities, local self-government bodies, and other designated business entities. Under such circumstances, there are cases where different entities perform the same work of creating and administering geospatial data, resulting in unnecessary budgetary expenses. Additionally, due to the specific nature of certain entities’ activities, access to such data is often restricted.

Regarding functionality, users’ access to geospatial data and metadata is provided through the national geoportal, the official website of the National Spatial Data Infrastructure, which is managed by the State Service of Geology, Cartography, and Cadastre (hereinafter referred to as the State Geocadastre).

However, during the land reform, acts were adopted that significantly reduced the powers of the State Geocadastre. Specifically, the Ukrainian Parliament passed Law No. 2194 “On Amending the Land Code of Ukraine and Other Legislative Acts to Improve the Management and Deregulation System in the Sphere of Land Relations”, which envisages the transfer of functions of control over land use and protection to local authorities. Thus, Article 15-1 of the Land Code of Ukraine defines that the State Geocadastre exercises the administration of state-owned land within the limits set by this code.

By the Decree of the President of Ukraine dated October 15, 2020, No. 449/2020, “On Certain Measures to Accelerate Reforms in the Sphere of Land Relations”, the Cabinet of Ministers of Ukraine proposed to accelerate the transfer of state-owned agricultural land plots to municipal ownership. In accordance with this decree, the Cabinet of Ministers of Ukraine adopted Resolution No. 1113 on No-

vember 16, 2020, “On Certain Measures to Accelerate Reforms in the Sphere of Land Relations”, which entrusted the State Geocadastre with facilitating the transfer of state-owned agricultural land plots to municipal ownership from November 17, 2020, in accordance with Article 117 of the Land Code of Ukraine [7].

Moreover, on November 16, 2020, the Cabinet of Ministers of Ukraine adopted Resolution No. 1118 “Issues of functioning of territorial bodies of the State Service of Geodesy, Cartography, and Cadastre”, which decided to liquidate the territorial bodies of the State Geocadastre as legal entities of public law and establish corresponding structural units within the State Geocadastre itself. Thus, at this stage, the State Geocadastre is in the process of transforming into a service body specializing in maintaining and populating geospatial data.

Additionally, in 2023, the State Geocadastre signed the Protocol of Information Interaction between the Information Systems of the State Land Cadastre and the Pilot Project of the National Spatial Data Infrastructure. From now on, the State Enterprise “Center of State Land Cadastre” and the State Enterprise “Research Institute of Geodesy and Cartography” collaborate to ensure information exchange for further populating the State Land Cadastre and the Pilot Project of the National Spatial Data Infrastructure. According to the document, the State Enterprise “Research Institute of Geodesy and Cartography” provides the State Enterprise “Center of State Land Cadastre” with access to basic geospatial data, their metadata, and cartographic materials contained in the information system of the Pilot Project of the NSDI through appropriate web services.

In return, the State Enterprise “Center of State Land Cadastre” grants the State Enterprise “Research Institute of Geodesy and Cartography” access to information about land plots from the State Land Cadastre and access to cartographic layers of the Public Cadastre Map of Ukraine in the form of relevant services without attribute information. Moreover, the State Enterprise “Center of State Land Cadastre” facilitates the connection of experts from the State Enterprise “Research Institute of Geodesy and Cartography” to the Public Cadastre Map of Ukraine to obtain information, particularly about land use restrictions, the State Border of Ukraine, administrative-territorial structure, and soils.

The signing of the protocol of information interaction will contribute to ensuring the objectivity, reliability, and completeness of information in the information systems of the State Land Cadastre and the Pilot Project of the National Spatial Data Infrastructure, as well as meeting the needs of government bodies, local authorities, citizens, and businesses for up-to-date geospatial data [7].

**Conclusions.** It is worth noting that Ukraine's Eurointegration process in digitization has significantly enriched, and at the initial stage, inaccuracies in geospatial data cannot be entirely avoided due to substantial data duplication in existing cadastres, lack of information exchange, and other discrepancies and inaccuracies that will need to be addressed.

Data on a considerable number of land plots are not entered into the State Land Cadastre, and they may be outdated or contain errors, even though the process of populating, updating, and correcting information about them in the State Land Cadastre has been ongoing since 2013. As a result, there is incorrect mapping or the absence of land plots on the Public Cadastral Map.

It would be relevant to review the functions of the State Geocadastre and align them with the challenges of decentralization. After changing the functions, a review of organizational structures and a functional audit should follow. The service component should be prioritized, especially services that will be provided through online platforms in the future. However, during the transitional period, it is necessary to review staff numbers and the specific operations of territorial units. The State Geocadastre should remain functioning as a back-office that administers the land cadastre and related databases while encouraging the accelerated formation and population of the National Spatial Data Infrastructure. Furthermore, the signing of the protocol on information exchange will contribute to ensuring objectivity, reliability, and completeness of information in the information systems of the State Land Cadastre and the Pilot Project of the National Spatial Data Infrastructure, thus meeting the needs of government authorities, local governments, citizens, and businesses for up-to-date geospatial data [7].

#### REFERENCES:

1. Derzhheokadastr proponuiut likviduvaty, a zemelni funktsii perenesty u "smartfon" [State Geocadastre proposes to liquidate and transfer land functions to "smartphone"]. (n.d.). base agropolit. com. Retrieved from <https://agropolit.com/news/13519-derzheokadastr-proponuyutlikviduvati-a-zemelni-funktsiyi-perenesti-vsmartfon>.
2. Law of Ukraine on July 7, 2011 № 3613-VI "On State Land Cadastre", URL: <https://zakon.rada.gov.ua/laws/show/3613-17>.
3. Konecny G., Breitkopf U., Radtke A. The Status of Topographic Mapping in the Word. A UNGGIM-ISPRS Project 2012-2015.
4. Scott G. Integration a Global Police Agenda in to National Geospatial Capabilities. ISPRS UN GGIM Mapping and Cadastre Agency Forum "Geospatial Data Infrastructures" Published in Zfv 141 (2016) no1. Pp. 20–26.
5. Tarnopolskyi A.V., Malashevskyi M.A., Tarnopolskyi Ye.A. Palamar A.Yu. (2018). Deiaki aspekty pobudovy infrastruktury heoprosutorovykh danykh, [Some aspects of building a geospatial data infrastructure] *Molodyi vchenyi – Young Scientist*, № 2(54), 28–31.
6. Law of Ukraine on April 13, 2020 № 554-IX «About the National Infrastructure of Geospatial Data». URL: <https://zakon.rada.gov.ua/laws/show/554-20#Text>.
7. The Protocol of information interaction between the information systems of the State Land Cadastre and the Pilot Project of the National Spatial Data Infrastructure was approved by the order of the State Geocadastre on April 6, 2023, No. 120. URL: <https://land.gov.ua/wp-content/uploads/2023/04/nakaz-120-vid-06.04.2023.pdf>.