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in Przeworsk**

MANAGERIAL PRACTICES AND CHALLENGES IN VARIOUS ECONOMIC SECTORS

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MANAGERIAL PRACTICES AND CHALLENGES IN VARIOUS ECONOMIC SECTORS: SCIENTIFIC MONOGRAPH

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MODEL OF COMPREHENSIVE LAND RESTORATION AS A TOOL FOR STRATEGIC MANAGEMENT IN THE PUBLIC AND PRIVATE SECTORS

Introduction: The Relevance of Managerial Decisions in Land Restoration

Under current conditions of socio-economic transformation driven by global changes, armed conflicts, climate change, and urbanization, the issue of land degradation has become increasingly acute. Land resources, as the foundation of life and economic activity, are a critical factor in ensuring food security, economic stability, and sustainable development. Their restoration is not only an ecological imperative but, above all, a managerial challenge that requires a comprehensive approach from both public and private sectors.

Managerial decisions in the field of land restoration form an integral part of strategic natural resource management, encompassing planning, coordination, monitoring, and evaluation of land use efficiency. In the public sector, such decisions are associated with the implementation of sustainable land use policies, the development of institutional mechanisms, and the design of investment programs aimed at reclamation, conservation, and rehabilitation of degraded lands. In the private sector, they involve the introduction of innovative agrotechnologies, adherence to environmental standards, and the digitalization of land resource accounting and monitoring.

The interaction between the public and private sectors in sustainable land use is gaining increasing relevance. The implementation of public-private partnerships, the development of digital platforms for land resource management, and the promotion of investment in “green” technologies all demand scientifically grounded managerial decisions and the development of effective economic models that incorporate economic feasibility, environmental safety, and social equity.

Thus, the justification of the theoretical foundations for constructing a comprehensive economic model for land restoration is a timely and strategically significant step toward shaping modern management practices in organizations across both the public and private sectors.

The Role of Land Resources in the Sustainable Development of the Public and Private Sectors

Land resources constitute a fundamental component of sustainable development, providing the foundation for economic activity, social well-being, and environmental balance.

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The Significance of Land Resources in the Public Sector

In the public sector, land resources serve as a basis for the implementation of national development strategies, including the assurance of food security, the maintenance of ecological stability, and the advancement of infrastructure. The rational use of land contributes to the preservation of soil fertility and the prevention of degradation and erosion-key elements of state environmental protection policies. The studies by Kravchuk I. and Akhmetova I.²⁸⁹ emphasize the need to improve state regulation of the rational use of land resources in order to ensure the sustainable development of Ukraine's economy.

In the public sector, land resources form the basis for the implementation of key national development strategies. Notably, the State Regional Development Strategy for 2021–2027 identifies the ecological recovery of territories as a prerequisite for socio-economic advancement. This strategy serves as a fundamental document of national regional policy aimed at achieving territorial cohesion, economic growth, and environmental balance.

The section devoted to environmental safety and sustainable development outlines the objective of “reducing the extent of land degradation” as one of the critical measures to overcome barriers to the socio-economic development of specific regions of Ukraine. The document highlights the necessity of increasing the resilience of regions to the impacts of climate change, improving the environmental condition of territories-particularly through the reclamation of degraded lands – and restoring infrastructure in rural areas²⁹⁰.

Complementary to this document is the Environmental Policy Strategy of Ukraine for the period up to 2030, in which land and soil protection is regarded as a structural component of the state's environmental security. Particular attention is given to the problem of soil erosion, which, according to official estimates, affects over 20 million hectares of agricultural land.

This strategy proposes a comprehensive system of measures, including the implementation of integrated land resource management based on an ecosystem approach, the strengthening of institutional control over soil quality, and the application of modern anti-erosion land use practices. The document emphasizes the importance of preserving the natural fertility of soils not only as an ecological factor but also as a socio-economic determinant of the well-being of future generations.

Thus, the strategy provides a foundation for integrating land restoration issues into all levels of national environmental policy²⁹¹.

In addition, the field of land relations in Ukraine is supported by several strategic documents directly related to the provision of sustainable land management. Notably, the “White Paper” – the Strategy for the Development of Land Relations in Ukraine –

²⁸⁹ Kravchuk I. I., & Akhmetov I. R. State regulation of rational land use as a prerequisite for sustainable development of Ukraine's economy. *Environmental Economics and Sustainable Development*, 5(1). 161–168.

²⁹⁰ Ministry for Communities and Territories Development of Ukraine. *State Regional Development Strategy for 2021–2027*.

²⁹¹ Verkhovna Rada of Ukraine. *The Basics (Strategy) of the State Environmental Policy of Ukraine for the Period until 2030*.

outlines the need to transition toward a transparent system of land resource governance. This includes the implementation of a digital cadaster, monitoring of soil quality changes, and the creation of incentives for land conservation and restoration.

The authors of the strategy emphasize that only a combination of institutional reform and environmental responsibility can ensure rational and long-term effective land use. The document not only proposes legal and economic foundations for the functioning of the land market, but also stresses the importance of fostering a culture of responsible land use.

The issue of land degradation is considered through the lens of management practices, with particular focus on the implementation of monitoring systems, financial accountability for soil degradation, and the development of economic incentives for preserving and restoring soil fertility. The strategy envisions a gradual transition to digital mechanisms of land resource management, including cadastral support, satellite observation, and geographic information systems (GIS).

Thus, it combines institutional modernization with environmental responsibility, offering an example of a strategic vision for land restoration in the context of public governance²⁹².

As shown in Table 1, national strategies in Ukraine emphasize the restoration and sustainable use of land resources through institutional reforms, environmental protection measures, and the integration of digital tools.

Table 1

National Strategies for the Restoration and Sustainable Use of Land Resources in Ukraine

Title of Strategy	Year	Responsible Authority	Key Provisions Related to Land Restoration
State Regional Development Strategy for 2021–2027	2020	Ministry for Communities, Territories and Infrastructure Development of Ukraine	- reclamation of degraded lands;
			- integration of environmental priorities into infrastructure planning;
			- increasing the resilience of territories to climate change
Environmental Policy Strategy of Ukraine until 2030	2019	Ministry of Environmental Protection and Natural Resources of Ukraine	- protection of land and soil as part of environmental security;
			- implementation of integrated land resource management;
			- anti-erosion land use practices
“White Paper” – Strategy for the Development of Land Relations in Ukraine	2021	Kyiv School of Economics (supported by the Ministry of Agrarian Policy and the World Bank)	- monitoring of soil quality and implementation of a digital cadaster;
			- economic incentives for land conservation and restoration;
			- institutionally and environmentally responsible land management

*Source: systematized by the authors.

²⁹² Kyiv School of Economics. *Land Reform Strategy: White Paper*.

Thus, Ukraine’s current state policy in the field of land resources is gradually shifting from a predominantly regulatory approach to an integrated system of strategic management that combines economic, social, and environmental instruments. In this process, particular emphasis is placed on the restoration of degraded lands, which are viewed not only as an environmental task but also as a crucial factor in spatial development, food security, and regional economic resilience.

The strategic documents reviewed above illustrate the growing role of land resources within the national governance system and provide a regulatory and managerial foundation for the implementation of comprehensive land restoration models. It is at the intersection of regional development, environmental policy, and land reform that a context is formed in which managerial decisions acquire strategic importance for achieving sustainable development.

The generalization of strategic approaches to land resource management in the public sector allows us to trace the logical interconnection between key policy documents, spheres of influence, and anticipated outcomes. To visualize these interconnections, a graphic scheme has been developed to demonstrate how national strategies for regional development, environmental policy, and land relations collectively form the managerial basis for a cohesive land restoration policy. At the center of the scheme lies the concept of “Land Restoration,” which is influenced by three major domains: environmental, infrastructural, and regulatory (Fig. 1).

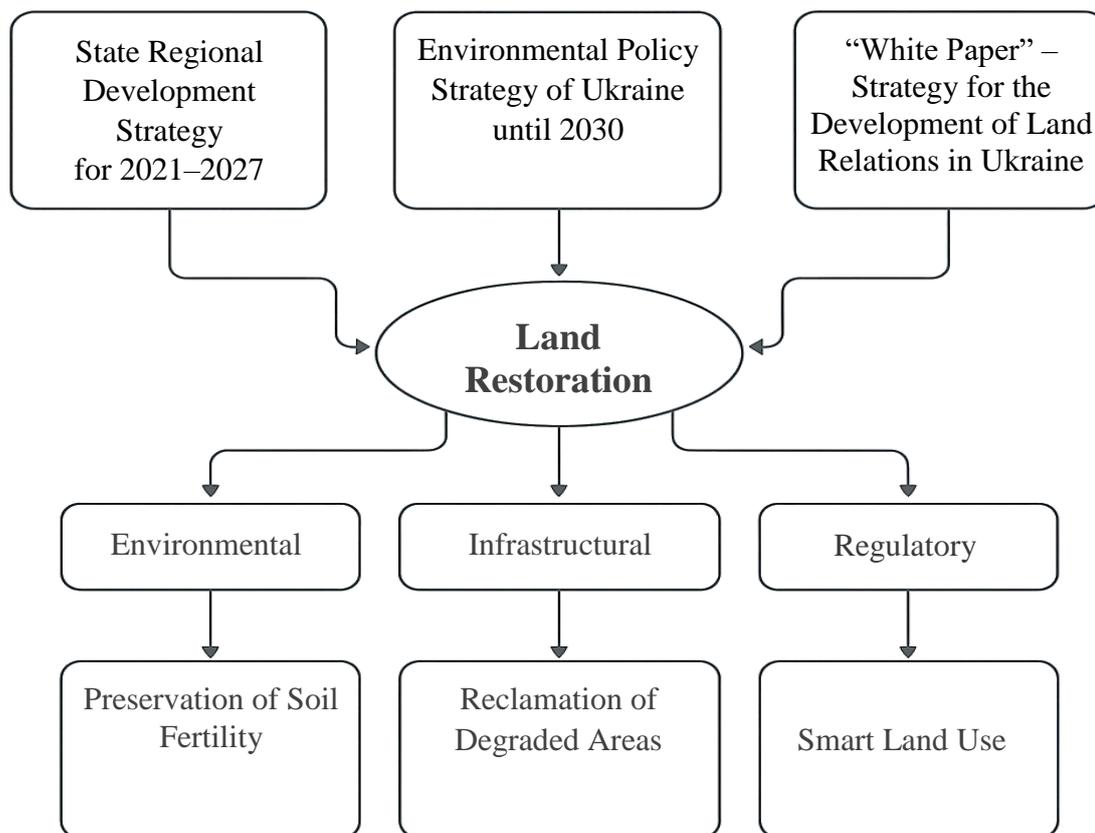


Figure 1. The Role of Land Resources in the Sustainable Development of the Public and Private Sectors

**Compiled by the authors.*

The environmental component of the strategies focuses on preserving soil fertility, implementing anti-erosion measures, and applying an ecosystem approach to land use. The infrastructural component emphasizes the reclamation of territories damaged by armed conflicts or industrial pressures, as well as the integration of environmental priorities into spatial planning. The regulatory influence encompasses the digitalization of management, the implementation of cadastral monitoring, and the creation of incentives for responsible land use. The expected outcomes of these measures – including reduced land degradation, increased land productivity, and the establishment of preconditions for the sustainable development of territories – underscore the relevance of a comprehensive approach to the management of land resources in both the public and private sectors.

The Role of Land Resources in the Private Sector

For the private sector – particularly in agriculture – land resources represent the primary means of production. Effective management of land assets directly affects enterprise productivity, market competitiveness, and overall economic development. Specifically, the rational use of agricultural land increases crop yields, which serves as a key indicator of the efficiency of agricultural production. Studies conducted by Tomchuk O. and Kozhukhar V.²⁹³ confirm the assertion that the modernization of agrotechnologies and the implementation of irrigation systems have a positive impact on both the quality and quantity of agricultural output. An analysis of the efficiency of land resource use in agricultural enterprises demonstrates that the application of modern soil cultivation technologies and the optimization of crop area structure contribute to increased economic returns from land use.

An important factor in the development of the agricultural sector is investment in land resources. Funding aimed at improving soil conditions, implementing innovative technologies, and upgrading the material and technical base contributes to increased productivity and ensures the long-term sustainability of agricultural production. In light of recent events related to the destruction of infrastructure due to war, the role of investment has become even more critical.

As noted by A. Sakhno and O. Zaremba, one of the key prospects for the recovery and development of agricultural production lies in strengthening cooperation within agricultural infrastructure reconstruction programs. This particularly involves attracting capital for the restoration of transportation routes, logistics hubs, storage facilities, and processing enterprises damaged by military actions. Alongside this, the implementation of innovative technologies is considered an equally important investment direction, forming a new quality of agricultural production.

Both international and national investors have the opportunity to support the development of precision farming, automated systems for soil and crop condition monitoring, and other advanced tools that significantly enhance land use efficiency and

²⁹³ Tomchuk, O. F., & Kozhukhar, V. V. Analysis of land resource use efficiency. *Agrosvit*, (19), 38-45.

reduce resource losses. Research highlights that investment in land assets increases the level of food security and contributes to the economic stability of the country²⁹⁴.

Investments in land resources are not limited to financing current production needs; rather, they serve as a strategic mechanism for driving innovation in the agricultural sector. Their effective implementation lays the groundwork for the recovery of the industry, enhancing its adaptability to external threats and facilitating integration into global value chains.

Efficient use of land resources in the private sector is impossible without considering regional natural-climatic, ecological, and structural characteristics of land use. One of the key determinants in this context is the level of land cultivation and the actual condition of soils, which in some regions of Ukraine has already reached a critical threshold. The challenges of irrational and exhaustive use of agricultural land are particularly pronounced under conditions of intensified agricultural production, increased anthropogenic pressure on rural ecosystems, and the violation of scientifically grounded agrotechnical standards.

As noted by Muzyka P., Urba S., and Honcharenko L., the agricultural sector in Ukraine generally demonstrates low efficiency in the application of agrotechnical measures, which are essential for ensuring stable yields and the regeneration of soil fertility²⁹⁵. According to their findings, yields of key crops – wheat, sunflower, sugar beet, and potatoes – are considerably lower in Ukraine than in many other countries. The least efficient land use is observed in household farms, where agroecological monitoring and soil restoration practices are largely absent.

There is also widespread noncompliance with agrotechnical requirements, such as crop rotation and the use of organic fertilizers, due to an imbalance between crop and livestock production. This leads to soil fertility depletion, intensified erosion, and worsening environmental imbalances. The situation is aggravated by weak environmental responsibility among producers, ineffective control mechanisms, and minimal enforcement of environmental laws.

Thus, rational land use in the private sector is tied to both economic feasibility and environmental safety. Addressing this challenge requires not only technological solutions but also institutional mechanisms based on sustainable land use, responsible agribusiness, and state oversight of agroecological standards.

Sustainable development goals can be achieved through cooperation between the public and private sectors. The state provides the legal and institutional framework, while the private sector implements practical land management measures. Public policy promotes investment in land restoration and preservation, supporting rural development and improving well-being.

²⁹⁴ Sakhno, A. A., & Zaremba, O. Ye. Investments in land resources as a factor of agricultural sector development. *Investytsiyyi: praktyka ta dosvid*, (22), 56–62.

²⁹⁵ Muzyka, P. M., Urba, S. I., & Honcharenko, L. V. Analysis of the efficiency of agricultural land use in Ukraine. *Scientific Notes of V. I. Vernadsky TNU. Series: Economics and Management*, 30(69), 4, 45–53.

Challenges for Effective Land Resource Management

Despite the strategic importance of land resources for ensuring sustainable development, their effective management in Ukraine faces a number of systemic challenges. Three groups of challenges are particularly noteworthy: environmental, socio-economic, and security-related.

Environmental challenges primarily include the ongoing degradation of soils, driven by both anthropogenic factors – such as irrational land use, depletion of fertile topsoil, and disruption of crop rotation – and climate change. Socio-economic challenges relate to the uneven development of the agricultural sector, low levels of investment in land restoration, and the lack of adequate oversight of resource use.

At the same time, security-related factors have become especially critical under current conditions. These include widespread landmine contamination, the destruction of agricultural infrastructure, and soil pollution resulting from military operations (Fig. 2).

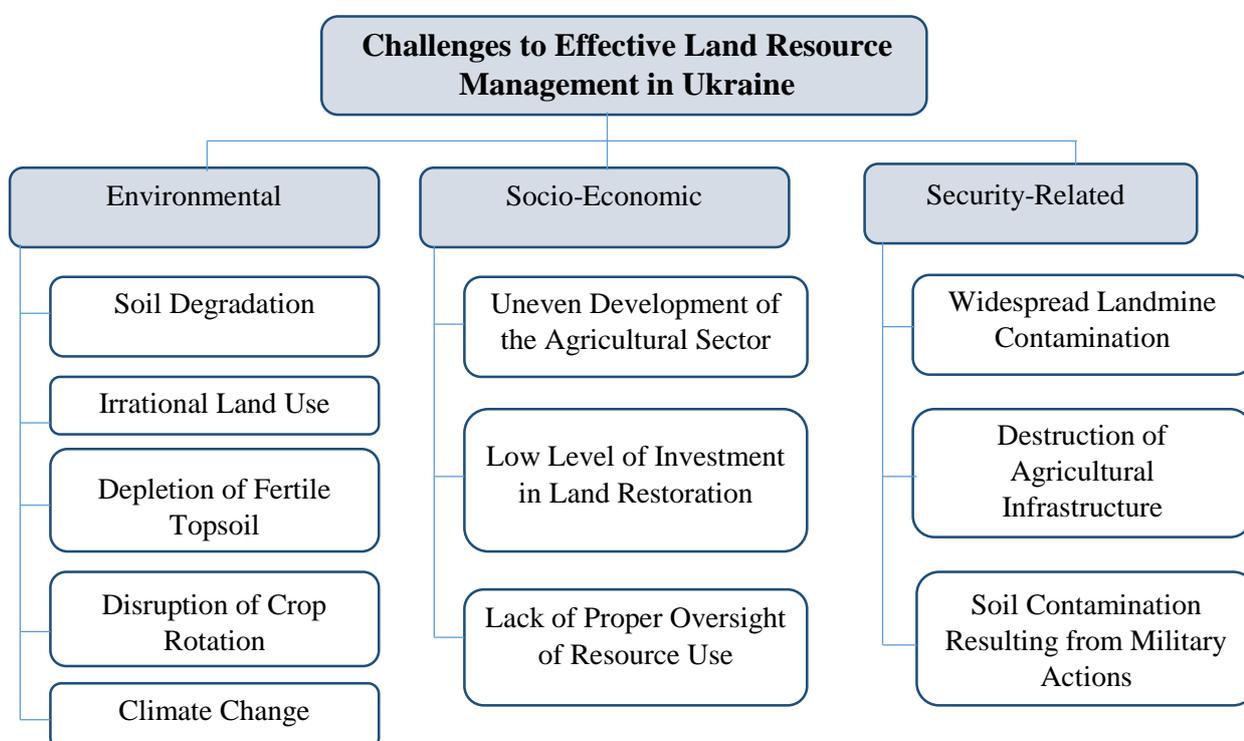


Figure 2. Challenges for Effective Land Resource Management

**Source: systematized by the authors.*

All of these issues hinder the establishment of an effective land management system. However, land degradation remains the most chronic, widespread, and potentially irreversible threat to agricultural production and the country's food security. Its in-depth study is a prerequisite for developing effective models for the restoration and preservation of land potential.

Proposals for Improving Land Resource Management in the Context of Recovery

Given the existing challenges and the strategic importance of land resources for ensuring sustainable development in both the public and private sectors, there is a pressing need to establish a new land management system that aligns with the conditions of transformation caused by war, climate change, soil degradation, and urbanization pressures. The current paradigm requires not merely an adjustment of individual management elements, but a fundamental rethinking of its logic – one that can serve as the basis for developing a comprehensive economic model for land restoration.

First and foremost, it is essential to strengthen the *institutional framework for land resource management*. It is advisable to establish regional centers for sustainable land use, which would function as multidisciplinary platforms for collaboration among government authorities, agribusiness representatives, academia, and civil society. Such platforms would facilitate knowledge exchange and support effective decision-making tailored to local conditions. At the same time, the management hierarchy at the local level should be improved by delegating certain land oversight responsibilities to local communities and equipping them with the necessary resources and analytical support.

One of the key directions for modernizing land management should be *digitalization*. The implementation of a unified national geoinformation platform integrating cadastral, environmental, agrochemical, and climate data aligns with the concept of “smart land use”, which is widely applied in EU countries. Introducing such a system in Ukraine would represent a significant step toward transparent and scientifically grounded land use. This platform should ensure open access to data for all stakeholders, including citizens, researchers, and businesses. The use of blockchain technologies to record changes in land use would further enhance the reliability and trustworthiness of the system.

Special attention should be given to *financial and investment instruments supporting land restoration*. The establishment of a state fund for the restoration of degraded lands is advisable, with resources allocated to the implementation of regional reclamation programs, the adoption of anti-erosion technologies, and the promotion of organic farming. In addition, mechanisms for “green” lending to agricultural enterprises that adopt sustainable land use practices should be considered. These may include tax incentives and partial reimbursement of expenses related to environmental measures.

An important element of the reform is the strengthening of *educational and informational support*. The introduction of a national educational program on sustainable land resource management – targeted at farmers, agronomists, civil servants, and local communities – would promote the development of a culture of responsible land use. In parallel, open online platforms should be created to provide training in modern agroecological practices adapted to the specific conditions of Ukraine.

The land management system must also strengthen *accountability for violations of land use regulations*. The introduction of an indicator-based system for assessing

land use efficiency – considering environmental, social, and economic metrics – would enable objective monitoring. At the same time, it is essential to enhance sanctions for violations of agroecological standards, including non-compliance with crop rotation practices, disruption of crop area structures, the use of prohibited chemicals, or actions leading to soil degradation.

An effective tool for implementing a comprehensive approach should be the development of *public-private partnerships in the field of land restoration*. Mechanisms for cooperation between the state and business in executing reclamation projects, investing in advanced technologies, and restoring infrastructure align with the principles of the European “green transition” policy. Engaging businesses, government bodies, and international organizations in joint projects – particularly in the reclamation of war-affected areas, infrastructure recovery, and the implementation of digital technologies – will generate a synergistic effect. In this context, the establishment of sustainable land use clusters appears promising. These would consist of networks of enterprises that implement innovations, share logistical and infrastructural resources, and adhere to high environmental standards.

Particular attention should be given to the need to *integrate land policy into spatial development strategies*. The theoretical justification for such integration is presented in the works of UN-Habitat²⁹⁶. These works emphasize the importance of coherence among agricultural, environmental, and infrastructural policies. Land issues cannot be addressed in isolation from regional policy, climate adaptation, and social development. It is essential to ensure the alignment of land use policies with the development plans of communities, regions, and the country as a whole. Special regulatory zones should play a key role – these are areas with restorative status or elevated environmental pressure, where specific land use regimes and state support programs are to be implemented.

As summarized in Table 2, the proposed measures aim to improve land resource management in the context of post-war recovery and sustainable development.

The proposed steps should be part of a broader model of comprehensive land restoration that integrates three strategic vectors: cross-sectoral coordination among the state, business, and the scientific community; the implementation of digital management tools; and the achievement of a balance between economic feasibility, environmental responsibility, and security. This model should serve as a foundation for strategic planning in the post-war period and must be developed with regard to the multi-level interaction of security, environmental, and economic factors.

As illustrated in Figure 3, the model of comprehensive land restoration integrates strategic coordination, digital management tools, and a balance between economic, environmental, and security priorities.

²⁹⁶ UN-Habitat. International Guidelines on Urban and Territorial Planning.

Table 2

**Proposals for Improving Land Resource Management
in the Context of Recovery**

Area of Improvement	Managerial Decisions	Effect on Sustainable Development (Public Sector)	Effect on Sustainable Development (Private Sector)
Institutional Strengthening	<ul style="list-style-type: none"> – establishment of regional centers for sustainable land use; – delegation of land use oversight powers to local communities 	Strengthening of administrative capacity, decentralization of governance, effective control over land use	Development of partnership mechanisms with communities, access to support from local authorities
Digitalization and Data Integration	<ul style="list-style-type: none"> – unified geoinformation platform; – blockchain for recording land use changes 	Transparency and justification of decisions, reduced corruption risks, timely response to changes	Access to reliable data, optimization of land use, reduced transaction costs
Financial and Investment Instruments	<ul style="list-style-type: none"> – state fund for land restoration; – green lending for agricultural producers 	Increased investment attractiveness of regions, support for strategic recovery programs	Access to financing for eco-projects, stimulation of innovation in agribusiness
Educational and Informational Initiatives	<ul style="list-style-type: none"> – national program for sustainable land use; – online agroecological education platforms 	Improved professional competence of public administration personnel	Dissemination of knowledge on effective land use, promotion of responsible business culture
Enhancing Responsibility	<ul style="list-style-type: none"> – indicator-based evaluation system; – sanctions and compensation mechanisms for environmental damage 	Strengthened environmental oversight, monitoring of compliance with state standards	Reduced environmental risks, increased trust in agricultural producers
Public-Private Partnership	<ul style="list-style-type: none"> – land reclamation projects; – clusters for sustainable land use 	Implementation of recovery strategies involving the private sector, mobilization of resources	Shared infrastructure, scaling of technological solutions, strengthened market positions
Integration into Spatial Development	<ul style="list-style-type: none"> – alignment with spatial planning; – special eco-regulation zones 	Formation of balanced territorial development, consideration of environmental factors	Predictable conditions for doing business, long-term land use stability

* Source: systematized by the authors.

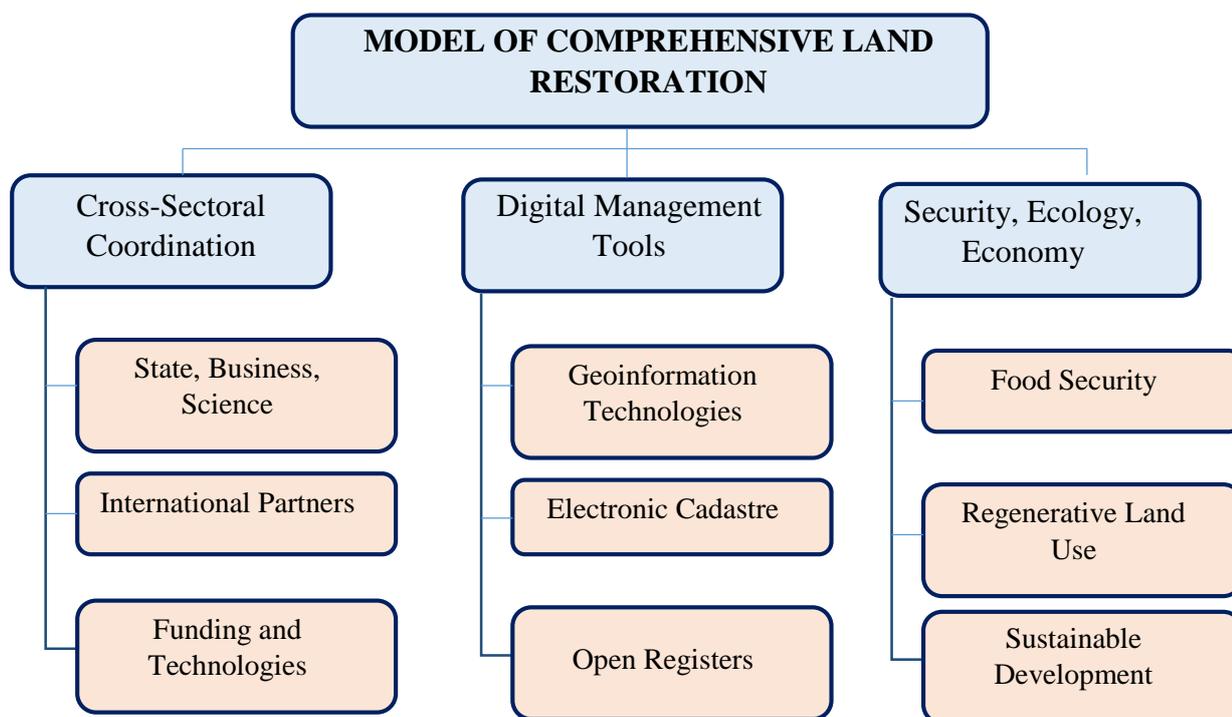


Figure 3. Model of Comprehensive Land Restoration

*Source: proposed by the authors.

The model of comprehensive land restoration should be based on three core principles:

1. *Cross-sectoral coordination* serves as the central element of this model. Effective restoration of agricultural potential is impossible without the involvement of a wide range of stakeholders: government authorities, private businesses, research institutions, as well as international partners and donor organizations. It is the synergy among these actors that enables adequate financing, the implementation of modern technologies, and adherence to environmental standards and regulatory requirements. State policy in the field of land use should evolve toward greater transparency, analytical support for decision-making, and a clear distribution of responsibilities between central and local levels of governance.

2. *Digitalization of management processes*. The use of geographic information systems (GIS), satellite monitoring, electronic cadaster systems, and open registries creates the conditions for transparency, efficiency, and objectivity in decision-making related to land use and the restoration of degraded areas. The systematic application of GIS technologies, satellite data, electronic land cadaster systems, and open digital registries should serve as the foundation for transparent and effective territorial resource management. In times of war and post-war recovery, digital tools provide the capacity for rapid response, continuous monitoring, damage assessment, and well-informed decision-making regarding land reuse or reclamation.

3. *Integration of security, environmental, and economic priorities*. For Ukraine, it is particularly important to integrate security, environmental, and socio-economic priorities. The model must recognize that land restoration is not only an issue of agricultural production, but also of ecological stability, food security, and the socio-economic development of rural areas. Land resources should be considered not only as

a component of agro-production, but as a foundation for food security, spatial planning, and long-term sustainable development. Environmental restoration of damaged soils, reconstruction of destroyed infrastructure, and the assurance of legal access to land require a systemic vision that combines strategic management with adaptability to high levels of uncertainty.

In this context, land restoration cannot be limited to technical measures alone – it must be based on the concept of regenerative land use, which considers both anthropogenic and natural constraints, as well as risks posed by military actions.

The proposed model of a comprehensive approach to addressing security-related issues in land management is not merely a response to current challenges; it is a forward-looking instrument for building a resilient land use system capable of adapting to global changes and ensuring the sustainable development of rural areas in the long term.

Conclusions

In the current context of systemic transformations caused by war, global environmental threats, and economic instability, land resources have acquired particular strategic significance for both the public and private sectors. Their rational use and effective management are key factors in ensuring food security, spatial cohesion, environmental balance, and sustainable economic growth. An analysis of current strategic documents – such as the State Regional Development Strategy, the Environmental Policy Strategy of Ukraine, and the Strategy for the Development of Land Relations – demonstrates a gradual shift from a regulatory to an integrated management approach, based on a combination of institutional modernization, environmental responsibility, and digitalization.

Special attention should be paid to the interaction between the state and the private sector in shaping a comprehensive model for land restoration. State policy sets the strategic direction and legal framework, while business functions as the operational provider of technological solutions. It is precisely at the intersection of public regulation, investment activity, and innovation that an ecosystem of sustainable land use is formed – one capable of producing long-term results.

The conducted research has made it possible to outline the key directions for improving land resource management. These include strengthening the institutional capacity of regional authorities; developing an integrated digital land management system based on geoinformation technologies; expanding financial instruments for land restoration support, including "green" lending; establishing educational platforms and increasing agroecological awareness; introducing clear monitoring and accountability mechanisms; and broadening forms of public-private partnerships in land use.

Given the high level of land degradation in Ukraine – which poses a threat not only to ecological stability but also to the socio-economic security of regions – the implementation of the proposed approaches is not merely desirable, but strategically necessary. It requires a scientifically grounded approach to the development of a comprehensive land restoration model that ensures a balance between economic feasibility, environmental safety, and social equity.

The proposed model has all the prerequisites to serve not only as a tool for ecological restoration but also for the spatial reconfiguration of national and regional policy in Ukraine. The significance of the developed model lies in its potential to transform both public and private governance in the field of land use and protection. For the public sector, it serves as a tool for strategic planning, enabling targeted resource allocation, transparency in decision-making, and greater accountability for outcomes. In particular, the model can be integrated into regional recovery strategies, humanitarian demining programs, and institutional reforms of the StateGeoCadastre and land oversight system. In the private sector, its application allows for risk optimization in land use under conditions of uncertainty, enhances the attractiveness of investment in land restoration, and fosters a new culture of resource-oriented thinking. The proposed model also provides a foundation for the development of public-private partnerships in the reconstruction of the agricultural sector.

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