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**"SUSTAINABLE MANAGEMENT OF AGRICULTURAL LANDS  
FROM THE STATE LAND FUND IN BULGARIA"**

**AUTHOR'S ABSTRACT**

of a dissertation for the acquisition of the educational and scientific degree "Doctor"

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The dissertation consists of 156 pages, of which: introduction – 5 pages; exposition in three chapters – 135 pages; conclusion – 4 pages; list of references – 12 pages; 22 tables and 23 figures. The list of references contains 135 titles, including both printed and online sources.

The defense of the dissertation will be held on ..... at ..... in hall ..... of the University of Economics - Varna, at a meeting of a scientific jury appointed by an Order of the Rector of the University of Economics - Varna.

# **I. GENERAL CHARACTERISTICS OF THE DISSERTATION**

## **1. Relevance and Significance of the Research Problem**

The sustainable management of agricultural land from the State Land Fund (SLF) is one of the key issues of public administration in land use. On one hand, the SLF is an instrument for activating a state resource and generating revenue and economic realization; on another – it influences access to land, the social fairness of the rules, and the legitimacy of allocation procedures; on a third – the quality of management has a direct bearing on the preservation of land as natural capital, where the negative effects of improper use and weak control are difficult to reverse.

The relevance is intensified by the fact that sustainability concerning state resources is not exhausted by achieving a result but also includes the sustainability of the management system's operation over time: predictability of rules, procedural rationality, risk manageability, coordination between instruments, and the system's ability to respond consistently under pressure and change. Consequently, the sustainability of SLF management should be assessed simultaneously as an outcome (economic, social, and environmental effects) and as a process (quality and stability of the mechanisms' functioning).

The scientific problem addressed by the dissertation is how to develop and apply an evaluation approach that measures the sustainability of SLF land management in an integrated manner – not only through individual indicators but through a framework that combines outcome and process criteria and allows for the formulation of practically applicable guidelines for improvement. The problem is particularly complex because SLF management is not a unified procedure but a portfolio of normatively distinct mechanisms with different underlying logics, which may produce good results individually but generate systemic deficits in the absence of coordination (procedural losses, unpredictability, tension around access, and trust).

In this context, the research introduces an approach that links three levels of analysis: 1) the normative-institutional architecture of management (rules for access, selection, and accountability); 2) the empirical operational dynamics (variation, scope,

selectivity, and the presence of feedback over time); and 3) the validation of sustainability through stakeholder perceptions as a key component of social legitimacy. Thus, the dissertation seeks not merely a description of problems, but a diagnostic logic: which process characteristics generate tension and which management interventions have the highest potential to stabilize operations and improve the sustainable effects of the SLF over time.

## **2. Subject and Object of the Study**

**Subject of the study** are the economic, social, and environmental sustainability of outcomes, as well as the sustainability of the functioning of the management mechanisms in the management of agricultural land from the SLF. These are assessed by combining secondary data on the functioning of the mechanisms under the Law on Ownership and Use of Agricultural Lands and stakeholder evaluations, applying a two-layered evaluation framework (process-outcome).

**Object of the study** are the agricultural lands from the State Land Fund (SLF) in Bulgaria.

## **3. Goal and Objectives of the Study**

**The goal of the dissertation is**, based on a theoretical analysis of sustainable management, to develop and apply a methodology for assessing the sustainable management of agricultural land from the State Land Fund (SLF) in Bulgaria, and on this basis to formulate possibilities for improving the studied management mechanisms.

To achieve the set goal, the following main objectives are formulated in the dissertation:

1. To systematize theoretical foundations of sustainable management and to derive criteria for assessing the sustainability of management of agricultural land from the State Land Fund.

2. To develop a conceptual framework that considers the management of SLF lands as a system of interconnected mechanisms, and to justify the analytical approach and evaluation logic.
3. To develop a methodology for empirical assessment through a combination of outcome and process indicators.
4. To apply the methodology and perform an assessment of management sustainability based on secondary data for the period 2007–2024.
5. To analyze stakeholder evaluations and to formulate priority directions and practical measures for improving the management of agricultural land from the State Land Fund (SLF).

#### **4. Main Thesis**

The main research thesis of the dissertation is that the management of SLF lands is sustainable only when it simultaneously achieves economic, social, and environmental goals, and when the mechanisms for allocation and control operate predictably and consistently over time.

#### **5. Limitations in the Development of the Dissertation**

1. The present study focuses on the conceptual and legal framework for sustainable management established by the Law on Ownership and Use of Agricultural Lands (LOUAL), as this law defines the strategic goals and principles of state policy. The procedural provisions from Art. 47 to Art. 47III of the Regulations for Implementation of the LOUAL, concerning the technical organization of auctions and tenders, field inspections by the Municipal Agricultural Offices (MAOs) of SLF properties, and other provisions within the referenced articles of the Regulations, remain outside the direct scope of the analysis. This is because they are of a sub-legal, operational-technical nature and do not alter the fundamental philosophical aspects of sustainable land use.
2. The research focuses on the mechanisms for sustainable management of agricultural land from the State Land Fund (SLF) that incentivize their rational use as a state resource. Excluded from the scope is the provision of Art. 24b of the LOUAL regarding the gratuitous allocation of land to state institutions, as it

has a specific servicing character and does not introduce management mechanisms based on efficiency and economic sustainability.

3. The analytical scope excludes a detailed examination of the administrative proceedings under Art. 34 of the LOUAL, concerning the reclamation of properties, including from the SLF, used without legal basis. These proceedings are considered solely as an auxiliary tool for ensuring legal certainty, not as part of the sustainable management model for SLF agricultural land, which is the central theme of the study.
4. The study examines the sustainable management of the SLF through an institutional-process and portfolio-based interpretation, operationalized via secondary data on the functioning of the three main mechanisms (Art. 24a, Art. 37i, and Art. 24c of the LOUAL). The focus is on management sustainability – adaptability, procedural rationality, coordination, selectivity, predictability, and process inefficiencies ("waste") – and on the sustainability of effects as an orientation towards economic, social, and environmental goals at the level of management outcomes. Accordingly, the study does not encompass direct biophysical environmental results on the land (soils, biodiversity, pasture load), detailed monitoring of actual use at the farm/property level, spatial (GIS) analysis by territory, or price-financial assessment of revenues (e.g., rent/hectare, collection rate, contractual clauses, indexation). Thus, sustainability is assessed within the framework of what is manageable and measurable through official secondary data: as the quality of the process and the interaction between mechanisms, not as a comprehensive coverage of all environmental and market dimensions of land use.

## **6. Information Provision**

The information provision for the dissertation is based on a methodological framework that integrates approaches, methods, and primary and secondary data sources. This ensures the systematic collection, processing, and interpretation of information relevant to the sustainable management of agricultural land from the State Land Fund (SLF).

In methodological terms, the systemic and process approaches were applied, allowing the sustainability of SLF management to be examined simultaneously as a system of outcomes and as a potential of management mechanisms. Comparative and factor analysis were used, along with synthesis and the systematic summarization of empirical results from primary inquiries and secondary statistical datasets.

For the purposes of the study, a survey was conducted between June 2024 and September 2025 among two target groups: 1) farmers – users of SLF land, and 2) employees of Municipal Agricultural Offices involved in the administration and control of contracts. The survey was anonymous, aiming to limit subjective bias and increase the reliability of the results. The questions were structured according to the goals and objectives of the dissertation and allow for a quantitative analysis of perceptions regarding sustainability, trust, information availability, and procedural fairness.

The secondary information base includes official and specialized sources, among them: Annual Reports on the State and Development of Agriculture (Ministry of Agriculture) /agricultural reports for the period 2007-2025/ (as a systematic source for sectoral and institutional context); BANSIC (Bulgarian Survey of Agricultural Economic Conjuncture – as an administrative/informational source used in the empirical part); Detailed reports on the execution of the program budget of the Ministry of Agriculture and Food (as of December 31 for the respective year).

## **II. STRUCTURE AND CONTENT OF THE DISSERTATION**

The dissertation is structured into an introduction, three chapters, a conclusion, and a bibliography, which present the logical sequence of its content.

### **INTRODUCTION**

#### **CHAPTER 1. THEORETICAL AND METHODOLOGICAL ASPECTS OF THE SUSTAINABLE MANAGEMENT OF AGRICULTURAL LANDS UNDER STATE OWNERSHIP**

- 1.1. Land Reform and State Ownership of Agricultural Land: European Parallels and Bulgarian Specificity
- 1.2. Evolution of the Idea of Sustainable Management: From Sustainable Development to the Management of Natural Resources, Land, and State Assets
- 1.3. Conceptual Framework for Researching the Sustainable Management of Agricultural Land from the State Land Fund (SLF) in Bulgaria

#### **CHAPTER TWO: EMPIRICAL RESEARCH AND ASSESSMENT OF THE SUSTAINABLE MANAGEMENT OF AGRICULTURAL LAND FROM THE SLF IN BULGARIA**

- 2.1. Methodology for Assessing the Sustainable Management of Agricultural Land from the State Land Fund
- 2.2. State Land Fund as a Managed Portfolio: Scope of Mechanisms and Fiscal Outcome
- 2.3. Results from the Assessment of the Sustainable Management of Agricultural Land from the SLF

#### **CHAPTER THREE: OPPORTUNITIES FOR IMPROVING THE MANAGEMENT OF AGRICULTURAL LAND FROM THE STATE LAND FUND**

- 3.1. Stakeholder Evaluations and Directions for Enhancing the Sustainability of SLF Management (Outcome Aspect)

3.2. Directions for Improving the Sustainability of SLF Operations

3.3. A Package of Measures to Enhance Sustainability: Summary

## CONCLUSION

## REFERENCES

## III. MAIN CONTENT OF THE DISSERTATION

**Table 1.**  
**Abbreviations and Notations Used in the Abstract**

<b>Abbreviation/Notation</b>	<b>Meaning</b>
Art. 24a	Market-based regime for allocation of State Agricultural Fund lands (competitive procedure)
Art. 37i	Social-ecological regime for pastures/meadows (priority to livestock breeders)
Art. 24v	Territorial-institutional mechanism (territorial pressure/conflict of land uses)
Para. 13 (37i)	Auction for free/residual areas under Art. 37i
CV (%)	Coefficient of Variation (predictability/stability)
O–A	Gap between announced and allocated areas (process loss/inefficiency)
O24a (Offered)	Announced areas under Art. 24a (ha)
A24a	Allocated areas under Art. 24a (ha)
S24a	Realization share under Art. 24a (%)
Stock24a (Stock)	Total size of provided lands / Active contractual stock under Art. 24a (ha)
$\Delta$ Stock24a ( $\Delta$ Stock)	Annual change of the active stock under Art. 24a (ha) $\Delta$ Stock(t) = Stock(t) – Stock(t–1)
Flow(t)	Annual activity (announcement, distribution, allocation)
ABI	Access Breadth Index: contracts per 1000 ha (No./1000 ha)
S37i	Utilization share under Art. 37i (%)
All3S	Share of Para. 13 in the total allocation under Art. 37i (%)
Req24v	Submitted requests under Art. 24v (No.)
Pre24v	Preliminary agreements under Art. 24v (No.)
Con24v	Concluded contracts under Art. 24v (No.)
Sel <sub>1</sub> (Pre/Req)	Intermediate permeability: agreements/requests (%)
Sel <sub>2</sub> (Con/Req) / Sel24v	Overall selectivity: contracts/requests (%)
t; t–1	Time index; lag (previous year)
LOUAL	Law on Ownership and Use of Agricultural Land (ZSPZZ)

## **CHAPTER 1. THEORETICAL AND METHODOLOGICAL ASPECTS OF THE SUSTAINABLE MANAGEMENT OF AGRICULTURAL LANDS UNDER STATE OWNERSHIP**

The **First Chapter** fulfills **Tasks 1 and 2**. It systematizes the theoretical foundations of sustainable management and derives criteria for assessing sustainability in the management of agricultural land as a public resource. A conceptual framework is developed, viewing the management of SLF lands as a system of mechanisms (Art. 24a, Art. 37i, and Art. 24c of the LOUAL) and justifying the analytical logic of an integrated assessment of both process and outcome.

In the first subsection, **1.1. „Land Reform and State Ownership of Agricultural Land: European Parallels and Bulgarian Specificity”**, the dissertation positions the post-1990 land reform as a structure-defining context for SLF management – not merely as historical background, but as a source of enduring institutional and spatial consequences that predetermine the access regime, transaction costs, control, and conflicts surrounding land use. Emphasis is placed on the restitution logic and its most lasting effect – the fragmentation of ownership and the complication of the use regime (further aggravated by hereditary subdivisions and limitations on consolidation), which makes land management inherently institutionally intensive. On this basis, the genesis and functional roles of the SLF within the post-restitution architecture are clarified: 1) management of state land as an asset; 2) compensatory functions within restitution procedures; 3) an instrument for regulated access through lease/rent under conditions of publicity, competition, and/or special grounds. It is emphasized that in practice, SLF management materializes annually through lists, orders, auction sessions, and protocols – i.e., the SLF functions not only as an inventory (stock) but also as an "administratively managed flow," placing process sustainability at the heart of the assessment.

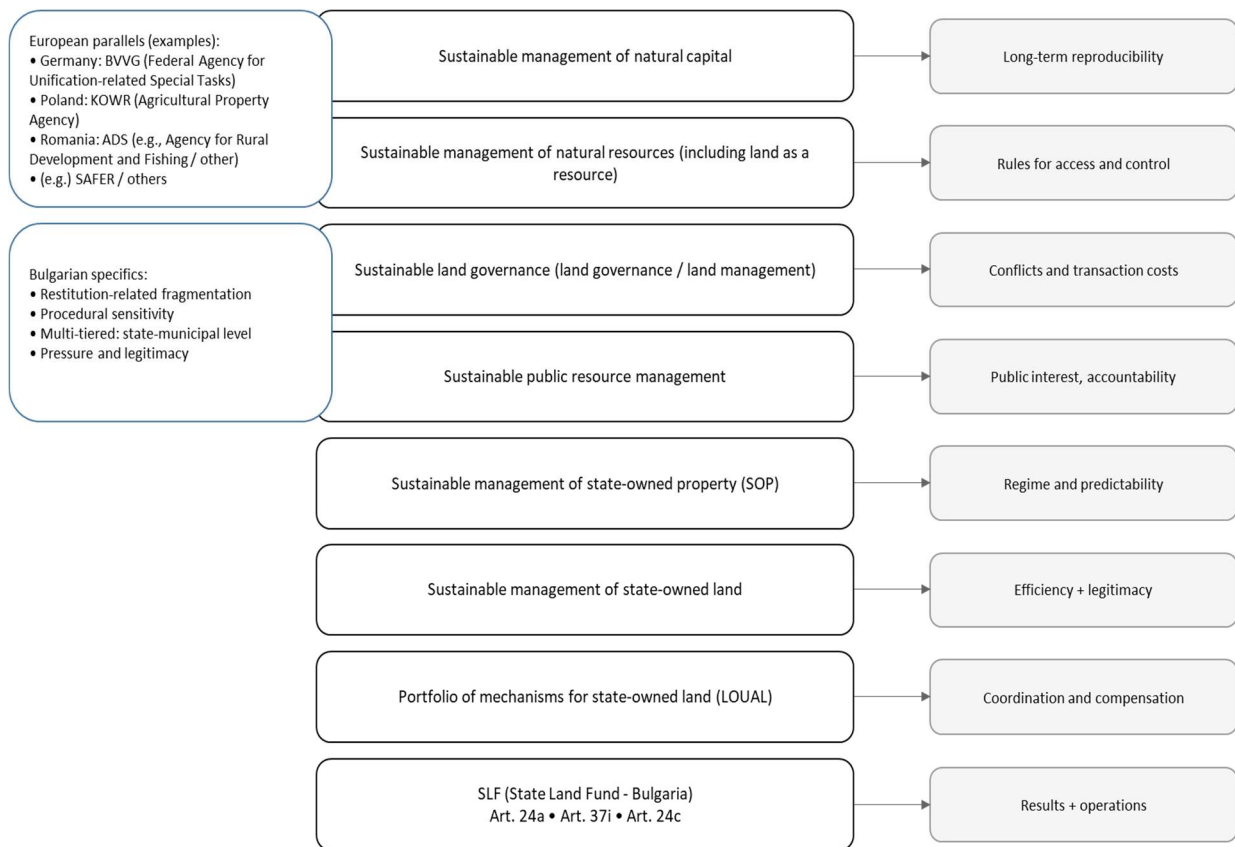
An important focus is the multi-level nature of land management through the connection between the SLF and the municipal level, including the role of the "residual" municipal land fund under Art. 19 of the LOUAL and the need for consistency between state and municipal regimes. This supports the thesis that sustainability depends not only on the rules "within" a single fund, but also on coordination between institutional levels and instruments.

This subsection also includes European parallels through comparative models of state land management (e.g., BVVG–Germany, KOWR–Poland, ADS–Romania), which show that state land is a normal political instrument, but its successful management requires institutional design: transparent procedures, public registers/information, standards, and accountability. Against this backdrop, the Bulgarian specifics are formulated – restitution-driven fragmentation, parallel Special Purpose Investment Company (SPIC) structures, and high procedural sensitivity – which make the sustainability of the SLF a genuine research problem and justify the need to analyze it simultaneously as operational sustainability (process) and developmental sustainability (outcomes).

For the purposes of the study, it is important to establish the legal status of lands from the State Land Fund (SLF), as it determines permissible management actions and the boundaries of the instruments. The Law on State Property distinguishes between public and private state ownership; therefore, SLF lands are generally managed as private state property, unless the regime of public state ownership applies to specific properties. The special framework in agriculture is established by the LOUAL, which structures SLF management through specific mechanisms: Art. 24a (general procedure for leasing), Art. 37i (special regime for pastures, meadows, and grasslands), and Art. 24c (prior approval when SLF land is affected by spatial planning).

In summary, the sustainable management of the SLF can be viewed as a concretization of the sustainable management of natural capital. This means that management cannot be reduced to current efficiency, as it implies protecting the long-term productivity and reproducibility of the resource base (land as a carrier of natural functions), and decisions have intergenerational and ecological sensitivity. When this perspective is translated into the sustainable management of natural resources (including land), the regulation of access and use under conditions of limited resources and competing interests becomes key, requiring rules, control, and legitimacy, not just market rationality. Viewing the SLF through the lens of sustainable land governance/land management adds another layer of specificity: the focus is not only on "*what is achieved*" but on *how* access regimes, transaction costs, and conflicts are managed, as land is a territorially fixed resource highly dependent on institutional design

and local context. When the object is a public resource, management must balance economic efficiency with public interest, fairness, accountability, and transparency; therefore, success is measured not only in outcomes but also in the quality of procedures. As state property, the SLF carries additional institutional specificity: actions are constrained and structured by legal rules (competencies, procedures, publicity, control), and management is subject to public scrutiny and must minimize the risk of arbitrariness and unpredictability. For state land, this means combining two logics: 1) economic (farming, profitability, contract discipline) and 2) socio-political (access, fairness, protection of sensitive uses), without accumulating systemic process losses. Finally, when the SLF is conceptualized as a portfolio of institutional mechanisms under the LOUAL (Art. 24a, Art. 37i, Art. 24c), "management" means not a single channel, but the coordinated functioning of different regimes with different target logics; sustainability depends on whether these regimes are predictable, coordinated, and compensate for each other's weaknesses. In this sense, European parallels show that sustainable state land management is primarily a matter of institutional design (rules, control, accountability, and balancing objectives), while the Bulgarian specifics require an additional emphasis on procedural stability, manageability of pressure/conflicts, and minimizing process losses.



**Figure 1. Framing Context of SLF Management in Bulgaria: European Parallels and Bulgarian Specifics**

**Figure 1** presents the contextual positioning of the study and prepares for the derivation of the conceptual model in subsection 1.3.

In subsection 1.2. “1.2. **Evolution of the Idea of Sustainable Management: From Sustainable Development to the Management of Natural Resources, Land, and State Assets**”, the dissertation traces how the concept of "sustainable management" has taken shape in science as a response to the fundamental question of how societies can pursue development without undermining the very conditions that make this development possible. The starting point is the classic intergenerational logic of sustainable development, later institutionalized globally through Agenda 2030 and as a universal guideline for policies in the three dimensions – economic, social, and environmental, including within EU policies.

The focus then shifts to the key "fissure" that makes the topic managerially relevant: sustainable development is a goal, but goals alone do not manage systems – real policies are implemented under uncertainty, conflicting interests, and side effects.

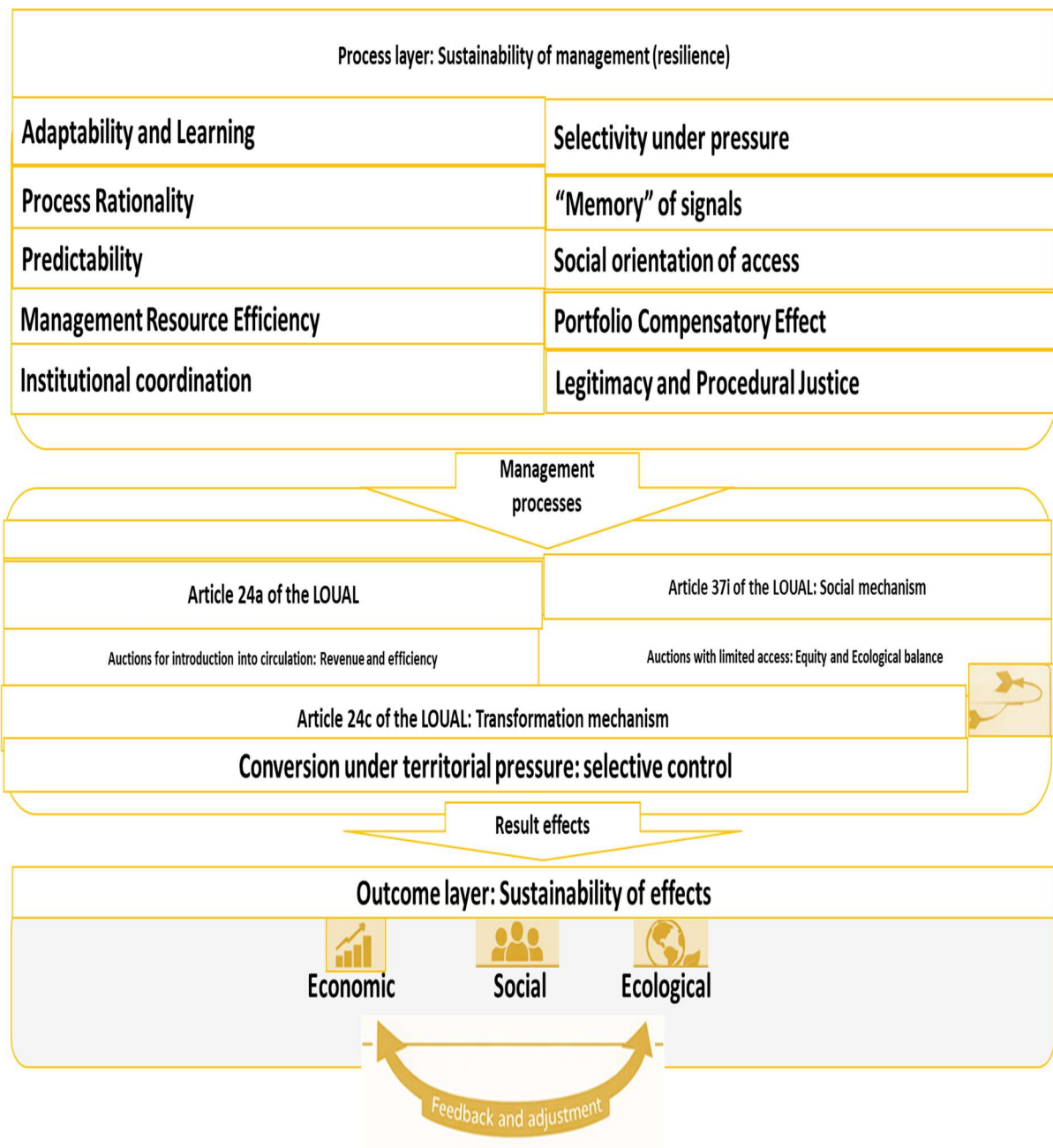
This shifts the focus from "what we want to achieve" to "how we manage to achieve it sustainably." In this transition, sustainability is translated from a normative ideal into requirements for the quality of governance: coordination and consistency of policies, institutional design of rules, and actual manageability of the inevitable trade-offs between efficiency, fairness, and preservation.

Building on this, subsection 1.1 draws upon literature on common-pool and state resources, showing why sustainability does not depend mechanically on ownership but is "produced" by the management regime: clear rules for access, monitoring and control, sanctions, conflict resolution mechanisms, and the legitimacy of procedures. It is here that an expansion of the understanding of sustainability is introduced: as the system's capacity to function under pressure and change, i.e., to not accumulate process losses, to respond consistently, and to maintain risk manageability over time. The final logic of this subsection is directly relevant to state land: land is considered simultaneously as natural capital and as a state-owned asset, where "good governance" cannot be reduced to a one-time outcome (e.g., how much land is leased), because public value also includes the quality of procedures – fairness, predictability, transparency, selectivity, risk controllability, and the ability to coordinate between instruments. Thus, subsection 1.1 justifies the dual-channel evaluation logic applied later in the dissertation: outcome criteria (economic, social, and environmental effects) and process criteria (sustainability of operations), which for the SLF specifically means analyzing the land both as an asset for effective management and as an institutional mechanism for legitimate access and conflict reduction.

In subsection **1.3, "Conceptual Framework for Researching the Sustainable Management of Agricultural Land from the State Land Fund (SLF) in Bulgaria"**, the research applies a two-layered approach to sustainability, distinguishing between **operational sustainability (resilience)** and **outcome sustainability**. The underlying logic is that for a state resource, a "high outcome" is insufficient if achieved through practices that make the system unpredictable and difficult to reproduce over time, while a correct process is unacceptable if it does not produce publicly significant economic, social, and environmental effects. The connecting link between the two layers is the **instrumental portfolio** – the normatively defined system of mechanisms in the

LOUAL through which the state manages land resources via different institutional logics: Art. 24a as a market-based (competitive) allocation regime; Art. 37i as a socio-ecological regime for pastures, meadows, and grasslands with target admissibility and restrictions; and Art. 24c as a control regime under spatial planning, functioning as a selective filter under territorial pressure and conflict of uses.

Based on this, the evaluation framework derives **ten criteria for operational sustainability** (1. adaptability and learning; 2. procedural rationality; 3. predictability; 4. economy of administrative resources; 5. institutional coordination; 6. selectivity under pressure; 7. "memory" of signals; 8. social orientation of access; 9. portfolio-level compensatory capacity; 10. legitimacy and procedural fairness). These are justified by theories and concepts in public administration and resource management (adaptive/reflexive governance, governance through learning, results-oriented governance, institutional resource regimes, good governance, and policy coherence). In parallel, **outcome sustainability** is framed through the three dimensions of sustainable development – economic, social, and environmental effects over time.



**Figure 2. Conceptual Model for the Sustainable Management of State Agricultural Fund Lands**

Thus, the model (Fig. 2) provides a general framework for interpreting the empirical analysis in Chapter 2 and for its validation through stakeholder assessments and improvement measures in Chapter 3.

## CHAPTER TWO: EMPIRICAL RESEARCH AND ASSESSMENT OF THE SUSTAINABLE MANAGEMENT OF AGRICULTURAL LAND FROM THE SLF IN BULGARIA

The **Second Chapter** fulfills **Tasks 3 and 4**. It develops a methodology for the empirical assessment of sustainability by combining process and outcome indicators and applies it to secondary data for the period 2007–2024 (including annual flows, selectivity, scope, variation, etc.). Through this, quantitative operational profiles of the three mechanisms are derived, and diagnostic conclusions are formulated regarding the sustainability of management over time.

In subsection **2.1. “Methodology for Assessing the Sustainable Management of Agricultural Land from the State Land Fund”**, the operationalization is based on annual secondary data for the period 2009–2024 and uses annual management flows by area and contracts (Art. 24a and Art. 37i) and the chain of requests–approvals–contracts (Art. 24c) as the empirical unit of analysis. The empirical analysis is grounded in an evaluation framework that views the management of SLF lands as a public portfolio of three complementary mechanisms regulating 1) the inclusion of lands in economic circulation, 2) the socio-ecological targeting of a specific resource (pastures/meadows/grasslands), and 3) the control over pressure to change land use and conflicts over usage. These mechanisms are operationalized through different types of indicators (Flow/Stock; scope and structure of access; pressure and selectivity) because they perform different management functions.

➤ *Art. 24a of the LOUAL – Market-based (competitive) leasing regime.*

Art. 24a regulates the classic "contractual channel" for including SLF lands in economic circulation through an auction (sealed bidding) and subsequent contract conclusion based on the result. The management logic is competitive: land is provided under market-formed conditions, and the outcome materializes as contracted areas. In the empirical model, Art. 24a is measured through annual flows (Flow) of announcement and actual leasing, and through the cumulative active contract portfolio (Stock). This allows for the assessment of procedural rationality (the "announced–leased" gap, CV) and adaptability (Stock–Flow feedback).

- *Art. 37i of the LOUAL – Socio-ecological regime with dual-channel implementation.*

Art. 37i regulates the allocation/distribution of pastures, meadows, and grasslands (including from the SLF) with priority given to actual livestock breeders – i.e., access is normatively directed towards a specific user group and tied to registered grazing animals and rules on admissibility and area size. The regime has a dual-channel architecture: 1) a primary distribution procedure for livestock breeders and 2) a secondary channel for residual free areas through an auction under Para. 13. Thus, Art. 37i combines a "social objective" (priority and protection of livestock farming) with a market mechanism for utilizing the remainder. In the model, this is accounted for through utilization indicators (utilization rate), as well as the relative role of Para. 13 (share by area/contracts and differences in average contract size), allowing for the simultaneous assessment of social targeting and potential concentration risks.

- *Art. 24c of the LOUAL – Territorial-institutional mechanism for pressure and filtering in conflicts of use.* Art. 24c introduces a requirement for the minister's prior consent when commissioning the development of a detailed spatial plan that affects SLF lands. In practice, this is a "control entry" that functions as an institutional filter against attempts to involve SLF lands in spatial planning, often associated with changes in the use regime and potential conversion/limitation of the agricultural function. Therefore, in the empirical model, Art. 24c is interpreted as an indicator of territorial pressure (number of requests) and institutional selectivity/permeability (the "requests – approvals – contracts" chain,  $Sel_1/Sel_2$ ), i.e., the extent to which the system allows pressure to materialize into a final outcome. This logic allows for the assessment of predictability and manageability of the "bottleneck" in land use conflicts.

The framework measures sustainability through two complementary logics: (A) *Operational sustainability (process resilience)* – predictability, procedural rationality, adaptability (learning), coordination, and economy of administrative resources; (B) *Outcome sustainability (sustainability outcomes)* – social orientation

(access), ecological precaution and public control under territorial pressure, as well as legitimacy/procedural fairness (finalized with primary data).

The operationalization is built using Stock–Flow logic and indicators for selectivity and stability over time (CV), tracking: 1) annual flows ("input" and "output"), 2) the cumulative state of the active portfolio (stock), 3) process losses/"waste," and 4) the presence of feedback and compensatory relationships between the instruments.

**Table 2.**

### Evaluation Framework – Criteria, Logic, and Empirical Indicators

Evaluation Criterion	Conceptual Logic	Indicators (Operationalization)	Applies To
<b>1) Adaptiveness (Stock–Flow Feedback)</b>	Decisions are calibrated based on accumulated results (learning/feedback)	correlation / regression: Offered(t) ~ Stock(t–1) or $\Delta$ Stock(t–1) (+ trend); check for compensatory sign and significance	24a; (in extension: inter-modal lags)
<b>2) Process Rationality</b>	The managerial "input" is transformed into results with minimal losses	O–A; S(%); comparison CV(O) vs CV(A); ranges of S	24a; 37i 24a; 37i
<b>3) Process Predictability/Stability</b>	Low fluctuations over time under similar conditions	CV of key flows and of efficiency S(%); structural breaks	24a; 37i; 24c
<b>4) Economy of Managerial Resource</b>	Minimal "process waste" per stage; avoidance of excessive administrative burden	O–A (24a), (37i); Req→Pre→Con (24c)	24a; 37i; 24c
<b>5) Institutional Coordination (Policy Coherence)</b>	The regimes work as a portfolio, not as parallel procedures	lag-correlations between 24c(t–1) and 24a(t); between indicators of 37i and 24a; presence of systemic dependencies	24a↔37i↔24c
<b>6) Selectiveness under Territorial Pressure</b>	The public resource is protected through a managed filter in cases of conflicting uses	Req, Pre, Con; Sel <sub>1</sub> =Pre/Req; Sel <sub>2</sub> =Con/Req; CV(Sel); "bottleneck" Con/Pre	24c
<b>"Memory"/Inertia of Pressure and Filter</b>	Signals are reproduced sufficiently to allow for planning	lag-1 test: Req(t–1)→Req(t); Sel(t–1)→Sel(t) (for periods with reliable reporting)	24c
<b>8) Social Orientation (Access)</b>	Broader participation and limitation of systemic narrowing/concentration	ABI (contracts/1000 ha); average area/contract; CV(ABI); profiles by year	24a; (supplement: structure by channels for 37i)
<b>9) Portfolio Logic and Compensatory Effect</b>	Shortage in one channel predictably and appropriately activates another	within 37i: connection between S37i and share of Art.13; between regimes: lag-connections 24c→24a/37i	37i (main line ↔ Art.13); inter-modal
<b>10) Legitimacy and Procedural Fairness</b>	Perceived fairness/trust; alignment between goals and procedures	secondary data and survey (Chapter 3)	all (finalized in Chapter 3)

The evaluation framework allows for distinguishing between 1) sustainability as the inertia of an accumulated portfolio and 2) sustainability as adaptive and coordinated management, by seeking empirical signals for predictability, feedback (Stock–Flow),

selectivity under pressure, and portfolio-level compensatory capacity between the regimes.

In subsection 2.2. “**State Land Fund as a Managed Portfolio: Scope of Mechanisms and Fiscal Result**”, the empirical analysis of secondary data presents the portfolio's scope through relative indicators that compare the activated resource of the State Land Fund with national baselines. For the period 2007–2024, the "active" SLF under Art. 24a fluctuates approximately between 70,000 and 114,000 ha, representing between 1.23% and 2.17% of the total agricultural land. After 2013, stabilization is observed around 2%, indicating a sustainable and reproducible scope for the primary activation channel.

The profile of Art. 37i is different. This mechanism has a small national scope (under 1% of all pastures) but demonstrates high variability. After relative stabilization around 0.60–0.62% during 2018–2022, a sharp decline to 0.13% (1,772 ha) is observed in 2023, followed by a strong recovery in 2024 to 0.74% (10,306 ha). This "shock" dynamic shows that the socio-ecological mechanism is more sensitive to institutional and procedural adjustments and is best interpreted primarily through the lens of operational sustainability (e.g., predictability, consistency, coordination, etc.), rather than solely through its scale.

Revenue from lease and rental fees for state lands shows a natural increase. The linear trend for the period 2019-2024 is statistically significant ( $Rev_t = \alpha + \beta t + \epsilon_t$ ;  $\beta = 8.694$  million BGN/year,  $R^2 = 0.958$ ,  $p = 0.00$ ), supporting the conclusion of a stable upward trajectory. In the short-term horizon of 2019–2024, revenues do not mechanically follow the allocated areas, pointing to the influence of pricing, contractual parameters, and/or collection rates.

**Table 3**

**Portfolio Profile of the SLF: Scope and Fiscal Result  
(Key Values)**

<b>Indicator</b>	<b>Period / Base</b>	<b>Values (min–max / key years)</b>	<b>Interpretation</b>
<b>Active SLF under Art. 24a (ha)</b>	2007–2024; Agricultural Report	70 000 – 114 000 ha;	The primary activation channel is relatively stable after 2013.
<b>Share of Active SLF under Art. 24a (% of agric. land)</b>	2007–2024; BANSIC Agricultural Report	1.23% – 2.17%; stabilization around 2% after 2013	A relatively stable institutional scope is emerging.
<b>Art. 37i (ha)</b>	2007–2024; Agricultural Report	Typically under 1%	Small national scope, but highly sensitive to adjustments/procedures (high variability).

<b>Share under Art. 37i (% of pastures)</b>	2007–2024 BANSIC Agricultural Report	2018–2022: 0.60–0.62%; 2023: 0.13%; 2024: 0.74%	"Shock" dynamics: this segment should be assessed primarily through operational sustainability (predictability/consistency).
<b>Revenue from lease and rental fees (million BGN)</b>	2019–2024 Reports on the execution of the program budgets of the Ministry of Agriculture and Food	2019: 58.35 2024: 97.87	The fiscal result shows steady growth in the short term.
<b>Average annual change in revenue (million BGN/year)</b>	2019–2024 (linear trend)	+8.694 million BGN/year, $R^2 = 0.958, p = 0.00067$	The trend is statistically significant; 2024 shows a minor correction around the upward trajectory.

In summary, the management of the SLF during the examined period is characterized by a relatively stable scope of the primary market mechanism in the long term, high variability in the socio-ecological segment, and sustainable growth in the fiscal result. In the short term, this growth is explained more by an increase in the intensity of realization than by an expansion of the activated scope. Following the outlining of the portfolio's empirical contours, the next step is to assess the operational sustainability of the mechanisms under Art. 24a and Art. 37i, and to incorporate Art. 24c as an indicator of pressure and selectivity in the spatial planning of SLF lands under the LOUAL.

Subsection 2.3 presents the results from the assessment of the sustainable management of agricultural land from the SLF.

To evaluate the management dynamics of the market mechanism under Art. 24a of the LOUAL, a descriptive profile of key process indicators is first constructed. Within the logic of the evaluation framework, the emphasis is on 1) predictability/stability (CV) and 2) adaptability (Stock–Flow), to distinguish between the inertial sustainability of the fund and management sustainability through learning.

**Table 4.**

**Descriptive Statistics of Process and Cumulative Indicators under Article 24a  
(2009–2024)**

<b>Indicator</b>	<b>Mean</b>	<b>CV%</b>
Announced Areas (Flow-input), ha	42 676	39,6
Leased Areas (Flow-output), ha	19 867	45,0
Realization Share (S24a), %	48,56	37,8
Active Contract Fund (Stock), ha	99 066	13,7
Number of Contracts, units	1 014	51,9
Average Area per Contract, ha/contract	18,54	19,2

The data reveals management on a significant scale, but with notable process instability. On average, approximately 42.7 thousand hectares are announced annually, while about 19.9 thousand hectares are allocated, indicating a systematic gap between management intention and realized outcome (see Table 4). The "input" (announcement) is variable, but the "output" (allocated area) is even more unstable – with a CV  $\approx$  45%, meaning the contractual result fluctuates strongly from year to year. This is further confirmed by the realization rate: an average of 48.6% with high variation (CV  $\approx$  37.8%) and a wide range (from about 28.5% to 94.2%). In other words, the mechanism can achieve very high realization under certain conditions, but these results are not sustainably reproducible over time (see Fig. 3).



**Figure 3. Realization Rate under Art. 24a (Process Efficiency), 2009–2024, %**

Regarding access and usage structure, it is evident that the number of contracts varies considerably (CV  $\approx$  51.9%), while the average contract area is relatively more stable (Mean  $\approx$  18.5 ha/contract; CV  $\approx$  19.2%) (see Table 4). This means that fluctuations in the annual outcome under Art. 24a more often stem from changes in scope (number of contracts and administrative workload) than from sharp changes in the average contract size.

In terms of dynamics, the discrepancy between announcement and allocation is clearly visible: the two flows do not move in parallel, indicating a lack of stable coordination between them (see Fig. 4). Simultaneously, towards the end of the period, an increased realization rate is evident (including high values in 2022–2024), showing that the issue with Art. 24a is not a "lack of capacity," but rather a lack of a stabilized management regime – efficiency is possible but remains unpredictable over time (a signal of process instability according to CV and variable process efficiency).



**Figure 4. Announced and Allocated Areas under Art. 24a (Pressure/Input vs. Result/Output), ha, 2009–2024**

Finally, to verify whether the mechanism exhibits strategic adaptation (Stock–Flow feedback), a test was conducted to see if the annual announcement responds to the previous state of the active contract portfolio. The correlation results do not confirm a systemic adaptive response: the relationships are weak and statistically insignificant ( $\Delta\text{Stock}(t-1)$ –Offered(t):  $r = -0.154$ ;  $p = 0.600$ ;  $\text{Stock}(t-1)$ –Offered(t):  $r = -0.183$ ;  $p = 0.515$ ; see Table 5).

**Table 5**

**Results from a Test for Strategic Adaptation of Supply under Article 24a Relative to the Accumulated State of the Active Fund, 2009-2024**

Relationship	r	p
$\Delta\text{Stock}(t-1) - \text{Offered}(t)$	-0,154	0,600
$\text{Stock}(t-1) - \text{Offered}(t)$	-0,183	0,515

**Note:** Offered(t) is announced areas (ha); Stock(t) – active contract fund (ha);  $\Delta\text{Stock}_{(t-1)} = \text{Stock}_{(t-1)} - \text{Stock}_{(t-2)}$

The test for the strategic adaptation of supply under Article 24a of the LOUAL was conducted using regression models with a time trend to examine whether the annual announced area (Offered(t)) is calibrated in response to (a) the change in the active contract fund ( $\Delta\text{Stock}(t-1)$  – Model A) or (b) the level of the fund (Stock(t-1) – Model B). Within the logic of the assessment framework, this constitutes a test for adaptability through management "learning."

**Table 6**

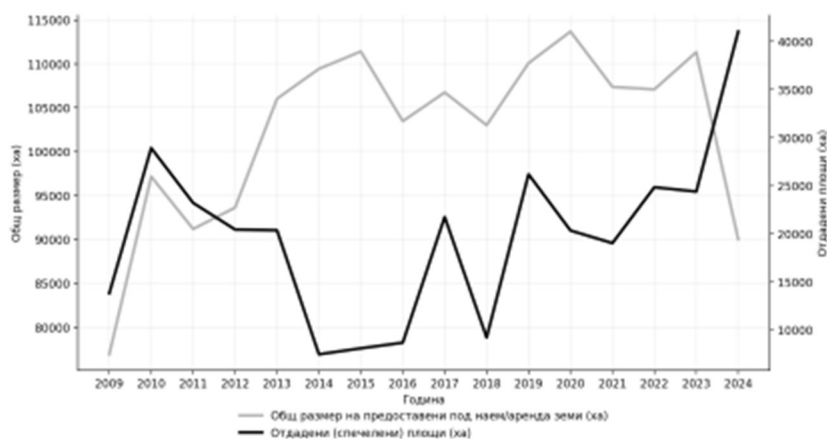
**Regression Test for Strategic Adaptation of Supply under Article 24a (with Time Trend)**

*Dependent variable: Offered<sub>(t)</sub> – Announced areas (ha)*

Model	Main Variable ( $\beta_1$ )	$\beta_1$	p(HC3)	$\beta_2$ : trend t	p(HC3)	N	Adj. R <sup>2</sup>
A	$\Delta\text{Stock}(t-1)$	-0,363	0,7835	-153,94	0,9127	14	-0,152
B	Stock(t-1)	-0,992	0,5630	2031,03	0,2856	15	0,034

Note:  $\Delta\text{Stock}_{(t-1)} = \text{Stock}_{(t-1)} - \text{Stock}_{(t-2)}$ ; t – time index. p-values based on OLS and robust HC3 standard errors are presented.

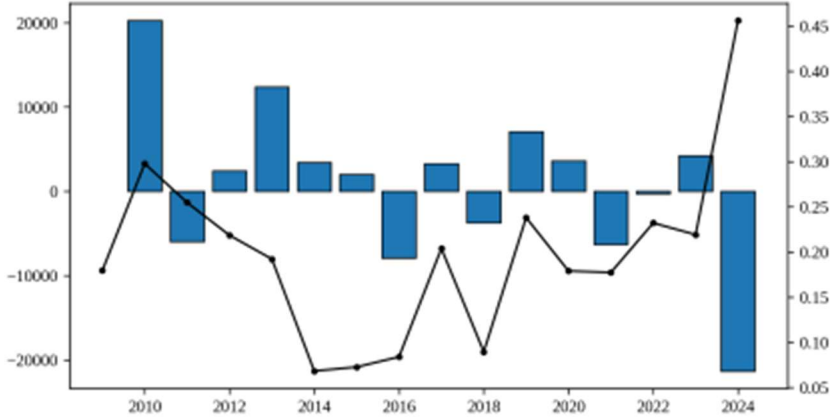
Formally, the signs are in the expected compensatory direction, but the lack of significance suggests that adjustments in supply are more reactive/contextual rather than systematically managed. A combined reading of the correlation (Table 5) and regression results (Table 6) indicates that the supply under Art. 24a is not consistently calibrated in relation to its own accumulated outcomes – neither in terms of the change nor the level of the active fund. The deviations between "announced" and "realized" do not function as a stable management signal for correction, which explains why the high process variability reproduces itself over time. Therefore, according to the adaptability criterion (Stock–Flow), Art. 24a demonstrates a lack of systematic 'learning' from previous results.



**Figure 5. Art. 24a: Stock–Flow Dynamics: Stock (Total Size of SLF Land Provided under Lease/Rent, ha) and Flow (Allocated/Won Areas, ha), 2009–2024**

The comparison with the dynamics of the cumulative indicator confirms this pattern: the active contract portfolio (stock) is relatively stable in the long term, while

the annual realization is significantly more variable. In other words, the fund moves inertially, whereas the annual allocation does not exhibit smooth and predictable regulation relative to its dynamics (see Fig. 5).



**Figure 6. Art. 24a: Turnover of the Active Fund (Allocated Area (ha) / Total Size (ha)) and Annual Change of the Fund Δ "Total Size (ha)", 2010–2024**

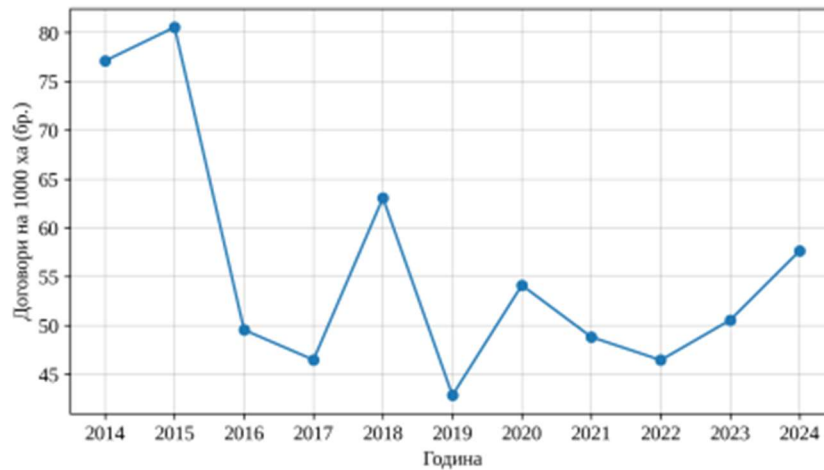
An additional diagnostic perspective is provided by the indicator "turnover of the active fund" (Allocated Area / Total Size) and the annual change ΔStock: high turnover does not guarantee fund stabilization, which suggests inconsistency between annual decisions and the sustainable maintenance of the contract portfolio (see Fig. 6).

**Table 7**

**Access and Distribution Structure under Article 24a (2014–2024)**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
<b>ABI (contracts/1000 ha)</b>	77,11	80,55	49,53	46,47	63,06	42,83	54,11	48,80	46,44	50,54	57,64	Mean=56.1 CV=22.43%
<b>Avg. Area (ha/contract)</b>	12,97	12,41	20,19	21,52	15,86	23,35	18,48	20,49	21,53	19,79	17,35	

The social element in Article 24a is assessed through two complementary indicators: access breadth (ABI – contracts per 1000 ha) and distribution structure (average contract area). The combination of these shows whether the inclusion of the state resource into economic circulation is realized through broader participation or through larger contracts and more restricted access (see Table 7).



**Figure 7. Access Breadth under Article 24a: Contracts per 1000 ha (ABI), 2014–2024**

Over the years, distinct profiles emerge. During 2014–2015, the ABI was highest (around 77–81 contracts/1000 ha) with a low average area (about 12–13 ha/contract), indicating broader access and smaller-scale distribution. After 2016, a narrowing of access and an enlargement of contracts is observed: the ABI declines while the average area increases (around 20–22 ha/contract). The most pronounced profile of restricted access was in 2019 (ABI  $\approx$  42.8 with the highest average area of about 23.35 ha/contract). At the end of the period (2024), a partial expansion of access is recorded (ABI  $\approx$  57.6) alongside a decrease in the average area ( $\approx$  17.35), pointing to a broader distribution compared to 2019–2022, though not reaching the 2014–2015 levels (see Fig. 7). In the long term, the variability of the ABI is moderate ( $CV \approx 22.43\%$ ), which does not indicate extreme instability, but the distinct declines in specific years are managerially significant because the regime's legitimacy depends on the ability to avoid periods of systemic narrowing of access to state lands.

After 2013, the normative intent of the regime under Article 37i is clear: pastures, meadows, and grasslands are to be directed primarily to real livestock breeders, with distribution carried out proportionally to the number and type of registered grazing animals, at market prices. Auctions are permitted only for the remaining free areas, including for individuals who commit to maintaining the land in good agricultural and ecological condition. This is a "social objective + market price" policy, oriented towards protecting livestock breeders and limiting the speculative acquisition of land.

**Table 8**

**Key Process Indicators under Article 37i: Announcement, Allocation,  
Utilization, and Share of Para. 13 (2012–2024)**

<b>Indicator</b>	<b>Mean</b>	<b>Min</b>	<b>Max</b>	<b>CV%</b>
<b>Announced areas (ha)</b>	29 221,88	23 860	35 744	11,92
<b>Total allocated areas (ha)</b>	6 612,83	404	11 533	52,78
<b>Utilization rate (%)</b>	16,20	11,16	22,95	32,00
<b>Share under Para. 13 by area (%)</b>	66,69	18,36	83,01	32,76

Despite implemented amendments to the LOUAL aimed at protecting the interests of livestock breeders, the empirical results show that the regime has not transitioned to a predominantly social model but has retained a hybrid architecture: a primary channel (distribution under the main procedure) and a secondary channel (auction for the remaining land). The data reveal a strong asymmetry between administrative "supply" and actual contractual outcomes: the announced areas under Article 37i are relatively stable (average  $\approx 29,222$  ha;  $CV \approx 11.9\%$ ), whereas the distributed and total allocated areas are highly variable ( $CV \approx 53\%$ ). In other words, the system maintains a predictable input but does not reproduce a predictable output.



**Figure 8. Utilization Rate under Article 37i, %, 2017–2024**

The synthetic indicator "utilization rate" remains persistently low (average  $\approx 16.2\%$ ; see Table 8; Fig. 8), indicating a recurring pattern where a significant portion of the announced resource does not translate into actual allocation. This can be interpreted in two sequential steps. First, the "remainder" is logically consistent with the

socio-ecological design of the primary procedure: after the initial distribution under Art. 37i, Para. 4, systematically unallocated/unutilized areas remain, partly because allocation to livestock breeders is limited to the normative "eligible" area per Livestock Unit (LU) (15/30 decares/LU). In other words, the mechanism is designed to distribute up to the norm, not to "clear" the entire resource. Second, managing this remainder is where tension arises: the unallocated areas are directed to auctions under Art. 37i, Para. 13, where eligibility is tied to the presence of grazing animals but not to a minimum threshold/density (LU). This preserves a structural possibility for unallocated areas to be utilized based on motives related to area-based payments and maintenance commitments. Furthermore, the share of areas allocated through auctions under Para. 13 is high, meaning the secondary "market channel" is not a marginal exception but a systematic component of the actual implementation under Art. 37i. For most years (especially 2018–2022), the values are in the range of about 70–83%, meaning the predominant part of the actually allocated land under Art. 37i is distributed through auctions, not the primary procedure.



**Figure 9. Share of Areas Allocated through Auction (Para. 13) in the Total Allocated Areas under Article 37i, %, 2018–2024**

Thus, the secondary mechanism serves the function of absorbing/utilizing the residual land, but simultaneously gives rise to an inherent inconsistency between the core objective of the primary procedure and the effect of the secondary channel.



**Figure 10. Average Contract Area by Channels under Article 37i – Primary Procedure and Para. 13, ha, 2017 – 2024**

Simultaneously, the auction under Para. 13 "produces" larger contracts: the average contract area is consistently higher compared to the primary procedure, which is a quantitative marker for a potential concentration effect and a more market-oriented profile of the secondary channel (see Fig. 10).

**Table 9**

**Correlations between Article 37i and Article 24a and Internal Dependencies within Article 37i (Pearson r, 2018–2024)**

Correlation	r	P
S37i (utilization rate) – O24a (announced areas)	-0.688	0.087
S37i (utilization rate) – S24a (realization rate)	-0.221	0.633
S37i (utilization rate) – A113S (share under Para. 13 by area)	0.264	0.567

The correlation analysis (2018–2024) does not establish statistically significant relationships between indicators of Art. 37i and those of the market mechanism under Art. 24a, which is expected given their differing target functions and resource types. More importantly, no significant internal relationship is found within Art. 37i between the utilization rate and the relative share of Para. 13, suggesting that the compensatory channel is not activated predictably in relation to the degree of non-utilization but operates more reactively (see Table 9). This means the portfolio logic within the regime

(primary procedure – Para. 13) is not stabilized as a predictable compensatory mechanism—a key risk both for manageability in the social and ecological aspects, and from the perspective of prioritizing the interests of the protected farmer group (livestock breeders). Within the logic of the evaluation framework, this is an indicator of limited strategic predictability and a problem in the manageability of "compensation" between the two channels, given that the secondary instrument is crucial for the regime's implementation.

In line with the adopted methodology, the process under Art. 24c is interpreted as a signal of territorial pressure on the state resource (Req<sub>24c</sub>) and as an institutional filter (selectivity) that converts (or fails to convert) pressure into a contractual result. In accordance with the evaluation framework, selectivity is tracked through the chain "requests – approvals – contracts" and via the coefficients Sel<sub>1</sub> = approvals/requests and Sel<sub>2</sub> = contracts/requests, while stability is assessed using the coefficient of variation (CV).

**Table 10**

**Pressure and Selectivity under Article 24c (2009–2024)**

<b>Indicator</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Median</b>	<b>CV%</b>
Requests (Req <sub>24v</sub> , No.)	37	134	78	73	30.1
Contracts (Con <sub>24v</sub> , No.)	0	26	9	8	61.7
Selectivity (Sel <sub>24v</sub> = Con <sub>24v</sub> /Req <sub>24v</sub> , %)	0.0	28.7	12.2	11.2	59.4

A clearly defined "funnel-shaped" dynamic is observed (Table 10): on average, about 78 requests are submitted annually, but only about 9 result in contracts, meaning the average permeability (Sel<sub>2</sub>) is about 12%. The process "waste" is two-stage: the first narrowing is from requests to approvals (Sel<sub>1</sub>), and the second – from approvals to contracts (finalization). An important signal for manageability here is the variability: the final outcome and selectivity are significantly more unstable than the pressure itself, meaning the pressure varies, but the institutional output varies even more. This supports the interpretation of a regime where the issue is not only "how much pressure exists,"

but also how predictably it is filtered and finalized. Within the evaluation framework, this is interpreted as high institutional uncertainty in the final transition to a contract.



**Figure 11. Submitted Requests, Preliminary Agreements, and Concluded Contracts under Article 24c, No., 2009–2024**

Figure 11 visualizes the three stages (requests, approvals, contracts) and shows that the pressure is met with approval to a moderate degree, but the **bottleneck** is concentrated in the final transition to a contract. This is further supported by the correlation profile: requests are correlated with preliminary approvals ( $r=0.57$ ;  $p=0.021$ ), but not with contracts ( $r=0.11$ ;  $p=0.677$ ), pointing to a **bottleneck** between the approval stage and the final contracting.



**Figure 12. Selectivity: Contracts/Requests under Article 24c, %, 2012–2024**

Figure 12 (*Sel<sub>2</sub>*, 2012–2024) shows that the permeability does not follow a smooth trajectory but exhibits sharp annual changes (periods of stricter and weaker filtering). From a management perspective, this is critical: under similar pressure, the outcome can be very different, undermining the regime's predictability and communicability to stakeholders. Therefore, according to the criterion of selectivity under territorial pressure (*Sel<sub>1</sub>/Sel<sub>2</sub>*; CV), the regime is highly variable/unstable, which hampers predictability and, consequently, the planning and management of land-use conflicts.

Before seeking integration with the other regimes, it was deemed methodologically necessary to verify whether the pressure under Art. 24c exhibits inertia—that is, whether values in year *t* follow a pattern relative to values in *t*–1. If inertia is present, the pressure can be viewed as a sustainable management signal, allowing for planning and proactive response; if absent, the pressure is more episodic and highly dependent on specific events and context.

**Table 11**

**Inertia of Territorial Pressure and Selectivity under Article 24c (Pearson *r*, lag-1)**

Indicator	Period	Pearson <i>r</i> : X( <i>t</i> –1) -X( <i>t</i> )	p-value	n (year pairs)
Submitted Requests (Req24v)	2007–2024	0.641	0.0055	17
Submitted Requests (Req24v)	2009–2024	0.468	0.0783	15
Selectivity: Contracts/Requests (Sel24v)	2011–2024**	0.237	0.4348	13

\*\* For Sel24v, the values are from the point when contracts actually began to be recorded consistently (after 2011).

The lag-1 test (Table 11) shows moderate inertia in pressure (Req<sub>24c</sub>): years with a higher number of requests tend to be followed by years with relatively higher pressure. This means the pressure is not "pure noise" but a partially self-reproducing process and can therefore be used as a guideline in the management cycle. In contrast, selectivity (*Sel<sub>2</sub>* = contracts/requests) does not show stable inertia in the period with more reliable reporting. Practically, this means that even when pressure persists or repeats, institutional permeability (the proportion of requests that result in a contract) does not behave predictably: it changes significantly from year to year and is more context-

dependent (procedural conditions, coordination, legal/territorial cases) than durably reproducible. Therefore, from a management perspective, the picture is asymmetric: pressure has partial "memory," but the filter does not. This asymmetry is direct evidence of limited adaptability: an available signal does not lead to the stable stabilization of permeability. The system receives a relatively stable signal about the load and competition for the resource, but the way this signal is "filtered" into a contractual result remains unstable and difficult to predict. This is directly relevant to the criteria in the evaluation framework for adaptability (whether management uses pressure as an input for correction) and for selectivity under territorial pressure (whether permeability is consistent and manageably stabilized).

Additionally, an analysis is performed to determine whether the territorial pressure and institutional permeability recorded under Article 24c in year t-1 are reflected in the decisions and results of the other regimes in year t (see Table 12). The goal is to establish whether Article 24c functions as an input to a general management cycle (implying adaptation and coordination) or remains a standalone regime.

**Table 12**

**Integration of Territorial Pressure under Article 24c into the Decisions of the Market Mechanism under Article 24a (Pearson r, 2009–2024; lag t-1)**

Correlation (t-1 - t)	Indicators (Name; Abbreviation)	Pearson r	p-value
Req24v(t-1) - O24a(t)	Submitted requests under Art. 24c (Req24v) - Announced areas under Art. 24a (O24a)	-0.349	0.202
Req24v(t-1) - A24a(t)	Submitted requests under Art. 24c (Req24v) - Allocated areas under Art. 24a (A24a)	-0.267	0.336
Req24v(t-1) - S24a(t)	Submitted requests under Art. 24c (Req24v) - Realization rate under Art. 24a (S24a)	0.019	0.945
Req24v(t-1) - ΔStock(t)	Submitted requests under Art. 24c (Req24v) - Annual change in the active fund (ΔStock)	0.121	0.667
Sel24v(t-1) - O24a(t)	Selectivity under Art. 24c (Sel24v) - Announced areas under Art. 24a (O24a)	0.648	0.017
Sel24v(t-1) - A24a(t)	Selectivity under Art. 24c (Sel24v) - Allocated areas under Art. 24a (A24a)	0.471	0.104
Sel24v(t-1) - S24a(t)	Selectivity under Art. 24c (Sel24v) - Realization rate under Art. 24a (S24a)	-0.052	0.866
Sel24v(t-1) - ΔStock(t)	Selectivity under Art. 24c (Sel24v) - Annual change in the active fund (ΔStock)	0.019	0.952

The results indicate that the volume of territorial pressure under Art. 24c (number of requests) is not statistically linked to the key decisions and outcomes of Art. 24a in the following year—neither to announced areas, nor to actually allocated areas, process efficiency (realization rate), or the annual change in the active contract fund. For Art.

37i, no significant relationship is established either between the pressure/permeability under Art. 24c and the utilization rate under the primary procedure or the intensity of auctions under Para. 13. The only clearer intermediate signal is that higher permeability under Art. 24c in the previous year is associated with greater announcement under Art. 24a, but this effect does not translate into actual allocation and a sustainable outcome. In terms of the evaluation framework, this supports a conclusion of limited adaptability and weak coordination among the mechanisms used by the SLF: even when a pressure signal is present, it does not function as a systemic input for coordinated corrections between the regimes.

Based on the analysis in Chapter Two, the following key conclusions are formulated:

*First*, the management of the SLF is conducted on a significant scale, but the system's sustainability is more a result of the inertia of the active contract portfolio rather than consistent management learning and coordination between mechanisms. There is real management activity, but convincing empirical signals for self-correction and for the regimes functioning as a coordinated management portfolio are lacking.

*Second*, the active contract fund under Art. 24a (stock) is relatively stable: averaging about 99.1 thousand ha with CV=13.7%, which can be interpreted as low variability for a public resource. This is a key positive result because it shows an accumulated, cumulative management effect: a significant volume of land has been permanently moved out of passivity and sustainably included in economic use through contracts.

*Third*, the mechanism under Art. 24c functions as a strong institutional "filter" under territorial pressure. A clearly defined "funnel-shaped" structure is present (average of 78 requests, 34 preliminary approvals, and 9 contracts), with an overall permeability Con/Req of about 12%. For a public resource, high selectivity is in principle compatible with a precautionary approach and control over land-use conflict. However, the secondary data reveals problematic process dynamics: a relationship exists between requests and preliminary approvals ( $r \approx 0.56$ ), but no relationship is established

between requests and contracts, while a moderate negative correlation ( $r \approx -0.50$ ) is observed between preliminary approvals and contracts, pointing to a "breakdown" in the process before finalization. Furthermore, the high variability ( $CV \approx 61.7\%$  for contracts and  $CV \approx 59.4\%$  for selectivity) raises questions about the regime's predictability and manageability.

*Fourth*, concerning Art. 24a, the social profile of access (ABI) does not exhibit a regime of extreme instability. For 2014–2024,  $CV(ABI) = 22.43\%$ , which signifies moderate variability and suggests the mechanism does not systemically "lock out" access, despite distinct annual fluctuations and periods of narrowing.

*Fifth*, the procedural rationality of Art. 24a is limited due to a systematic discrepancy between announcement and realization. On average, 42.7 thousand ha are announced, while 19.9 thousand ha are allocated; the realization rate is 48.6% with high variability ( $CV = 37.8\%$ ), with announced areas having  $CV = 39.6\%$  and allocated areas  $CV = 45\%$ . This is an indicator of low predictability in the annual process and significant process losses: the management decision of "announcement" is not consistently transformed into a contractual result.

*Sixth*, convincing adaptability (learning) according to the Stock–Flow logic is not established. The data show inertial dynamics of the fund alongside highly variable annual flows, and the tests do not confirm a systemic relationship between the accumulated state and subsequent management decisions. Therefore, the "result – correction of decisions" cycle is weakly manifested, which limits operational sustainability in terms of adaptive/reflexive management.

*Seventh*, the regime under Art. 37i produces operational results but does not demonstrate a strategic logic of stable compensation and coordination. Stable dependencies are not established between indicators of Art. 37i and those of Art. 24a, nor a stable internal relationship within Art. 37i between the utilization rate ( $S_{37i}$ ) and the intensity of Para. 13. This means the system can achieve results, but without empirically demonstrable, consistent logic of "learning," compensation, and coordination between instruments.

*Eighth*, the question remains open whether the persistently low utilization rate under Art. 37i should be interpreted as ecological precaution/structural limit or as a management deficit. The secondary data are compatible with both hypotheses: low levels may stem from the regime's normative goal, but can also signal a process problem when not accompanied by a predictable compensatory response.

*Ninth*, the actual allocation under Art. 37i is significantly realized through Para. 13, which is an operational strength of the regime (compensatory channel). However, the secondary data do not allow for a definitive assessment of whether this supports the social objective or creates a risk of concentration and deviation from the target function. Therefore, empirical verification through primary data regarding legitimacy and perceived fairness is necessary.

The assessments based on the criteria of the conceptual and evaluation framework are synthesized in Table 13.

**Table 13**

**Preliminary Assessment by Criteria (Based on Chapter Two – Secondary Data)**

<b>№</b>	<b>Assessment Criterion for Sustainability</b>	<b>What the Data from Chapter 2 Shows (Conclusion)</b>	<b>Preliminary Assessment (Chapter 2)</b>
1	Adaptability of management	Under Art. 24a, no systemic link is observed between "accumulated state" (Stock(t-1)) and annual announcement/activity (Flow(t)). This indicates a weak learning/feedback mechanism in planning.	Area for improvement
2	Procedural rationality	Under Art. 24a, there are significant discrepancies between announced and actually allocated areas, and high variability in the realization rate. Under Art. 37i – low utilization rate under the primary procedure and heavy reliance on Para. 13, indicating reactivity rather than results-informed management.	Area for improvement
3	Institutional coordination	There are no stable statistical relationships between the annual activity of Art. 24a and key indicators of Art. 37i and Art. 24c (including lags). Parallel/fragmented functioning of the mechanisms is observed.	Core problem
4	Selectivity under territorial pressure	Under Art. 24c, a "funnel-shaped" dynamic is observed: many requests, significantly fewer preliminary approvals, and the fewest contracts. Average selectivity is high (low permeability), indicating a strong institutional filter.	Strength
5	Social orientation (access)	Under Art. 24a, access breadth (ABI) is moderately stable in the long term, but there are years of narrowing and "larger" contracts. Under Art. 37i, access is dual-channel, with Para. 13 dominating by area in "normal" years – a potential concentration risk.	Mixed profile
6	Ecological precaution	Under Art. 37i, the utilization rate under the primary procedure is persistently low – this is compatible with precaution/regulatory limits, but by itself does not prove an active ecological strategy (rather a structural limit).	Structural limitation
7	Portfolio logic (compensation)	No stable compensatory effects are observed between 24a–37i–24c (i.e., "when one mechanism fails, another picks up"). Para. 13 compensates for internal losses in Art. 37i, but this is internal, not portfolio-level compensation.	Core problem
8	Process predictability	Coefficients of variation show high variability in key process indicators (especially for Art. 24a and selectivity under Art. 24c). Under Art. 37i, announcements are relatively stable, but realization and internal losses vary significantly.	Area for improvement
9	Economy of administrative resources	There is substantial "process waste": under Art. 24a – difference between announced and allocated areas; under Art. 37i – significant internal losses after distribution; under Art. 24c – losses between the request-approval-contract stages.	Core problem
10	Legitimacy and procedural fairness	Based on secondary data, only a hypothesis can be formulated: high variability and process waste likely undermine perceived fairness. The assessment will be finalized using the survey data (Chapter 3).	To be assessed in Chapter 3

In summary, the empirical results indicate that the management of lands from the SLF maintains a significant active fund and exercises strong control under territorial pressure, but does not demonstrate stable reflexivity and portfolio coordination between the regimes. The market mechanism under Art. 24a operates on a large scale, but with high process variability and significant losses between announcement and contracting, limiting predictability and suggesting a deficit in process learning. The socio-ecological regime under Art. 37i produces operational results, including through Para. 13, but lacks

a stable strategic logic of compensation and demonstrable coordination with Art. 24a. The mechanism under Art. 24c shows high selectivity as a form of public control, but also high variability in permeability, raising questions about the regime's predictability. These results justify the need for Chapter 3: the survey research is necessary to assess legitimacy and procedural fairness and to verify how process deficits are perceived by the participants.

## **CHAPTER THREE: OPPORTUNITIES FOR IMPROVING THE MANAGEMENT OF AGRICULTURAL LAND FROM THE STATE LAND FUND (SLF)**

In the **Third Chapter, Task 5** is realized. The evaluations of stakeholders (farmers – users of SLF land, and employees of Municipal Agricultural Offices) are analyzed, and key discrepancies in their perceptions of sustainability, trust, information availability, and procedural fairness are identified. Based on this, priority directions and a package of practical measures are formulated to improve the management mechanisms and to enhance the sustainability of both the outcomes and the operations of the management system.

In subsection **3.1. "Stakeholder Evaluations and Directions for Enhancing the Sustainability of SLF Management (Outcome Aspect)"**, the assessments of the outcome aspect of sustainability in SLF management are based on data from a survey conducted between June 2024 and September 2025 among two target groups: 1) farmers – users of agricultural land from the SLF, and 2) employees in Municipal Agricultural Offices involved in the administration and control of contracts. The design is deliberately two-sided: discrepancies in evaluations are analytically important because in the management of a state resource, these typically manifest as deficits in trust, information asymmetry, and perceived unfairness, which directly undermine the social sustainability and public acceptance of the management.

The instrument is constructed as blocks of statements reflecting the three dimensions of outcome sustainability – economic, social, and environmental, as well as key elements of legitimacy and procedural fairness (transparency, predictability, equality, control, and the quality of administrative service). In this way, the primary data "completes" the evaluation framework where secondary indicators are inherently limited: they can describe process outcomes (activity, selectivity, process losses) but cannot independently measure perceived fairness and trust, which determine whether the management is sustainable as a socially legitimate regime.

The reliability of the scales was verified using the internal consistency coefficient (Cronbach's  $\alpha$ ), justifying the aggregation of statements into indices and their use in group comparisons and interpretations.

**Table 14**

**Reliability of the Scales Used (Cronbach's  $\alpha$ )**

Scale	Number of Statements	Valid Cases (N)	Cronbach's $\alpha$
Social Sustainability – Total	26	54	0,975
Trust	8	54	0,943
Social Networks	7	52	0,937
Shared Values	6	51	0,931
Economic Sustainability – Total	13	54	0,961
Ecological Sustainability – Total	10	53	0,952
General Sustainability – Index	49	50	0,984

The  $\alpha$  values are high, indicating strong internal consistency of the measurements used. This allows the results to be interpreted as reliable empirical evidence for outcome sustainability and legitimacy. From a methodological standpoint, this means the constructed indices can serve as a basis for: 1) identifying areas of consensus and deficit in the evaluations; 2) comparing the groups (users – administration) as an indicator of potential tensions within the regime; and 3) formulating improvement directions grounded both in the process signals from Chapter 2 and in the perceptions of fairness and outcome effectiveness measured with primary data.

The obtained evaluations outline a moderately positive profile of sustainability, but with a clear distinction between dimensions and with systematic discrepancies between the target groups. For farmers, the overall sustainability score is above the midpoint of the scale, with economic and some ecological aspects rated higher, while social sustainability and indicators related to information provision, transparency, and control are rated lowest. The evaluations from the administration are consistently higher; despite the small number of respondents, the differences are an important diagnostic

signal for potential information asymmetry and a procedural gap, which in the management of public resources manifest as a deficit of trust and perceived unfairness.

**Table 15**

**Mean Scores for the Main Scales (Farmers and Administration)**

Scale	Farmers – Mean	Administration – Mean	Δ
<b>General Sustainability (25 items)</b>	<b>3,486</b>	<b>4,017</b>	<b>0,531</b>
Economic Sustainability	3,827	4,059	0,232
Ecological Sustainability	3,721	3,881	0,160
<b>Social Sustainability</b>	<b>3,375</b>	<b>4,225</b>	<b>0,850</b>
<b>Transparency and Control</b>	<b>3,104</b>	<b>4,267</b>	<b>1,163</b>
Procedural Fairness	3,325	4,166	0,841
Trust	3,353	4,065	0,712
Social Networks	3,212	4,286	1,074
Conflicts/Tensions	3,574	4,046	0,472

The results indicate that for farmers, economic sustainability and some environmental effects are more easily recognizable and more highly rated, while social sustainability is weaker and more sensitive to procedural deficits. The largest differences between the groups are concentrated in components related to information, transparency, and administrative support—i.e., not in the management's objectives, but in the experience of the process. This is managerially significant because it is precisely these components that "produce" trust and acceptance, without which sustainable results are difficult to reproduce over time.

At the level of individual statements, consistently lower ratings from farmers stand out regarding topics such as the effectiveness of control and rule enforcement, the sufficiency and timeliness of information, as well as the predictability of conditions and equality. Simultaneously, farmers give higher ratings for the overall economic utility of using SLF land and for some of the practices/requirements with an ecological character. Thus, the survey supports the conclusion that the problematic areas in sustainability are more procedural and socio-legitimatory, rather than outcome-related in a narrow economic sense.

In summary, the primary data validates the conclusions from Chapter 2 that the sustainability of SLF management is not exhausted by the existence of results but depends on the predictability, transparency, and fairness of the procedures. The discrepancies between farmer and administration evaluations are an empirical signal of procedural asymmetry, which should be addressed through measures to improve management standards, information channels, and control—the subject of the next subsection.

In subsection **3.2. "Directions for Improving the Sustainability of SLF Operations"**, an interpretive model (Fig. 15) is proposed that links the process signals from the analysis of secondary data (Chapter 2) with the perceptions of sustainability from the survey (Chapter 3) through an intermediate "bridge" of probable mechanisms. The goal is not causal identification, but structuring explanatory relationships and prioritizing management measures in areas where both: 1) the strongest process risks (variation/scope) are observed, and 2) the greatest discrepancies exist between the groups regarding indicators of social legitimacy, trust, and predictability.

## I. Process Signals (Secondary Data)

1. **Art. 24c of the LOUAL** – "Filter" → Key indicator: **VARIATION** (variability/instability of selectivity and/or process "waste" over time)
2. **Art. 37i of the LOUAL** – "Socio-ecological regime" → Key indicator: **SCOPE** (degree of actual reach to target groups)



## II. Mechanism: How Process Signals Translate into Tension

### M1. Institutional Unpredictability and Transaction Costs (from variation in Art. 24c)

- Fluctuating "permeability" of the filter; perception of "unequal rules"; costs in time, information, documents; risk of delays/rejections.

### M2. Insufficient Compensation and Pressure on Legitimacy (from limited scope in Art. 37i)

- Social groups remain outside the socio-ecological logic; tension around fairness and access.

### M3. Portfolio Fragmentation (Art. 24a–37i–24c)

- Weak feedback between regimes; limited "learning" from results; sustained reproduction of tension.



## III. Outcome Signals (Primary Data: Perceptions of Sustainability, 1–5)

**Social Sustainability:** Farmers 3.212 and Administration 3.953 ( $\Delta=0.741$ ) ← **"Core" of the discrepancy and lowest ratings** ↓

## IV. Management Inference → Priority Measures (Data-Driven Decisions)

**P1. Reducing Variation in Art. 24c** → More predictability, process rationalization, clear criteria, and feedback.

(Addresses primarily: Social Trust  $\Delta=0.712$ ; Social Fairness  $\Delta=0.560$ )

**P2. Increasing the Scope of Art. 37i** → Stronger compensatory effect and social legitimacy.

(Addresses primarily: Social Networks  $\Delta=1.074$ ; Social Sustainability  $\Delta=0.741$ )

**P3. Linking Regimes through "Learning"** → Annual cycle: results → corrections → measurement → next correction.

(Addresses sustainably: Overall Sustainability  $\Delta=0.55$ ; "Locking in" improvements over time)

*Source: Own development based on analysis of data from the Agricultural Report and survey research*

\*Note: The scores are mean values of composite indices on a 5-point scale (1–5), where a higher value indicates a more positive assessment of sustainability.\*

## Figure 15. "Process – Mechanism – Perceptions" Model

The model uses two process signals with high diagnostic value:

- **Art. 24c of the LOUAL** as a "filter" under territorial pressure – key signal: **VARIATION** (instability of selectivity and/or process "waste" over time);
- **Art. 37i of the LOUAL** as a socio-ecological regime – key signal: **SCOPE** (degree of actual reach to target groups and effectiveness of the compensatory logic).

The empirical profiles from the survey support the focus on social legitimacy. Overall sustainability is rated lower by farmers compared to the administration, with the discrepancy concentrated precisely in the social dimensions—social sustainability, social networks/coordination, and trust—while ecological sustainability shows closer mean values and higher consensus. This leads to the conclusion that the key risk to sustainable operation lies not in the "technical" feasibility of ecological requirements, but in the process conditions that generate tension in trust, fairness, and regime predictability.

Based on this, three mutually complementary mechanisms are formulated:

**M1. Institutional Unpredictability and Transaction Costs** (variation in Art. 24c). When selectivity and process "waste" under Art. 24c fluctuate over time, the result appears different under similar pressure. For users, this is experienced as uncertainty (unclear probabilities of success and time horizons) and as coordination costs (time, documents, contingency plans), which logically translates into lower ratings for trust and procedural fairness, as well as lower economic predictability.

**M2. Insufficient Compensation and Pressure on Legitimacy** (limited scope in Art. 37i). When the socio-ecological regime does not sufficiently reach target groups, a compensatory logic with more limited potential for socio-ecological correction (including through residual channels) is activated. This generates tension around access and fairness and explains why the discrepancies between groups are most pronounced precisely for "social networks/coordination" and social sustainability as a whole.

### **M3. Portfolio Fragmentation and Limited "Learning"** (Art. 24a–37i–24c).

When regimes operate with weak interconnection and insufficient feedback, the system does not close the "results – corrections" loop. Thus, the same tensions are reproduced over time: the administration assesses the internal procedural logic, while farmers assess the external effect and coordination costs, which stabilizes the discrepancies in sustainability ratings.

The derived mechanisms lead to three priorities for management measures to improve operational sustainability:

**P1. Reducing Variation in Art. 24c: Predictability and Process Rationalization.** The focus is on clear criteria, standardized deadlines, and consistent feedback—not to mechanically increase permeability, but to stabilize and make decisions predictable under similar conditions. Expected effect: strengthening trust and perceived procedural fairness.

**P2. Increasing the Scope of Art. 37i: Real Compensatory Effect and Social Legitimacy.** The priority implies management orientation toward actually reaching target groups through clearer access conditions, active communication, and limiting the regime's "uncovered areas." Expected effect: reducing tension around fairness and improving social sustainability.

**P3. Linking Regimes through a Learning Cycle: "Results – Corrections – Measurement."** An annual framework for management learning is recommended, which systematically combines key process indicators (variation in Art. 24c; scope in Art. 37i) with outcome indices from the survey and leads to specific corrections in rules and practices. This priority does not replace P1 and P2, but "locks in" improvements as sustainable, rather than one-off administrative interventions.

In subsection 3.3. "A Package of Measures to Enhance Sustainability: Summary", based on the combined interpretation of 1) the process deficits identified in the secondary data analysis (Chapter 2), and 2) stakeholder evaluations (Chapter 3.1), a package of measures aimed at improving the sustainability of SLF land management

is formulated. The package's logic follows the three priorities derived in the "Process – Mechanism – Perceptions" model (Chapter 3.2): P1) transparency and predictability, P2) social legitimacy and access, P3) management learning and feedback. The empirical profiles from the survey show that the discrepancy between farmers and administration is concentrated precisely in the social dimensions (trust, fairness, coordination), directing attention to mechanisms of information, procedural clarity, and manageability of process losses.

➤ **Transparency and Procedural Predictability: From "Administration" to Public Accountability**

The first block of measures addresses the identified deficits in information availability and perceived procedural fairness, which are key to social sustainability and institutional trust. The introduction of a unified system for public information and traceability of property and procedure status is recommended, including:

- A public register/portal (including GIS visualization) of SLF properties with basic status (available, leased, in procedure), access conditions, and key deadlines;
  - Standardized rules for notification and feedback to applicants (minimum information requirements, clear grounds for refusal, traceability of stages);
  - Unification of deadlines and a "single version of the truth" (unified reports on status, documents, and requirements), reducing transaction costs and minimizing tension from unpredictability.
- This block is directly aimed at improving indicators for trust, fairness, and information availability, while simultaneously supporting process sustainability by reducing "hidden" process losses and administrative burden.

➤ **Social Legitimacy and Access: Targeted Orientation and Protection of Vulnerable Groups**

The second block of measures targets outcome sustainability in the social dimension and the role of the SLF as a public resource, where access and

distribution rules are part of the regime's legitimacy. Based on the analysis of Art. 24a and Art. 37i of the LOUAL, the following are recommended:

- Clearer priorities and qualitative criteria for specific objectives (e.g., young farmers, organic production, investments with local added value), so that the SLF supports regional development, not just price competition;
- Longer-term predictability of contracts for investment-intensive activities (e.g., permanent crops, sustainable practices), to reduce incentives for short-term resource "extraction" and support investment and ecological sustainability;
- Limiting concentration risks through distribution monitoring (contract structure, average sizes, annual profiles) and, if necessary, corrections in access conditions.  
This block aims to reduce tension around access and increase the perceived fairness and public acceptability of management.

➤ **Active Ecological Management and Management Learning: "Results – Corrections" Cycle**

The third block of measures aims to transform management into an adaptive cycle where decisions are calibrated against observed results and risks. Although ecological sustainability is rated relatively higher, the results support the need for a more active and measurable ecological component integrated into the contractual regime:

- Minimum requirements for sustainable practices in contracts for larger areas (e.g., crop rotation, soil fertility measures, degradation prevention), with clear verification criteria;
- Targeted interventions for reclamation/restoration on problematic terrains (where applicable), including measures against erosion and for climate adaptation;
- An annual management "learning cycle" that compares process indicators (variation in Art. 24c, scope and structure in Art. 37i, "announced–

realized" gap in Art. 24a) with outcome assessments (perceptions of trust, fairness, predictability) and leads to specific corrections in rules and practices.

In conclusion, the dissertation examines the sustainable management of agricultural land from Bulgaria's State Land Fund (SLF), viewing it not as a single procedure but as a system of interconnected mechanisms for allocating and regulating access to the state-owned land resource. The theoretical part substantiates the understanding that sustainability in public resources has a dual nature: it manifests both as sustainability of outcomes (economic, social, and environmental effects) and as sustainability of governance functioning over time (predictability, consistency, risk manageability, coordination, and adaptive response under pressure and change). On this basis, an assessment methodology is developed that integrates process and outcome indicators and allows governance to be evaluated simultaneously by "what it achieves" and "how it works." The methodology is applied through a combination of secondary-data analysis for the period 2007–2024 and an analysis of stakeholder assessments, which complements the quantitative diagnosis with a dimension of social legitimacy, perceptions of fairness, awareness, and trust. The results confirm that sustainability cannot be assessed unambiguously solely through separate quantitative outcomes: it remains incomplete where key process characteristics are unpredictable and volatile, and where there are deficits in the consistency of managerial actions. A key conclusion is also reached that social legitimacy is an essential component of sustainability and is influenced by the stability of the governance environment. The identified discrepancies in social assessments between farmers and the administration outline a legitimacy deficit which, in theoretical terms, is associated with lower willingness to comply and greater conflict in the implementation of the regime. Furthermore, it is shown that sustainable functioning depends on coordination among the mechanisms and on a "closed-loop" feedback cycle (signals – interpretation – adjustments – monitoring of effects). The dissertation demonstrates that the sustainable management of SLF land requires both balanced outcomes and sustained governance functioning over time through predictable rules, consistency, effective institutional control, and coordination among mechanisms.

The developed methodology and the applied assessment provide a basis for objectifying the state of governance and for formulating priorities and practical guidelines for long-term improvement.

#### IV. STATEMENT OF CONTRIBUTIONS OF THE DISSERTATION

1. *A conceptual framework for assessing the sustainable management of agricultural land by the SLF has been developed.* It conceptualizes the SLF as a state land portfolio and integrates the three normatively differentiated mechanisms under the ALOUA (Art. 24a, Art. 37i, and Art. 24c) into a unified analytical logic for managing access, socio-ecological targeting, and control under territorial pressure.
2. *An original methodology for integrated sustainability assessment has been developed.* It allows sustainability to be measured simultaneously as functional sustainability (predictability, procedural rationality, selectivity under pressure, coordination, and "learning") and as outcome sustainability (economic, social, and environmental effects) over a time horizon.
3. *An original empirical application of the methodology has been implemented over an extended period (2007–2024).* It is based on annual secondary data on administrative flows and the "applications–approvals–contracts" chain, supplemented by a survey among key stakeholders. This approach enhances the quantitative results with a dimension of social legitimacy and perceptions of effectiveness and fairness.
4. *Science-based practical guidelines and a package of measures for improving SLF management have been formulated.* They are structured as "actionable levers" (rules, guidelines, transparency/information provision, control, and coordination between mechanisms). Thus, the research moves beyond descriptive analysis and provides a framework for prioritizing managerial interventions to enhance sustainability.

## V. LIST OF PUBLICATIONS FROM THE DISSERTATION

### Articles

1. Varbanov, D., “*Finding Optimal Solutions for Achieving Sustainable Development and Good Governance of a State Land Fund in Regional Directorates of Agriculture*”, Shumen Institute of Technology, SiT Review Index-2025, pp. 38–44.

### Reports

1. Varbanov, D., “*Effective Management of Agricultural Land by the State Land Fund in the Shumen Region*”, "The Bulgarian Dream – The Positive Concept", 2020, NBU Sofia, pp. 327–337.
2. Varbanov, D., “*Participation of the State Administration in Creating Land Use Arrays for Agricultural Land*”, "Sustainable Management of Land Resources – Contemporary Practices and Solutions", Publishing House “Science and Economy” 2021, IU-Varna, pp. 67–74.

## **VI. DECLARATION OF ORIGINALITY**

I hereby declare that this dissertation is entirely my own work, and that no external publications or materials have been used in its preparation in violation of their copyright.