

ECONOMIC SECURITY IN THE CONTEXT OF THE SUSTAINABLE DEVELOPMENT PARADIGM: CONCEPTUAL FOUNDATIONS AND STRATEGIC TRAJECTORIES

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Abstract: *This study examines the conceptual and functional relationship between economic security and sustainable development in the context of climate change, resource scarcity, biodiversity loss, and increasing geo-economic tensions in the 21st century. It explores the contradictions between economic growth and the regenerative capacity of the biosphere, emphasizing the strategic importance of the green economy as a development priority. The research applies systemic analysis, comparative assessment, and an integrative approach, interpreting economic security as a protective mechanism against external shocks and sustainable development as the internal adaptive capacity of socio-economic systems. A conceptual framework titled the Sustainable Development Matrix of Socio-Economic Systems is proposed, integrating resource efficiency, social stability, ecological balance, and innovation-driven security indicators. The findings indicate that ecological factors should be considered an essential component of economic security. Sustainable development is framed as non-destructive progress based on a synthesis of anthropocentric and biosphere-centric perspectives. The study concludes that noospherogenesis-based development models provide a robust strategic framework for enhancing long-term competitiveness and resilience of national economies.*

Keywords: *economic security, green economy, sustainable development, resource efficiency, biosphere-centrism, strategic resilience, intergenerational equity.*

1. Introduction

In the 21st century, the intensification of global transformations, acceleration of technological progress, and increasing interdependence of economic systems have created a qualitatively new stage in the relationship between society and nature. Climate change, biodiversity loss, scarcity of energy and water resources, and rising geo-economic tensions raise fundamental questions regarding the sustainability of existing development models. Traditional growth paradigms have long measured economic performance primarily through quantitative indicators; however, such approaches have insufficiently accounted for ecological constraints and social balance. In the current context, aligning economic growth with the carrying capacity of the biosphere has become a strategic necessity. Systemic global risks demonstrate that development sustainability is determined not only by the expansion of production and consumption but also by efficient resource utilization, ecological balance, and social inclusiveness. From this perspective, a comprehensive analysis of the interrelationship between economic security and sustainable development is of both theoretical and applied significance.

1.1. Theoretical Framework

The theoretical foundation of the study is based on the concept of sustainable development systematized in the 1987 report *Our Common Future*, prepared by the World

Commission on Environment and Development (the Brundtland Report). According to this approach, development should meet the needs of the present generation without compromising the ability of future generations to meet their own needs. This concept integrates the principles of economic efficiency, environmental sustainability, and social equity. In contemporary scholarly discourse, economic security is interpreted as a system of institutional and structural mechanisms ensuring the resilience of the state and society against internal and external shocks. In this context, economic security functions as a “protective shield,” while sustainable development represents a strategic framework that shapes the adaptive and self-renewing capacity of socio-economic systems. Thus, both categories are mutually complementary and form the conceptual basis of a new development paradigm.

1.2. Problem Statement

At the current stage, the deepening of global civilizational processes, accelerated technological transformation, and the rapid expansion of production and consumption have fundamentally altered the structure of interactions between society and the natural environment. As a result, a systemic and profound contradiction has emerged between the intensity of economic growth and the ecological sustainability of the biosphere. While traditional extensive and resource-oriented development models have prioritized economic expansion, they have largely overlooked the regenerative capacity of ecosystems and the finite nature of natural capital. The central problem, therefore, lies in the imbalance between economic growth rates and the regenerative capacity of the biosphere, which leads to the cumulative increase of ecological, social, and economic risks at the global level. This issue extends beyond environmental protection alone; it concerns the long-term sustainability of economic security, national sovereignty, and civilizational stability.

2. Economic Security and Green Economy: A New Conceptual Framework of Sustainable Development

In the 21st century, the intensification of interactions between society and nature and the consequent escalation of global civilizational challenges have significantly increased risks to human security. Climate change, rapid depletion of resources, loss of biodiversity, and deepening geo-economic contradictions clearly expose the limitations of the existing development model. In this context, the question “to be or not to be?” has moved beyond the philosophical domain and has become a fundamental existential issue in global governance and strategic planning processes. In order to ensure civilizational continuity and respond adequately to global challenges, since the late 20th century important international initiatives have been undertaken to establish a new model of interaction between society and nature. As a conceptual outcome of these efforts, the idea of sustainable development was formalized and systematized in the *Brundtland Report* (1987), which defined sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987). This definition later became a methodological foundation for national strategies, institutional frameworks, and international programs, including the 2030 Agenda for Sustainable Development (United Nations, 2015).

The interpretation of sustainable development has evolved in parallel with transformations in scientific paradigms, acquiring new qualitative characteristics at each stage. In modern literature, sustainable development is characterized by the integration of economic efficiency, ecological balance, and social equity principles, forming a systemic triad of development sustainability (Elkington, 1994). At the same time, economic security is increasingly understood as a system of institutional and structural mechanisms ensuring the resilience of socio-economic systems against internal and external shocks. In this context, economic security functions as a “protective shield,” while sustainable development represents the strategic framework that shapes adaptive and self-renewing capacity of socio-economic

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systems. Thus, both categories are mutually reinforcing and constitute the conceptual foundation of a new development model (Kruglova, 2019).

From a general theoretical perspective, economic security refers to the availability of necessary resources, technologies, and institutional mechanisms that ensure the long-term stability and uninterrupted functioning of socio-economic systems. However, when the principle of continuity is considered, it becomes evident that development models based on exhaustible resources generate systemic risks in the long term. Resource degradation and the violation of ecological limits weaken the structural foundations of economic security. In this regard, sustainable resource management and green transformation become essential prerequisites for systemic stability (Pearce & Barbier, 2000).

The green economy model plays a crucial bridging role between economic security and sustainable development. By integrating resource efficiency, low-carbon technologies, circular economy principles, and environmental responsibility, the green economy establishes an ecological paradigm of economic security (Kruglova, 2019). In this framework, economic security is no longer limited to financial and productive capacity but also includes the regeneration of natural capital and the sustainability of ecosystem services. Therefore, sustainable development requires an integrated approach that combines economic, ecological, and social determinants into a unified strategic framework. The interrelationship between economic security and sustainable development can be further analyzed through several key dimensions. First, resource provision and resource efficiency highlight the transition from extensive to intensive development models. Second, financial stability and social inclusiveness demonstrate that economic resilience cannot be sustained without equitable income distribution and human capital development (Sen, 1999). Third, energy security and decarbonization underline the importance of renewable energy expansion in reducing systemic risks and enhancing long-term stability. Finally, institutional stability and adaptive governance mechanisms ensure that socio-economic systems remain flexible under changing environmental and market conditions (Daly, 1991).

Conceptually, this relationship can be described at three levels: macro-level (strategic sustainability of national economies and protection of natural capital), meso-level (sectoral and regional resource efficiency and innovation-based transformation), and micro-level (environmental responsibility and adaptive capacity of firms and households). Within this structure, economic security primarily functions as a risk management and shock absorption mechanism, whereas sustainable development defines the long-term transformation trajectory of the system. In conditions of global uncertainty and ecological constraints, ensuring economic security cannot be limited to defensive measures alone; it must be integrated with sustainable development principles that prioritize ecological restoration and social stability.

Table 1. Sustainable development matrix of social-economic systems

Conceptual Direction	Importance from the Perspective of Economic Security	Sustainability Mechanism
Resource Efficiency	Reduction of raw material dependence and import reliance	Circular economy and recycling
Social Stability	Prevention of internal unrest and social disruptions	Inclusive growth, fair income distribution, and employment
Ecological Balance	Protection from economic losses caused by natural disasters and climate change	Green technologies and renewable energy
Innovation Security	Elimination of dependence on foreign technologies	Research and Development (R&D) and development of domestic intellectual property

Source. Prepared by the author based on the studied literature sources (1, 4, 5, 11, 13, 14, 17–19, 21, 23, 26; World Commission on Environment and Development, 1987; Elkington, 1994; Daly, 1991; United Nations, 2015; Sachs, 2015; Pearce & Barbier, 2000).

Figure 1. Conceptual Model of Socio-Economic System Stability and Economic Security

The presented framework illustrates a systemic model of socio-economic stability and its transformation into economic security and sustainable development. At the core of the model lies Socio-Economic System Stability, which is operationalized through four interrelated strategic pillars: Resource Efficiency, Social Stability, Ecological Balance, and Innovation Security.

The first pillar, *Resource Efficiency*, emphasizes circular economy principles, resource sovereignty, and supply chain resilience as key determinants of reducing external dependency and strengthening domestic economic autonomy. The second pillar, *Social Stability*, is grounded in inclusive growth, equitable income distribution, and employment stability, which collectively ensure internal socio-economic cohesion and mitigate systemic risks of social fragmentation. The third pillar, *Ecological Balance*, reflects the increasing transformation of environmental risks into economic risks. It highlights the role of green technologies, renewable energy systems, and climate risk reduction mechanisms in safeguarding long-term economic resilience. The fourth pillar, *Innovation Security*, represents the technological and intellectual foundation of the system, encompassing R&D development, technological independence, and intellectual property accumulation as drivers of competitiveness and strategic autonomy.

These four pillars collectively converge into the formation of Economic Security, which functions as an integrative mechanism ensuring system-wide resilience against internal and external shocks. Economic security, in turn, serves as a transitional stage toward Sustainable Development, defined as a balanced integration of economic, social, and environmental objectives. Ultimately, this trajectory leads to Strategic National Resilience, representing the highest level of systemic stability and adaptive capacity. From a theoretical perspective, the model demonstrates that economic security is not an isolated domain but rather an outcome of multidimensional sustainability interactions. The integration of resource, social, ecological, and innovation dimensions reflects a shift from traditional growth-oriented paradigms toward a resilience-based development framework.

3. The Strategic Trajectory of Economic Security in the Context of Sustainable Development

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The sustainability of economic growth rates characterizes the dynamics of expanded reproduction with considerable precision. The continuity and efficiency of this production mode are directly dependent on resource availability. Hence, the systemic continuity of a socio-economic development trajectory as a key condition of economic security requires an adequate and high-quality resource base. This is a fundamental premise of the sustainable development concept as defined by the United Nations, which frames it as a strategic approach to socio-economic progress aimed at preserving biosphere integrity and ensuring human survival (United Nations, 2002; World Commission on Environment and Development, 1987).

Within this framework, sustainable development provides a global governance orientation for state policy, strategic planning, and decision-making processes. It implies the formation of development trajectories for socio-natural systems that may either ensure or undermine economic security depending on their structural parameters. From this perspective, civilizational trajectories can be grouped into two categories: spontaneous (unregulated) trajectories and regulated trajectories. Historically, spontaneous trajectories maintained relative system stability over long periods. However, in the modern era, they significantly increase systemic risks due to approaching critical “tipping points” of irreversibility. Current resource consumption levels exceed the regenerative capacity of the biosphere, and the ecological footprint threshold was already surpassed in 2016 (WWF, 2016). Therefore, global and national economic security increasingly depends on the transition to green technologies, embedded within regulated socio-natural-economic development frameworks (Kruglova, 2019).

The term “sustainable development” has undergone a complex conceptual evolution. Its translation into different languages is not fully unambiguous, as “sustainability” is often mistakenly interpreted as static equilibrium, whereas in reality it reflects dynamic and nonlinear processes. Some scholars emphasize terminological limitations, arguing that absolute sustainability is conceptually unattainable due to systemic variability in nature and society (Korchagina, 2008; Sachs, 2015). The conceptual foundations of sustainable development were formalized at the 1992 Rio Conference (United Nations, 1992) and further institutionalized through the Johannesburg Declaration of 2002. These principles were later consolidated in the 2030 Agenda for Sustainable Development (United Nations, 2015).

UN documents emphasize that sustainable development principles are not entirely new; they are historically rooted in traditional societies and local community practices. Even industrialized countries retain fragmented elements of sustainability within their socio-economic systems. These ecosystem-based and community-centered components now represent a strategic foundation of the modern sustainable development paradigm. In Western literature, sustainable development is defined as a development model in which the needs of future generations are not compromised by current economic activity. This reflects the principle of intergenerational equity, highlighting the risks associated with overexploitation of finite resources (Sen, 1999; Stiglitz, 2012; Sachs, 2015). More specifically, sustainable development is interpreted as the balanced reproduction of territorial potential including economic, ecological, social, and resource components ensuring long-term socially oriented development conditions (Leksin & Shvetsov, 2007). From a systemic economic perspective, sustainability and economic security are tightly interconnected. Classical models such as *The Limits to Growth* demonstrate the structural constraints of exponential growth within finite systems (Meadows et al., 1972). Later approaches, including steady-state economics, argue that long-term stability requires maintaining economic activity within ecological limits (Daly, 1991). The triple bottom line framework further integrates economic, social, and environmental dimensions of development (Elkington, 1994), while OECD and World Bank methodologies expand evaluation beyond GDP toward comprehensive sustainability indicators (OECD, 2017; World Bank, 2018). For Azerbaijan, these principles are reflected in national development

policy, particularly in the strategic document “Azerbaijan 2030: National Priorities for Socio-Economic Development,” which emphasizes green growth, environmental sustainability, and inclusive development as key pillars of long-term economic security (President of the Republic of Azerbaijan, 2021).

Table 2. Schematic Presentation of the Concept of Sustainable Development

Dimension	Main Directions	Key Mechanisms	Outcome
Economic	Sustainable economic growth, efficiency, competitiveness	Innovations, efficient use of resources, investment environment, employment growth	Economic stability, long-term development, economic security
Social	Social justice, improvement of welfare, inclusiveness	Access to education and healthcare, social protection mechanisms, human capital development	Improved quality of life, social stability
Environmental	Environmental protection, ecological balance	Conservation of natural resources, ecological standards	Sustainability of ecosystems, healthy environment
Integration	Economic–social–environmental coordination	Green economy, sustainable governance, institutional mechanisms	Ensuring sustainable development

Source. Prepared by the author based on analyzed sources (President of the Republic of Azerbaijan, 2021; Daly, 1991; Sachs, 2015; United Nations, 2015; UNDP, 1991; World Commission on Environment and Development, 1987).

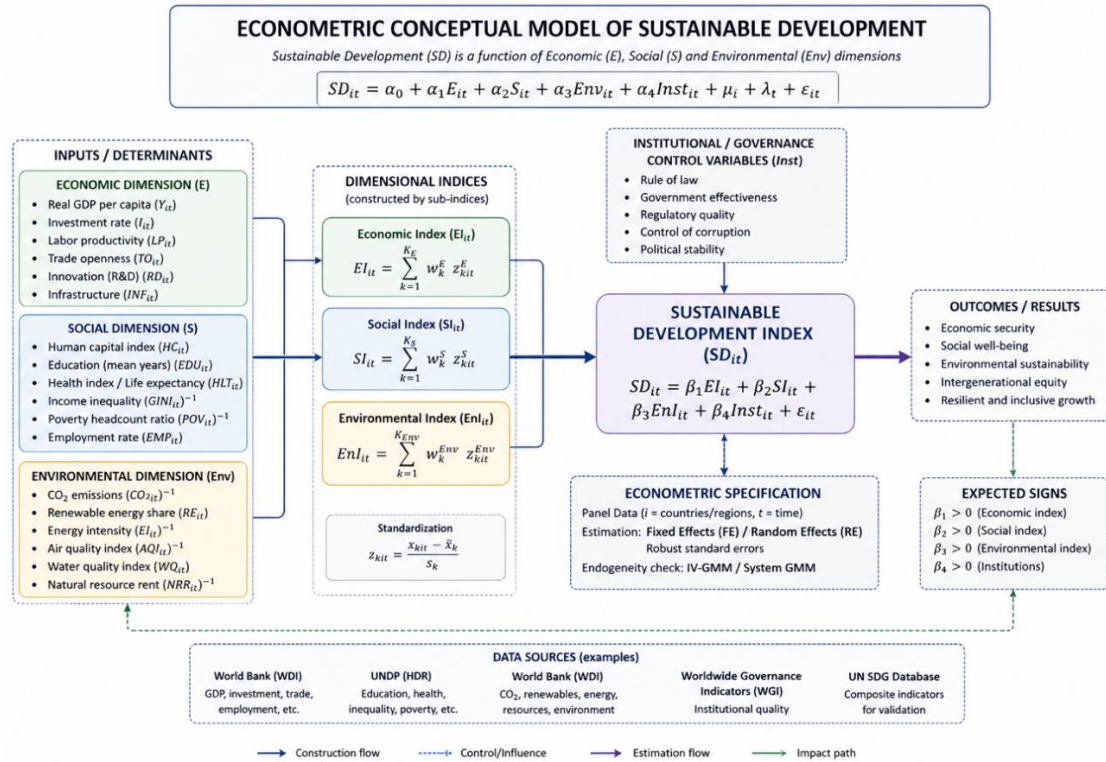
Based on the above, the main criterion is the preservation of all elements of regional potential, as well as the direct impact of quantitative and qualitative parameters on the population’s standard of living. The presented table reflects a systemic and integrative model of the sustainable development concept. The concept is formed on the basis of the interdependence of economic, social, and environmental dimensions, an approach widely recognized in modern economic theory as the triple bottom line model. The economic dimension constitutes the material foundation of sustainable development and aims to ensure long-term economic growth, efficient resource utilization, and improvement of the innovation and investment environment.

This dimension is crucial for strengthening economic security and maintaining economic stability. The social dimension is focused on improving societal welfare, ensuring social justice, and developing human capital. Expanding access to education and healthcare, as well as strengthening social protection mechanisms, forms the social foundation of sustainable development and stimulates inclusive economic growth. The environmental dimension encompasses environmental protection, efficient and responsible use of natural resources, and the maintenance of ecological balance. This dimension plays a decisive role in protecting the interests of future generations and ensuring the sustainability of ecosystems. The integrated approach involves the coordination of these three dimensions. Through green economy principles, sustainable governance, and institutional mechanisms, economic growth is aligned with social welfare and environmental security. This integrated approach represents the key outcome of sustainable development. Thus, the table clearly illustrates the goal–mechanism–outcome chain of the sustainable development concept, systematizing both its theoretical and applied nature. Based on the above conceptual approaches, it should be emphasized that sustainable development can essentially be characterized as “development without

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destruction” (Leksin & Shvetsov, 2007). This concept combines two fundamental and inseparable aspects: the anthropocentric aspect, which reflects human welfare and progress, and the biosphere-centric aspect, which emphasizes environmental protection as a prerequisite for human development. Modern socio-economic, scientific-technical, and industrial-technological transformations, along with the resulting environmental risks and global threats, have made the formation of a new development paradigm inevitable, as highlighted at the 1992 Rio de Janeiro Conference (United Nations, 1992). This paradigm is based on social justice and high economic efficiency while aiming to preserve natural ecosystems for both present and future generations.

Figure 2. Econometric conceptual model of sustainable development



The figure 2 depicting the econometric conceptual model of sustainable development explains how economic, social, and environmental dimensions jointly determine a country's sustainable development performance. It treats sustainable development as a dependent variable influenced by measurable indicators from all three pillars. The economic dimension includes variables such as GDP per capita, investment, productivity, trade openness, innovation, and infrastructure, which represent growth and efficiency. The social dimension captures human capital, education, health, income equality, poverty levels, and employment, reflecting welfare and inclusiveness. The environmental dimension includes CO₂ emissions, renewable energy use, energy intensity, air and water quality, and natural resource depletion, representing ecological sustainability.

To operationalize the relationship between economic security and sustainable development, the following conceptual econometric model is proposed:

$$ES = \alpha + \beta_1 RE + \beta_2 SS + \beta_3 EB + \beta_4 IS + \varepsilon$$

Where:

- **ES** = Economic Security Index
- **RE** = Resource Efficiency (circular economy, resource productivity)
- **SS** = Social Stability (income equality, employment, human capital)
- **EB** = Ecological Balance (CO₂ emissions, renewable energy share)

- IS = Innovation Security (R&D intensity, technological independence)
- ε = stochastic error term
- $\alpha, \beta_1-\beta_4$ = estimated coefficients showing the contribution of each dimension

To ensure system viability under ecological limits, the following constraint can be added:

$$RE \leq BC$$

Where:

- BC = Biosphere Carrying Capacity

The abovementioned condition ensures that resource use does not exceed ecological regeneration limits. For a more advanced representation of civilizational development trajectories, the following functional relationship can be introduced to describe sustainable development dynamics:

$$SD_t = f(ES_t, EC_t, IN_t, G_t)$$

Where:

- SD_t represents the level of sustainable development at time t ;
- ES_t denotes economic security at time t ;
- EC_t refers to environmental (ecological) conditions at time t ;
- IN_t reflects innovation capacity, including technological advancement and R&D potential;
- G_t represents governance effectiveness, encompassing institutional quality, regulatory efficiency, and policy coherence.

The functional specification implies that sustainable development is a dynamic and multidimensional process determined by the simultaneous interaction of economic, ecological, technological, and institutional factors.

Besides, the Sustainable Development Index (SADI) is introduced as an aggregated empirical proxy for sustainable development performance. It integrates multidimensional indicators covering economic resilience, social welfare, environmental integrity, and institutional quality. In this study, SADI serves as a synthetic measurement tool that operationalizes the theoretical model of sustainable development and enables its empirical approximation within an economic security framework. Sustainable development can be operationalized through the composite SADI index, which integrates economic, social, and environmental dimensions into a single measurable indicator. Accordingly, the model can be reformulated as:

$$SADI_t = \alpha + \beta_1 ES_t + \beta_2 EC_t + \beta_3 IN_t + \beta_4 G_t + \varepsilon$$

Where:

- $SADI_t$ = Sustainable Development Index at time t
- ES_t = Economic security
- EC_t = Environmental condition
- IN_t = Innovation capacity
- G_t = Governance effectiveness
- ε = stochastic error term

In this specification, the SADI index becomes the endogenous outcome variable, allowing empirical validation of how economic security and its determinants jointly shape sustainability performance.

As a logical result of evolutionary processes, the sustainable development model currently represents a systemic structure in which ecological, economic, social, and integration components are prioritized in optimal balance. Summarizing the presented definitions, we formulate our conceptual understanding of sustainable development as follows: Sustainable development is the ability of a socio-economic system at any hierarchical level (global, national, regional, or local) to function and evolve within defined parameters under conditions of both endogenous and exogenous negative influences. This development model must ensure

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the progressive and socially oriented interests of individuals, maintain ecological balance, create necessary conditions for the evolution of the biosphere as the foundation of life on Earth, and ultimately support the health and long-term existence of humanity. Finally, the components of sustainable development within the paradigm of economic security can be systematically presented in the following table based on the conceptual framework outlined above (Table 3).

Table 3. Components of Sustainable Development in Ensuring Economic Security

Component Name	Essence and Relation to Economic Security	Key Principles
Anthropocentric Aspect	Focuses on human-centered development, ensuring progressive and socially oriented living standards for individuals and society.	Social justice, protection of human capital, safeguarding vital interests
Biosphere-Centric Aspect	Emphasizes the protection of the environment and maintaining ecological balance as the foundation for human development.	Protection of the biosphere, ecological equilibrium, respect for nature's regenerative capacity
Technological Aspect	Involves the application of innovative, "green," and waste-free technologies that transform the resource base of the economic production system.	Smart eco-oriented impact, resource efficiency, transition to renewable energy sources
Intergenerational Equity	Ensures that current economic interests do not compromise the needs of future generations.	Balanced resource distribution across generations, sustainable (non-destructive) development trajectory
System Stability	Maintains the system's ability to function under internal (endogenous) and external (exogenous) shocks and disturbances.	Risk and threat management, enhancement of economic resilience

Source. Prepared by the author based on reviewed sources [1,6,9,15,21,23,26].

The sustainable development complex is analyzed from the perspective of ensuring economic security along two main trajectories: free and regulated pathways. Free trajectories refer to development patterns that, at the current stage, have a high probability of causing instability in the nature civilization system and leading to the deterioration of economic security. In contrast, regulated trajectories are considered an integral part of economic security and are based on the application of new technologies that keep resource consumption within the limits of nature's regenerative capacity. As a result, the interaction of these components ensures the restoration of the resource base after humanity passed the so-called "point of no return" in 2016, while also maintaining the economic system within the framework of national ecological security. At the same time, the conceptual differences between the sustainable development approach and models predicting ecosystem destabilization are comparatively summarized in Table 4. The main factor necessitating the transition to a sustainable development model is the highly risky and unstable nature of the current anthropogenic environment (Yusibov, 2026). The present situation requires the development and urgent implementation of comprehensive preventive measures aimed at stabilizing the biosphere and restoring key parameters of economic security. The comparative characteristics presented in Table 4 confirm that the sustainable development model represents a new stage of civilizational development economic and social within the constraints of planetary biosphere limits and environmental protection imperatives.

Table 4. Comparative Analysis of Sustainable Development Model and Non-Stable Development Models

Comparison Criteria	Non-Stable (Extensive) Models	Sustainable Development Model (Enduring Development)
Resource Use	Exploitation of non-renewable resources and extensive growth.	Prioritization of renewable and alternative resources.
Environmental Approach	Reactive exploitation of the environment for profit.	Proactive compliance with planetary–biosphere limits.
Nature of Development	Risk of instability and ecological crisis.	Safe and systematic civilizational progress.
Energy Base	Fossil fuels and high carbon emissions.	Renewable energy sources and “green” technologies.

Source: Prepared by the author based on reviewed sources [1,6,9,15,25].

This model, while minimizing the scale and intensity of anthropogenic pressure on the environment, also aims to transform the resource base of the economic production system. This transformation essentially implies a shift toward an alternative economic model based on renewable resources and inexhaustible energy sources, thereby ensuring the harmonization of biosphere protection with the developmental interests of civilization. Consequently, the study of the interrelationship between the transition to sustainable development and noospherogenesis as a means of realizing economic security potential is of significant scientific importance. This interrelationship is manifested in several key aspects. First, the necessity of ensuring the future existence of society and civilization as a whole will strongly stimulate scientific research and creative activity. Second, the main mechanism for implementing the sustainable development model is collective human intelligence. Thus, solving global challenges and threats facing modern civilization is impossible through the efforts of individuals or single states alone. In this regard, the global community is confronted with the necessity of adopting a development model based on intelligence and knowledge. The analysis of most normative and strategic documents on the development of the green economy shows that the formulation of unified and systematic principles for sustainable territorial development is both feasible and necessary. These principles can be summarized as follows:

- The principle of considering human needs and harmonizing human activity with nature
- The principle of developing civil society institutions and ensuring their active participation in sustainable territorial development
- The principle of strengthening social protection of families and children
- The principle of protecting the cultural, social, and economic interests of indigenous populations
- The principle of combating population decline and socio-demographic degradation processes
- The principle of increasing legal culture and fostering respect for the law among the population
- The principle of intensifying economic development through the application of advanced technological innovations
- The principle of ensuring and improving environmental quality
- The principle of improving environmental protection legislation
- The principle of developing paid nature use and natural resource management systems
- The principle of efficient and rational use of natural resources
- The principle of considering the interests and needs of future generations

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The systematic implementation of the proposed principles of sustainable territorial development has significant scientific and practical importance for forming sustainable development models at national, regional, and subregional levels, as well as for ensuring long-term economic security.

4. Conclusions

The accelerating global transformation processes of the 21st century, combined with deepening ecological and socio-economic imbalances at the planetary level, have fundamentally intensified the interaction between society and nature. This shift has made the transition toward a qualitatively new stage of the economic security paradigm both necessary and unavoidable. The conducted theoretical and conceptual analysis demonstrates that economic security is no longer limited to a defensive mechanism against internal and external threats. Instead, it has evolved into a complex systemic category that is intrinsically linked to the principles of sustainable development, ensuring self-renewal capacity, adaptability, and long-term resilience of socio-economic systems. From a systems perspective, economic security should be redefined as an integrated structure in which environmental factors are not externalities but internal and inseparable components of the socio-economic system. The stability and competitiveness of any economic system are therefore directly conditioned by the equilibrium state of its surrounding ecological environment, which functions as a higher-order supersystem. In this context, ecological security must be conceptually embedded within the architecture of economic security.

At the same time, the current global evidence of exceeding biospheric regenerative limits clearly indicates the high-risk nature of uncontrolled and resource-intensive development models. This validates the necessity of transitioning toward regulated development trajectories based on ecological constraints, reduced carbon intensity, and green technological innovation. Strategic economic planning must therefore shift from linear growth logic to adaptive models that internalize environmental limitations as core planning parameters. Sustainable development, in this sense, represents a “non-destructive progress” model that replaces the artificial dichotomy between anthropocentric and biosphere-centered approaches with a harmonized synthesis. This ensures the protection of both present and future generations while reinforcing intergenerational equity as a foundational principle of economic security. The preservation of ecosystem stability thus becomes not a secondary environmental objective but a core strategic pillar of national and global security frameworks. Furthermore, the transition to a sustainable development model extends beyond institutional restructuring and technological modernization. It requires a deeper intellectual transformation of economic thinking, driven by collective cognitive capacity and innovation-based governance. Green technologies, digitalization, and enhanced scientific research potential collectively form an intellectual self-defense mechanism of the economy against ecological and systemic risks, accelerating the shift toward a noospheric development paradigm. Overall, the analysis confirms that the harmonization of human needs with ecological constraints, efficient and rational resource governance, and the institutionalization of green economy mechanisms constitute the strategic foundation of long-term economic security. The systematic implementation of these principles strengthens the resilience of national economic systems, enhances their adaptive capacity under global uncertainties, and ensures their competitiveness in the context of global transformations. Consequently, this lays the scientific and practical groundwork for the formation of a new, sustainability-oriented model of economic security.

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