

THEORETICAL FOUNDATIONS OF SUSTAINABLE DEVELOPMENT IN THE CONTEXT OF DIGITAL TRANSFORMATION

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Summary. Sustainable development integrates economic growth, social inclusion, and environmental protection. This article examines the theoretical foundations of sustainable rural development in fragile contexts, focusing on Lebanon during its digital transformation. Drawing on ecological economics, institutional economics, systems theory, political ecology, and the human development approach, it is determined that rural resilience depends not only on technology but also on environmental constraints, governance quality, and inclusive policy. The Belarusian scientific school offers practical recommendations, emphasizing institutional coordination and innovation-driven development. For Lebanon, success depends on rebuilding institutions and policy coherence, making governance a central challenge.

Аннотация. Устойчивое развитие объединяет экономический рост, социальную интеграцию и охрану окружающей среды. В данной статье рассматриваются теоретические основы устойчивого развития сельских районов в нестабильных условиях, с акцентом на Ливан в период цифровой трансформации. Опираясь на экологическую экономику, институциональную экономику, теорию систем, политическую экологию и подход к развитию человеческого потенциала определено, что устойчивость сельских районов зависит не только от технологий, но и от экологических ограничений, качества управления и инклюзивных мер. Белорусская научная школа предлагает практические рекомендации, подчеркивая институциональную координацию и развитие, основанное на инновациях. Для Ливана успех зависит от восстановления институтов и согласованности политики, что делает управление центральной проблемой.

Key words: sustainable development, economic growth, social integration, environmental components, innovations, technologies.

Ключевые слова: устойчивое развитие, экономический рост, социальная интеграция, экологические составляющие, инновации, технологии.

Relevance of the study. Sustainable development has become a central requirement for strengthening the resilience and long-term viability of rural regions, particularly in countries facing prolonged economic and institutional fragility. In Lebanon, rural communities experience severe constraints in accessing basic services, economic opportunities, and effective institutional support, creating significant developmental imbalances that require targeted and integrated policy responses.

The purpose of the article – to examine the theoretical foundations of sustainable rural development and identify directions for their transformation in the unstable conditions of Lebanon.

Research methodology. The research was conducted based on the works of Russian and international scholars. Factor and comparative analysis, as well as expert assessments, were used.

Main result. The conducted research allowed us to obtain the following scientific results, containing theoretical and methodological aspects on the problem under study.

1. Theoretical Framework. Sustainable development has emerged as a central interdisciplinary paradigm that redefines the relationship between economic growth, social equity, and environmental protection. Unlike traditional development models that prioritized economic expansion, it is grounded in the recognition that economic activity is constrained by ecological limits and generates long-term environmental and social risks [1]. Rural areas are central to sustainability but face poverty, weak infrastructure, climate risks, and institutional fragility, which are intensified in Lebanon by economic crisis and weak governance [2, 3, 4].

Ecological economics deepens this perspective by arguing that the economy is embedded within the biosphere and constrained by biophysical limits or planetary boundaries. It treats climate stability, biodiversity, fertile soils, and freshwater as non-substitutable foundations of development, a view particularly relevant for rural areas where livelihoods depend directly on ecosystem resilience [5; 6; 7]. Environmental economics laid the foundations by demonstrating that markets fail to account for environmental costs. Pigou's (1920) theory of externalities showed that unregulated economic activity leads to pollution and resource depletion. Contemporary environmental economics promotes policy instruments such as carbon pricing, tradable permits, and ecosystem valuation to internalize these externalities and integrate environmental concerns into economic decision-making. Institutional economics places governance at the core of sustainability, while the human development approach focuses on expanding people's capabilities and inclusion [8; 9].

Together, these perspectives show that sustainable rural development is primarily an institutional and governance challenge. Technology can support progress, but it cannot replace strong institutions, social equity, and ecological responsibility.

2. The Belarusian Scientific School. By contrast, the Belarusian scientific school provides an applied model of sustainable rural development centered on institutional capacity, innovation systems, and digital transformation. Belarusian scholarship, particularly N. V. Kireyenka, views sustainability as an institutional and innovation-driven process based on policy coordination and technological modernization [10, 11]. Digital tools such as precision agriculture

and e-governance improve efficiency and transparency when supported by strong institutions [12; 13].

Digital transformation can enhance rural access to markets and services, but its impact depends on infrastructure, digital skills, and affordability [14; 15]. Unequal access may deepen social divides, while environmental costs such as e-waste and higher energy use must be considered [16; 16].

Thus, the Belarusian experience shows that sustainability results from coordinated governance that aligns innovation with social inclusion and environmental responsibility, not from technology alone.

3. Implications for Lebanon. In Lebanon, sustainability challenges are intensified by environmental vulnerability, economic fragility, and institutional weakness, making integrated approaches combining ecological protection, institutional reform, and inclusive development essential.

In this regard Lebanon's rural sustainability requires rebuilding governance alongside adopting new technologies. Key priorities include strengthening institutions, ensuring policy coherence, promoting social inclusion, and integrating environmental safeguards into development planning. A long-term strategic vision is essential to move beyond crisis management. Overall, technology must support, not replace, effective governance, inclusive policies, and ecological responsibility.

4. Conclusion

In fragile contexts like Lebanon, digital transformation can support rural sustainability only if guided by strong governance, equity, and ecological responsibility. Sustainable development is therefore a systemic challenge requiring institutional coordination and inclusive planning. Lebanon's rural resilience depends on rebuilding governance and integrating technology into coherent sustainability strategies.

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MARKET RELATIONS AND STATE REGULATION IN AGRICULTURE

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***Summary.** Market relations are based on the freedom and independence of economic entities in the competitive struggle for sales markets. This includes the risk and responsibility of the economic entity for the final results and the exploitation of favorable opportunities for profit or income.*

***Аннотация.** Рыночные отношения базируются на свободе и самостоятельности хозяйствующих субъектов в конкурентной борьбе за рынки сбыта. риск и ответственность хозяйствующего субъекта за конечные результаты, использование благоприятных возможностей для получения прибыли или дохода.*

Key words: market, laws, regulation, consumer, producer, financing, credit.

Ключевые слова: рынок, законы, регулирование, потребитель, товаропроизводитель, финансирование, кредит.

Currently, effective operation in a market economy is only possible with a thorough knowledge and understanding of its essence, market structure, and fundamental market laws. The market is the economic sphere where the process of commodity-money exchange (the conversion of goods into money and the