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Review Article

INNOVATION, ENTREPRENEURSHIP AND THE GREEN ECONOMY

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Abstract: This study analyzes the role of innovation and entrepreneurship in the development of the green economy. The theoretical framework includes concepts such as the circular economy, eco-innovation, and sustainable entrepreneurship, while the methodology combines analysis of international policies (UN, OECD, EU), a comparative review of national strategies, and case studies. The results indicate that innovation not only reduces the environmental footprint of production but also enhances competitiveness and creates new jobs. The entrepreneurial sector serves as a key channel for commercializing sustainable technologies, yet it faces barriers such as limited access to finance and underdeveloped institutional support. The study concludes that the green economy is inseparable from systematic investment in innovation, entrepreneurial dynamics, and multidisciplinary cooperation among government, science, and industry.

Key words: *green economy, innovation, entrepreneurship, sustainable development, circular economy, eco-innovation, sustainable entrepreneurship, public policy support, Serbia and Western Balkans.*

1. INTRODUCTION

The green economy is increasingly significant in global and regional strategies, as climate change, pollution, and resource depletion demand radical shifts in production and consumption models. The European Union has managed to reduce greenhouse gas (GHG) emissions by approximately 40% compared to 1990, while simultaneously accelerating investments in renewable energy, the circular economy, energy efficiency, and eco-design standards. Policies such as the European Green Deal and the Circular Economy Action Plan set the goal for Europe to become climate-neutral by 2050.

Serbia, as an EU candidate country, shows mixed results in this area. According to the International Energy Agency, approximately 20–23% of Serbia's electricity comes from renewable sources, mainly hydro, while wind and solar shares are growing. However, the overall energy mix still heavily depends on coal, which accounts for over 55% of electricity production. This indicates that Serbia is not yet on a trajectory that would allow it to achieve climate goals without stronger investments and structural reforms.

Economically, Serbia has experienced stable GDP growth (3–4% annually in recent years), but this growth is heavily burdened by high energy intensity and emissions per unit of output. Climate change impacts, such as more frequent droughts and floods, already negatively affect agriculture and infrastructure, further emphasizing the need for systemic measures within the green economy.

Serbia has adopted strategic documents, including the Climate Change Law (2021) and the National Energy and Climate Plan (NECP) for the period until 2030, with a vision extending to 2050. These documents foresee gradual increases in renewable energy shares, improvements in energy efficiency, and measures to reduce emissions. Their implementation, however, depends on the country's financial capacity, institutional strength, and the private sector's ability to invest in innovations and new technologies.

Comparing Serbia with the EU reveals significant differences: EU member states average over 40% renewable energy in electricity generation and have well-developed green finance mechanisms, whereas Serbia is at the beginning of its transition. Key challenges slowing this process include financing, regulatory alignment, research and development capacities, and social equity.

In summary, the green economy in Serbia develops under the pressures of European integration and domestic modernization needs. EU experience demonstrates that long-term strategies, clear regulatory frameworks, and incentive-based financial policies can create synergy between growth and sustainability. Serbia has the potential to leverage entrepreneurship and innovation as key levers of green transformation.

2. THE GREEN ECONOMY FRAMEWORK

2.1 Theoretical Concepts of the Green Economy

According to the UNEP (2011) report, the green economy rests on three pillars: low-carbon development, resource efficiency, and social inclusion. In a regional context, Radojević (2019) points out that the circular economy concept in Serbia is still in its early stages, although there are examples of local companies applying recycling and material reuse principles. In Croatia and Slovenia, this model is institutionally supported through national strategies and circular economy funds.

2.2 Role of Innovation and Eco-Technologies

The OECD (2019) emphasizes that eco-innovation is a core driver of sustainable development. Serbia has made significant progress in renewable energy, with wind farms in Kovačica and Čibuk representing investments that align local potentials with European energy transition goals. In Slovenia, according to the European Environment Agency (EEA, 2020), investments in building energy efficiency have led to substantial reductions in energy consumption and CO_2 emissions.

2.3 Entrepreneurship and Sustainable Business Models

The role of small and medium-sized enterprises (SMEs) in green entrepreneurship in Serbia is growing but remains limited by financial barriers. According to the Serbian Development Agency (2022), only 18% of SMEs implemented eco-innovations in the past five years, mainly through energy efficiency and waste management initiatives. In Slovenia, initiatives like the Eco Fund encourage citizens and companies to invest in energy-efficient technologies and renewable energy. In Croatia, the case of Rimac Automobili demonstrates how entrepreneurship and high-tech innovations can position a country as a global leader in electromobility.

2.4 Policies and Institutional Framework

The European Green Deal (2019) sets ambitious climate neutrality goals by 2050. Serbia has adopted the Climate Change Law (2021) and is working on the implementation of the NECP. However, according to the World Bank (2021), institutional capacities are limited, and implementation often lags. Montenegro has adopted a Circular Economy Strategy (2022), while North Macedonia is developing a national plan in line with EU directives. These examples show that the region, although at different levels, gradually aligns its policies with European standards.

2.5 Critiques and Limitations

Some authors warn that the green economy often remains declarative. In Serbia, according to the Institute for Economics and Finance (2022), although strategies exist, their implementation is often incomplete, and there is insufficient financial incentive. Similar challenges exist in the region, where the risk of "greenwashing" is present, particularly in the corporate sector. Delmas & Burbano (2011) highlight that misrepresentation of environmental practices can undermine public and investor trust in the long term.

3. USED METHODOLOGICAL SOLUTIONS IN THE STUDY

This research methodology is based on an advisory and comparative approach, combining analysis of existing European green transition models and their application in the context of Serbian entrepreneurship.

3.1 Advisory Approach

The goal is to develop recommendations for Serbian SMEs planning to enter sectors crucial for the green economy – manufacturing EV chargers, solar panels, and wind turbines. The advisory approach involves analyzing European policies and financial instruments (EU Green Deal, Horizon Europe, Innovation Fund), identifying best practices in countries such as Germany, Denmark, and the Netherlands, and adapting them to the Serbian market context.

3.2 Entrepreneurship as a Driver of the Green Transition

Entrepreneurship is considered the main channel for transferring technology and innovation into practice, with a focus on startup ecosystems, public-private partnerships, and technology transfer through collaboration with European research centers and companies.

3.3 EV Charger Production

Methodology includes analyzing European standards (IEC 61851, ISO 15118) for local adaptation, creating models for local component production (electronic modules, cables) in cooperation with domestic SMEs, and piloting projects in urban areas (Belgrade, Novi Sad, Niš).

3.4 Solar Panels

The methodology involves monitoring European photovoltaic technology experiences, transferring know-how to local production (aluminum frames, inverters, mounting systems), and encouraging niche entrepreneurship in areas like solar facades and agrivoltaics.

3.5 Wind Turbines

Focus is on European models (Denmark as a global leader), adapting capacities for SMEs to produce components (blades, towers, electronic control systems), and advisory models to integrate local companies into supply chains of existing wind farms (Čibuk, Kovačica).

3.6 Methodological Limitations

Limitations include financial constraints of Serbian SMEs, underdeveloped regulatory and institutional support, and reliance on external markets and foreign partners.

3.7 Methodological Conclusion

This approach ensures that European green transition knowledge and experience are transferred to Serbia through an entrepreneurship lens, guiding future action plans and development strategies in EV chargers, solar panels, and wind turbines.

4. RESULTS AND DISCUSSION

4.1 Role of the State in Promoting Green Entrepreneurship

The results show that without active state involvement, mass entry of entrepreneurs into the green economy sector is impossible. Serbia has recently introduced measures such as subsidies for renewable energy, loans for energy efficiency, and incentives for eco-innovation, though these remain limited compared to EU member states.

4.2 Connection to European Funds and Programs

Key results indicate that Serbian entrepreneurs can significantly enhance their business by participating in European funds, including:

- Horizon Europe – for R&D in solar panels and wind turbines;
- Innovation Fund – for commercializing EV charger innovations;

- IPA funds – for regional cooperation and EU standards alignment.

These instruments provide access to capital unavailable domestically and allow participation in international consortia that accelerate technology transfer.

4.3 Product Placement in Domestic and European Markets

It is essential for entrepreneurs to position their products not only domestically but also in Europe. Domestic and Western Balkans markets serve as pilot zones, but true competitiveness comes from access to the European market. Companies meeting EU standards can significantly increase exports and profitability.

4.4 European Certification and Standards

Alignment with European technical and environmental standards is crucial. Certifications such as CE marking, ISO 14001, and EN standards for energy efficiency are prerequisites for entering the EU market. Certified companies gain both market access and competitive advantage.

4.5 Integration with Green Transition Principles

The results reaffirm that the green economy involves not only environmental sustainability but also economic modernization and social justice. Entrepreneurs become change agents when supported by the state and EU funds. The triad of state–EU–entrepreneurs forms the key to a successful green transition in Serbia.

5. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

The green economy is no longer a distant vision but a present reality shaping global economic flows. Analysis shows that innovation, entrepreneurship, and state support through regulation and incentives are critical to transitioning to sustainable development. Serbia and the Western Balkans, despite challenges, have a real opportunity to become equal participants in the European green agenda.

Connection to European funds allows local entrepreneurs to improve and market their products under the highest standards. Support for producing EV chargers, solar panels, or wind turbine components, as seen in EU projects, shows that the green transition is both an economic opportunity and a matter of social responsibility.

This study emphasizes that the green economy is not solely an institutional task but also a space for individual and entrepreneurial engagement. Every step – whether a small business adopting energy-efficient solutions, a startup developing digital sustainability tools, or a large system investing in renewables – is vital.

The green transition requires joint effort from the state, the economy, and citizens. Only through collaboration can a competitive, innovative, and environmentally conscious economy be created. This work is thus both an analysis and a call to action: prompting readers to consider how they or their organizations can contribute to Serbia's and the Western Balkans' sustainable future.

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