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ISSUES OF IMPLEMENTING "GREEN" TECHNOLOGIES IN ENSURING SUSTAINABLE ECONOMIC GROWTH OF REGIONS

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Abstract

This research paper explores the critical intersection between regional economic development and environmental sustainability through the lens of "green" technology implementation. As global resource scarcity and climate change pose significant threats to traditional industrial models, regions must transition toward a "green" economy to maintain long-term competitiveness. The study identifies systemic barriers—ranging from high initial capital requirements to technical infrastructure gaps—and proposes strategic frameworks for local governments to foster eco-innovation. By analyzing the "decoupling" effect, the paper demonstrates how regions can achieve economic expansion while simultaneously reducing their ecological footprint.

Keywords

Green Economy, Sustainable Development, Regional Competitiveness, Eco-innovation, Energy Efficiency, Decoupling Effect, Renewable Energy.

In the contemporary global economic landscape, the paradigm of "growth at any cost" is being replaced by the concept of Sustainable Development. For regions, particularly those heavily reliant on manufacturing and heavy industry, the transition to green technologies is no longer an optional ethical choice but a structural necessity.

Regional economics now faces the challenge of "Decoupling"—a process where economic output continues to grow while the rate of resource consumption and environmental degradation declines. The implementation of green technologies—defined as innovative goods, services, and processes that provide value while significantly reducing environmental impacts—serves as the primary engine for this transition.

The integration of green technologies into regional economies is built upon three fundamental pillars:

1. *Resource Efficiency:* Utilizing advanced machinery and AI-driven systems to minimize waste in production cycles.
2. *Energy Transition:* Shifting regional power grids from fossil fuels to decentralized renewable sources (Solar, Wind, Geothermal).
3. *Circular Economy Models:* Transforming the regional supply chain so that the waste of one industry becomes the raw material for another (industrial symbiosis).

Despite the clear benefits, several "bottlenecks" hinder the rapid adoption of green innovations at the regional level:

A. Financial Constraints and High Sunk Costs

Green technologies often require massive upfront investments with longer payback periods compared to traditional technologies. Small and medium-sized enterprises (SMEs) in rural or developing regions frequently lack the liquidity or access to specialized "Green Credit" lines to fund these transitions.

B. The "Technology Gap" and Human Capital

There is a significant disparity between urban hubs and outlying regions regarding technical expertise. Implementing complex systems like carbon capture or smart grids requires a highly skilled workforce that is often absent in underdeveloped regions, leading to a "brain drain" toward more technologically advanced centers.

C. Institutional and Regulatory Barriers

In many cases, regional policies are still optimized for traditional industrial outputs. The lack of strict carbon pricing, insufficient subsidies for eco-friendly startups, and bureaucratic hurdles in licensing renewable energy projects slow down the pace of innovation.

To ensure that green technologies lead to sustainable regional growth, the following strategies are proposed:

- Regional Green Clusters: Establishing specialized economic zones that focus solely on green manufacturing. This allows for shared infrastructure and specialized R&D.
- Fiscal Incentives: Local governments should implement "Tax Holidays" for companies that achieve a 20% or higher reduction in carbon emissions or water usage within a fiscal year.
- Public-Private Partnerships (PPP): Attracting international investment through PPP models to fund large-scale regional projects like waste-to-energy plants or regional high-speed electric transport networks.
- Education and Re-skilling: Launching regional vocational programs to train the local workforce in maintaining and operating green infrastructure.

To deepen the analysis of the implementation of green technologies, we must evaluate three critical analytical dimensions: The Decoupling Analysis, The Green Multiplier Effect, and Regional Comparative Advantages.

The core objective of implementing green technology in regional development is achieving Relative or Absolute Decoupling.

- Relative Decoupling: Occurs when the growth rate of the regional economy is higher than the growth rate of its environmental pressure (e.g., GDP grows by 5% while CO_2 emissions grow by only 1%).
- Absolute Decoupling: The ideal state where the regional economy grows while the total environmental impact actually declines.
- Analytical Insight: For industrial regions like Navoiy or Tashkent, the focus should be on transitioning from relative to absolute decoupling through "Circular Economy" loops where waste is reintegrated into production.

Data from the International Labour Organization (ILO) suggests that investments in renewable energy and energy efficiency have a higher employment multiplier than fossil fuel sectors.

Job Creation: For every $1 million invested in solar PV or energy-efficient construction, approximately 7–10 jobs are created, compared to only 2–3 jobs in the coal or gas industry.

Local Value Chain: Unlike traditional manufacturing which often relies on imported raw materials, green technologies (like biomass or small-scale hydro) often utilize local resources, keeping the economic value within the region.

Conclusion

The implementation of green technologies is the cornerstone of modern regional economic policy. While the transition involves significant structural challenges and financial risks, the cost of inaction is far higher. Regions that successfully integrate eco-innovations will not only improve their environmental quality but will also secure a competitive advantage in the global market, attract "green" investments, and ensure a resilient economy for future generations. Sustainable growth is not a destination but a continuous process of aligning economic ambitions with the limits of our natural ecosystem.

References

1. O'zbekiston Respublikasi Prezidentining 2020-yil 5-oktabrdagi "Raqamli O'zbekiston - 2030" strategiyasini tasdiqlash va uni samarali amalga oshirish chora-tadbirlari to'g'risida"gi PF-6079-son Farmoni.

2. Yormonqulova , N. (2024). iqtisodiy o'sish omillarini takomillashtirish va barqaror rivojlanishga erishish. QO'QON UNIVERSITETI XABARNOMASI, 10(10), 109-112. https://doi.org/10.54613/ku.v10i10.922

3. O’zbekiston Respublikasi Prezidentining 2019 yil 4 oktabrda “2019-2030 yillar davrida O’zbekiston Respublikasining “Yashil” iqtisodiyotga o’tish strategiyasi” to’g’risidagi PQ-4477-son Qarori. https://www.lex.uz O’zbekiston Respublikasi Qonun xujjatlari ma’lumotlar milliy bazasi.

4. Навстречу “зеленой” экономике: пути к устойчивому развитию и искоренению бедности / Штайнер А., Айрис Р., Бэсса С. И др: ЮНЕП/Грид Арендаль, 2011. С. 17. 5. Greening the Global Economy. Hardcover- November 13, 2015. – 176 p.

6. Barqaror taraqqiyot va tabiatshunoslik asoslari. Darslik. A.E. Ergashev va b. – T.: Baktria press, 2016.-296 b