ECOLOGICAL INNOVATIONS IN SHAPING SUSTAINABLE GOVERNANCE POLICIES

Vitalii Kruhlov
National Technical University «Kharkiv Polytechnic Institute» (Ukraine)
virt197@gmail.com

INTRODUCTION

Environmental sustainability has become a paramount issue in contemporary scientific discourse, given the increasing challenges related to climate change, resource depletion, and environmental degradation. Governments worldwide are striving to transition to sustainable development models that balance economic growth, social well-being, and environmental protection. This requires profound transformations in production systems, infrastructure, lifestyles, and the system of government administration.

Environmental innovations, offering cleaner and resource-efficient technological solutions, are gaining increasing significance as key drivers of the transition to sustainable development. Environmental innovations entail new or modified processes, products, services, and business models that prevent or reduce anthropogenic harm to the natural environment, encompassing a broad spectrum of green technologies in various sectors of economic activity.

Therefore, the development of effective and innovative governance policies is a necessary condition for reducing environmental risks and promoting a sustainable future. The global community is at a critical juncture where decisions made today will significantly impact the well-being of future generations. The Paris Agreement, Sustainable Development Goals (SDGs), and other international agreements emphasize the shared responsibility of countries for adopting environmentally conscious policies. Research on the role of environmental innovations in such policies becomes essential to understand how countries can collaboratively address environmental challenges.

The aim of this research is to analyse the impact of environmental innovations on the formation of sustainable management policies.

The primary objectives of the study are as follows:

1. Examine contemporary innovative approaches aimed at improving the state of the environment.
2. Evaluate the influence of environmental innovations on the development and implementation of management policies.
3. Identify obstacles and opportunities arising in the adoption of environmental innovations in management policies.
4. Formulate recommendations for government authorities on the optimal utilization of environmental innovations in sustainable management policies.

Research methods: The research procedure involves several stages: (1) the use of two models depicting the dependency of environmental indicators on the level of government management in a country and sustainable development goals; (2) analysis of indicators of the Green Budget Index of individual European member countries (; (3) analysis of respondents' support for directions in solving environmental problems.

Literary Review

The intersection of environmental innovations and sustainable governance is the subject of growing scientific interest. The urgent need to address global environmental challenges has accelerated research efforts aimed at finding effective strategies for integrating innovations into governance policies.

Environmental innovations can be defined as new or modified processes, methods, systems, and products that help avoid or reduce environmental harm (Skordoulis et al., 2020; Aldieri & Vinci, 2021). According to Schiederig et al. (2012), environmental innovations should contribute to environmental conservation and sustainable resource utilization. Sustainable governance is defined as the institutional capacity to develop integrated environmental, social, and economic policies (Hickmann et al., 2024). These definitions underscore the interconnected nature of environmental issues, technological progress, state policies, and business processes.

Environmental innovations help define important sustainable development goals in the system of public administration and enhance policy coherence by implementing stricter environmental norms and standards. Additionally, environmental innovations have numerous advantages for sustainable development, such as cleaner production, reduced resource dependency, job creation in "green" sectors, increased competitiveness, and mitigating the consequences of climate change (Schiederig et al., 2012). Thus, environmental innovations are both a prerequisite and a result of effective sustainable governance. A favorable innovative ecosystem should stimulate and implement green technologies while concurrently using them to develop integrated environmental policies.

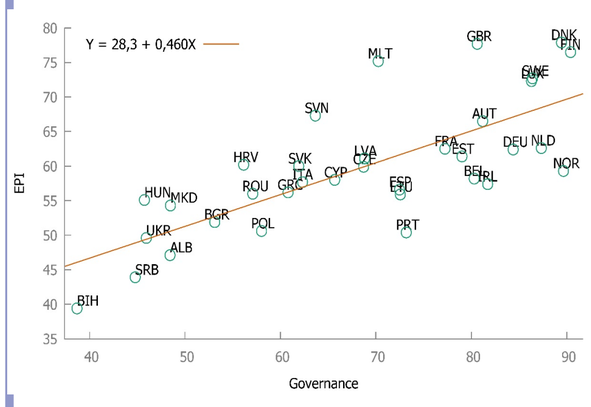
In a resolution adopted in July 2022 by the UN General Assembly, it is noted that one of the most pressing threats to humanity's future is climate change and environmental degradation. As a proposed solution at the state level, there is a call for intensified efforts to ensure access to a clean and sustainable environment (UN, 2022). In line with this, the state should invest in energy-efficient, environmentally friendly projects that can contribute to achieving environmentally linked sustainable development. Furthermore, the state should formulate policies to stimulate economic growth in a sustainable manner that improves overall environmental efficiency (Adeel-Farooq et al., 2018).

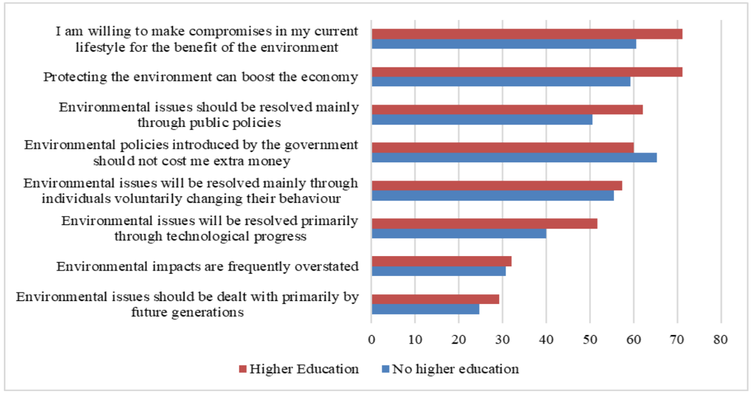
Therefore, contemporary research and global strategies emphasize the importance of environmental innovations for achieving sustainable development.

Results and Discussion

In the current era of escalating environmental challenges, the integration of innovative approaches in both ecology and public administration has become imperative. In the field of ecology, a paradigm shift has occurred, accompanied by the use of innovative approaches to address pressing environmental issues based on technological, social, and political initiatives. The adoption of Sustainable Development Goals has accelerated the implementation of various management systems and policy programs aimed at harmonizing economic, social, and environmental objectives to ensure long-term prosperity.

Understanding the impact of government policy on the ecological state of a country has demonstrated the existence of a correlation between the Environmental Performance Index (EPI), which indicates how close countries are to established environmental policy goals (Wolf et al., 2022), and the Governance sub-index of the Prosperity Index (Legatum Institute, 2023), measuring the effectiveness of government bodies. The identified dependencies (with a determination coefficient of 0.55) between the Environmental Performance Index (EPI) and the indicator of government governance are illustrated in Fig. 1.





The policy of environmental innovations is shaped based on the needs and demands of society. However, societal perspectives on responsibility for environmental outcomes have different vectors (Fig. 2), and the presence of higher education plays a role in the responsible attitude towards the environment. In most cases, respondents consider issues of environmental protection and its impact on economic development to be important.

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Regarding the research's purpose, certain limitations in the methodology used should be acknowledged. Primarily, the study was based on data from European countries with a high level of implementation of state policies in the ecological sphere. Moreover, contemporary approaches in the public management system, specifically the concept of sustainable development goals and the greening of management, have contributed to achieving a high level of ecological efficiency.

The obtained results confirm the notion that weak institutions are the main obstacle to formulating and regulating environmental policy, implementing green technologies, and alternative energy . Successful implementation of environmental innovations depends on strong institutional capacity and effective governance. Weak state institutions, corruption, and inadequate compliance with environmental legislation can hinder progress. Addressing these issues requires collective efforts from the state, civil society, and international organizations.

CONCLUSIONS

*T*he findings of the study lead to the conclusion that the integration of environmental innovations into state policies is a crucial factor in promoting sustainable governance. The pivotal role of technologies, which have expanded the capabilities of economic entities for effective monitoring, management, and optimization of natural resource utilization, cannot be overstated.

It was established that there is a moderate positive correlation between indicators of a country's environmental efficiency and the level of implementation of state policies. Countries with more developed institutions demonstrate better results in environmental protection, as regulatory instruments actively contribute to the implementation and dissemination of environmental innovations in the economy.

A holistic approach, considering economic, social, and ecological aspects, is of paramount importance. Comprehensive approaches in state support (both regulatory and market instruments) at different stages of the innovation cycle enable the realization of the transformative potential of environmental innovations toward a sustainable governance model. However, the implementation of many innovations requires significant financial and technological resources, and regions lacking such capabilities may face obstacles in adopting environmental innovations.

The research on effective environmental innovations in state policies demonstrates compelling progress and potential. On the path to developing sustainable solutions, prioritizing the implementation of environmental innovations is necessary for preserving biodiversity, ecosystem health, and the well-being of current and future generations. Embracing this approach as a fundamental component of environmental protection, society can establish harmonious relationships with a safe environment, contributing to the creation of favourable and sustainable social development.

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