

Institutional Models of Economic Greening: Comparative Analysis and Transformation Pathways for Belarus

Batava Nadzeya

Environmental and Economic Research Sector, Center for Human Development and Demography State Scientific Institution,
Institute of Economics of the National Academy of Sciences of Belarus, Minsk, Republic of Belarus

Email: nbatava@gmail.com

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Abstract

Modern global challenges—including climate change, biodiversity loss, and natural resource degradation—necessitate the integration of environmental priorities into economic and social processes. This article proposes a typology of institutional models of economic greening, comprising directive, coordination-market, network, and hybrid approaches. Based on an analysis of national practices in Finland (network model), Austria (coordination-market), Turkmenistan (directive), and China (hybrid), an institutional profile of Belarus is developed. The study finds that Belarus demonstrates features of an institutionally hybrid (state-market) regime with a dominant role of the state. Drawing on international experience, the article formulates key transformation pathways aimed at improving the institutional environment and enhancing the effectiveness of economic greening in Belarus.

Keywords

Economic Greening, Institutional Models, Typology, Sustainable Development, Environmental Governance, ESG, Belarus

1. Introduction

The current global environmental agenda necessitates a profound transformation of existing economic development models. This is driven by the finite nature of natural resources, the intensifying anthropogenic impact, and the deepening climate crisis (OECD, 2023). Ecological transformation is a complex, interdisciplinary process that aims to build a sustainable, low-carbon, and circular economy. In such an economy, priority is given not only to economic growth but also to

environmental quality, social justice, and intergenerational responsibility.

Institutions—both formal and informal—play a central role in this transformation. Formal institutions include legislation, strategic documents, regulatory authorities, and systems for monitoring and reporting. Informal institutions encompass social norms, environmental values, public trust, and the character of interaction among government, business, and civil society (Batava, 2018). Effective institutional frameworks are critical to achieving the Sustainable Development Goals (SDGs), implementing the Paris Agreement on climate change, and introducing circular economy and climate-neutrality strategies.

Institutional models vary significantly across countries. Key differentiating factors include political and economic conditions, the maturity of environmental legislation, stakeholder engagement mechanisms, the level of intersectoral coordination, and the degree to which environmental priorities are integrated into strategic planning.

The object of this study is the institutional configuration of ecological transformation. The aim is to conduct a comparative analysis of international experiences in institutional support for economic greening, to identify the specific features of the Belarusian model, and to justify directions for its adaptation in light of global challenges and national sustainable development priorities.

2. Institutional Foundations and Models of Ecological Transformation: A Comparative International Analysis

2.1. Formal Institutions of Ecological Transformation

Formal institutions of economic greening represent a set of legal, administrative, and economic mechanisms that regulate the behavior of actors in the field of environmental protection and sustainable development. Their primary purpose is to establish the conditions for institutionalized, transparent, and accountable implementation of ecological transformation goals. Key formal institutions include:

- national and regional strategies, programs, and action plans, including those related to the development of the green and circular economy, as well as climate change adaptation;
- legislative acts on environmental protection, climate regulation, waste management, and the use of natural resources;
- environmental licensing mechanisms and permit systems;
- systems of environmental standardization and certification, such as ISO 14000 and EMAS;
- environmental insurance schemes and subsidies for green initiatives;
- elements of environmental taxation, including taxes, levies, quotas, and emissions trading schemes;
- national and international environmental monitoring programs;
- mechanisms for strategic environmental assessment (SEA) and environmental impact assessment (EIA);
- digital platforms and registries for environmental information and reporting.

2.2. Informal Practices and Socio-Cultural Factors

Informal institutions of economic greening refer to established social norms, behavioral practices, traditions, public expectations, and environmental values that are not legally codified but have a significant impact on the implementation of environmental policy. These institutions reflect the level of environmental maturity within a society and shape national trajectories of sustainable development while aligning with universal goals. They include:

- the level of environmental awareness and consumer behavior among the population;
- historically embedded societal norms regarding nature and resource use;
- environmental culture and values of sustainable development;
- corporate environmental culture and voluntary sustainability reporting in accordance with ESG standards;
- the activity of environmental movements, including youth-led initiatives;
- environmental education and public awareness campaigns at all levels of the educational system;
- participation of professional associations and industry organizations in promoting environmental standards;
- cooperation between business communities, NGOs, and local populations within the framework of sustainable development;
- public pressure (via media and social networks) on companies and government institutions in response to environmental violations;
- public participation in environmental planning and decision-making processes.

2.3. Typology of Institutional Models of Economic Greening: International Context

The analysis of international experience makes it possible to distinguish four typical institutional models of economic greening. These models vary in terms of the degree of centralization in decision-making, the level of stakeholder engagement, and the nature of the instruments applied.

The directive model (e.g., Turkmenistan, Saudi Arabia) is characterized by a high degree of centralization in decision-making and a hierarchical approach to policy implementation. Formal institutions dominate in this model, including national plans, quantitative targets, government subsidies, and other administrative tools. Stakeholder participation—especially from business and civil society—is limited, and policy initiatives are typically implemented through top-down mechanisms.

The main advantage of this model lies in its ability to rapidly mobilize resources to address priority environmental issues. However, its drawbacks include low institutional flexibility, restricted public engagement, weak feedback mechanisms, and a lack of incentives for voluntary and innovative environmental practices.

Turkmenistan exemplifies this model, where mechanisms for public oversight

are underdeveloped, and environmental policy is largely implemented through centralized programs (Ahmet, 2024). In Saudi Arabia, despite a similar directive structure, ecological transformation is supported by large-scale public investments, particularly within the framework of the Vision 2030 initiative, which promotes the development of renewable energy and the hydrogen economy (Ayna.AI, 2023).

The coordination-market model, typical of countries with strong traditions of social partnership (e.g., Germany, Austria), is based on the strategic role of the state in setting goals and objectives for environmental development, while actively engaging businesses, industry associations, the scientific community, and civil society. Policy implementation relies on market-based instruments such as tax and non-tax incentives, emissions trading, green bonds, and other forms of sustainable finance.

The strengths of this model include high institutional stability, effectiveness in achieving climate goals, and progress in promoting circular economy practices and sustainable consumption. However, challenges arise from the complexity of interagency coordination and the sensitivity of the model to political shifts and stakeholder interest balancing.

In Germany, initiatives such as *Energiewende* and the Climate Protection Act (*Klimaschutzgesetz*) embed climate targets into legislation, while enterprises are incentivized through green taxation and access to climate finance (Federal Government, 2024). Austria emphasizes cooperative interaction between federal and regional levels in implementing environmental strategies, including support for R&D and sustainable transport systems (Prutsch et al., 2018).

The network model (e.g., Finland, Sweden) relies on decentralized decision-making and active involvement of a broad range of stakeholders—government bodies at various levels, businesses, academic institutions, NGOs, and civic initiatives. Informal institutions play a significant role, including environmental norms, educational practices, and a culture of collaboration.

This model ensures high policy legitimacy and adaptability, encouraging innovative approaches to resource management, climate risk mitigation, and biodiversity conservation. At the same time, the complexity of coordination and the risk of policy fragmentation—due to the large number of actors involved and possible lack of cohesion—can hinder the timely achievement of policy goals.

Sweden exemplifies this approach through broad municipal involvement in environmental planning and inclusive decision-making mechanisms (Kronvall et al., 2024). Finland applies the “Living Labs” model—collaborative platforms where business, academia, and citizens co-develop and test environmental innovations, including circular economy initiatives at the community level (Engez et al., 2021).

The hybrid model (e.g., China, Kazakhstan, Russia) combines elements of the previously mentioned models, integrating directive governance with market-based incentives. The state retains a leading role in setting environmental priorities while actively applying instruments of green growth, such as environmental

credit schemes, industrial decarbonization programs, R&D support for eco-technologies and innovations, and the expansion of international cooperation. This model offers institutional flexibility, scalability of implemented policies, and the potential for experimental policy formats (e.g., circular economy pilot zones, green cities).

In China, ecological transformation is carried out under the concept of “ecological civilization”, supported by mandatory environmental standards, R&D incentives, and the development of green financial institutions, such as the Green Development Fund (Ke, 2023). Kazakhstan, following a hybrid model, is developing pilot circular economy territories with the support of international organizations and is introducing elements of emissions trading in the energy sector (unfccc, 2024). In Russia, environmental policy is implemented under the “Ecology” National Project, which includes a range of priority areas—from waste management to water resource protection. Additionally, a pilot initiative has been launched to establish a carbon-neutral region on Sakhalin, where carbon regulation instruments and emissions trading systems are being tested (Popova & Kolmar, 2023).

2.4. Factors Shaping the Institutional Structure and Effectiveness of Environmental Policy

The diversity of institutional models for economic greening is largely determined by a set of factors that influence both the intensity of policy formulation and the effectiveness of its implementation (Batova et al., 2024). The most significant of these factors include the following:

- Level of economic development. Highly developed countries possess the financial resources and technological infrastructure necessary to support the deployment of environmental innovations. In contrast, countries with emerging economies often rely on the assistance of international development institutions—such as the World Bank, UNDP, and the Global Environment Facility (GEF)—which provide funding, technology, and expert support.
- Domestic environmental challenges, exacerbated by both internal and external drivers, often act as a catalyst for strengthening the environmental agenda, particularly at the regional governance level.
- Political and institutional characteristics, including the degree of decision-making centralization, the influence of environmental lobbies, and the extent of civil society participation, directly affect the structure and resilience of environmental governance mechanisms.
- Environmental disasters with significant social and political consequences often serve as triggers for institutional reforms. Notable examples include: the desiccation of the Aral Sea in the former USSR (1960-2007); the mercury contamination incident in Canada (1962-1970); the Bhopal disaster in India (1984); Minamata disease in Japan caused by mercury poisoning (1932-1968); the Sandox chemical spill in Switzerland (1986); the Chernobyl nuclear

accident in the USSR (1986); widespread forest fires in the United States (1871), Greece (2007, 2018), Russia (2010, 2019), and Canada (2023); and major oil spills, such as in the Gulf of Mexico (2020).

- Such events typically lead to the tightening of regulations and higher safety standards in both industrial and environmental policy domains.
- Strategic national priorities, as articulated in long-term sustainable development strategies and various government socio-economic and sectoral programs, also play a decisive role in shaping institutional structures and priorities.
- International agreements, including the Paris Agreement on Climate Change (2015), the Stockholm Convention on Persistent Organic Pollutants (2001), the Convention on Biological Diversity (2000), and the Kyoto Protocol (1998), among others, further influence national policy architecture by embedding environmental commitments into the global normative framework.

3. Institutional Specifics of Ecological Transformation in the Republic of Belarus

3.1. Strategic Framework and Formal Mechanisms of Environmental Policy

The Republic of Belarus exhibits features of a hybrid institutional model of economic greening, which combines directive mechanisms of state governance with elements of coordination-market regulation. The formulation and implementation of environmental policy are carried out within the framework of national strategic documents that reflect the country's commitment to integrating economic interests with the objectives of environmental security and social development (Kononchuk et al., 2022).

Key reference points include the National Sustainable Development Strategy of the Republic of Belarus until 2035, which affirms the priority of ensuring environmental safety and transitioning to rational models of production and consumption (including a circular economy), as well as the Socio-Economic Development Program for 2021-2025, which emphasizes the creation of an environmentally favorable living environment and rational use of natural resources as prerequisites for sustainable growth (Ministry of Economy, 2020, 2021).

Important elements of the institutional framework are represented by specialized cross-sectoral documents, such as:

- National Strategy for Municipal Solid Waste and Secondary Material Resource Management, which sets targets for waste recycling levels of 70% by 2030 and 90% by 2035;
- Action Plan for the Implementation of the Paris Agreement, adopted in 2019;
- Strategies for Adaptation of Forestry and Agriculture to Climate Change through 2050.

Of particular importance is the National Action Plan for Green Economy Development for 2021-2025, which serves as an instrument of intersectoral co-

ordination. It aims to promote sustainable production and consumption, digitalization, the development of green cities, and the advancement of circular business models.

The Circular Economy Development Strategy of the Republic of Belarus until 2035, adopted in 2024, defines a long-term objective: to build a model of sustainable development based on increasing the environmental efficiency of resource use, minimizing environmental risks, and raising the material recycling rate at all stages of the product life cycle. Priority areas of transformation include: eco-design, resource-efficient production, industrial symbiosis, sustainable packaging, and the sharing economy. The leading sectors identified for transformation are industry, construction, agriculture and forestry, transport, housing and utilities, and services. The strategy also underscores the need for scientific and technological support, workforce training, and the cultivation of a culture of responsible consumption and production (National Legal Portal, 2024).

3.2. Spatial Dimensions and Regionalization of Ecological Transformation

The implementation of the environmental agenda at the regional level in Belarus is characterized by differentiation, which is driven by variations in natural, economic, and infrastructural conditions. Important contributing factors include the availability of waste processing facilities, the resilience of ecosystems, and the presence of incentives for the adoption of environmental innovations.

The Chernobyl nuclear accident had a significant impact on the institutionalization of environmental policy. Its consequences necessitated the rehabilitation of affected territories, the development of environmental infrastructure, environmental monitoring, public education, and the engagement of local communities in greening processes.

Several cities—Minsk, Polotsk, Orsha, and Pinsk—are implementing sustainable and “smart” development strategies with a focus on energy efficiency and circular technologies. A notable example of an integrated approach is the Sustainable Development Strategy of Bobruisk until 2035, where ecological transformation is supported through the development of small and medium-sized enterprises (SMEs), the formation of clusters, and the introduction of innovative models.

Pilot measures for advancing the circular economy are being implemented in Brest Region (Circular Economy Development Program) and Mogilev Region (Roadmap for Transition to a Circular Economy). These efforts reflect a growing regional institutional capacity and a readiness to scale up sustainable practices.

3.3. Civic and Corporate Practices for Sustainable Development

Belarus has established a multi-level system of continuous environmental education, integrating various levels of formal and non-formal learning. This system encompasses preschool, general secondary, vocational, secondary specialized, higher, and postgraduate education, and is complemented by extracurricular

activities and public education programs. Both state institutions and environmental NGOs are actively involved in environmental education and awareness-raising initiatives.

In the business sector, there is steady progress in the implementation of circular transformation elements, including: improving energy efficiency, reducing waste generation, developing recycling, and creating new employment niches.

Circular practices are gaining ground in areas such as agricultural waste processing, building materials production, and in the woodworking, paper, glass, food, and metallurgy industries. A growing number of enterprises are incorporating ESG principles into strategic management processes.

4. Conclusion: Institutional Vectors of Ecological Transformation in Belarus

The analysis of international institutional models of economic greening has made it possible to identify their structural features, applied instruments, and the key factors that determine the effectiveness of environmental policy implementation. The typological findings show that differences across countries stem not only from the degree of centralization in governance, but also from institutional flexibility, the level of stakeholder engagement, and the significance of informal mechanisms.

The Republic of Belarus exhibits characteristics of an institutionally hybrid model, which combines directive instruments of strategic regulation with market-based incentives and elements of international cooperation. A notable strength lies in the presence of a comprehensive formal framework—consisting of strategies, plans, and programs—while the potential of informal institutions, including public participation and corporate environmental responsibility, still requires further institutional reinforcement.

In the context of global climate and resource instability, the transformation vectors of Belarus's institutional development in the area of economic greening should be guided by the following key priorities:

- institutionalization of stakeholder engagement mechanisms at all levels of governance;
- development and support of regional circular economy clusters focused on resource efficiency and local innovation activity;
- strengthening the scientific and technological base for the design and deployment of environmental innovations;
- integration of ESG principles into both public and corporate governance practices;
- expansion of international partnerships in the fields of climate and resource diplomacy, including joint projects, technology exchange, and the harmonization of green standards.

In this context, Belarus is also steadily strengthening its presence in international platforms such as the Shanghai Cooperation Organization (SCO), the Eurasian

Economic Union (EAEU), and BRICS, through participation in environmental and climate-related initiatives. At the global level, the country has expressed its readiness to engage in the exchange of green technologies, harmonize sustainable finance taxonomies, and coordinate climate action approaches. This external strategy reinforces Belarus's role in sustainable development across the Eurasian region and supports the institutionalization of ecological transformation at both national and supranational levels.

Accordingly, the institutional development of environmental policy in Belarus requires a consistent transition from sector-specific coordination to a holistic, system-integrated model grounded in the principles of sustainability, inclusiveness, and adaptability.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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