

SUSTAINABLE DEVELOPMENT AND GREEN TRANSFORMATION

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ABSTRACT: This article examines the concepts of sustainable development and green transformation as integral components of modern socio-economic progress. It describes the key directions of green reforms, including decarbonization, the development of renewable energy sources, circular economy, and ecological design. Special attention is paid to international strategies such as the UN Sustainable Development Goals and the European Green Deal. The challenges and opportunities associated with the transition to an environmentally sustainable development model are analyzed.

KEYWORDS: Sustainable development, green transformation, ecology, renewable energy, climate, circular economy, green technologies.

The world faces challenges that require urgent and systemic solutions: climate change, depletion of natural resources, environmental pollution, and social inequality. In response, the global community is developing concepts of sustainable development and green transformation, striving to create a balance between economic growth, universal justice, and environmental preservation. Meeting the needs of the present without compromising the ability of future generations to meet their own needs (UN definition, 1987, Brundtland Report) is called sustainable development. It implies a comprehensive approach to the economy, ecology, and social policy, where:

- The economy develops steadily and inclusively;
- Natural resources are used rationally and are replenished;
- Society evolves fairly, considering the rights of all population groups.

The Sustainable Development Goals (SDGs) were adopted by the UN in 2015 as part of the 2030 Agenda for Sustainable Development, comprising 17 goals. These include fighting poverty and hunger, ensuring quality education, achieving gender equality, providing clean water and sanitation, accessible and clean energy, combating climate change, and promoting responsible consumption and production.

What do we mean by Green Transformation?

It is the transition of the economy, industry, energy, transport, and other sectors towards environmentally safe, resource-saving, and low-carbon models of operation.

Main directions of green transformation:

- Decarbonization of the economy — reducing greenhouse gas emissions.
- Development of renewable energy — solar, wind, hydro, and geothermal energy.
- Circular economy — moving from the linear model "production — consumption — disposal" to the reuse and recycling of resources.
- Green finance and investment — directing capital into sustainable projects.
- Ecological design and sustainable technologies — innovation that minimizes environmental impact.

Examples of Green Transformation:

- The EU is implementing the European Green Deal, aiming for climate neutrality by 2050.
- China is actively investing in green transport and energy sectors.
- Scandinavian countries lead in renewable energy (RE) and environmental regulation.
- Cities worldwide are introducing "smart" infrastructure, green transport, and energy-efficient buildings.

Examples from various countries:

- The European Union plans to eliminate greenhouse gas emissions by 2050 via the Green Deal strategy.

- Kazakhstan is developing a green economy, implementing solar and wind power plants.
- Germany is shutting down coal-fired plants and transitioning to green energy.
- Japan is building eco-cities of the future (e.g., Fujisawa).

Sustainable development is a way of development that meets today's needs without compromising the ability of future generations to meet theirs. This requires using ecological resources wisely, protecting the environment, and ensuring economic and social well-being.

Three core principles of sustainable development:

1. Economy — Business, technology, and industrial development;
2. Ecology — Nature conservation and pollution control;
3. Social justice — Equal access to education, healthcare, and rights.

Example: When constructing a factory, under sustainable development principles, it must be environmentally friendly, create jobs, and not destroy the local ecosystem.

Today, the scope of the "green economy" covers not only environmental protection and global aspects of green growth but also a complete restructuring of the economic functioning energy model. Despite its global spread, there is no single unified definition of the term.

The most widely accepted definition is provided by the United Nations (UN), describing the green economy as "an economy that results in improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities" (Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication, 2011).

Thus, the green economy is seen as a set of principles, goals, and actions aimed at improving people's welfare while mitigating environmental degradation risks. Green growth is inseparably linked to a system of markers and metrics that track economic improvements under the green economy model, similar to traditional economic indicators.

Climate Agenda in the Eurasian Economic Union (EAEU): The attitude towards the climate agenda in the EAEU can be characterized as ambivalent. On one hand, the member states have signed agreements committing to reduce greenhouse gas emissions. On the other hand, they are slow to implement these commitments, largely because of the high share of carbon-intensive sectors such as coal, oil, gas, iron ore, and the production of steel, cement, mineral fertilizers, and food — all strategic resources making up about 35% of the EAEU economy. However, these sectors also generate the largest CO₂ emissions.

Russia's approach to achieving carbon neutrality, according to the Climate Doctrine (Presidential Decree No. 812 dated 26.10.2023), shifts the target date for climate neutrality to 2060.

CONCLUSION: Modern challenges, including climate change, resource depletion, and social inequality, demand urgent and comprehensive action. In response, the global community is actively developing the concepts of sustainable development and green transformation, which serve as the foundation for creating an environmentally safe and socially fair future.

Sustainable development harmoniously combines three elements: economic growth, social justice, and ecological sustainability, ensuring that current needs are met without jeopardizing the needs of future generations.

Green transformation is the practical realization of sustainable development. It encompasses decarbonization, the development of renewable energy, the establishment of a circular economy, ecological design, and sustainable technologies.

Examples such as the European Green Deal, China's green transportation strategies, Germany's shift to renewable energy, and Japan's eco-city projects demonstrate the relevance and necessity of green transformation.

Thus, sustainable development and green transformation are not just theoretical concepts but strategically crucial directions, on the realization of which the well-being of the planet and future generations depends.

They require governments, businesses, and society to reconsider traditional production and consumption models, moving towards environmentally safe and resource-efficient solutions.

The implementation of green initiatives — such as the development of renewable energy, a circular economy, and ecological design — helps minimize environmental harm and strengthens social justice.

International experience underscores the urgency and importance of these processes for the future of humanity.

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