

**Roksoliana Liubachivska**  
*PhD, Associate Professor at the Department  
of European Economy and Business,  
Kyiv National Economic University  
named after Vadym Hetman*

DOI: <https://doi.org/10.36059/978-966-397-285-5-9>

## **RENEWABLE ENERGY WITHIN A SUSTAINABLE ECONOMY**

In the conditions of the modern world, the time has come for the transformation of the global energy system and the formation of a new system of energy security. Energy drives the economy, which entails building the essential infrastructure for the delivery of energy services, from the extraction of resources and materials through the technologies for producing electricity and other energy carriers and the final equipment. The energy system, its parts, and the flow of energy are all supported by the economy. Energy supply systems that rely mostly on fossil fuels are hopelessly outdated and must be replaced with renewable energy. This transition should be based on high energy efficiency and a rise in renewable energy share, which will result in the decarbonization of the energy system.

The global economy is defined by access to modern types of energy, namely safe, clean, and economical energy carriers. Electricity is important in this case since it best fits the demands of the modern economy. It is more than merely an energy carrier in the physical sense. Electricity enables a wide range of tasks, from information exchange to transportation. Its performance in terms of economic production and consumption, as well as point-of-use cleanliness, is unrivaled [1]. Because access to energy is critical for the growth and survival of civilizations, securing its continuous supply is a top concern for most countries today.

The oil and gas flows continue, and Russia is attempting to exploit them to divide and destroy democratic Europe by bombing Ukrainian cities and energy infrastructure.

The ability of natural energy resources to coordinate human energy development demands underpins sustainable energy development. To improve production processes, boost efficiency, and participate in the energy revolution, it is vital to use the most recent technological, industrial, and artificial intelligence advancements.

One of the main areas for securing Ukraine's energy security is the utilization of renewable energy. The following facts confirm the relevance, expediency, and necessity of these measures in Ukraine:

- there is an urgent need to reduce the harmful load on the environment;
- ecology and modernization of domestic energy in accordance with the requirements of the twenty-first century;
- proven by world practice, the ability of renewable energy sources to solve the problems of a lack of traditional energy capacities in the shortest possible time and at the lowest possible cost;
- the growing global demand for fuel and energy, combined with the resource and environmental limitations of traditional energy, necessitates the timely development of new energy technologies capable of meeting a significant portion of the increase in energy needs while stabilizing the consumption of fossil fuels.

In recent years, there has been an increase in the production of renewable energy (the peak of investment in the construction of renewable energy facilities fell on 2019) in Ukraine. The capacity of power plants that employ renewable energy sources for electricity generation reached 4,722 GW in 2019. During 2020, renewable energy facilities with a capacity of 1.95 GW were additionally put into operation, and in 2021 – another 1.45 GW. However, due to quarantine limitations imposed by the spread of the COVID-19 pandemic, as well as a variety of economic factors, not all facilities slated for commissioning during the year were placed into service. As expected, renewable energy facilities with a total capacity of about 1.54 GW or more will be additionally put into operation in 2022 [2].

The rate of change and the interest of both the public and private sectors in funding innovation characterize global progress in the field of renewable energy sources. This is owing to the high degree of return of such projects, as well as the capacity to secure the country's energy

independence in the face of globalization concerns, which is also characteristic for Ukraine.

Ukraine must develop a strategy for a green recovery and set ambitious climate and energy targets by 2030 in order to become self-sufficient in energy supply. A road to renewable energy will instill market confidence, which will attract investment.

Progress in reducing energy consumption will greatly lower the requirement for the creation of more energy resources, which is required for GDP development and the enhancement of residents' welfare. Simultaneously, the very structure of the necessary energy resources will change significantly, owing primarily to the progressive electrification of the economy of transportation, industry, and buildings, which will necessitate a significant increase in the share of renewable energy sources in electricity production and a significant decrease in the use of fossil fuels.

Regardless of the complexity of problems and various situations in the world today and expected in the future, it is necessary to build a concept of sustainable energy development [3].

The primary notion of sustainable energy development may be constructed using a variety of criteria, however it can be described as follows:

- the principle of conservation of available non-renewable resources, when the most appropriate way is considered preservation of available resources, or a constant decrease in the intensity of their exploitation, depending on the type, quantity, and quality of available resources, as well as needs and opportunities in specific territories;
- the principle of exploitation of renewable energy resources, which to some extent replaces the use of non-renewable resources and a constant decrease in the intensity of their exploitation;
- the principle of energy efficiency, which provides for the efficient and economical use of energy at all stages of its existence, from energy that is accumulated in resources through efficient production, distribution and consumption, to promotion and support, to the production of goods that use less energy than the same or similar goods;

– the principle of justice between generations, which includes the rule of energy management in all energy development plans, which will enable future generations to meet their own energy needs;

– -the principle of harmonization of economic development and energy consumption, which determines the development discussed above, is a particularly sensitive principle, the implementation of which is associated with many problems, as it implies the need to change the traditional way of thinking.

In point of fact, economic development was seen as the sole indication of each country's progress, and only measures of economic growth were considered important and accessible for judging each country's condition and place in the international community.

### **Acknowledgments**

Funded by the Federal Ministry of Education and Research (BMBF) and the Baden-Württemberg Ministry of Science as part of the Excellence Strategy of the German Federal and State Governments. Supported by Zukunftskolleg – Universität Konstanz.

### **References:**

1. Sustainable Development [Electronic resource] // United Nations – Mode of access to the resource: <https://sustainabledevelopment.un.org>.
2. Draft Ukraine Recovery Plan Materials of the “Energy security” working group [Electronic resource] // The National Council for the Recovery of Ukraine from the Consequences of the War. – 2022. – Mode of access to the resource: <https://www.kmu.gov.ua/storage/app/sites/recoveryrada/eng/energy-security-eng.pdf>.
3. Trilemma Index [Electronic resource] // World energy. – 2022. – Mode of access to the resource: <https://www.worldenergy.org/transition-toolkit/world-energy-scenarios>.