

SWITCHING TO RENEWABLE ENERGY SOURCES*Student of group 147-21:****Khasanov Khasan Ilhamovich****Scientific supervisor:****Allaeva Gulchehra Zhalgasovna****DSc in Economics, Associate Professor,**Acting Professor of the Department of Industrial Economics and Management,**Tashkent State Technical University**e-mail: hasanelshad@gmail.com***Abstract**

The article examines renewable energy sources such as solar, wind, geothermal and hydropower, which are generated from continuously replenished natural resources. The development and implementation of renewable energy technologies play a crucial role in addressing global challenges related to climate change, depletion of fossil fuels and energy security. Renewable energy sources not only reduce greenhouse gas emissions but also decrease dependence on volatile global energy markets and contribute to sustainable economic growth.

Key words

energy, renewable energy sources, sustainable development, energy security, greenhouse gas emissions, clean environment, fossil fuels.

The transition to renewable energy sources is an integral part of modern efforts to solve global problems associated with climate change and the depletion of oil, coal and natural gas resources. Renewable energy sources, including solar, wind, geothermal and hydropower, can be generated from continuously replenished natural processes. Their large-scale adoption contributes to reducing environmental pollution and ensuring long-term energy sustainability.

Switching to renewable energy has numerous advantages. First, renewable energy sources are environmentally friendly and produce significantly lower emissions compared to traditional fossil fuel-based energy systems. Second, they are more reliable and sustainable in the long term, as renewable resources are less exposed to geopolitical risks and price volatility in international energy markets.

In addition, the transition to renewable energy stimulates economic development and job creation. The design, production, installation and maintenance of renewable energy systems require skilled labor, technological innovation and investment, thereby supporting industrial growth and improving human capital.

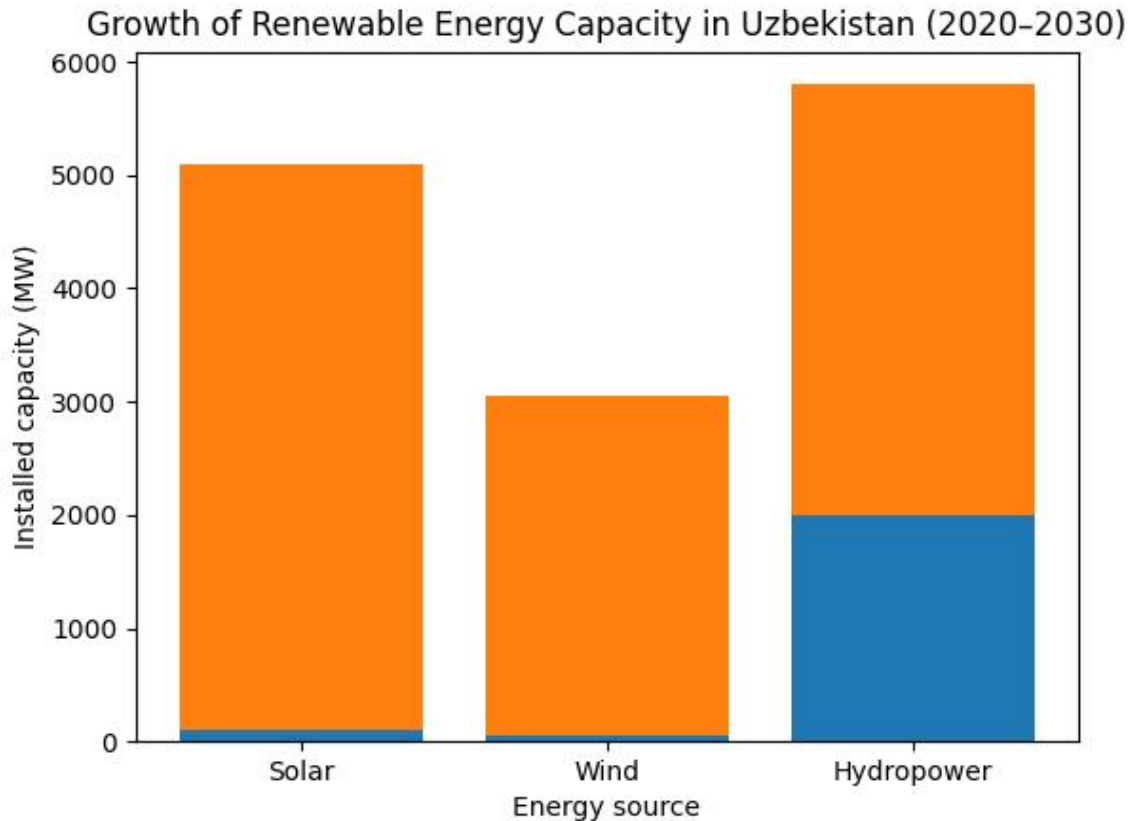


Figure 1

Figure 1 illustrates the projected growth of installed renewable energy capacity in Uzbekistan between 2020 and 2030, based on officially announced national targets.

However, the transition to renewable energy sources also faces certain challenges. Significant initial investments are required to develop infrastructure such as solar power plants, wind farms and energy storage systems. Moreover, the efficiency of renewable energy production may depend on climatic and geographical conditions, which can limit its application in specific regions. Therefore, comprehensive energy planning and technological modernization are essential for overcoming these limitations.

Uzbekistan is actively implementing policies aimed at expanding the use of renewable energy sources. One of the key objectives is to increase the share of renewable energy in the national energy balance in order to strengthen energy security and reduce dependence on fossil fuels. In recent years, large-scale solar and wind power projects have been launched in regions such as Karakalpakstan, Navoi and Surkhandarya, with the involvement of foreign investors and international financial institutions.

In the long term, solar energy has significant potential and may become a dominant source of electricity generation in Uzbekistan. Nevertheless, in the short term, solar energy alone is unlikely to fully meet the country's growing energy demand. Therefore, it is

necessary to focus on the development of distributed generation systems, hybrid power plants and energy storage technologies. The effective integration of renewable energy into the economy and everyday life requires coordinated efforts from the government, private sector and research institutions.

Energy source	Installed capacity (approx.) 2020	Target capacity by 2030	Main regions
Solar energy	100 MW	5,000 MW	Navoi, Samarkand, Surkhandarya
Wind energy	50 MW	3,000 MW	Karakalpakstan, Navoi
Hydropower	2,000 MW	3,800 MW	Nationwide

Table 1

The data in **Table 1** demonstrate that solar and wind energy are expected to become the fastest-growing segments of the national energy sector. This trend highlights the importance of investment, technological innovation and effective energy policy to ensure the successful transition to a sustainable energy system.

In conclusion, the development of renewable energy in Uzbekistan is not only an environmental necessity but also a strategic economic priority. The consistent implementation of renewable energy projects will contribute to sustainable development, environmental protection and the attraction of new investments into the national energy sector.

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