

RENEWABLE ENERGY DEVELOPMENT IN UKRAINE

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Abstract

This article discusses the development of renewable energy in Ukraine. The country has made significant progress in increasing its installed capacity for renewable energy, particularly in solar and wind power. However, the sector still faces challenges, including a lack of a stable regulatory framework and limited financing options, exacerbated by the ongoing conflict and war in Ukraine.

Keywords: *Ukraine, Renewable energy, Energy.*

Introduction

Renewable energy development in Ukraine has been gaining momentum since its independence in 1991. Renewable energy has become a priority for Ukraine in recent years, as the country seeks to modernize its energy sector and reduce its dependence on non-renewable energy sources. In addition to solar and wind power, Ukraine is also making strides in other areas of renewable energy, such as the development of biogas facilities, small hydropower plants and energy storage systems. Biogas facilities use organic waste materials, such as agricultural byproducts, to produce energy. Ukraine's biogas sector has grown rapidly in recent years, with more than 300 biogas plants now in operation across the country. Small hydropower plants use the natural flow of water to generate electricity, while energy storage systems enable renewable energy sources to be stored and used when needed.

Process

In the early years of independence, Ukraine relied heavily on coal and natural gas for its energy needs. However, the country's energy sector was in need of modernization, and renewable energy presented a promising alternative. In 2008, Ukraine introduced a feed-in tariff scheme to encourage investment in renewable energy projects, and this proved to be a catalyst for the sector's growth. Between 2010 and 2022, the country's installed capacity for renewable energy increased from 609 MW to over 9,200 MW. The rapid expansion of renewable energy sources (RES) was driven by the adoption of a feed-in tariff (FIT) in 2009. The policy led to a surge of private sector investment, as the FIT in Ukraine was one of the highest across Europe [1].

Solar power has emerged as a key area of growth for renewable energy in Ukraine in recent years. Since the introduction of a feed-in tariff system, which guarantees a fixed price for electricity produced from solar energy, Ukraine has seen a rapid increase in the development of solar power projects. As of 2022, Ukraine had an installed solar capacity of over 6 GW, making it one of the largest solar markets in Europe. The country's abundant sunlight resources and favorable regulatory framework have contributed to the growth of the sector.

Wind power is another rapidly growing area of renewable energy development in Ukraine. The country has significant wind energy potential, particularly in coastal regions and mountainous areas. The wind power sector has witnessed significant growth, with a total installed capacity of over 2 GW as of 2022. The potential for further growth in the wind power sector is high, particularly as Ukraine aims to increase its share of renewable energy in the overall energy mix.

Biogas power plants are an emerging field of renewable energy in Ukraine. These plants use organic waste, such as agricultural and food waste, to produce biogas, which can then be used to generate electricity. Ukraine has significant potential for biogas production, especially in the agricultural sector, where there is an abundance of waste materials available for use. As of 2022, there are more than 200 biogas plants in Ukraine, with a total installed capacity exceeding 300 MW.

Small hydropower stations have been present in Ukraine for many years, but it was only after gaining independence in 1991 that the development of this sector began in earnest. In recent years, there has been renewed interest in the construction of small hydropower plants due to their potential to provide clean and reliable energy. As of 2022, there are over 200 small hydropower plants operating in Ukraine, with a total

installed capacity of over 400 MW. The majority of these stations are located in the western regions of the country, where there are suitable water resources and infrastructure for their development.

In recent years, Ukraine has made significant progress in the development of energy storage systems as a means of integrating more renewable energy into the grid. The country has implemented a number of pilot projects for battery energy storage, including a 1 MW project in Kyiv Oblast and a 5 MW project in the Zakarpattia Oblast. In addition to battery storage, other energy storage technologies such as pumped hydro storage and compressed air energy storage are also being explored. These systems can help to mitigate the variability and intermittency of renewable energy sources, making them more reliable and valuable to the grid.

The large-scale war launched by Russia in Ukraine in February 2022 left the RES sector in a state of uncertainty caused not only by active hostilities, damage and occupation of energy facilities, but also by the problems in the market created by some state bodies[2].

Despite the progress made, the renewable energy sector in Ukraine still faces significant challenges. One of the biggest obstacles is the lack of a stable regulatory framework, which has led to frequent changes in policy and uncertainty for investors. Financing is also a challenge, with many banks and financial institutions still hesitant to invest in renewable energy projects.

Conclusions

Overall, the development of renewable energy in Ukraine over the past three decades has been impressive, but there is still a long way to go. The country has set ambitious goals for the future, including increasing the share of renewable energy in its energy mix to 25% by 2035. Achieving these goals will require a stable regulatory framework, greater investment in renewable energy projects, and continued technological innovation. However, the potential benefits of a shift towards renewable energy are significant, including increased energy security, reduced greenhouse gas emissions, and the creation of new jobs and economic opportunities.

The war aggravated the financial crisis in the energy sector. The lack of funds has become an urgent problem for all sectors of the Ukrainian energy system. However, it had a particularly painful effect on the sector of renewable energy. It became a matter of survival[2].

REFERENCES

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