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NON-CONVENTIONAL ENERGY: USE OF SOLAR AND WIND ENERGY

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Annotation

This article discusses the relevance, advantages and practical significance of using non-traditional energy sources, in particular solar and wind energy. In modern conditions, the depletion of traditional fuel resources and the intensification of environmental problems are increasing the need for renewable energy sources. The article analyzes the principles of operation of solar and wind energy, their impact on the environment, economic efficiency and their role in energy supply.

Keywords

Solar energy, wind energy, renewable energy, green economy, energy efficiency, carbon emissions, environmental safety, sustainable development.

Introduction

Today, the increasing demand for energy resources and the limited availability of traditional fuels (oil, gas, coal) pose significant challenges to humanity. At the same time, the use of these energy sources leads to environmental pollution and climate change. Therefore, renewable energy sources, in particular solar and wind energy, are gaining great importance as an alternative solution. They are considered environmentally friendly, unlimited and sustainable energy sources. The main purpose of this article is to analyze the importance, advantages and development prospects of solar and wind energy on a scientific basis.

Solar and wind energy are environmentally friendly, unlimited and sustainable energy sources, which are a key factor in reducing carbon dioxide emissions, ensuring energy independence and developing a green economy. The introduction of these technologies in sunny regions such as Uzbekistan will ensure economic efficiency and environmental safety

Main part (Discussion)

The essence and advantages of solar energySolar energy: Converts sunlight into electricity using photovoltaic panels. Advantages: environmental friendliness, unlimited, low operating costs. Disadvantages: dependence on the weather and high initial investment.

Figure 1



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Solar energy is the process of converting sunlight into electrical energy. This is mainly done using photovoltaic panels.

Advantages: Environmentally friendly energy source, unlimited and renewable. Low operating costs, suitable for rural areas

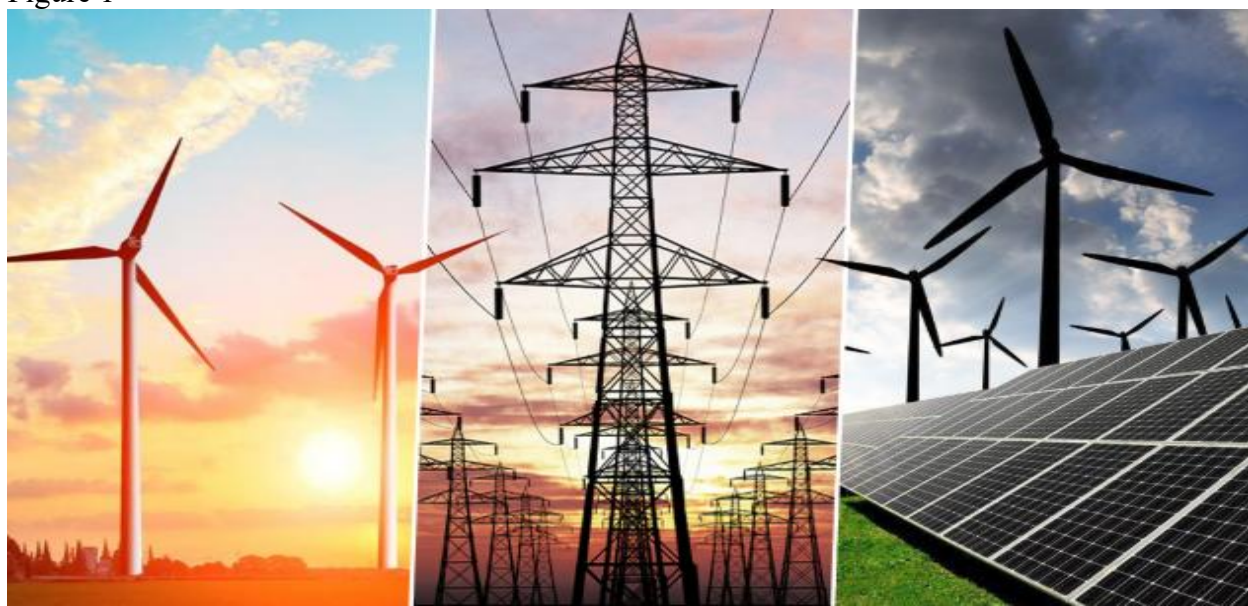
Disadvantages: High initial investment, dependence on weather conditions

2. The essence and importance of wind energy

Wind energy is a branch of science and technology that develops methods and theoretical foundations for using the kinetic energy of wind flows to obtain mechanical, electrical and thermal energy, and determines the sectors and ways of using wind energy in the national economy. Man has been using wind power since ancient times. Previously, its power was used only in sailing boats, later (2nd-1st centuries BC) windmills appeared in Egypt and China (see Windmill), and later wind engines and devices were created. The use of wind energy together with solar and water energy is of great importance. Wind energy is mainly divided into 2 parts: wind technology and wind use. The wind technology section is engaged in the development of theoretical foundations and practical methods for designing technical means (units, engines, devices) that operate using wind power. In the wind utilization section, theoretical and practical issues of effective use of wind energy, efficient use of wind devices, improvement of their technical and economic performance, etc. are studied and implemented. Wind energy is the process of converting the kinetic energy of wind flow into electrical energy.

Advantages: Does not emit harmful emissions into the atmosphere Quickly built and expanded, provides energy independence Disadvantages: Depends on wind speed, noise and impact on the landscape Environmental importance, Solar and wind energy:, reduces carbon emissions, slows down global warming, improves air quality.

Figure 1



Uzbekistan is distinguished by a large number of sunny days (more than 300 days a year). This creates great opportunities for the development of solar energy. Also, in some regions there is an opportunity to use wind energy.

Research results. The analysis shows the following: The demand for renewable energy sources is increasing from year to year. Solar and wind energy are among the fastest growing sectors. Their share in energy production is increasing. Developing countries are actively switching to these technologies

Statistics show that by 2023, about 30% of the world's electricity will be generated from renewable sources

The share of solar energy is 12%

The share of wind energy is 10%

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The share of renewable energy is expected to reach 50% by 2030

In Uzbekistan: by 2030, it is planned to generate 25–30% of electricity from renewable sources

In conclusion, it should be said that solar and wind energy are an integral part of the modern energy system. They are one of the main factors of environmentally friendly, economically efficient and sustainable development. In the future, the share of these energy sources will increase further and they will play an important role in ensuring global energy security.

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