EFFECTIVE METHODS OF USING ALTERNATIVE ENERGY SOURCES IN THE GREEN ECONOMY

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Abstract: *This article discusses effective methods of using alternative energy sources in the context of the green economy. The article provides information about the importance of green energy and alternative energy sources today in the context of the green economy and digital economy.*

Key words: *Green energy, alternative energy, wind, solar, water, geothermal energy, green economy, digital economy.*

Introduction

In a green economy, there are several important steps that can be taken to use alternative energy sources efficiently, to provide clean and pure energy to mankind, to conserve natural resources, and to achieve mutual benefits. I would like to list a sequence of steps that are generally recommended in the use of alternative energy sources in the green economy through effective methods below. It is necessary to analyze energy sources in all regions of the republic and create projects for their development. Increasing the use of various energy sources (sun, wind, water, geothermal energy, etc.) in all regions of Uzbekistan is in line with the goal. These methods are an effective and important technology in the use of alternative energy sources in the green economy.

Methodolgy

Development of light energy sources. The development of the use of renewable energy sources, such as wind, solar, geothermal, biothermal, water and other types of energy, has a special place.

It is necessary to develop light energy projects and implement them in accordance with international standards. It is necessary to use the most developed and well-established technologies at the international level, to teach effective methods of providing energy to citizens and enterprises, and to develop energy technologies. Support for new approaches and technologies in the field of energy technologies is an important basis for the use of alternative energy sources. For this, it is important to increase the education and distribution of innovative technologies for energy, increase energy saving and improve the quality of energy.

Strengthening and increasing the production of materials used in the application of green energy technologies in the field of energy security and protection, for example, solar panels, air, water, wind, humidity sensors, will develop investment. Upgrading the transportation system by converting electric cars to green energy allows cooperation with international organizations and making a significant contribution to the management of green energy projects. In order to transition to a green economy, it is necessary to study and harmonize international experience. The development of educational and research activities in the field of energy in higher educational institutions helps to increase the knowledge skills of young students in this field.

As a result of cooperation with specialists and scientists and management of huge projects, it will be possible to launch and implement new alternative energy sources and systems.

The question of what is included in alternative energy sources can be answered as follows:

One of the main models of alternative energy sources, that is, light (alternative) energy sources, is wind energy.

Wind Energy. Wind is an invariable physical phenomenon, which is actively used as a source of light energy. Wind energy can be converted into electricity using a wind turbine.

Solar Energy. Solar energy is used to capture solar energy through solar panels. These panels can collect solar energy and convert it into electricity.

Water Energy. Hydropower is used to generate energy through water flow or using water pools. Hydroelectric power plant and hydroelectric lighting are used in the implementation of this method.

Geothermal Energy. Geothermal energy is the heat energy obtained from geothermal energy falling on the earth's surface. It is possible to receive thermal energy through the warm part of the Earth (Southern continents) and convert it into thermal energy.

Results and Discussion

Our dependence on fossil fuels has led to environmental degradation and climate change. A green economy requires a shift towards sustainable energy sources. In turn, this paper explores the effective use of alternative energy sources like solar, wind, geothermal, and hydropower in various sectors to create a thriving green economy.

Results:

Solar Energy:

- Distributed Solar: Rooftop panels on homes and businesses can generate electricity for on-site use, reducing dependence on the grid.
- Utility-Scale Solar Farms: Large-scale solar plants can provide clean energy to entire communities.
- Desalination: Solar-powered desalination plants can provide clean water in arid regions, promoting sustainable development.

Wind Energy:

- Wind Farms: Onshore and offshore wind farms harness wind power for electricity generation.
- Distributed Wind: Small wind turbines can provide power to individual homes or remote communities.

Geothermal Energy:

- Electricity Generation: Geothermal power plants utilize underground heat to generate electricity.
- District Heating: Geothermal energy can be used for heating buildings and providing hot water, reducing reliance on fossil fuels.

Hydropower:

- Large Dams: Large hydropower dams generate significant electricity but can have environmental drawbacks.
- Run-of-the-River Hydropower: Smaller-scale hydropower plants on rivers minimize environmental impact while providing clean energy.

Discussion:

Integration and Storage: A key challenge is integrating the variable nature of renewable energy sources like solar and wind into the grid. Energy storage solutions like batteries are crucial to balance supply and demand.

Policy and Incentives: Government policies and incentives like feed-in tariffs and tax breaks can encourage investment in renewable energy infrastructure.

Grid Modernization: Modernizing the electricity grid with smart technologies can optimize energy distribution and improve efficiency.

Public Awareness: Educating the public about the benefits of renewable energy can garner support for a green transition.

Further Research:

- Research on advancements in energy storage technologies for efficient integration of renewables into the grid.
- Exploring the potential of emerging renewable energy sources like ocean wave and tidal energy.
- Developing strategies for a just transition to a green economy, ensuring a smooth shift for workers in the traditional energy sector.

Conclusion:

The effective use of alternative energy sources across various sectors is essential for building a green economy. By implementing a combination of solar,

wind, geothermal, and hydropower technologies, coupled with energy storage solutions and supportive policies, we can create a sustainable future with clean energy.

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