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## DEVELOPMENT OF THE PATH OF NON-TRADITIONAL ENERGY IN UZBEKISTAN

**Yusupov Elmurod Turdalievich**

Head of Standards Resource Center

Uzbek Institute of Standards

E-mail: [eddik87@gmail.com](mailto:eddik87@gmail.com)

**Abstract:** The article considers the possibility of improving the reliability of power supply in remote areas of the Republic of Uzbekistan using hybrid energy systems based on renewable energy sources.

**Keywords:** renewable energy sources, hybrid systems, solar panels, micro-hydro power plants

For the existence and conduct of economic activity, a person needs an energy.

From time immemorial, the source of energy was first coal, then oil and gas. However, their resources are constantly shrinking. It is estimated that the total remaining oil reserves could last approximately 200 years . This estimate is up to 190 years for natural gas resources and 230 years for coal [1, p. 2].

Therefore, worldwide interest in renewable energy sources has increased quickly.

Renewable energy is any form of energy available in the natural environment that can be repeatedly replenish. For example, solar energy is naturally available and we cannot deplete it by consuming.

Renewable energy is available in various forms depending on location and time of year. For example, hurricane-force winds blow in some areas, and there is not enough sunlight due to cloudy weather.

So far, renewable energy sources provide less than [13 % of all the energy](#) that we currently consume in the world. However, this share is constantly increasing, especially

in developed countries pursuing a policy of transition to green energy. For example, in Germany in 2021, 490.6 billion kWh of electricity were produced, of which 224.6 billion kWh (or 45.8%) of electricity came from renewable energy sources [2, p. 10].

The following renewable energy sources are available:

- ° Solar radiation;
- ° Wind;
- ° Waters of rivers and canals;
- ° Ebb and flow;
- ° Waves in lakes, seas and oceans;
- ° Geothermal water sources;
- ° Earth, air, water;
- ° Biological masses, which include plants specially grown for this purpose.

Now consider what are the advantages or disadvantages of renewable energy sources. The table provides a brief overview of them:

Table 1

#### Overview of the advantages or disadvantages of renewable energy

Advantages	Flaws
Renewable resources never run out	Inconstancy, dependence on weather conditions and time of day.
Require less maintenance and save money	No possibility of accumulation (storage) of generated energy
Environmentally friendly	Geographic restrictions
Increase the energy independence of countries	Higher initial cost
Expanded access to clean energy for off - grid or remote locations	

As can be seen from the Table 1, renewable energy sources have more pluses than minuses. Renewable energy has more advantages than disadvantages.

In Uzbekistan, as well as around the world, the production of electricity from renewable energy sources is developing. In 2018, Uzbekistan joined the Paris Agreement and committed itself to its implementation - by 2030, reducing the specific greenhouse gas emissions per unit of gross domestic product by 10% from the 2010 level. According to the "Strategy for the transition of the Republic of Uzbekistan to a "green" economy for the period 2019-2030", by 2030 it is planned to increase the share of renewable energy sources to more than 25% of the total electricity generation [3].

In 2021-2022, two photovoltaic installations with a capacity of 100 MW each were launched in the Navoi and Samarkand regions of Uzbekistan. At present, the Saudi energy company ACWA Power is working on the construction of wind power plants (WPPs) with a total capacity of 1000 MW in the Bukhara and Navoi regions, the total cost of the project is 1 billion US dollars [4].

As mentioned above, the main disadvantage of renewable energy sources is volatility, dependence on weather conditions and time of day. The generation of energy by solar panels, wind turbines and water heating collectors is highly dependent on the season and weather conditions, which causes problems with the stability of energy supply. For example, the inability to use solar panels at night or other situations where sunlight is limited.

To solve this shortcoming in remote areas of Uzbekistan with the presence of wind and water potential, it is proposed to create hybrid energy systems based on renewable energy sources based on solar panels, wind power plants and micro hydroelectric power plants. The composition of hybrid systems can also include a traditional source of energy, and all this increases the reliability of energy supply.

## References

1. P. Lako, J.C. Jansen "What scenario studies tell about security of energy supply in Europe" ECN-C--01-054 - 2001. - 56 p.

2. Burger, Bruno. Öffentliche Nettostromerzeugung in Deutschland im Jahr 2021. Freiburg, Germany: Fraunhofer- Institut for Solare Energiesysteme ISE. - 2022. – 80 p.

3. Decree President Republic Uzbekistan from 04.10.2019 No. PP -4477 (National base data Legislation Republic Uzbekistan) – Access mode: URL: <https://lex.uz/ru/docs/4539506>

4. Official website of the Ministry of Energy of the Republic of Uzbekistan. – Access mode: URL: <https://minenergy.uz/ru/news/view/685>

