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ALTERNATIVE SOURCES OF ENERGY IN UZBEKISTAN: ECONOMIC MECHANISMS FOR STIMULATION AND DEVELOPMENT DIRECTIONS

Review

Abstract

The article examines the economic aspects of the use of renewable energy sources (RES) in Uzbekistan and the world, studies the world practice of implementing state policy in the field of renewable energy, and also describes the main trends in the development of renewable energy. An analysis is presented of the introduction of state incentive mechanisms for renewable energy in Uzbekistan, including a substantive analysis of the regulatory framework for such incentives.

Keywords: renewable energy sources, energy consumption, energy balance, green certificate, green tariff, sustainable development.

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АЛТЕРНАТИВНЫЕ ИСТОЧНИКИ ЭНЕРГИИ В УЗБЕКИСТАНЕ: ЭКОНОМИЧЕСКИЕ МЕХАНИЗМЫ СТИМУЛИРОВАНИЯ И НАПРАВЛЕНИЯ РАЗВИТИЯ

Обзор

Аннотация

В статье исследованы экономические аспекты использования возобновляемых источников энергии (ВИЭ) в Узбекистане и мире, изучена мировая практика реализации государственной политики в сфере ВИЭ, а также дана характеристика основных тенденций развития возобновляемой энергетики. Представлен анализ внедрения механизмов государственного стимулирования ВИЭ в Узбекистане, включая содержательный анализ нормативно-правовой базы такого стимулирования.

Ключевые слова: возобновляемые источники энергии, энергопотребление, энергобаланс, «зеленый» сертификат, «зеленый» тариф, устойчивое развитие.

1. Introduction

Global energy demand continues to grow by developing countries, reflecting the expansion of the global economy, rapid industrialization, population growth, urbanization, and improved access to energy. At the same time, the negative social, economic, and environmental impacts that lead to strong dependence on fossil fuels for governments to find more sustainable to meet energy demand. World experience will become the basis of a long-term energy strategy, one of the key factors for sustainable development of the country, in increasing the scale of use of renewable energy in the future will bring huge economic benefits.

The future of commodity and energy markets in modern conditions is shaped by two factors. Firstly, the cost of electricity production using renewable energy sources (RES) is decreasing and has already become equal to the cost of its generation by hydrocarbon generation. Secondly, the level of state regulation from the point of view of financial security of investments through a system of interaction of legislative norms needs serious reform [1].

One of the key outcomes of the United Nations Conference on Sustainable Development in 2015 was the adoption by Member States of the 17 Sustainable Development Goals until 2030. These goals are designed to help achieve and expand the Millennium Development Goals. As part of these efforts, a separate energy goal has been adopted in order to reaffirm the importance of energy as one of the key factors for sustainable development. To achieve this goal, by 2030 it is proposed to significantly increase the share of renewable energy in the global energy balance, as well as intensify international cooperation in order to facilitate access to research and technology in the field of renewable energy.

2. Materials and methods

The methodological basis of the study is to apply the fundamental principles of economic theory. During the preparation of the article, dialectical and comparative methods of analysis were used, as well as statistical and mathematical methods. The research information base was composed of analytical materials from the Ministry of Energy, fundamental studies of the International Energy Agency, the International Renewable Energy Agency, OECD, the World Bank, the International Finance Corporation, the International Renewable Energy Network, scientific publications of domestic and foreign scientists on the development of renewable energy sources, information resources from the Internet.

3. Results and discussion

EU countries have begun to use solar energy in production to reduce their dependence on hydrocarbons and to reduce greenhouse gas emissions. In this regard, a number of European countries decided to increase the share of non-traditional renewable energy sources in the energy balance to 20% by 2020 [2].

Such an increase in the scale of use of renewable energy sources will lead to an increase in the standard of living of the world's population by 2.7% by 2030, an increase in the heat and transport sector to 3.7%, due to high electrification. In addition, employment in the field of production of renewable energy sources will increase from 7.7 million people to 24.4 million people by 2030 compared to 2017 [3], [4].

Along with domestic sources of financing, the country pays great attention to attracting foreign investment to increase the use of renewable energy sources. The Asian Development Bank (ADB) raised \$ 215.7 million to finance renewable energy in our country in 2010-2016. 85.3% of these funds are aimed at increasing the power of solar energy. We can see that these funds allocated by the Asian Development Bank to Uzbekistan are significantly higher than the funds allocated for some countries of Central Asia and the Caucasus. This indicator in Kyrgyzstan is about 360.7 million dollars. The USA, in Tajikistan 136 million, in Armenia 25 million and in Georgia 15 million dollars and in Azerbaijan 5 million dollars [5].

Since the full satisfaction of the general energy demand makes it possible to solve a number of issues, such as high economic efficiency and reducing the negative impact on the environment, in recent years the share of renewable energy sources in the overall energy balance of our country has been growing. The total capacity of these energy sources increased by 198 MW in 2006-2017 and reached 1,797 MW in 2017. In the energy balance of our country is about 3% (Fig. 1).

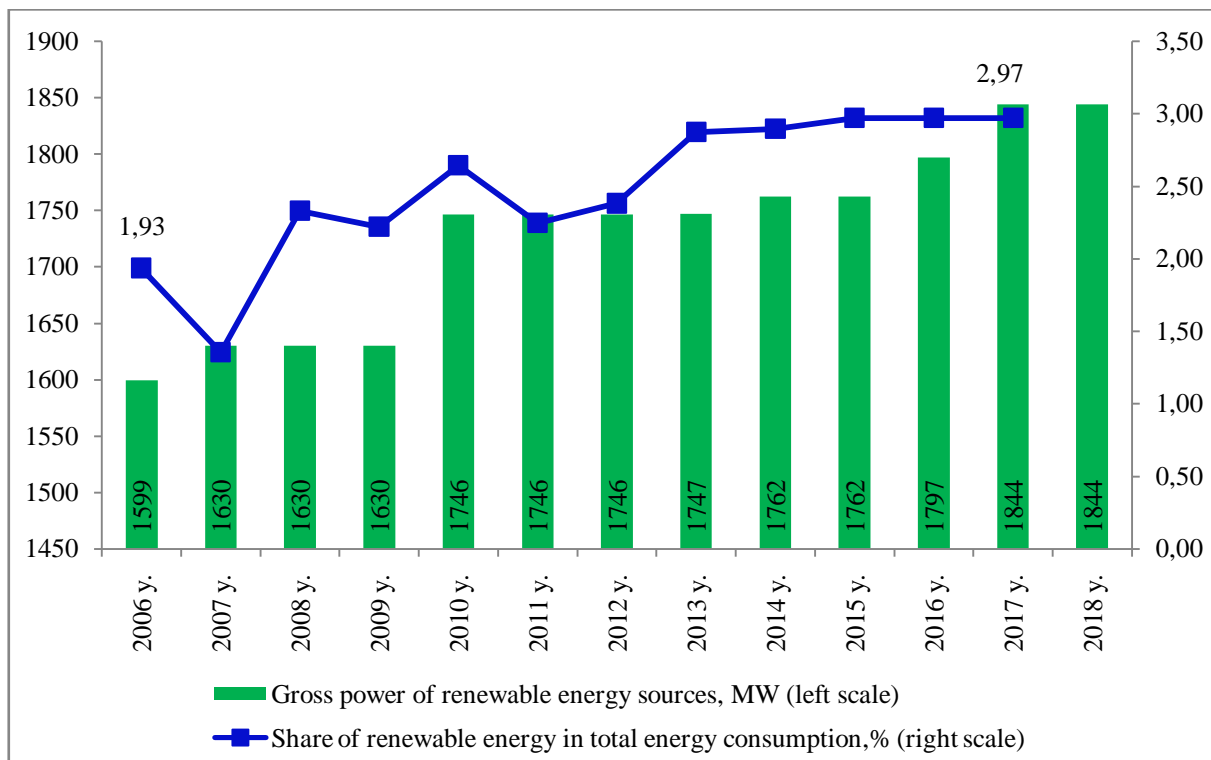


Figure 1 – Growth dynamics of the share of renewable energy in Uzbekistan [6], [7]

Today, in many countries of the world, the concept of "sustainable development" is the main goal of the state, to abandon the production of high-carbon products and switch to the use of clean fuels and technologies. A very small negative impact on renewable energy sources will increase the importance of such energy sources in the near future. The share of renewable

energy in total energy consumption in Uzbekistan increased from 1.46% in 1995 to 2.93% in 2015. The share of renewable energy in electricity consumption increased from 13% in 2015 to 21% in 2015. An increase in the share of renewable energy sources in total energy consumption had a significant impact on a significant reduction in CO₂ emissions in our country, in particular, in 1995 it amounted to 4.39 metric tons compared to 3.41 metric tons in 2015 (Fig. 2).

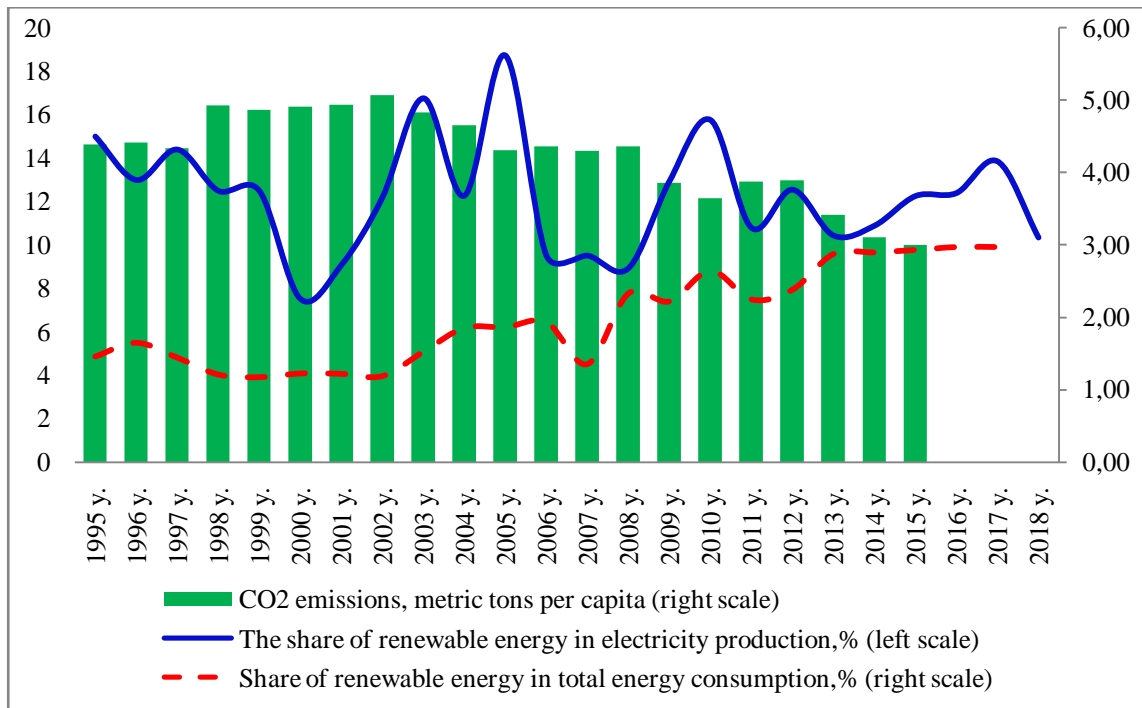


Figure 2 – Renewable energy and CO₂ emissions in Uzbekistan [8], [9], [10]

The main part of renewable energy sources in the country is solar, water and partially wind energy. If the annual solar-energy potential of Uzbekistan is 51 billion tons of oil equivalent, then wind energy for this indicator is 360 million tons. and 1.8 million cubic meters of water. tons of oil equivalent. The total area of land that can be used to use clean energy is 11 million hectares. In our country, by 2030 the largest share of energy is planned to be withdrawn from solar panels. In Uzbekistan, more than 200 thousand cars are produced annually. By 2030, 48.5% of these will be provided with renewable fuels. Renewable energy sources will remain one of the country's top priorities. This reduces fuel consumption by 50%, reducing air pollution by up to 80% [11]. According to forecasts, the share of renewable energy in total energy consumption in the country will increase by 16% by 2030, to 19% by 2050 [12], [13].

Today in our country there are some obstacles to expanding the use of renewable energy sources:

1. Legislative factors. The formation of legal bases is not sufficient for economic mechanisms to stimulate the use of renewable energy sources.
2. Economic factors. High production of renewable energy sources and low capacity than traditional energy sources, lack of incentive measures (tariffs and taxes) and specific financial mechanisms for state support of renewable energy sources and relatively low cost of traditional energy resources compared to other countries,
3. Technological factors. Insufficient development of advanced equipment and technology based on modern control systems.
4. Information and psychological factors. Lack of information on renewable energy potential.

World experience uses a number of economic mechanisms to stimulate the use of renewable energy sources. Among these mechanisms are economic mechanisms, such as a green certification system, state coverage of the costs of technological connection, modern technological, strict tariffs for renewable energy sources and a clean measurement system.

The system of "Green" certification is a means of accounting and monitoring the production and consumption of electricity based on renewable energy sources. This system is widely used in world practice and is named after various terms. For example, these economic mechanisms have been renamed "Green Certificate" in Europe, "Renewable Energy Certificates" and "Renewable Energy Credits", "Green emblem", "Renewable Electricity Certificates" in the USA [14].

The Green Certification system is used to achieve the following main objectives:

1. Assess the production and consumption of electricity based on renewable sources.
2. Clarify and approve information on the compositions and types of fuel used in the country. A "green" certification system helps ensure transparency of information about the origin of electricity. In addition, these certificates are also used for marking goods.
3. Using collateral certificates to develop corporate voluntary commitments. Renewable energy certificates are used to verify that they have fulfilled their environmental and social obligations not only by the state, but also by some other companies.
4. Using certificates to support renewable energy. A "green" certificate will lead to the provision by the state, subsidies, benefits and other types of financial assistance to producers, consumers and suppliers of renewable energy sources.

Another important mechanism for promoting the use of renewable energy sources is green definitions, that is, strict definitions. Today, in more than 65 countries around the world, green definitions have been introduced. As part of these support measures, the following three main areas of incentives are:

1. Guaranteed network connectivity.
2. A long-term contract for the purchase of all renewable energy sources.
3. Guaranteed purchase of generated electricity in strict terms. In many cases, in order to further stimulate, the acquisition of electricity based on renewable sources may be more accurate than that generated by fuel energy resources.

In addition, we can include the following economic mechanisms to stimulate the use of renewable energy:

- increase in tariffs of traditional energy sources;
- Creation of networks of producers of renewable energy sources (households and legal entities), as well as the introduction and sale of surplus energy from consumption;
- ensure free access to the electricity market, including the production of renewable energy in the private sector and the sale of part of what it exceeded;
- imposition of fines and taxes on emissions of environmentally harmful substances through the use of extractive energy sources.

The use of a number of the above economic mechanisms to stimulate the use of renewable energy sources, as well as an increase in the share of renewable energy sources in the total energy consumption, will lead to a high economic effect, reduction of negative environmental impact and, ultimately, sustainable development of the country.

Conflict of Interest

None declared.

Конфликт интересов

Не указан.

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