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PROSPECTS FOR EFFECTIVE USE OF SOME DESERT PLANTS

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ABSTRACT:

The article provides information, that in response to reduced hydrocarbon resources in Uzbekistan, one of the main directions of alternative sources of energy can be use of biomass of some halophyte plants.

The results have high scientific and practical importance, which serve for the development of new alternative energy sources.

KEYWORDS: power industry, alternative sources of energy, renewable energy sources, halophyte, bioethanol, biogas.

INTRODUCTION:

Biomass is a renewable energy source. The term "biomass" is used to refer to parts of plants where energy can be extracted, as well as their remains [2]. It can be used as a universal alternative energy source to produce environmentally friendly gas, fuel and electricity. Interest in the use of biomass as an energy source, primarily the annual re-emergence of biomass; the stored energy can be stored and used for a long time as desired; the possibility of converting this energy into other types of energy; and in some regions, this source of heat is cheaper than natural heat sources; being an environmentally friendly heat source; its use does not produce toxic sulfur oxides in the environment; This is due to the fact that the balance of carbon dioxide in the atmosphere does not change and a number of other reasons [3]. In recent years, plant biomass has been used mainly to extract bioethanol and biogas.

Bioethanol is a form of ethanol that is currently used as a fuel to process organic waste from plants. According to the IAEA, the annual production of bioethanol worldwide is estimated at 36.3 billion tons. liter equal. Brazil is currently the world leader in bioethanol production. In this country, 44-46% of fuel demand is met by bioethanol production. The Brazilian experience of ethanol production in the United States, France, India, Japan, the Philippines, Latin America, Africa, and Asia has been studied with great interest and is being widely used. According to the latest data, the technology of obtaining ethanol from residual biomass has been introduced in 43 countries around the world and has become an integral part of their economies [4]. In these countries, bioethanol is obtained from plants that can be widely used in the national economy, such as Jerusalem artichokes, peanuts, and sugar cane, and has a number of disadvantages [5]. Biogas is an energy product obtained by digesting organic waste. While the first information about biogas began to appear in the early 18th century, its technology was fully explored in the early 20th century. During World War II, the demand for electricity in France and Germany reached catastrophic levels, and attention was focused on the use of agricultural waste, including manure, in the production of biogas. By the mid-1940 s, more than 2,000 biogas plants had been put into operation in

France. Similar equipment has been built on many Hungarian farms. In the United States, special attention is paid to the production of biogas from manure, because, firstly, in terms of energy, and secondly, about half of the economically viable conversion of annual waste on all livestock farms into biogas in large livestock complexes (large horned animals, pigs and poultry). German livestock annually collect 200 million tons of manure, including 70 million tons of liquid manure. Scientists and experts estimate that when the above-mentioned amount of manure is processed in biogas plants, it is possible to obtain energy equal to 4% of the national energy requirements. In the UK, 3.2% of the country's natural gas demand is met by biogas. A total of 2.3 million tons of gas equivalent to oil can be produced annually from the processing of manure from cattle, pigs and poultry. Japan's agriculture produces 56.5 million tons of manure a year. When this amount of manure is fully recycled, 1.7 billion m^3 of gas or 1 million tons of oil can be replaced. The country is working on a program to accelerate the development of livestock production, with a special focus on this technology. Russia also has great potential for biogas production. Annually, livestock farms produce 665 million tons of manure, each of which can be produced by anaerobic fermentation to produce 15-20 m3 of biogas with a heat output of 5600-6300 kcal / m^3.

One of the main principles of India’s energy policy is the production of biogas in rural areas. Fundamental and applied research in this field is mostly conducted at the Center for Biochemical Engineering of the Indian Institute of Technology. According to the country's scientists, converting 300 million tons of cattle manure into biogas each year could save 33 million tons of oil (0.11 tons of oil equals 1 ton of manure). Today, there are more than 1 million small biogas generators in India. This technology is very advanced in China. There are more than 200 million devices in the country. It is noteworthy that the country has established bodies to control the use of digest. Digestors are installed in every individual family, especially in remote areas, on livestock and poultry farms, small businesses, and elsewhere. Biogas production technology is widespread in the Philippines, Guatemala, Israel. In these countries, in addition to livestock and poultry wastes, continuous methanization is carried out in a variety of organic wastes, including plant biomass residues [7]. According to experts, the amount of energy released from the annual biomass on Earth is theoretically 2900 Edj / year [8].

Currently, natural gas (91.8%), oil (7.0%), hydropower (1.3%), coal (0.01%) and others (0.03%) are widely used as primary energy sources in Uzbekistan. [9]. Uzbekistan's reserves of hydrocarbons are about 5.1 billion tons of oil equivalent, including about 245 million tons of oil, 1979 million tons of natural gas and 2,850 million tons of coal. When the population dynamics in the country is equal to today's level, the existing oil reserves are projected to last for 10-12 years, natural gas reserves for 28-30 years, and coal reserves for more than 50 years [10].

Based on the above problems, special attention is paid to the development of non-traditional methods and technologies of energy production in Uzbekistan, the creation of alternative energy sources for them and their implementation in practice (including the President of the Republic of Uzbekistan "Alternative energy sources"). F PF-Decree No. 4512 of March 1, 2013 "On measures for further development"). It is important to study the possibility of using alternative energy sources as the most important factor in the sustainable development and competitiveness of the economy in the context of declining global hydrocarbon production in economically developed and developing countries [1].

Most of Uzbekistan's territory is desert. The deserts have a unique floristic composition and are mainly used as fodder for small cattle. However, among the desert plants, there are some plant groups, such as halophyte plants, which are not used in the national economy, but produce a lot of biomass. They have a relatively heavy wood, which breaks down quickly and has a good fuel base, and the heat is not inferior to that of coal. If the stems of these plants are burned in the traditional way, they will release large amounts of CO2 and pollute the environment [11]. In order to use the biomass of halophyte plants wisely, it is necessary to study in practice the technology of obtaining bioethanol, biogas or biofertilizers based on their fermentation.

Halophyte-type plants can be found in the Mingbulak sandy desert in the Central Kyzylkum, in the lower reaches of the Zarafshan. According to EP Korovin (1964), 256 species of halophilous plants have been identified in Uzbekistan. MG Popov (1940), KZ Zokirov (1955) and II Granitov (1969) studied the flora of the desert sands of the Kyzylkum and Zarafshan valleys.

Halocnemum strobilaceum

Halostachys belangeriana

Climacoptera lanata

Tamarix hispida

Haloxylon aphyllum

Figure 1. Halophyte plants that can be used as alternative energy sources

Among the halophytic plants that are not widely used for agricultural purposes in the saline areas of the Central Kyzylkum sandy and loamy soils, saline basins and artesian wells, we can include the following:

- Halochnimum strobilaceum;
- Halostachys belangeriana;
- Climacoptera lanata;
- Karelinia caspia;
- Tamarix hispida;
- Haloxylon aphyllum.

The above-mentioned plants differ from other halophyte plants by their high biomass production, their almost no use as fodder for livestock, and their lack of medicinal properties.

Halochnimum strobilaceum is a hypergalogite shrub up to 70 cm tall. The annual branches are divided into seret and joints. The earth grows steeply and forms many cushioned biomass [12, 14].

Climacoptera lanata is an annual herb that grows up to 10-45 cm in height. The stem is highly branched at the base and forms a large biomass. The leaves are fleshy.

Karelinia caspia is a shrub with many stems, about 15-75 cm long. Widespread in bald and saline areas.

Haloxylon aphyllum is a xeromorphic tree belonging to the afil group. Adapted to growing in saline soils, the average height of the stem is 70 cm. A number of experts have suggested that the saxophone's stem is a good fuel.

Tamarix hispida is a common shrub in the vicinity of water bodies and has a large number of stems. The flammability of the stem is high [13].

It is important to conduct research to assess the potential of plants that are common in desert areas and are not used for their intended purpose in the economy.

REFERENCES:

1) "Muqobil energiya manbalarini yanada rivojlantirish chora-tadbirlari toʻgʻrisida"gi Oʻzbekiston Respublikasi Prezidentining farmoni. 2013-yil 1-mart.
2) Bogdanovich S.P., Shevchenko N.V. Prospects for the use of alternative fuels in agriculture. // Technique in agriculture. 2012. No. 5. P.38-40.
3) Harding S., Adams B. Biomass as a rebuming fuel: a specialized cofring applications. // Biomass and Bioenergy. -2000. № 19. P. 429-445.
4) Gnansounou E, Dauriat A. Ethanol fuel from biomass. // Journal of Scientific: Industrial Research. 2005. № 64. P. 809-821.
5) Almodares A, Hadi M.R. Production of bioethanol from sweet sorghum. // African Journal of Agricultural Research. 2009. № 9. P. 772-780.
6) Kovalev A.A., Marsagishvili G.P., Gudiev Z.A. Anaerobic processing of solid waste into biogas and organic fertilizers. // Scientific works of VIESH. 1990. No. 1. P.77-85.
7) A.A. Kovalev Scientific basis for calculating technological lines for biogas production. // Scientific works of VIESH. Energy and electromechanization of agriculture. 2000. No. 4. P.8-15.
8) Shuisky V.P., Alabyan S.S., Komissarov A.V., Morozenkova O.V. World renewable energy markets and Russia's national interests. // Prediction problem. 2010. No. 3. P.133.
9) Alternative energy sources: opportunities, use in Uzbekistan. // Analytical report (The report was prepared by the Center for Economic Research with the assistance of UNDP). 2011. No. 3. P.7.
10) Prospects for the development of renewable energy in Uzbekistan. // Analytical report (The report was prepared by the Center for Economic Research with the assistance of UNDP). 2007.S. 17.

11) Zakirov K.Z. Flora and vegetation of the Zeravshan river basin. Part I. Tashkent. Publishing house of the Academy of Sciences of the UzSSR. 1955.S. 61-64.
12) Flora of Uzbekistan. Volume II. Ed. A.I.Vvedensky. Tashkent. Publishing house of the Academy of Sciences of the UzSSR. 1953.S. 297-314.
13) Flora of Uzbekistan. Volume IV. Ed. A.I.Vvedensky. Tashkent. Publishing house of the Academy of Sciences of the UzSSR. 1959.S. 136-137.
14) Sherimbetov S.G. Halophilic vegetation of the dried bottom of the Aral Sea and its role in the formation of biological diversity. // Guliston davlat universiteti axborotnomasi. 2015. No. 3. P.29-32.