

CURRENT STATE OF BIOENERGY IN UKRAINE

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Анотація

Розглянуто питання поточного стану, існуючих бар'єрів та перспектив розвитку біоенергетики в Україні. Показано можливість, важливість і актуальність використання біомаси як палива. Запропоновано реалістичні цілі для розвитку сектору біоенергетики в країні.

Ключові слова: біоенергія, біопаливо, відновлювальна енергія, біоенергетичний сектор

Abstract

The question of the current state and prospects of existing barriers to bioenergy development in Ukraine are considered. The possibility of the importance and relevance of biomass as fuel are highlighted. Realistic targets for bioenergy development in the country are offered.

Keywords: Bioenergy, biofuels, renewable energy, bioenergy sector

European experience shows that energy from biomass and other renewable sources plays an increasingly important role in the overall energy balance. According to experts from the Bioenergy Association of Ukraine, in the EU, the share of renewable sources today is 15%, and in Ukraine – 1% [1-4]. In this case, biomass itself accounts for 62% of the total contribution of renewable energy sources. And in European countries with the most advanced agro-industrial complex, such as Hungary, Poland, Finland, the Baltic States, due to the large volume of bioenergy raw materials, the production of energy from biomass reaches 95%. Taking into account the potential of Ukraine regarding the amount of raw materials for biomass production, our state has all chances to embrace the leading positions in the field of bioenergy. [1]

According to the research data [2], in 2013, the share of renewable energy in gross final energy consumption amounted to 3.45%, including biomass – 2.2%, accounting for 63% of all renewable energy sources. This suggests that compared to 2012 there is a significant increase in the contribution of biomass to the total supply of primary energy – by 23%. At the same time, by 2015, the Bioenergy Association of Ukraine forecasts further growth of these indicators due to the urgent need to replace Russian gas with alternative fuels.

Bioenergy experts point out that Ukraine has sufficient biomass potential available for energy production of more than 27 million tons of conventional fuel per year in order to achieve this goal. Its main components are the primary waste of agriculture. But at present, only 10% of the total biomass potential – 2.7 million tons of conventional fuel per year – is used for energy needs in Ukraine. It is mainly woody biomass (86% of total biomass use) and sunflower husk (8%). The least active vegetable waste is used – 94 thousand tons of straw per year, which is less than 1% of the economic potential of straw in Ukraine.

Figure 1 shows data on the implementation of IE technologies in Ukraine.

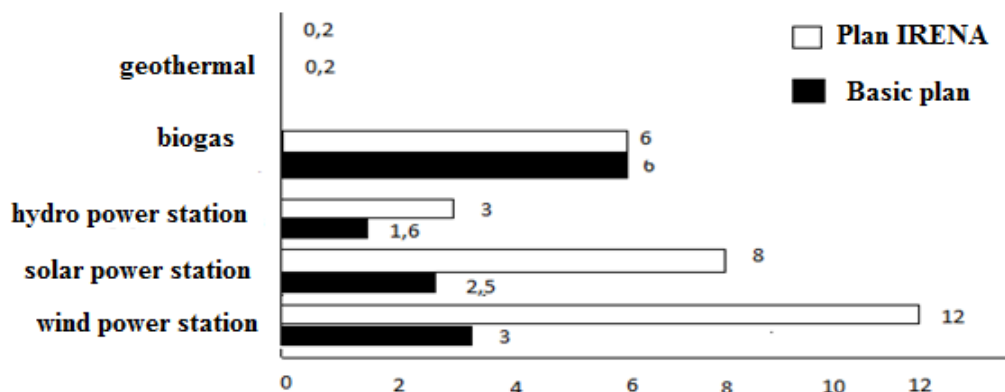


Figure 1. Estimated energy production by 2030, GW

Research results

Currently, the volume of biomass consumption for energy production in the European Union is over 120 million tons of energy per year, and by 2020 total final consumption of biomass should increase to 138 million tons of oil equivalent per year. The main type of biomass used is solid biomass. Its share in the total consumption is constantly about 70%.

The biogas total final consumption of biomass has already exceeded 8%, and by 2020 it has to rise to 14%. In some leading countries, the level of bioenergy development is much higher than average in Europe. So, in Finland, the share of biomass in final energy consumption is 28%, in Latvia – more than 27%, in Sweden and Estonia – about 26% (for comparison – in Ukraine 1,78%). Austria and Estonia have already practically fulfilled their 2020 commitments on the contribution of biomass to total final energy consumption.

Ukraine has a great potential for biomass available for energy production, which is a good precondition for the dynamic development of the bioenergy sector. The economically feasible energy potential of biomass in the country is about 20-25 million tons of fuel equivalent per year. The main components of the potential are agricultural waste (straw, corn stalks, sunflower stems, etc.) – more than 11 million tons of fuel equivalent per year (according to 2015) and energy crops are about 10 million tons per year (Table 1). At the same time, agricultural waste is a real part of the potential of biomass, and data on energy crops reflect the amount of biomass that can be obtained by growing these crops on free lands in Ukraine. It should be noted that this process has been actively developing over the past few years.

For Ukraine, bioenergy is one of the strategic directions for the development of the renewable energy sector, given the high dependence of the country on imported energy resources, first of all, on natural gas, and the great potential of biomass available for energy production. Unfortunately, the pace of bioenergy development in Ukraine still lags far behind European ones. Today, the share of biomass in the total supply of primary energy in the country is only 1.2%, and in total final energy consumption – 1.78%.

Every year for the production of energy in Ukraine about 2 million tons of fuel equivalent per year biomass of various types are used. At the same time, the main contribution is made by wood – its share in the structure of annual consumption of biomass is almost 80%. Wood has the highest percentage of utilization of economically feasible potential – about 80%, while for other types of biomass (with the exception of sunflower husks) this figure is lower. The least dynamic (at the level of 1%) is the energy potential of straw and rape.

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