

Biofuel production and consumption in the EU transport sector in the context of sustainable development

The EU has set an ambitious goal of achieving climate neutrality by 2050. In order to achieve this goal, it is necessary to introduce systemic measures in various sectors of the economy. One of the measures contributing to the reduction of greenhouse gas emissions and, at the same time, ensuring energy security, is the stimulation of the development of renewable energy. In the EU, renewable energy is increasingly used in various sectors, for example, in heating and cooling systems of buildings, for electricity generation, and in transport.

It should be noted that the transport sector is one of the biggest polluters of the environment. Traditional fuels are still used in transport, and that causes significant emissions of greenhouse gases. One of the ways to minimize the negative impact of the transport sector on the environment is the wider use of biofuels, in particular, liquid biofuels such as biodiesel and bioethanol. Therefore, special attention is paid to stimulate the development of the biofuels market in the EU.

The revised Renewable Energy Directive EU/2023/2413 (RED III) set a target of 29%, i.e. the share of renewable energy sources in transport, which must be achieved by 2030 [1]. In addition, this Directive contains a target indicator, namely 5.5% of advanced biofuels and renewable fuels of non-biological origin (RFNBOs) to be reached in final consumption of all energy supplied in transport sector by 2030.

EU Member States, taking into account the importance of ensuring compliance with sustainability criteria, stimulate the production of biofuels from various types of organic waste and by-products. Thus, used cooking oil is increasingly used for the production of biodiesel. In recent years, there is a noticeable trend of both the increase in the import of used cooking oil and the consumption of biodiesel produced on the basis of such feedstock (Fig. 1). At the same time, it is noted that the increase in the import of this feedstock, mainly from China, has led to the cases when primary raw materials are supplied under the guise of used oil, so this problem needs to be solved. There is also a clear tendency to increase the use of bioethanol produced on the basis of various types of waste (Fig. 2).

The RED III also reinforces the sustainability criteria of bioenergy through different provisions, taking into account the negative impact that the production of biofuels may have due to indirect land use change (ILUC).

In the EU, attention is also paid to the implementation of “green” technologies in the air transport sector as well as in sea transport. The Fit for 55 Package of legislative initiatives included the ReFuelEU Aviation and FuelEU Maritime aimed at decarbonising air and maritime transport and increasing the use of biofuels in these sectors. And already in 2023, both these Regula-

tions were adopted.

As for Ukraine, it has significant biomass potential for the production of liquid motor biofuels, including advanced (II generation) ones. Part of this biomass can be used to obtain advanced liquid biofuels. According to the Bioenergy Development Roadmap of Ukraine until 2050 the production of liquid biofuels of the II generation can range from 30,000 toe in 2025 to 430,000 toe in 2050 [3]. Currently, the development of national biofuel market is hindered by a number of barriers, including the absence of a legally established requirement regarding the mandatory share of bioethanol in gasoline and biodiesel in diesel. The wider implementation of the principles of decarbonization in the transport sector of Ukraine will undoubtedly be facilitated by the application of EU experience and best practices in this area.

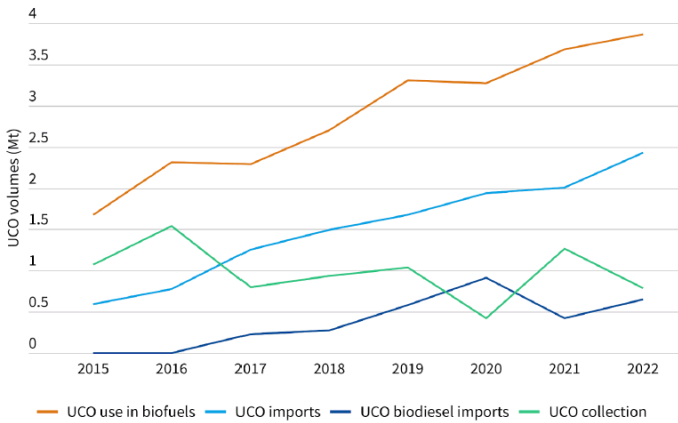


Fig. 1. Imports, collection and use of used cooking oil in EU biofuels [2]

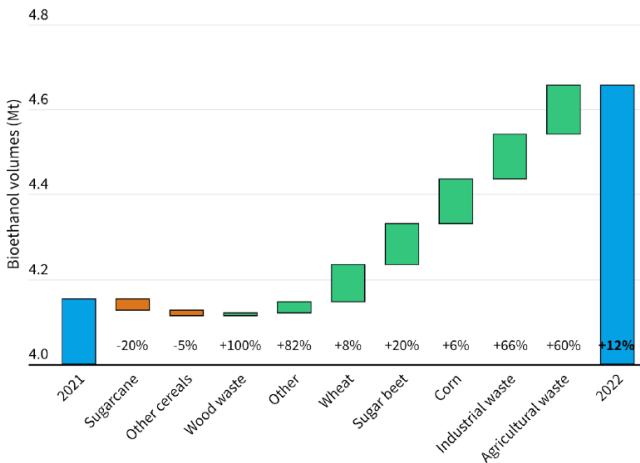


Fig. 2. Changes in bioethanol consumption between 2021 and 2022 in the EU (Note: for each feedstock, the percentages correspond to the increase or decrease of the respective bioethanol consumption between 2021 and 2022) [2]

References

1. Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652. <https://eur-lex.europa.eu/eli/dir/2023/2413/oj>
2. Simon Suzan. Biofuels: from unsustainable crops to dubious waste? European Federation for Transport and Environment AISBL, 2023.
3. Гелетуха Г. Г., Железна Т. А., Баштовий А. І. Дорожня карта розвитку біоенергетики України до 2050 року // Теплофізика та теплоенергетика. — 2020. — Т. 42, № 2. — С. 60–67. <https://doi.org/10.31472/ttpe.2.2020.6>



Co-funded by
the European Union

Фінансується Європейським Союзом. Однак висловлені думки та погляди належать лише авторам і не обов'язково передають погляди Європейського Союзу або Європейського виконавчого агентства з питань освіти та культури. Ні Європейський Союз, ні орган, що надає грант, не можуть нести за них відповідальність.