

## Feedstock availability for 2<sup>nd</sup> generation biofuels in the EU

### What are 2<sup>nd</sup> generation biofuels?

2<sup>nd</sup> generation biofuels are characterized by the fact that they produce significantly less CO<sub>2</sub> than fossil fuels and do not cause a food and fuel discussion. Waste and residual materials from agriculture, forestry, gardening and food serve as feedstock. Innovative technologies are necessary to convert these types of feedstock into biofuels. This is why they are often called advanced biofuels. An example of such an advanced biofuel is cellulosic ethanol, which is derived from plant residues such as cereal straw.



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### Why are advanced biofuels important?

The transportation sector is experiencing one of the highest growth rates in the world, which has a significant impact on fuel demand and the level of CO<sub>2</sub> emissions. The EU has set a target to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. Transport alone is responsible for 20% of GHG emissions in the European Union. 2<sup>nd</sup> generation biofuels such as cellulosic ethanol can play a crucial role in achieving the EU's ambitious targets, as they are significantly more efficient than 1<sup>st</sup> generation biofuels in terms of climate protection.

### What potential do biofuels from residues offer?

Nearly half of the EU's land mass is used for agriculture. The utilisation of the available agricultural residues has positive effects on climate change, the environment and the labour market. The most important agricultural residue in the EU is wheat straw. In one year, approximately 144 million tons of wheat straw accumulate within the 27 EU member states. It is known that in sustainable agriculture, about one third of the residues remain on the field as fertilizer, another third is used as animal bedding or animal feed. Considering this, 48 million tons of wheat straw remain annually, which are suitable for the conversion into biofuels and other products.

With particularly efficient processes such as sunliquid®, around 12 million tons of cellulosic ethanol can be produced from it, which is equivalent to the energy content of almost eight million tons of fossil gasoline. If all sustainably available feedstock was converted into modern biofuels, 16% of the energy demand in the transportation sector could be met with them by 2030.

## What incentives are necessary to exploit the available feedstock potential?

It is quite possible to develop a biofuel industry based on the use of agricultural residues in the EU, but policymakers must create incentives for the efficient use of resources and facilitate market entry for economic, innovative technologies through subsidies. Stable political framework conditions are indispensable for their establishment. The EU is already setting binding targets: under the Renewable Energy Directive (RED), the share of renewable energies in the transport sector is to be increased from 14% (RED II) to 24% (RED III) by 2030. Financial mechanisms also play an important role. For example, following the Bio-based Industries Joint Undertaking (BBI JU), a new public-private partnership (PPP), the Circular Bio-based Europe Joint Undertaking (CBE JU), has been in place since November 2021 to promote bio-based industries. The partnership between the European Union and the Bio-based Industries Consortium will fund projects with 2 billion euros that contribute to the EU's goal of becoming carbon neutral by 2050.

To ensure the success of the public-private partnership and demonstrate the viability of commercial plants for the production of sustainable biofuels, the PPP must be combined with other funding such as structural funds - especially in Central and Eastern Europe.

## What happens if the available feedstock is optimally used?

In the long term, 2<sup>nd</sup> generation biofuels could reduce Europe's dependence on oil imports and the CO<sub>2</sub> intensity of transport fuels as well as strengthen agriculture. An additional income of up to around 15 billion euros of can flow into European agriculture if the entire feedstock volume available for biofuels can be used. In addition, up to 300,000 new jobs could be created across Europe by 2030. Above all, a drastic reduction in CO<sub>2</sub> emissions can be expected. Greenhouse gas savings of over 60% are possible. These are calculated on the one hand from the gasoline saved, and on the other hand, from the methane that would be saved if all the residues were left to rot.



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### Feedstock availability in Romania

Over the past few years, a total of 6,812,512 tons of cereal straw (wheat, barley, rye, oats, triticale) have been produced in Romania. If one third of this straw is subtracted for further use (mainly as animal bedding) and another third to remain on the fields, there are still 2,270,837 tons of straw left for the production of cellulosic ethanol. From this remaining straw, 10,218,766.50 tons of cellulosic ethanol can be produced using the sunliquid® process.

Sources:

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