BIKE
BIOFUELS PRODUCTION AT LOW - ILUC RISK FOR EUROPEAN SUSTAINABLE BIOECONOMY

BIKE CASE STUDY #2

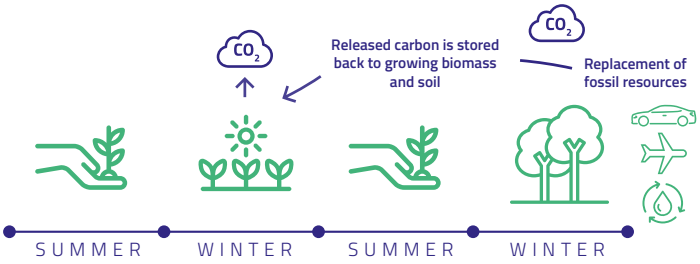
The sustainable production of *Brassica carinata* for renewable diesel

Advanced biofuels are instrumental for the decarbonization of transport in the efforts to achieve the climate targets for 2030 and 2050. But what if low-ILUC risk feedstocks used for biofuel production could significantly contribute to soil health and carbon sequestration from the atmosphere? This is the concept of Climate Positive Fuels, developed by BIKE partner UPM.

Intense farming with no diversification in crop rotation can lead to soil depletion

Soil carbon decreasing

Rotation with productive cover crops creates new sustainable biomass



Additional biomass with no displacement

Positive soil carbon balance and soil health

Climate Positive Fuels in figures

More than 50% of agricultural land still not in productive use during the winter time in Uruguay – *Brassica carinata* has enabled taking this unused period into use

The Climate Positive Fuels concept piloted on over **50.000 ha** in Uruguay since **2015**

GHG↓

Typical **GHG savings** of final fuel over **100%** in comparison to fossil fuels, due to carbon sequestration in the soil

Up to 1.3 tons/ha of non-edible low ILUC risk **oil for biofuel** can be provided by productive cover cropping of *Brassica carinata*

Up to 1.4 tons/ha of protein feed for animals can be provided by productive cover cropping of *Brassica carinata*

Concept applicable and scalable for **several different geographies and crop rotation systems**

Key principles

UPM is one of the industrial partners in BIKE consortium and responsible for one of the case studies, demonstrating already developed solutions for low ILUC risk biofuels. Being both a biomass and advanced biofuel producer, UPM has extensive experience on the whole value chain of sustainable fuels. UPM provides the BIKE project with tested data and valuable insights on practical opportunities and challenges when developing new sustainable solutions for low carbon bioeconomy.

Additionality

Biomass produced from productive cover cropping of *Brassica carinata* is additional to the output provided by the existing cropping systems on the same agricultural land. In addition to production of oil for biofuels, the additional protein produced reduces the overall pressure on global demand for vegetable protein used for animal feed. Therefore, cultivation within such systems can be deemed having low risk for ILUC, as it causes no need to displace food or feed.

Enhanced soil health and positive soil carbon balance

The introduction of these feedstocks can contribute to increase in soil health and biodiversity. Moreover, an increase in soil carbon content of the system through bio-sequestration is demonstrated. The soil carbon content is increased following the carbon farming practises: use of a cover crop, diversified rotations, increased crop biomass, no tilling and addition of external organic carbon inputs (organic fertilizers, biochar or soil amendments such as cellulosic residues or bio-sludge) to enhance endogenous soil organic pools.
This concept is equally applicable to the agricultural sector in the EU and could provide significant increases in sustainable feedstock for renewable fuels. Such development would benefit both transport decarbonization and the agricultural sector engaged in carbon farming.

References

Climate Positive Fuels for transport decarbonization, Concept paper 2020 (UPM)

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www.upmbiofuels.com