GIZ Project: Supporting sustainable biomass production and use in Ukraine and Russia

Greenhouse Gas Emissions from Biofuel Feedstocks in Ukraine

First pilot GHG calculations for rape seed and corn: Implication for Ukraine's access to the EU biofuels market

For the first time, calculations of greenhouse gas (GHG) emissions using actual farm data for Ukrainian corn and rape seed have been performed. The results give clear signals: **If Ukrainian feedstock producers want to maintain access to the EU biofuels market they have to improve their GHG performance.** This is especially true for rape seed. However, the results also show that GHG calculations are feasible and give indications as to where emission hot spots lie. The EU under its Renewable Energy Directive (RED) requires that, alongside other environmental criteria, biofuels cause at least 35% less GHG emissions than the fossil fuels they replace. This target will rise to 50% in 2017 and to 60% in 2018[1]. This means that operators along a biofuels production chain have to calculate the amount of emissions that were caused in their operations. The EU RED provides feedstock specific "default values" for the calculation. Where no default values are provided or where they do not reach the GHG reduction requirements, actual calculations will be needed.

Rape Seed

- ⇨ Until 2017 actual GHG calculations are not required. The RED default value can be applied as it meets the GHG reduction target of 35%.
- ⇨ From 2017 on, actual GHG calculations are needed because the default value does not meet the 50% reduction target.
- ⇨ Pilot results show that current emissions from Ukrainian rape seed producers are likely to be too high to meet the reduction goals. In a best case scenario they will reach 37%, in the worst case only 19%.
- ⇨ A biofuels production chain with Ukrainian rape seed feedstock would have to reduce its total emissions by about 30% to reach the 50% reduction goal.
- ⇨ The emission hot spots at feedstock production levels are machinery use (diesel consumption), fertilizer use (mostly nitrogen fertilizer) and pesticide use.

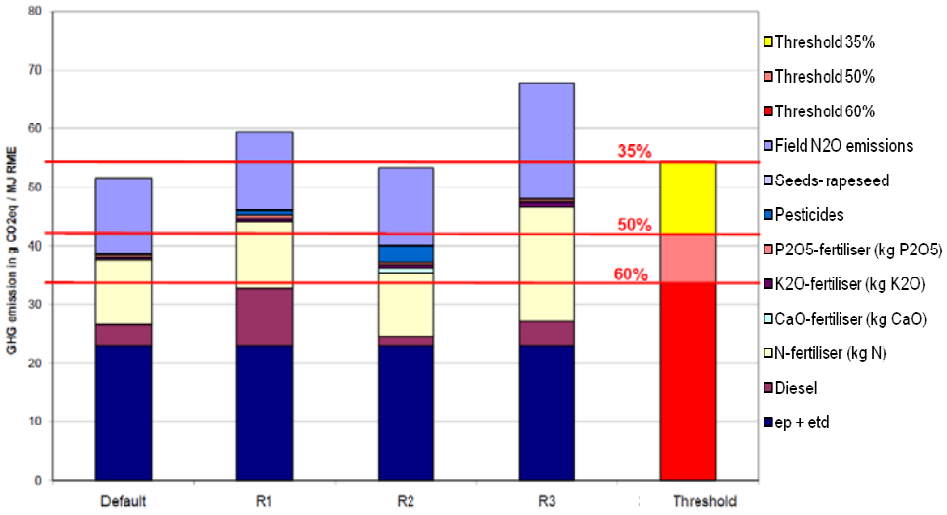

Figure 1: Greenhouse gas emissions from rape seed in gCO2e/MJ rape methyl ester calculated with actual farm data and default values for processing and transport (ep and etd). Right column indicates EU RED reduction threshold for biofuels using the fossil fuel comparator for diesel and petrol. Left column shows EU RED total default value for RME. Middle columns display result from pilot data per case (R1-3).

[1] For biofuels installations that started production on or after Jan 2017.

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Corn

- ⇨ GHG calculations with actual values are needed now because RED does not provide default values for corn produced outside of the EU.
- ⇨ Pilot results show that current emissions from Ukrainian corn producers will reach the 35% and 50% reduction target but will have problems reaching the 60% target. In the best case scenario 58% GHG savings will be reached, in the worst case 47%.
- ⇨ A biofuels production chain with Ukrainian corn as the feedstock would have to reduce its total emissions by about 17% to reach the 60% reduction goal.
- ⇨ The emissions hot spots at feedstock production level are machinery use (diesel consumption), fertilizer use (mostly nitrogen fertilizer) and pesticide use.

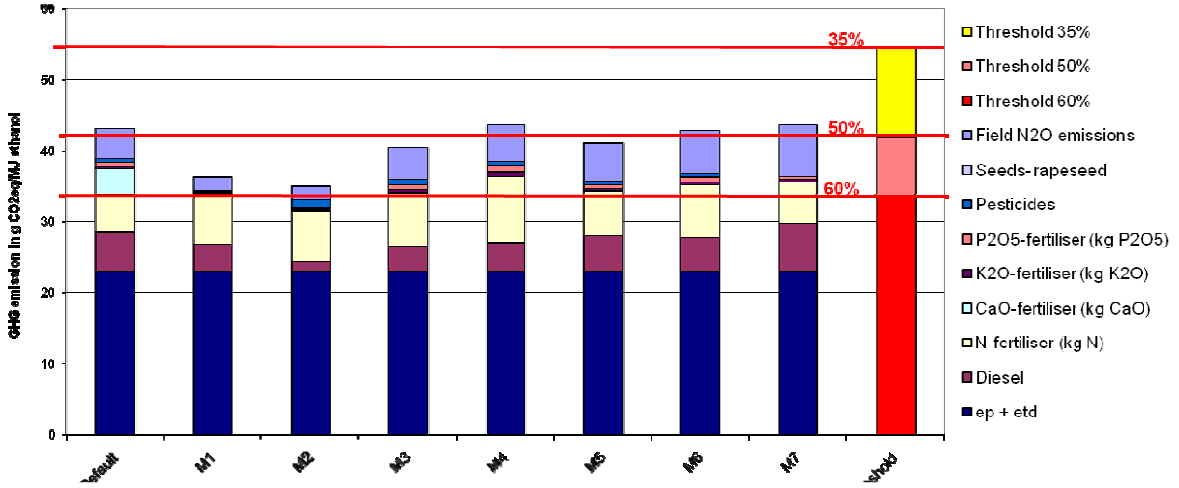

Figure 2: Greenhouse gas emissions from corn in gCO2e/MJ corn ethanol calculated with actual farm data and default values for processing and transport (ep and etd). Right column indicates EU RED reduction threshold for biofuels using the fossil fuel comparator for diesel and petrol. Left column shows EU RED total default value for corn ethanol (for EU production only). Middle columns display results from pilot data

Approach and Partners

The pilot calculations were performed using the BioGrace calculation tool (http://www.biograce.net), which provides a RED compliant methodology and background data. The BioGrace partner Heidelberg Institute for Energy and Environmental Research (IFEU) performed the calculations. The actual farm data was provided through direct contact with farmers (IER) and through a representative sample of the Ukrainian Agribusiness Club (UCAB)/Agribenchmark data base (http://www.agribenchmark.org). To facilitate the calculation of the GHG savings, potential emissions from land use change were assumed to be zero.

Further Information and Contact

The pilot calculations were performed in the framework of the GIZ funded project “Supporting sustainable biomass production and use in the Ukraine and Russia”. The project partners GIZ and IER work with Ukrainian stakeholders and international experts to introduce the concept of sustainability certification for biomass in Ukraine. For further information and to learn about our upcoming trainings on EU RED and GHG calculations, please contact

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