

Sustainability criteria for transport biofuels need improvements

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In its Renewable Energy Directive, the European Union has set a 10% goal for the use of renewable energy in transport by 2020. Only biofuels meeting certain sustainability criteria are included in the renewable energy goals and are allowed to take advantage of national support systems. In her doctoral dissertation, VTT's Research Scientist Kati Koponen proposes several areas of development for the greenhouse gas assessment method of the criteria.

The calculation of greenhouse gas emissions from biofuels is based on [life cycle](#) assessment. It is often used for defining the sustainability of biofuels. In her doctoral dissertation, Kati Koponen has studied how a tool, based on life cycle assessment, can be applied to policy-driven decision-making related to biofuels and what challenges the assessment entails.

While life cycle assessment has been widely used for assessing the environmental impacts of products, the method still entails challenges related to, for instance, system boundary setting, allocation of emissions between different products as well as the definition of calculation parameters. When life cycle assessment is used in political decision-making, the required simplifications may cause further method-related problems. The research results show that the current EU calculation method alone cannot ensure the climate benefits of biofuels.

In her dissertation, Kati Koponen proposes that the sustainability criteria should be developed as follows:

- The calculation method presented in the current sustainability criteria does not take into account emissions due to indirect market impacts that may result from an increase in biofuel production. These include, for instance, indirect changes in land use and impacts on the fuel market. To simplify the determination of sustainability criteria, these impacts should be comprehensively evaluated when bioenergy goals are set.
- Currently, the calculation method ignores uncertainties related to greenhouse gas calculation, stemming from, for instance, deficient background information or poor knowledge of emission impacts. These uncertainties should be identified and taken into account as life cycle assessment is only an assessment of the reality.
- In many cases, the production of biofuels creates by-products. Currently, emissions are divided between products on the basis of their energy content, even if the by-product is utilised as, for instance, animal feed. Price-based allocation would clarify the economic cause and effect relationships between products as well as the double counting rule that is proposed in the directive for raw materials based on waste and residues. The double counting rule means that biofuels produced from waste and residue based raw materials may be counted as double in the national biofuel goal.
- The calculation of [greenhouse gas](#) emissions due to biofuel production should identify possible decreases in ecosystem carbon stocks, as well as forgone carbon sequestration. These impacts can be identified by including land use reference system in the life cycle assessment of bioenergy.

The EU sustainability criteria should be further developed, to ensure the use of bioenergy systems that most effectively support climate change mitigation.

Provided by VTT Technical Research Centre of Finland

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