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How sustainable are "biofuels"? A new web-based tool can tell

New biofuel sustainability assessment tool and GHG calculator released

Various biofuels, first hailed as a way to a sustainable energy supply, have since fallen out of favor because of the overall negative impact they have on the environment, mainly due to the production of the biogenic fuels – as they should be more aptly termed. Now researchers at Empa, the Swiss Federal Laboratories for Materials Science and Technology, have together with their colleagues at the Swiss Roundtable on Sustainable Biofuels (RSB) and the HTW Berlin, Germany, developed an online tool to assess the sustainability of biofuel production.

The new tool allows users to perform a self-assessment against the Principles and Criteria of the RSB and a self-risk assessment. The online tool also calculates greenhouse gas (GHG) emissions of biofuels for each lifecycle production step, from farming to final fuel distribution; this calculation can be done according to various methodologies. The development of the new tool, which is directly accessible (free of charge) at <http://buiprojekte.f2.htw-berlin.de:1339/>, took about two years and was supported by the Swiss State Secretariat for Economic Affairs (SECO).

The RSB Standard comprises 12 principles and criteria for sustainable biofuel production, including environmental and social principles such as food security and human and labor rights. For instance, "Greenhouse Gas Emissions" aims to mitigate climate change by requiring that biofuels significantly reduce lifecycle GHG emissions compared to fossil fuels. Under this principle, operators along each step in the biofuel production chain must calculate the GHG emissions of their operations.

Such calculations are complex and require a sound knowledge in biofuels' life cycle assessment (LCA). To facilitate the RSB certification process, Empa – in collaboration with the HTW Berlin – developed a web-based tool allowing for the online calculation of biofuels' GHG emissions. Various GHG calculation methods are implemented, including the Swiss standard (for mineral-oil tax-relief), the European Renewable Energy Directive (RED) standard, the Californian standard and the RSB standard. By allowing a risk assessment of biofuels production and an evaluation based on the RSB sustainability principles, the tool forms the entry point to the RSB sustainability certification. "As such, the tool is targeted at all stakeholders in the biofuels

sector, ranging from energy crop farmers and biofuel producers to traders who want to demonstrate the sustainability of their products", explains Empa researcher Rainer Zah, who was heading the project.

Zah's team at Empa has a long-standing record in LCA for biofuels. In 2007, they conducted an LCA for biofuels on behalf of the Swiss government, which became the basis for the OECD strategy on biofuels and for the Swiss ordinance on tax redemption for sustainable biofuels. In the following years, the Empa researchers have analyzed the direct and indirect impacts of biofuels production in various regions in Latin America, Africa and India; they developed the first web-based LCA tool for biofuels ("Sustainable Quick Check for Biofuels", SQCB) that formed the basis for the new web-tool.

The tool is freely available on the internet and can be used by any interested party who wishes to perform lifecycle GHG calculations of biofuels or assess their biofuel operations; it allows the user to conduct a self-assessment against the RSB Principles & Criteria and a self-risk assessment against the RSB Standard for Risk Management. More information on the RSB, which is based within the Energy Center of the Lausanne Federal Polytechnic University (EPFL) can be found at <http://rsb.epfl.ch/>.

Further information

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