



**ludwig bolkow
systemtechnik**

Biofuel Sustainability Support

www.LBST.de



Biofuel Challenges

- › The European Union (EU) has defined mandatory biofuel targets for each EU Member State.
- › This guaranteed biofuels market can only be accessed, if sustainability criteria are complied with.
- › The sustainability criteria are set out in the EU Renewable Energy Directive (EU RED)¹.
- › The sustainability criteria comprise legally binding thresholds on environmental issues and reporting obligations on environmental, social and economic issues.
- › Non-compliant biofuels may still be sold in the EU, but selling on a compliance basis will likely achieve a premium price.
- › Other biofuels compliance schemes are being developed (CARB Low Carbon Fuel Standard, RSB Gold Standard etc.).

¹ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the Promotion of the Use of Energy from Renewable Sources

European Union Biofuel Sustainability Criteria

The European Union biofuel sustainability scheme includes these mandatory thresholds and reporting obligations.

- › Greenhouse Gas Emission savings
 - Carbon dioxide, methane, nitrous oxide
 - Land-use and land-use change
 - 35 % reduction from April 2013
 - 50 % reduction from 2017
 - 60 % reduction from 2018 (for installations with production start from 2017 onwards)
- › Exclusion of high biodiversity value areas
 - Undisturbed primary forest, forest and other wooded land of native species, with no clearly visible indications of human activities
- › Exclusion of high carbon stock areas
 - Continuously forested areas matching the forest definition
- › Reporting requirements on measures taken for:
 - Soil, water, and air protection
 - Restoration of degraded land
 - Avoidance of excessive water consumption
 - Social sustainability
 - Availability of foodstuffs at affordable prices
 - Wider development issues
 - Respect of land use rights
 - Indirect land use change
 - National ratification of various international treaties

LBST Offering

Based on its extensive expertise, LBST helps you meet these market challenges by checking your compatibility with the European policy framework (and other certification schemes). Our scalable offering ranges from a risk appraisal to a full sustainability due diligence of your business or development project. Client Data are complemented by sound desktop and field research where required.

Greenhouse Gas Balance

We analyse the greenhouse gas balance of your biofuel(s) and guide you to improve it where required for compliance with the European Directive.

Other Sustainability Criteria

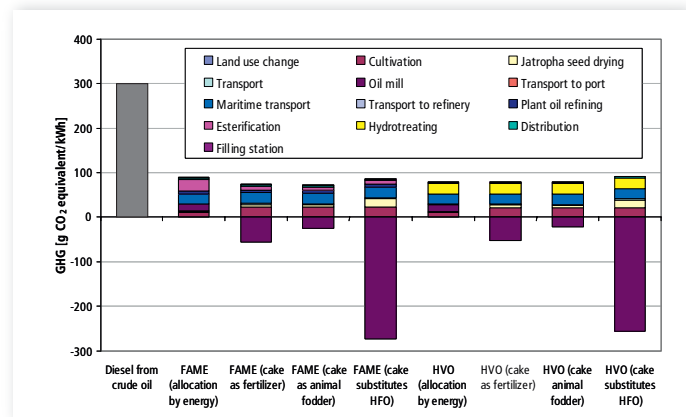
We analyse the other relevant sustainability criteria related to your biofuel(s) and help you comply with them.

Formal and Administrative Issues

We help you understand the formal requirements and support you in your business processes.

Strategic and Practical Support

We support your decision making with solid expertise and strategic analyses.



Client Benefits

- › Learn about the European Union's premium market for sustainable biofuels.
- › Reduce risk of non-compliance with the EU Renewable Energy Directive.
- › Improve your economic opportunity.
- › Get prepared for investor discussions.
- › Know where to focus in project planning.
- › Improve communication to stakeholders.
- › Prepare sustainability certification schemes.
- › Become a pioneer in sustainability issues.
- › Improve your supply chain economy.

Past Work Includes

- › Jatropha Sustainability Due Diligence – detailed analysis of all sustainability criteria for a large project development (European energy company)
- › Biomass-to-Liquid (BTL) implementation study (German Energy Agency)
- › Alternative fuels, energy supply infrastructure for aviation (international aviation industry)
- › Cost of logistics for gasoline/ethanol blends (European industry association)
- › Alternative fuels, Well-to-Wheel greenhouse gas balance analyses (international automotive and energy industries, European industry associations, European Commission)
- › Biofuel certification framework – analysis of international voluntary and legal schemes (international certification body)
- › Biomass-to-Liquid (BTL) implementation study (German Energy Agency)
- › Life-cycle analysis of algae-based biofuels (international energy company)

LUDWIG-BÖLKOW-SYSTEMTECHNIK GMBH

Ludwig-Bölkow-Systemtechnik GmbH (LBST) is an expert consultant for energy and environment, supporting international clients from industry, finance, politics and non-governmental organisations in strategy, technology and sustainability.

Its cutting edge competence is based on over two decades of continuous experience, and on its interdisciplinary team of leading experts, bridging policy, economy, and technology.

LBST supports its clients with

System & technology studies

- Technology assessment and due diligence
- Energy and infrastructure concepts
- Feasibility studies

Strategy consulting

- Product portfolio analysis, identifying new products and services
- Market analysis, decision support, and policy support

Sustainability consulting

- Life cycle and carbon footprint analysis
- Natural resources assessment (energy, minerals, water)
- Sustainability due diligence

Coordination

- Project management, monitoring and assessment

Capacity building

- Short studies, briefings, expert workshops, trainings

Particular expertise exists in energy (renewables, energy storage, hydrogen and fuel cells) and mobility (fuels and drives, infrastructure, mobility concepts), with our work in sustainability cutting across all sectors.

A key common denominator of all activities is the rigorous system approach, making sure all relevant elements of a tightly networked system are taken into account, providing our customers with a comprehensive and complete basis for their decisions.

With its deep understanding of developments and technologies and its truly independent advice, LBST helps its clients to secure their future.