

EU sustainability criteria for biofuels

The EU Renewable Energy Directive (RED) establishes that a minimum of 10% biofuels or other renewable fuels for transport shall be used in every Member State by 2020. The Fuel Quality Directive (FQD) is aimed towards fuel suppliers, obliging them to reduce greenhouse gas (GHG) emissions with 6% by 2020. Only biofuels meeting the sustainability criteria regarding net GHG savings, biodiversity and land use can be counted towards the targets. In 2015, the two directives were amended by the Indirect Land Use Change (ILUC) Directive, which amongst other strives to reduce indirect GHG emissions from biofuel production.

The EU Directives

The Renewable Energy Directive, RED, (Directive 2009/28/EC), was adopted by the EU in 2009. It mandates that all Member States shall have 10% (on energy basis) biofuels in the transport sector by 2020. In order for a biofuel to be accounted within the national reporting, it must meet a number of sustainability criteria as described in RED. Biofuels must also meet the sustainability criteria to receive financial support, such as tax exemptions.

The Fuel Quality Directive, FQD, (Directive 2009/30/EC) was also adopted in 2009. It sets requirements on fuel specifications, but also obliges fuel suppliers to reduce greenhouse gas (GHG) emissions. By 2020 every sold unit of energy must reduce life cycle GHG emissions by at least 6%, compared to the EU-average fossil fuel in 2010. FQD gives the fuel suppliers a number of options to obtain this 6% reduction, e.g. via reductions in oil refineries or use of biofuels and alternative fuels. The biofuels must meet the same sustainability criteria as in RED.

In 2015, amendments to RED and FQD were introduced with the Directive on Indirect Land Use Change, ILUC, (Directive (EU) 2015/1513) that introduces ILUC values for biofuels, and stricter sustainability criteria compared to RED and FQD. Interpretation of the complex ILUC Directive is necessary since it will be individually implemented in each Member State no later than September 2017. This text is based on the preliminary interpretations of the Swedish Energy Agency, available in January 2017.*

The amendments introduced by the ILUC Directive affect biofuel development in several important ways:

- Biofuels based on food crops can only represent 7% of the 10%-target (set in RED), which reduces the incentive to support these fuels.
- Member states must report GHG emissions from changes in land use due to biofuel production, but these values can exceed the threshold set in the sustainability criteria.
- The ILUC Directive promotes so called advanced biofuels, e.g. biofuel based on algae, waste, manure, sewage sludge as well as ligno-cellulosic and non-food cellulosic material. Member states should introduce a non-binding sub-target for advanced fuels, a guideline value of 0.5% is given. In addition, these fuels can be counted twice towards the 10%-target.
- Electrical road transport fueled by renewable energy can be counted five times and rail-bound transport fueled by renewable energy can be counted 2.5 times towards the target.

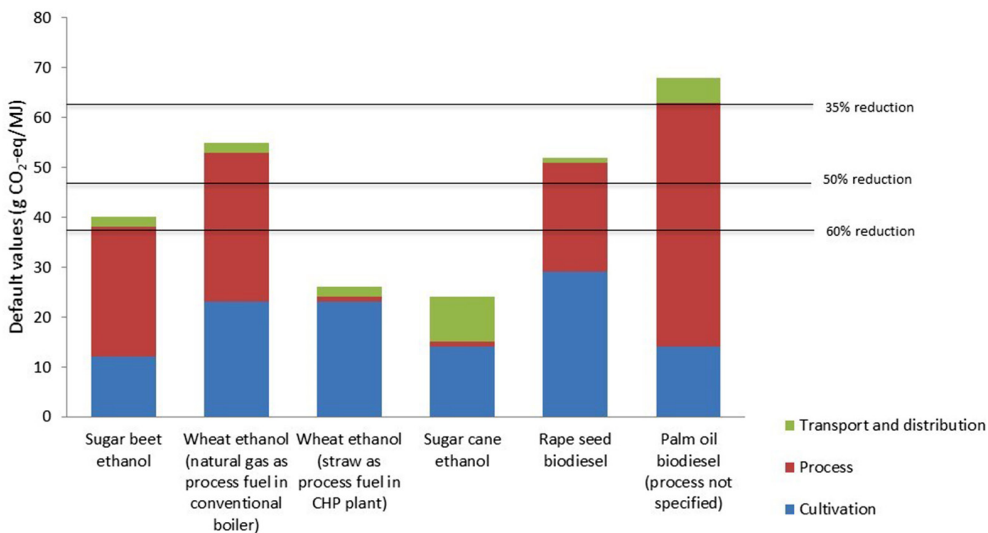
The sustainability criteria

To be counted as sustainable, RED states that raw material for biofuel production cannot be taken from primary forest, nature protection areas or highly biodiverse grassland. Land with high carbon stocks such as wetland or peatland can only be used under certain circumstances. A new Commission Regulation (No 1307/2014) from 2015 helps to define grasslands, human interaction and highly biodiverse grassland in order to prevent negative effects on grasslands due to biofuel production.

The RED requires a 35% GHG emission saving from the use of biofuels. However, from January 1st 2018, GHG emission savings from the use of biofuels produced in old production units must be at least 50%, according to the ILUC Directive. For units where biofuel production started after October 5th 2015, the threshold is 60%. The biofuel values are compared to a baseline of 94.1g CO₂ eq/MJ for fossil fuels, introduced in an amendment (EU 2015/652) to FQD in 2014.

Social and economic sustainability criteria are not mandatory for a biofuel producer to meet. However, every two years the European Commission has to report on the impact of increased demand for biofuels on food prices, the respect of land-use rights and whether main producer countries have ratified international labour conventions. The European Commission can thereafter propose corrective action.

* *Markets for biofuels 2016 (ER 2016:29), Markets for biofuels 2015 (ER 2015:31), available in Swedish.*



Summary of the default values for a number of biofuel production pathways, with the reduction targets marked (reduction compared to fossil fuel emissions of 94.1g CO₂-eq/MJ).

Implementation of sustainability criteria

The economic operators, in most Member States identified as the companies that pay fuel tax, are responsible for showing that the sustainability criteria have been fulfilled. They are obliged to have a control system that keeps track of the different batches of biofuels, where the raw material is taken from, and the sustainability properties of each batch. Independent auditors inspect and approve the quality of the control systems.

The sustainability criteria apply to biofuels and bioliquids (i.e. liquids produced from biomass that are used for purposes other than fuel, e.g. electricity generation or heating). This means that biogas used for electricity and heating is not included. Solid biofuels are presently not included.

Sweden has implemented the sustainability criteria in law (Act 2010:598), regulations and guidelines. The FQD is implemented in the law (Act 2011:319). The work of implementing the ILUC Directive and the FQD amendment in to Swedish law is ongoing. The Swedish Energy Agency is the supervisory authority to which the economic operators must report yearly.

GHG calculations

The Directives include a list of default GHG values for segments of the biofuel production chain (cultivation, process, transports). The economic operators can choose to use the default values (if the biofuel chain corresponds to those listed in the Directives), their own calculated actual values, or a combination of default and actual values. Calculation of actual values is made according to life cycle assessment methodology and rules described in the Directives annexes. The GHG calculations include emissions from cultivation, process, transport, and distribution.

Emissions of possible by-products that may arise in the calculation are allocated to the different products, based on their energy content (the lower heating value). There is also a number of emissions that can be subtracted e.g. if improved agricultural management binds more carbon in soil or if excess electricity is produced in the biofuel plant. There is also a GHG bonus if raw material is cultivated on severely degraded land. The ILUC Directive introduces a set of default values for indirect land use change which must be reported, but they are not included in the comparison against the threshold values.

Background: Climate and energy policy within the European Union

In 2008, the European Union adopted a set of binding legislations to ensure that the union meets its climate and energy targets for 2020. By 2020, in total 20% of the energy consumption shall derive from renewable sources in the EU. The target varies between Member States, based on each country's starting point. Sweden has the highest target: 49%. Also, the share of energy from renewable sources in the transport sector must be at least 10% of the final energy consumption by 2020. This applies equally to all Member States. In order to count as sustainable, the biofuel must meet a number of sustainability criteria.

In 2014, EU leaders adopted a new framework for climate and energy that sets targets from 2030. This framework builds on the previous one and is also in line with the longer term perspectives set in the "Roadmap for moving to a competitive lower carbon economy in 2050", the "Energy Roadmap 2050" and the "Transport White Paper". The framework sets a target for total greenhouse gas emissions reductions of at least 40% by 2030 (compared to 1990). The share of renewable fuels should be at least 27%. No specific target is set for the transport sector