High & low ILUC risk biofuels

Policy recommendations for the EU delegated act

January 2019

Summary

In June 2018 the EU decided that so-called 'high ILUC risk' biofuels should no longer be counted towards its 2030 renewable energy target. This decision must be implemented with a delegated act specifying which fuels would qualify as high ILUC risk. This act is due to be published in February and offers a unique opportunity for the European Commission to fix one of the main flaws of its biofuels policy which is driving deforestation and increasing greenhouse gas emissions. Based on the most recent available evidence on ILUC modelling and on expansion of different crops in high-carbon stock areas, it is clear that biofuels produced from palm oil and soy should be categorised as high ILUC risk biofuels and must not be counted towards the EU's renewable energy targets. A phase out of palm oil biodiesel (which has three times higher GHG emissions than oil) and soybean oil (two times higher than oil) would not only end the use of the highest emitting biofuels on the EU market but also reduce future deforestation linked to those crops.

The Commission is also analysing if and how some types of palm oil and soybean oil could be categorised as low ILUC risk. However, based on the available evidence, that does not appear possible – mainly because there are no clear, enforceable criteria that could guarantee these crops do not contribute to more deforestation and displacement of other uses. This means provisions to certify certain types of palm or soy oil as low ILUC risk could open the door for increased use of palm or soy oil in biofuels without reducing the associated greenhouse gas and environmental impacts.

1. Context

The recast of the Renewable Energy Directive for the period 2021 to 2030 was officially published in December 2018[i]. Compared to the 2020 framework, the new directive ends the EU mandate for food-based biofuels although it does allow member states to continue counting food-based biofuels towards their renewable energy and climate targets. If member states still decide to use food-based biofuels, their share will be limited at the 2020 national levels (with 1% flexibility), with a maximum of 7%.

While an improvement compared to the original RED, the new law fails to decisively phase out the use of food-based biofuels as a way to comply with the EU's green energy targets[ii]. However, the new framework does include a provision to progressively phase out the use of the highest emitting biofuels or "high ILUC risk" biofuels by 2030. The maximum share of these biofuels will be frozen until 2023, based on their 2019 levels and then progressively phased out of the renewable targets, de facto ending their counting towards the renewable targets in 2030. Biofuels based on crops falling into the high ILUC risk category which can demonstrate they are "low ILUC risk" will not be phased out but would still be subject to the overall cap on food-based biofuels.

The new law requires the Commission to submit a report on the status of worldwide production expansion of food and feed crops, by 1st February 2019. The Commission also needs to adopt a delegated act that will set out the criteria for determining the high ILUC risk feedstocks "for which a significant expansion of the production area into land with high-carbon stock is observed" – as well as the criteria for certifying low ILUC biofuels.

This briefing summarises the key findings of a new report by Cerulogy[iii], compiling the latest science on ILUC emissions, on the deforestation caused by main biofuel commodities and the implications for the upcoming EU delegated act.

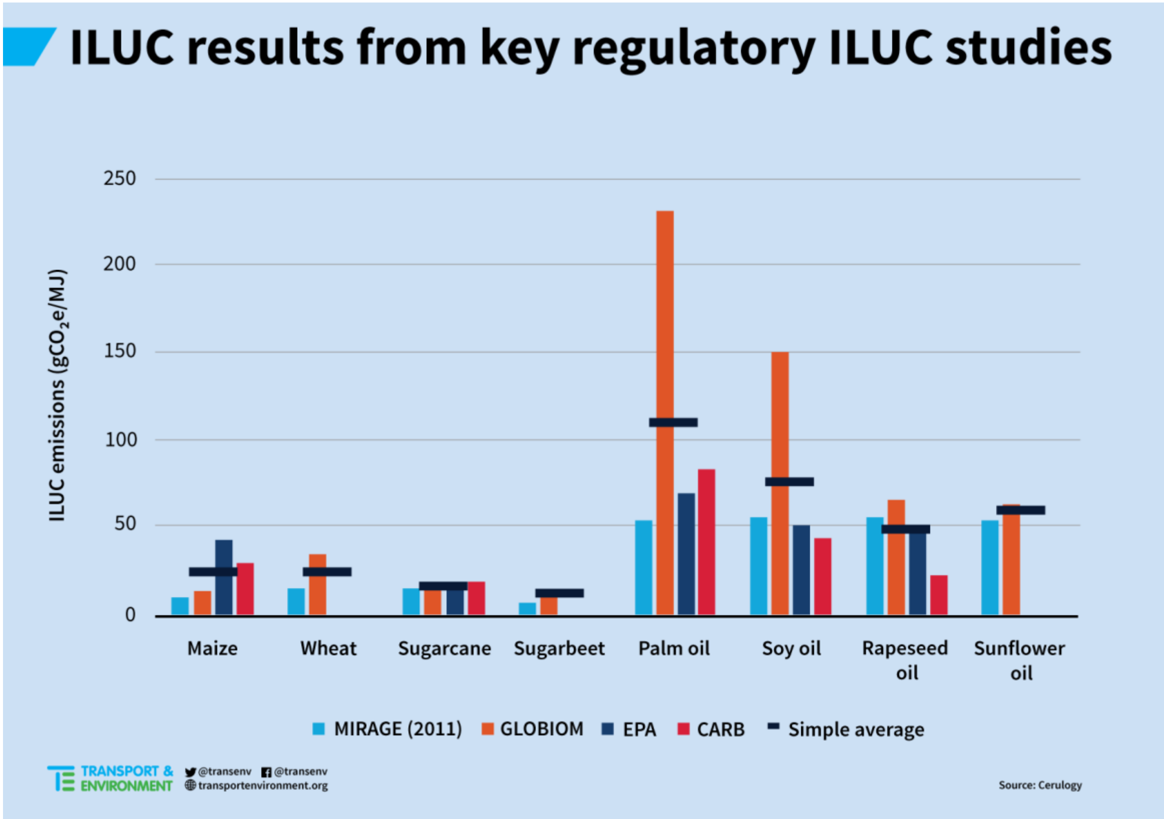
2. Defining biofuels with a high ILUC risk

2.1. Evidence from ILUC modelling

Modelling Indirect Land Use Change and its associated emissions has been officially recognised in EU law in 2015. The latest modelling done for the European Commission and released in 2016 – the Globiom study – clearly shows palm oil has the highest ILUC impacts, followed by soy oil and then rapeseed oil. On average, palm oil diesel under the RED is three times worse for the climate than fossil diesel and soy two times worse[iv].

Attempts to estimate ILUC emissions did not only occur in the EU but also in the US. Despite the differences in modelling assumptions and periods for amortisation, the weighted average values of different models provide quite a clear picture *(see graph below)*. Palm oil has generally higher ILUC emissions than any other feedstocks (109 gCO2e/MJ), with soy oil the second highest (75 gCO2e/MJ) followed then by rapeseed and sunflower oil, starch crops, and sugar crops. The results of these modelling exercises are already a good indication of the expected land use changes caused by different biofuels' feedstocks and their potential categorisation as 'high ILUC'.

Figure 1. ILUC results from key regulatory ILUC studies[v]



2.2. Evidence from existing literature on crop expansion in high carbon stock land

The recast of the RED mandates that the phase-out of the policy support will apply to high ILUC risk feedstocks "*for which a significant expansion of the production area into land with high carbon stock is observed*". The category, defined in article 26 of the RED, covers not only areas recognised as forests, but also some woody savannahs and shrubland, and peatlands.

The research report reviews a long list of studies and data, including the UN's Food and Agriculture Organisation (FAO) statistics, official studies released by the European Commission and its Joint Research Center as well as many other dedicated studies looking at the expansion of crops, including studies based on satellite images. Analysis of FAO data shows that expansion of oil palm, soybeans and sugarcane occurs predominantly in countries that report significant rates of forest loss. This is partly why the review focuses mainly on palm oil, soybean and sugarcane.

Palm oil is grown in several countries but around 85-90% of global production takes place in Indonesia and Malaysia. The study estimates that about 31% of oil palm expansion globally occurs on forested land, and 23% on peatlands (some of which overlaps with forest conversion). Regarding Indonesia and Malaysia specifically, a recent ICCT analysis concluded that 40 to 53% of palm expansion between 1990 and 2015 occurred on land with high carbon stocks[vi].

Regarding soy, the report highlights that between 20% and 30% of soy expansion in Latin America was directly linked to deforestation during the period 2000 to 2006, prior to the soy moratorium in the Amazon region. More recently, direct Amazon deforestation has decreased but there has been an increase in soy-linked deforestation in other forest biomes, notably the Cerrado region in Brazil. Overall, the study estimates that at least 7% of global soy expansion was directly linked to deforestation in the period 2012 to 2015.

Regarding sugarcane and other crops like rapeseed, the study concludes that there is no significant link between expansion of these crops and direct conversion of high carbon stocks.

It is important to keep in mind that these figures relate to direct expansion of a specific crop in high carbon stock lands, but in many cases, the link with deforestation is indirect. For example, soy expansion can displace livestock which then expands in high carbon areas. This is why modelling of ILUC impacts remains essential.

2.3. Precedents of commodities' classification

The EU delegated act is not the first attempt to classify different commodities according to their deforestation impact. Several examples of reports and initiatives identify soy and palm as high forest risk commodities. In 2013, a study for the European Commission on the impact of EU consumption on deforestation[vii] classified soy and palm among the commodities the most associated to deforestation, together with other products such as beef. Another example is the Amsterdam Declaration – Towards Eliminating Deforestation from Agricultural Commodity Chains with European Countries – signed in 2015 by Germany, Denmark, Norway, France and the United Kingdom[viii].

Based on the evidence presented in the study and a suggested threshold to define what is 'significant', it is clear that palm oil and soy biofuels should be considered high ILUC risk biofuels and be completely phased out of renewable targets by 2030 at the latest. In addition, all palm oil co-products such as Palm Fatty Acid Distillate (PFAD) should also be designated as high ILUC-risk. Research shows that its use for biofuels is likely to cause significant displacement emissions[ix] and more EU countries treat it as a co-product of palm oil production than as a residue.

3. The low ILUC loophole

The concept of 'low ILUC' biofuels is not new in the EU biofuels debate. Behind that category is the underlying assumption that some biofuels projects could produce biofuels feedstocks while avoiding the displacement of the existing uses for these lands and feedstocks – in summary, avoiding ILUC. Obviously these would need to comply with the sustainability criteria of the REDII as a minimum. Two main categories of projects are mentioned in the Directive: projects which can demonstrate "improved agricultural practices" or projects which involve "the cultivation of crops on areas which were previously not used for cultivation of crops, and which were produced in accordance with the sustainability criteria for biofuels". This concept could sound plausible in theory, but its practical implementation faces major difficulties and raises questions as to its applicability in EU regulation.

3.1. Stringent criteria are crucial to avoid higher uses of high ILUC risk biofuels, like palm oil

According to the latest ICCT research[x], weak criteria that would not require additionality could lead to imports of palm oil which are higher than the current use at EU level in biofuels, without mitigating ILUC impacts. In the case of biofuels, demonstrating additionality implies that an additional amount of feedstock can be produced that completely covers the demand from biofuels and that there is no reduction in the availability of feedstocks for other users (food, etc.). So this production needs to be additional to what would have been produced in a business-as-usual counterfactual scenario.

Regarding land use, the ICCT estimates that 4.9 million tonnes of palm oil could be produced in 2030 on land complying with very weak criteria for low ILUC, much greater than 3.9 million tonnes of palm oil used in biofuel in 2017 in the EU[xi]. These would be low ILUC certified whereas those areas may have been brought into production anyway, because overall global agricultural area is expanding and these large quantities of palm oil could have been used in the food sector.

It is important to keep in mind that the demand for vegetable oil in the food and oleochemical sectors is expected to increase in the coming years. Analysis by the OECD & FAO[xii] anticipates over 1.5 million tonnes additional vegetable oil demand globally per year from 2017 to 2026. This explains why even some currently 'unused' land is expected to be brought into production in the absence of an EU demand for low-ILUC biofuels.

When it comes to improved agricultural practices, the ICCT suggests, with weak low ILUC provisions, a low-end estimate of "3.3 million tonnes of palm oil which could qualify as low ILUC risk in the year 2030". Again, the reason is that these improved agricultural practices would have happened anyway and cannot be attributed to the REDII low ILUC provision. These practices would not avoid in any way the displacement of existing or future projected palm uses in non-energy sectors.

3.2. Robust additionality assessment and implementation is very challenging

It is clear that robust additionality tests are needed to avoid the low ILUC category becoming a big loophole and the allowance of free riders. In theory, this would already be progress compared to some of the weak proposed certification criteria for low ILUC. But can the EU really adopt a system which can be implemented robustly and with confidence, knowing the intrinsic difficulty of assessing and guaranteeing additionality?

The report suggests that the most robust way to ensure additionality is to apply guidelines and tests used for the Clean Development Mechanism (CDM), a conclusion also shared by the ICCT. But setting a robust counter-factual scenario is challenging, especially in the case of yield increases. The report shows how "*annual yield variations due to weather will often be larger than any annual marginal yield increase resulting from a given low ILUC-risk project activity"* and warns that *"this could result in over-crediting in years with good weather and under-crediting in years with poor weather".* Also, the CDM system has been criticised because of the lack of demonstrated additionality for certain projects. In 2016, an analysis by the Öko Institut confirmed the overall uncertainty with assessing additionality. It concluded that around 73% of the 2013-2020 supply of CDM credits has a low likelihood of emissions reductions being additional and that only 7% of the supply over this period has a high likelihood of being additional[xiii].

The report looks at 'proxy' assessments of additionality and suggests its own alternative proposal. These relaxed criteria aim at addressing some of the uncertainties around setting a baseline and potential administrative burden. However, this would only imply that the project *probably* resulted in additional production and it would increase the risk of free-rider projects being certified.

The report offers an in-depth journey into the low ILUC biofuels category, demonstrating the high complexity of the matter and the risk of creating a big loophole. It also highlights a set of minimum criteria. Furthermore it also suggests that a workable implementation might be possible but would require a compromise on the additionality requirement and thus on the avoided ILUC impacts. Additionality is a necessary concept, but its strict interpretation and robust implementation is very difficult – and has proven largely unsuccessful until now – in different policy areas. In the biofuels context it will prove to be even more challenging, especially in the case of yield increases and palm oil. Finally, the enforceability of the chosen criteria remains a key challenge. As the study highlights, it will require rigorous oversight to ensure that projects are properly implemented and sustained.

At this stage, the analysis of the different approaches around the low ILUC category does not provide sufficient certainty that a robust and implementable system exists to be credited under EU policy. It seems almost impossible to set up a system to ensure that biofuels' feedstocks do not contribute to increased deforestation and displacement of other crops. This is why we conclude that, as it stands now, the low ILUC option does not provide the insurance needed to address ILUC impacts of different crops for biofuels.

4. Expected impacts of EU measures on high ILUC risk biofuels

The classification by the European Commission of specific crops as high risk of ILUC will have an impact not only on the EU biofuels market and other end-use sectors but also on the expansion of these crops worldwide and the associated deforestation.

4.1. Impacts on the EU biofuels market

The report highlights that the pre-tax price of diesel fuel in Europe is generally below the price of crude palm oil on an energy equivalent basis. The cost of palm oil diesel (FAME) or renewable diesel (HVO) has been consistently higher on an energy equivalent basis than the fossil diesel price. Given this price hierarchy and the additional limits on biodiesel supply, the report expects that the EU measure would more or less eliminate the supply of biofuels from those feedstocks in the EU.

On the contrary, in a scenario where palm oil and soy oil are not classified as high ILUC risk and national support for food-based biofuels continue, there could be an increased use of these commodities for biofuels. Since the RED first came into force in 2009, palm oil biodiesel production has accounted for most of the growth in EU crop biodiesel production, while domestic EU vegetable oil biodiesel remained stable[xiv].

If palm oil and soy are eliminated from the EU biofuels market but member states keep the demand for other food-based biofuels stable or even increase it, there is a possibility of a shift in vegetable oils for biofuels, potentially leading to an increased use of feedstocks such as rapeseed or sunflower. This is why member states should adjust downwards their targets for renewables in transport and their cap on food-based biofuels in order to avoid a shift to other vegetable oils. This is particularly relevant as the use of rapeseed for biofuels also increases expansion and imports for palm oil for other uses[xv].

4.2. Impacts on global expansion and deforestation

Based on the results of previous ILUC modelling and taking into account some rebound effect, the report expects the categorisation to deliver a net global palm oil demand reduction in 2030 of 2.7 to 4.2 million tonnes, and a net global reduction in global soy oil demand of 0.3 to 0.7 million tonnes.

If demand for palm oil and soy for biofuels reduces, it should lead to less deforestation as it reduces the rate of growth of the palm and soy oil markets. Based on how ILUC modelling works and a specific set of assumptions, the report estimates that the reduced EU demand for palm oil biofuels could avoid between 130 to 210 thousand hectares of deforestation by 2030, and 100 to 150 thousand hectares of peat drainage. (In some cases, where there is forest on peat soils, these areas would overlap.)

Policy recommendations

In the context of the upcoming delegated act, T&E suggests the following recommendations to the Commission, member states and the European Parliament:

- **Soy oil and palm oil and PFAD should be included in the category of high ILUC risk biofuels,** to be phased out of the renewable targets by 2030 at the latest. This would put an end to the use of the highest emitting biofuels from the EU market and avoid up to 210,000 hectares of deforestation and up to 150,000 hectares of peat drainage.
- **Member states should adjust downwards their targets for renewables in transport and their cap on food-based biofuels** in order to avoid any displacement effect, e.g. replacement of palm oil biofuels by rapeseed diesel which would lead to palm expansion indirectly.
- **Regarding the low ILUC category, the available evidence at that stage does not provide for a workable and sufficiently robust system for certification. The Commission should close the door to this option for high ILUC risk biofuels.** Additionality is necessary to avoid further uses of high ILUC risk biofuels through the back door. However, there seems to be no clear cut criteria which would guarantee robust implementation of the concept and avoid displacing alternative uses of the crops, especially in the case of improved agricultural practices.
- **Discussions with producing countries on more sustainable production practices should focus on priority uses such as food**, while support for all food-based biofuels is progressively phased out. Demand for vegetable oil for non-energy uses such as food is expected to increase until 2030.

Further information

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Endnotes

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