

Position paper of the German biofuels sector on

INDIRECT LAND USE CHANGE IMPACTS OF BIOFUELS - CONSULTATION

Core statements

1. iLUC brought about by biofuels is quantitatively not verifiable

Indirect land use changes (iLUC) brought about by biofuels cannot be reliably proven through scientific means based on the current status of research. The precise scope and geographic location of iLUCs cannot be quantitatively allocated. In practice, there is a whole range of effects apart from the (additional) demand from the biofuels sector, e.g. increased demand for food and animal feed, changed productivities, changed weather conditions, degree of existing government regulation against land use changes, etc. It is therefore impossible to determine well-founded data about global iLUC.

2. A reliable analysis of iLUC is critical

The iLUC hypothesis has been proven neither true nor false. This makes a reliable analysis of the possible causes of land use changes that result in greenhouse gas emissions critical, especially in the regions affected. The analysis should include not only biofuels, but all kinds of biomass production

3. A global iLUC factor doesn't have the necessary directional impact

The goal of any measures against iLUC should be to prevent negative greenhouse gas emissions caused by land use changes. The research up to now cannot serve as a basis for legal measures due to the scientific uncertainties it contains. A global iLUC factor for biofuels would be based solely on arbitrary assumptions. If a global iLUC factor for biofuels were introduced, there would no longer be an incentive to undertake regional regulatory measures against land use changes.

4. International agreements to limit land use changes are needed

Land use changes can be effectively prevented by government regulations in the regions affected in third countries. The iLUC risk in the regions is also reduced if an effective regulation

against land use changes is established. This should be the goal of European Union measures. Within the EU, there are already many national and European regulations against land use changes (e.g. cross compliance).

A. General comments

Lowering greenhouse gas emissions is one of the primary goals of promoting renewable fuels through the Directive on Renewable Energy 2009/28. Biofuels produced from biomass help achieve this goal. The greenhouse gas effects brought about by land use changes (LUC) must be accounted for in the production of biomass. These changes can be positive, for example when degraded land is used, or negative, for example when cleared rain forests, savannahs and grassland are used for agricultural production. Land use changes with significant negative greenhouse gas effects must be prevented and/or reduced.

It is therefore critical that production of this biomass does not result in any land use changes if renewable fuels produced from biomass are to contribute to reducing greenhouse gas emissions. The directive ensures this for land use changes that can be directly allocated to biomass production for biofuels. The greenhouse gas emissions caused by direct land use changes (dLUC) are included in the greenhouse gas calculation for biofuels. The result is that these types of biofuels do not comply with the minimum requirements stipulated in Article 17 paragraph 2 of the directive and are thus not recognised in the EU. This is not the case for indirect land use changes (iLUC).

In 2008, approx. 51 million t of bioethanol and 14 million t of biodiesel were produced from biomass worldwide. Of this, approx. 27 million t of bioethanol was produced from corn in the USA, approx. 21.5 million t of bioethanol came from sugar cane in Brazil and approx. 2.3 million t of bioethanol originated from sugar beets, wheat, rye, barley, etc. in the EU. The percentage contributed by the EU to global bioethanol production was approx. 4.5%. In the case of biodiesel production, the most important producer countries (on the basis of domestic raw materials) are, in addition to the EU which produced 5.6 million t of biodiesel from rapeseed (5 million t) and sunflower oil (0.6 million t): USA – 2.4 million t, Argentina – 2.3 million t, Brazil – 1.2 million t (made from soy) and Malaysia – 0.6 million t of biodiesel from palm oil. The percentage contributed by the EU to global biodiesel production was thus approx. 40%. It is important to also note that, as a result of the Renewable Energy Act in Germany, around 0.55 million t of palm oil is imported from Malaysia and Indonesia to operate co-generation plants.

To satisfy the minimum EU target of 10% energy from renewable sources in petrol, a demand of maximum approximately 13 million t of bioethanol is to be used as a basis for consumption of 80 million t in the year 2020. To meet this 10% target for diesel, a maximum demand of approximately 22 million t of biodiesel is to be assumed for consumption of 200 million t in the year 2020. However, this assumption presupposes that the mandate in the Fuel Quality Directive (2009/30/EC) which would establish a diesel fuel standard allowing 10% vol. percentage in diesel fuel (B10) will be implemented soon in all member states. Due to the quality specifications to ensure winter quality in line with temperature conditions (CFPP value) in the respective climate region, only rapeseed is to be used as the basis for raw materials for biodiesel sold in Northern Europe between October and March. If the B10 standard is not introduced, we expect that the respective quantity difference will be made up by "hydrated" vegetable oil (HVO) from "standalone" facilities or through co-refining in mineral oil refineries. The demand for bioethanol and biodiesel can, however, drop if less petrol and diesel fuel is consumed. The demand is also dependent on the percentage of bioethanol and biodiesel that is produced from waste and residues. This type of bioethanol and biodiesel is counted twice toward the minimum target of 10%. Renewable electricity in electric cars also has to be accounted for. This is counted toward the minimum energy target of 10% by a factor of 2.5.

B. Answers

Based on these statements, we would answer the questions posed by the Commission as follows:

Question 1

Do you consider that the analytical work referred to above, and/or other analytical work in this field, provides a good basis for determining how significant indirect land use change resulting from the production of biofuels is?

Answer

The analyses published by the Commission for this consultation and other studies published previously have serious discrepancies and uncertainties. The iLUC hypothesis is not proven by these analyses. A concrete methodology to account for greenhouse gas emissions under the iLUC hypothesis does not exist.

The previous analyses are not suitable as a basis for regulating individual economic operators and individual consignments of transport fuels because they contain too many uncertainties. They can only contribute to policy analyses about whether land use changes can be brought about by

iLUC. The analytical models cannot serve as a basis for deriving concrete recommendations for action.

The study entitled "The Impact of Land Use Change on Greenhouse Gas Emissions from Biofuels and Bioliquids" published by the European Commission, analyses critical deficits in the previous research on iLUC.

From our perspective, the following aspects must be emphasised from the previous analyses:

- **Methodological limits of the models analysed**

With respect to the equilibrium models discussed in these analyses, it is to be generally noted that their results always depend on the assumptions made. The problems of the theoretical (e.g. functions used, modelling technical progress) and the empirical assumptions (e.g. availability and/or quality of data) relativise the results. Equilibrium models can thus best be used to make statements about tendencies. They are not suitable for adequately representing highly complex economic processes. In the basic design of most of the models, influences such as how decisions about trade and fiscal policy affect agrarian markets are not taken into consideration. The future dynamism of agricultural markets and aspects of technological progress in agricultural production are not taken into account or, in some cases, only to a limited extent. For example, land use changes can be prevented entirely or considerably reduced by increasing land yield. Some of the partial equilibrium models used do not allow for overall analyses due to their limited system boundaries.

- **Insufficient data**

The models are based on widely varying assumptions about key factors such as biofuel demand and current land use for the respective agrarian products. Data about key factors such as the scope of the actual land use changes which may have been brought about in part by iLUC, is available for rain forest clearing but not for the conversion of savannahs and grassland. FAO data, for example, on the amount of globally available agricultural land or cropland is based in part on estimates and insufficient statistics.

- **Lack of transparency and comprehensibility**

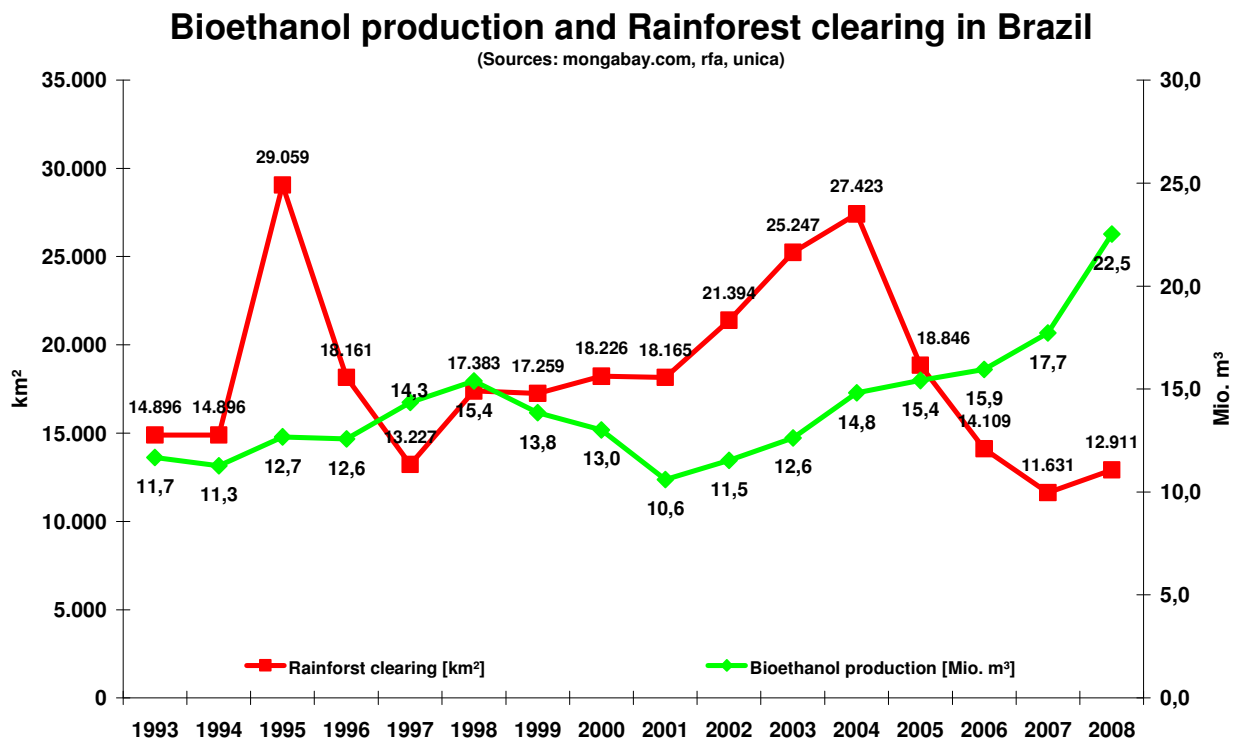
A significant number of analyses are difficult for external experts to understand due to a lack of transparency about input data, the algorithms applied, system boundaries and methodology.

- **Plausibility not reviewed**

Despite serious discrepancies in the results, the models applied in the analyses have not been reviewed for plausibility. This would be possible, for example, by applying them retroactively to historical time periods in defined regions.

The assumption that the iLUC hypothesis is based on which assumes a causal relationship between biofuel production and land use changes also needs to be reviewed for plausibility.

If we look at Brazil, for example, no clear relationship has been ascertained. While global bioethanol production rose between 1993 and 2008, rain forest clearing in this time period did not develop consistently in Brazil. And, since 2004, it has dropped considerably despite sharp increases in bioethanol production.



Nor can a direct link be established between the global increase in biofuel production and changes in the amount of usable agricultural land available around the world. The latter increased from 4.86 billion ha in 1990 to 4.96 in 2000 and fell to 4.93 billion ha in 2007. This supports the argument that yield on existing cropland has been intensified rather than the amount of cropland expanded.

Question 2

On the basis of the available evidence, do you think that EU action is needed to address indirect land use change?

Answer

From our perspective, the likelihood that land use changes are caused to a significant extent by iLUC cannot currently be quantitatively proven. The focus should thus be primarily on preventing land use changes with negative greenhouse gas effects; precautions should be taken in the regions affected in third countries as necessary. In the EU and the EU member states, a wide range of different measures against land use changes have already been undertaken (provisions to preserve forests, wetlands, permanent grassland, etc.) and monitoring occurs under the scope of the EU directive for renewable energy.

Question 3

If action is to be taken, and if it is to have the effect of encouraging greater use of some categories of biofuel and/or less use of other categories of biofuel than would otherwise be the case, it would be necessary to identify these categories of biofuel on the basis of the analytical work. As such, do you think it is possible to draw sufficiently reliable conclusions on whether indirect land use change impacts of biofuels vary according to

- ***feedstock type?***
- ***geographic location?***
- ***land management?***

Answer

Based on previously published studies and analyses, it is not possible to draw sound conclusions for specific categories of biofuels. The following must be kept in mind when assessing these categories:

a) Feedstock type

When evaluating raw materials, the production potential and the supply situation play an important role. It is, however, difficult to identify objective standards for reliably assessing the iLUC risk of a specific raw material category for biofuel production, for example, due to the complex substitution relationships among individual raw materials.

In the case of biofuel production, raw materials cannot be used to differentiate the iLUC risk.

b) Geographic location

To evaluate an iLUC impact, the regions in which considerable land use changes with negative greenhouse gas have occurred must be considered for it to be possible to arrive at a conclusion about the actual risk.

Only some reliable data pertaining to land use changes in individual regions is available such as, for example, data about rainforest clearings in Brazil or Southeast Asia.

The greenhouse gas emissions caused by these rainforest clearings are extremely significant due to the particularly large quantities of carbon released. The greenhouse gas emissions caused by changes in the use of savannahs and grassland may not, however, be ignored either.

For biofuels, regional differentiations in greenhouse gas emissions caused by iLUC can only be taken into consideration once adequate data is available for all of the land use changes or at least the most important ones.

c) Land management

Generally, a higher iLUC risk is to be assumed in regions where land ownership and usage laws are lacking and it is thus easier to change how land is used. Management standards in land management can only be effective in places where the land owners and the content of these standards are clear. This is not the case in regions like Brazil and Southeast Asia where land ownership and usage regulations are either insufficient or unclear.

In addition, adequate global data about different management standards in land management and their effects on greenhouse gas emissions is not available. Differentiating iLUC by different land management practices would require detailed monitoring of land use in third countries, something that is currently not practiced.

As a result, land management is currently not a basis for differentiating biofuels.

Question 4

Based on your responses to the above questions, what course of action do you think appropriate?

Question 4 A

Take no action for the time being, while monitoring impacts including trends in certain key parameters and, if appropriate, proposing corrective action at a later date

Answer

Due to the possibility of an iLUC impact discussed in the answer to Question 1 and the simultaneous impossibility of quantification, no concrete allocations should occur through iLUC factors or similar factors. At the same time, the negative global climate impact arising from land use changes cannot be justifiably disregarded.

Due to the uncertainties in the present iLUC analyses, monitoring, further field research and, in particular, analysis and evaluation of the implementation of RED in third countries are necessary. These model calculations must be subject to a better empirical review.

Question 4 B

Take action by encouraging greater use of some categories of biofuel

Answer

First, biofuels made from raw materials that, according to the iLUC hypothesis, cannot result in land use changes such as, e.g. waste or residues, could be promoted through weighted calculation to reach the minimum target of 10%.

This is already the case in Article 21 paragraph 2 of the directive which stipulates that the contribution made by biofuels produced from waste and residues is considered twice that made by other biofuels. The drawback of this regulation is that by doubling the contribution, actually only 50% of the calculated reduction in greenhouse gas emissions is reached, i.e. in this respect, it is only virtual.

There is no guarantee that waste and residues don't actually have an iLUC impact. This can only be assumed if waste is used that is to be disposed of because nothing else can be made from it.

An iLUC impact can also not be ruled out for residues because production residues are regularly handed over to processors that then make other products from them. An example is molasses as a residue from sugar production, B and C starch as a residue from starch production. When these raw materials are used for bioethanol production, they can bring about land use changes based on the iLUC hypotheses because they do not exist in other markets and thus have to be substituted.

Positive impacts on land use can arise from co-products in biofuel production such as protein feedstock when imports from regions with considerable land use change are substituted as a result.

Question 4 C

Take action by discouraging the use of some categories of biofuel

Answer

Question 4 C concerns regulatory measures in the form of quantitative government intervention undertaken at the expense of individual biofuels with respect to the raw materials used, origins as well as government intervention in the greenhouse gas calculation of all or individual biofuels. These activities are intended to prevent or reduce land use changes. We object to giving precedence to specific types of biofuels over others for the following reasons:

1. Targeted focus (directional impact) of the measures (*imposing additional sustainability requirements on certain categories of biofuel (these could, for example, require the use of practices that can help mitigate indirect land use change impacts)*)

A key criterion for the suitability of a measure is whether the desired directional impact can be achieved.

It is doubtful that the goal of preventing emissions from land use changes can be reached through measures such as raising the minimum values or allocating greenhouse gas emissions.

This goal can only be achieved if those affected by government intervention are actually able to undertake measures that influence land use changes. This is not the case because a biofuel manufacturer in Europe, for example, does not have the ability to prevent land use changes in third countries. Theoretically, he could avoid using raw materials that originate from regions with significant land use changes. But even if he did this, greenhouse gas emissions would still be allocated to him based on the iLUC hypothesis.

With a global iLUC factor for biofuels, there would no longer be an incentive for regional control to prevent land use changes. If the greenhouse gas calculations of biofuels from regions with considerable land use changes are improved by distributing regional greenhouse gas emissions globally, the incentive for regional measures against land use changes weakens.

Directional impact, however, could also be achieved through government regulatory measures in regions with greenhouse gas emissions arising from land use changes. This would affect third countries outside of the EU, in particular.

Pursuant to Article 17 paragraph 4 of the directive, biofuels from land with a high carbon stocks may not be taken into account. This regulation could also be extended to biofuels originating from regions where there are considerable changes in land use for land with high carbon stocks.

2. Insufficient basis for quantitative government intervention/arbitrary specifications

As described in the answer to Question 1, there is no objective basis for quantitative government intervention at the expense of individual biofuels because it is currently not possible to quantitatively determine iLUC impacts. The current analyses are not a sufficient basis for regulating individual economic operators and individual consignments of transport fuels. In the case of quantitative government intervention, the possibility that specifications are arbitrary could thus not be ruled out. This is critical when assessing the government intervention from a legal standpoint because regulations are not allowed to be arbitrary.

This applies to the following aspects in particular:

- ***(Increasing the minimum greenhouse gas saving for biofuels)*** The minimum values set forth in the directive will increase anyway from the current level of 50% greenhouse gas saving to 55% and 60% respectively. However, it would also be feasible to expand the regulation outlined in Article 17 paragraph 2 sentence 3 to all production facilities.
- ***(Attributing a quantity of greenhouse gas emissions from indirect land use change to all biofuels that use land)*** In addition to the fact that it is currently impossible to quantitatively determine iLUC impacts so as to be able to define reliable iLUC factors in economically and environmentally practical terms, it would also be arbitrary to treat all biofuels the same way. The iLUC potential of biofuels is different, for example, depending on the raw material used based on the different biofuel yields per ha. These differences in yield result in considerable differences in land requirements and thus in the assumed iLUC.

Question 4 D***Take some other form of action*****Answer**

The goal of the measures should be preventing and reducing emissions brought about by land use changes (dLUC and iLUC).

Land use changes with negative greenhouse gas effects can be effectively prevented through government regulations such as through the cross compliance provisions valid in the EU. In the regions affected by these types of land use changes in third countries, land use changes would first have to be determined regionally to achieve this goal. The advantages here would be that generally reliable figures could be determined for the individual regions.

It is crucial that preventing land use changes with negative greenhouse gas effects through government regulations reduces or completely eliminates the ILUC risk. Land use regulations are simultaneously an effective instrument against carbon leakage.

The approach outlined in Article 18 paragraph 5 with respect to the sustainability criteria set forth in Article 17 paragraphs 2 to 5 of the directive to conclude bilateral or multilateral treaties with third countries should also be pursued for land use changes. Concrete measures to prevent land use changes could be agreed in these types of treaties.

Including greenhouse gas emissions from land use changes for biofuels from regions with no such treaties could be considered only as a last result. This would be a differentiation by geographic location like the one discussed in Question 3 2.