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February 19, 2019

RE: International Council on Clean Transportation comments on the draft "Commission Delegated Regulation (EU) supplementing Directive (EU) 2018/2001 as regards the determination of high indirect land-use change-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed and the certification of low indirect land-use change-risk biofuels, bioliquids and biomass fuels."

These comments are submitted by the International Council on Clean Transportation (ICCT). The ICCT is an independent nonprofit organization founded to provide unbiased research and technical analysis to environmental regulators. Our mission is to improve the environmental performance and energy efficiency of road, marine, and air transportation, in order to benefit public health and mitigate climate change. We promote best practices and comprehensive solutions to increase vehicle efficiency, increase the sustainability of alternative fuels, reduce pollution from the in-use fleet, and curtail emissions of local air pollutants and greenhouse gases (GHG) from international goods movement.

The ICCT welcomes the opportunity to provide comments on the Renewable Energy Directive. We commend the European Commission for its commitment to developing a more sustainable biofuel industry in Europe, and to promote a cleaner, lower-carbon transportation sector that uses less petroleum-based fuels. The comments below offer a number of technical observations and recommendations for the Commission to consider in its continued efforts to strengthen the Directive and maximize its benefits in mitigating the risks of climate change and reducing petroleum use.

We would be glad to clarify or elaborate on any points made in the below comments. If there are any questions, Commission staff can feel free to contact Dr. Stephanie Searle (stephanie@theicct.org).

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ICCT comments on the Commission Delegated Regulation on high and low indirect land use change risk feedstocks and biofuels

Summary of suggested changes

ICCT suggests the European Commission consider making textual changes to the draft delegated act to achieve the following:

- Require that additional feedstock from yield increases be calculated as the difference between actual yields and a dynamic (likely increasing) yield baseline.
- Clarify how calculations of additional feedstock amounts can exclude annual yield fluctuations.
- Change the threshold for defining high indirect land use change feedstocks to 4-8% share of expansion into land with high carbon stock.
- Require a financial or barrier analysis to demonstrate additionality for projects on unused land unless they are on abandoned or degraded land or applied by smallholders.
- Clarify that low indirect land use change (ILUC) risk certification may be granted for a maximum of 10 years.

The following sections provide suggestions for specific textual changes to the draft delegated act as well as technical explanation for these changes for the Commission's consideration.

Suggested changes to Article 2

ICCT suggests the Commission consider making the following revisions to Article 2 paragraph 7 (added text in bold font):

> *'additional feedstock' means the additional amount of a food and feed crop produced on a clearly delineated* ***area as predicted by a trendline of yields in all years since certification*** *compared to* ***a dynamic yield baseline calculated based on average yields on that area in*** *the 3-year period immediately preceding the year when the relevant additionality measure has taken effect and* ***average yield increases of similar producers in the area in each year*** *and that is the direct result of applying an additionality measure, with the exclusion of annual yield fluctuations;*

Objective of changes:

- Require that additional feedstock from yield increases be calculated as the difference between actual yields and a dynamic (likely increasing) yield baseline.
- Clarify how calculations of additional feedstock amounts can exclude annual yield fluctuations.

Rationale for changes: Yields of major crops generally increase over time, independently of biofuel demand. For example, Figure 1 shows the global average yields of palm fruit, rapeseed, soybean, and sugarcane for the past several decades. Average yields of each of these crops has increased roughly linearly over this time period. Crop yield increases are generally the result of improvements in crop varieties and agricultural management technology and techniques. These improvements occur for reasons other than biofuel demand and should thus be considered part of the yield baseline. If a producer takes additional action to improve yields specifically because of European biofuel policy, it is very likely that not all of the yield increase observed compared to yields in year 0 are attributable to biofuel policy; some of that yield increase would very likely have occurred anyway due to business-as-usual improvements in crop varieties and agricultural management. Treating baseline yields as static would count business-as-usual yield improvements as "low ILUC risk" in the context of the recast Renewable

Energy Directive to 2030 (RED II) and could continue to support the use of large amounts of high ILUC feedstocks without actually reducing ILUC impacts. Instead, the Commission could require yield increases to be compared with a dynamic yield baseline. This means a yield baseline that increases either according to average yield increases of other agricultural producers in the area or in line with historical yield increases. Crediting yield increases above a dynamic yield baseline will reserve the policy incentive for the amount of feedstock produced using ILUC mitigation measures. Setting a requirement for yield increases to be measured against a dynamic baseline will furthermore increase the value of policy support and better direct investment towards measures that actually reduce ILUC.

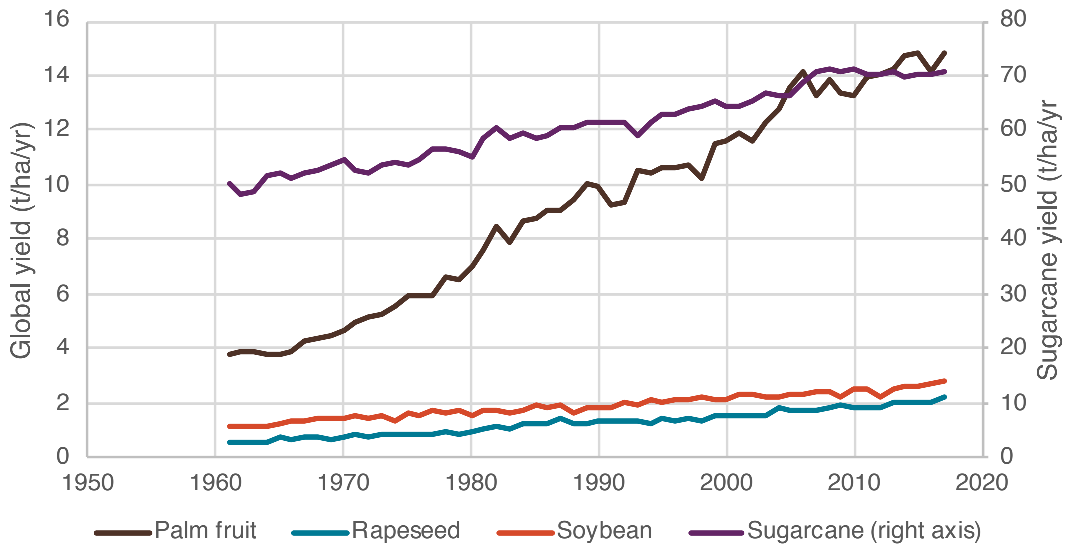

Figure 1: Global average yields of palm fruit, rapeseed, soybean (left axis) and sugarcane (right axis) from 1961-2017 (data from FAOSTAT[1]).

The Report from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions on the status of the production expansion of relevant food and feed crops worldwide[2] suggests that it is indeed the Commission's intention that yield increases must be compared against a dynamic baseline. The report reads:

> *"Average increases in productivity are still not sufficient to avoid all risks of displacement effects, though, because agricultural productivity is constantly improving while the concept of additionality, which is at the heart of the low ILUC certification, requires taking measures going beyond business as usual. Against this background, REDII stipulates that only productivity increases that go beyond the expected level of increase should be eligible."*

The suggested change to Article 2 in the draft delegated act would help clarify this intention.

The other change ICCT suggests is to clarify how calculations of additional feedstock amounts can exclude annual yield fluctuations. Excluding annual yield fluctuations is an important

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[1] http://www.fao.org/faostat/en/
[2] https://ec.europa.eu/energy/sites/ener/files/20190212_draft_report_-_post-isc_final.pdf

element of preventing over-crediting of yield increase projects. As we demonstrated in Searle & Giuntoli (2018),[3] spurious crediting of high yields in years of good weather can result in the crediting of large amounts of business-as-usual crop production without any reduction in ILUC impacts. The Commission's draft delegated act already specifies that yield increases from annual fluctuations should not be counted as low ILUC risk. Because it is not obvious how to implement this requirement, it may be beneficial for the Commission to further specify how producers and verifiers should exclude annual fluctuations from the calculated amount of low ILUC feedstock. This would help ensure greater consistency across verification schemes.

ICCT suggests that a simple approach may be easiest for producers and verifiers to follow: calculate the yield increase in any particular year based on a moving trendline of yields in all years since certification. Figure 2 presents a schematic to illustrate this idea. In the first year after certification, the amount of feedstock credited as low ILUC risk is the difference between the actual yield and the dynamic baseline (shown as "calculated low ILUC amount in year 1"). In the second year, the producer draws a trendline including the yields in years 0, 1, and 2, including a low yield due to poor weather in year 2. The amount of low ILUC risk feedstock is then calculated as the difference between the predicted yield value at year 2 on this trendline and the dynamic baseline ("calculated low ILUC amount in year 2"). In the third year, actual yields in years 0, 1, 2, and 3 are used to create a trendline, and the predicted yield in year 3 on that trendline is used to calculate the amount of low ILUC risk feedstock. In the example in Figure 2, poor weather results in an actual yield that is lower than the baseline. However, when all the evidence is considered (yields in years 0, 1, and 2), it still appears that this producer generally has higher than baseline yields. One benefit of this calculation approach is that it still rewards the producer even in years of poor weather. Conversely, it reduces over-crediting of the producer in years of unusually good weather.

[3] https://www.theicct.org/sites/default/files/publications/High_low_ILUC_risk_EU_20181115.pdf

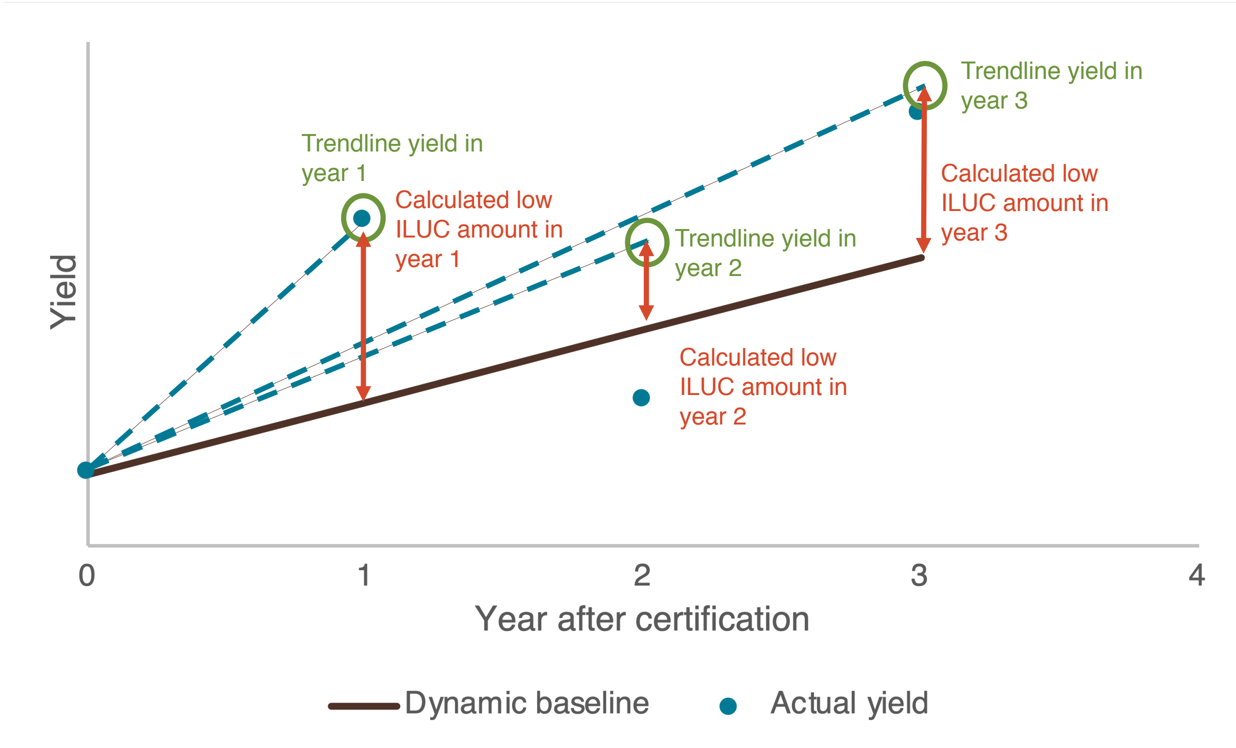

Figure 2: Schematic of how the amount of low ILUC risk feedstock could be calculated excluding annual fluctuations.

Suggested changes to Article 3

ICCT suggests changing the value of 10% in Article 3, paragraph b to a value in the range of 4-8%.

Objective of change: better align the threshold for the share of land expansion onto high carbon stock land with available evidence.

Rationale for change: According to section III.3 in the report on the status of the production expansion of relevant food and feed crops worldwide, this threshold was determined based on a calculation of the share of expansion onto forestland a generic oilcrop would need to have in order for its total lifecycle GHG emissions to equal those of petroleum. It appears that this calculation may have omitted GHG emissions from below-ground biomass and soil organic carbon. Adding these sources of GHG emissions into the calculation results in a range of 4-8% as the share of expansion onto high carbon stock land for which a generic oilcrop would not deliver any GHG benefits compared to petroleum.

Box 2 provides the assumptions used in the Commission's calculations. This text cites scientific literature reviewed in Annex I for the assumption that the average loss of carbon stock when biofuel feedstock replaces forest is roughly 90 tonnes of carbon per hectare. However, no such information is reviewed in Annex I. This reference may have been intended for Annex II, which lists data sources for calculations of GHG emissions for the GIS analysis. This section in Annex II specifies that "emissions associated with… belowground biomass (roots), dead wood, litter and soil carbon… were excluded from the analysis." If this section in Annex II is indeed the basis for the assumption of 90 tonnes of carbon per hectare, then the Commission is significantly underestimating GHG emissions from land use in this calculation. In any case, it is clear that the Commission excluded soil carbon loss from the conversion of non-forest land in this calculation, a significant omission.

We replicate the Commission's calculations but include belowground biomass and social carbon loss. We assume a belowground:aboveground biomass ratio of 0.2, towards the low end of the range of values for various forest types reviewed in Table 4.4 of forest chapter of the IPCC's 2006 Guidelines for National Greenhouse Gas Inventories.[4] We assume average soil carbon stocks on converted land of 37 tonnes carbon per hectare, which is the area-weighted average of soil carbon stocks for Africa, Asia (excluding Indonesia and Malaysia), and South America.[5] World average soil carbon stocks are higher, around 60 tonnes carbon per hectare, but soil carbon stocks tend to be lower than average in tropical areas where a great deal of cropland expansion occurs. We assume that 20% of soil carbon stocks are emitted as CO_2 upon conversion to cropland based on literature review.[6] We assume this soil carbon loss occurs for all land area converted to cropland production, whether or not it is forested. Using the Commission's assumptions on amortization period (20 years), energy yield per area (48 GJ/ha/yr), and GHG emissions of biofuel production other than land use change emissions (47 gCO2e/MJ), we estimate that with a 4.5% share of expansion onto forestland, biofuel produced from a generic oilcrop would produce zero GHG savings compared to petroleum. For newer biofuel installations starting operation after 1 January 2021, GHG emissions other than land use change emissions would need to be at least 65% lower than the fossil fuel comparator. For such installations, we estimate that a 7.9% share of expansion onto high carbon stock land would result in zero lifecycle GHG emission reductions compared to petroleum. Thus, depending on the age and performance of biofuel installations, the share of expansion onto high carbon stock land for which biofuel feedstocks would have no net climate benefits ranges from around 4-8%.

Suggested change to Article 5, paragraph 1(a)

ICCT suggests the Commission consider making the following revision to Article 5, paragraph 1(a) (ii):

> *(ii) they allow for cultivation of food and feed crops on ~~unused land, including~~ abandoned land, or severely degraded land;*

[4] https://www.ipcc-nggip.iges.or.jp/public/2006gl/

[5] Calculated using data from the Harmonized World Soil Database, downloaded in 2011. This database is now available online at: http://www.iiasa.ac.at/web/home/research/researchPrograms/water/HWSD.html

[6] Reviewed in Guo, L. B., and R. M. Gifford (2002). "Soil Carbon Stocks and Land Use Change: A Meta Analysis." Global Change Biology 8, no. 4 (April): 345–60; Murty, D., M. U. F. Kirschbaum, R. E. McMurtrie, and H. McGilvray (2002). "Does Conversion of Forest to Agricultural Land Change Soil Carbon and Nitrogen? A Review of the Literature." Global Change Biology 8, no. 2 (February): 105–23; and Don, A., J. Schumacher, and A. Freibauer (2011). "Impact of Tropical Land-Use Change on Soil Organic Carbon Stocks—A Meta-Analysis." Global Change Biology 17, no. 4 (April): 1658–70.

Objective of change: require a robust additionality assessment for feedstock produced on unused land, other than abandoned land, severely degraded land, or land used by smallholders.

Rationale for change: allowing crediting of feedstock produced on unused land without requiring an additionality assessment is unlikely to reduce ILUC compared to business-as-usual feedstock, including palm oil. Because global oil palm production is expanding rapidly, large amounts of palm oil will be produced in 2030 on newly converted land that is unused now in order to meet global vegetable oil demand for food, feed, and oleochemicals. Diverting some of this palm oil produced on formerly unused land to biofuel production will increase global palm oil demand and expansion of palm oil production elsewhere. In other words, this will cause ILUC. Article 2 of the RED defines "low indirect land-use change-risk biofuels" as "biofuels, the feedstocks of which were produced within schemes which reduce the displacement of production for purposes other than for making biofuels…" Diverting feedstock that would have been used for purposes to biofuels, even if feedstock on that area of land had not yet been used for other purposes, is displacement. Allowing the certification of feedstock produced on unused land as low ILUC risk is not consistent with the definition of low indirect land-use change-risk biofuels in the RED.

Based on literature review of studies using satellite data to track palm oil expansion onto various land types, we have previously estimated that 4.9 million tonnes palm oil are likely to be produced in 2030 on land that was unused in 2020 in Indonesia and Malaysia and that would meet the sustainability criteria in Article 29 of the RED II.[7] This amount could potentially be certified as low ILUC risk and be exempt from the cap and phase out of high ILUC biofuels in the RED II without any action taken to actually reduce ILUC impacts. This would represent an increase in the amount of palm oil used in biofuel since 2017 (3.9 million tonnes in that year).[8]

Making this change to the text would require producers (other than smallholders) using unused land to follow the additionality measure in Article 5, paragraph 1(a)(i). This requirement is for producers to show that the biofuel production on that unused land would not have been attractive (for financial or other reasons) in the absence of policy support in the RED II. The use of previously abandoned land or severely degraded land would be exempt from this additionality assessment requirement.

Suggested change to Article 5, paragraph 1(b)

ICCT suggests the Commission consider making the following revision to Article 5, paragraph 1 (b):

> *(b) ~~the additionality measures take effect no longer than 10 years before~~ the* ***maximum period for*** *certification of the biofuels, bioliquids and biomass fuels as low indirect land-use change-risk fuels* ***shall be 10 years****.*

Objective of change: clarify the meaning of this paragraph.

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[7] https://www.theicct.org/sites/default/files/publications/High_low_ILUC_risk_EU_20181115.pdf

[8] https://www.transportenvironment.org/sites/te/files/Europe%E2%80%99s%20cars%20driving%20deforestation%20in%20South%20East%20Asia.pdf

Rationale for change: It appears that this paragraph intends to specify that low ILUC risk certification may be given for a maximum of 10 years. This would be consistent with language in the report on the status of the production expansion of relevant food and feed crops worldwide, which states: “A time limit for the eligibility of 10 years is appropriate for [the eligibility of measures.]”

However, the wording in Article 5, paragraph 1(b) is unclear and could be misinterpreted as meaning that low ILUC risk certification could take place ten years after additionality measures were implemented. For example, previously unused land converted to palm oil production in 2010 could be certified as low ILUC risk in 2020. If this were true, approximately 5.5 million hectares producing around 14 million tonnes palm oil per year in Indonesia and Malaysia would qualify as low ILUC risk starting in 2020.[9] This is palm oil from, for the most part, plantations that are already established today to meet existing global demand for palm oil. Using this palm oil for EU biofuel production would clearly cause displacement of other existing uses and would not reduce ILUC. It is thus critically important to clarify the meaning of this paragraph.

[9] Calculated extrapolating expansion of palm oil onto non-forest and non-wetland land areas based on satellite data from 1990-2020 for Malaysia (Gunarso et al., 2013) and from 2010-2015 for Indonesia (Austin et al., 2017) and yields for FAOSTAT, and factoring in the predicted age class distribution of palm oil trees in 2020 following Searle & Giuntoli (2017). Austin, K. G., Mosnier, A., Pirker, J., McCallum, I., Fritz, S., & Kasibhatla, P. S. (2017). Shifting patterns of oil palm driven deforestation in Indonesia and implications for zerodeforesation commitments. Land Use Policy, 69, 41–48. doi:10.1016/j.landusepol.2017.08.036; Gunarso, P., Hartoyo, M. E., Agus, F., & Killeen, T. J. (2013). Oil palm and land use change in Indonesia, Malaysia and Papua New Guinea [Reports from the Technical Panels of the 2nd Greenhouse Gas Working Group of the Roundtable on Sustainable Palm Oil (RSPO) 29]. Retrieved from https:// www.researchgate.net/publication/288658092_Oil_palm_ and_land_use_change_in_Indonesia_Malaysia_and_Papua_ New_Guinea; FAOSTAT http://www.fao.org/faostat/en/; Searle, S., & Giuntoli, J., (2018). Analysis of high and low indirect land-use change definitions in European Union renewable fuel policy. Washington, DC: ICCT. https://www.theicct.org/sites/default/files/publications/High_low_ILUC_risk_EU_20181115.pdf