

Technical Note**Review of EU proposal to amend Commission Delegated Regulation (EU) 2019/807**

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1. Introduction

This technical note focuses on the report “Support for the implementation of the provisions on ILUC set out in the Renewable Energy Directive Lot 1 – HILUC,” which the European Commission used to release the proposal to amend Commission Delegated Regulation (EU) 2019/807.

The report was prepared by Guidehouse to support the implementation of ILUC provisions in the Renewable Energy Directive (RED). It reviews feedstock expansion and is referred to as the Phase II Final Report.

ABIOVE has provided contributions in phase I report¹. Those inputs included data and analyses showing that the calculations for soybean expansion into forest and the soybean productivity factor were misleading. In this technical note, ABIOVE follows a similar analytical approach and again questions the soybean figures presented in Phase II, presenting alternative results.

The most consequential aspect of the study is the revised estimation of iLUC risks for agricultural commodities used to produce biofuels—particularly soybeans—which places the oilseed in a high-risk category.

As the Brazilian Association of Vegetable Oil Industries, ABIOVE represents companies that produce soymeal, soybean oil, and biodiesel in Brazil. ABIOVE has published analyses on soybean expansion in Brazil for almost 20 years, giving us the necessary expertise to question Guidehouse’s report.

Because Brazil is the world’s largest soybean producer and the Guidehouse report identifies it as the country with the greatest soy planted on deforested areas (page 26)², results for Brazil are a strong reference for a global assessment. Accordingly, this technical note presents contributions analysing soy expansion over forests and the soybean productivity factor, highlighting the main aspects that must be reviewed to better reflect realities on the ground.

2. Allocation of soybean expansion into forests

¹ ABIOVE Contributions to the project “ILUC – High and low ILUC-risk fuels” conducted by Guidehouse in request of the European Commission on Soybean Expansion and Land Use Change (September 14th, 2022). Available at: <https://abiove.org.br/biblioteca/guidehouse-contributions-on-soybean-expansion/>

² Guidehouse (2026). Support for the implementation of the provisions on ILUC set out in the Renewable Energy Directive Lot 1 – HILUC: A review of the feedstock expansion report. Directorate-General for Energy.

A major concern in the study is the figure presented by Guidehouse for soybean expansion over forest—14.1% for 2014–2021. Considering the shorter timeframe compared with the previous study (2008–2019), ABIOVE analysed these results and found inconsistencies that require revision to ensure accuracy.

Before presenting the numbers, it is necessary to harmonize some concepts. RED adopts a concept of “high carbon areas” to evaluate iLUC risks, while Guidehouse’s analysis consists of evaluating expansion over forested areas according to the FAO definition (>10% canopy cover). Therefore, “high carbon areas” are operationally defined by Guidehouse as equivalent to the FAO definition of forest. In this technical note, we deliberately adopted a similar approach by measuring soy expansion over deforestation in the Amazon and Cerrado Biomes. Vegetation in the Amazon Biome is equivalent to the FAO definition; however, in the Cerrado Biome, only 54,5% is equivalent to the FAO definition³. Since PRODES, Brazil’s official deforestation mapping system, does not publish clearances with the 10% canopy cover filter, the numbers presented in this technical note are overestimated, we applied the 54,5% index to the expansion of soybeans over the Cerrado when assessing our mapping information, which implied a more accurate result, aligned with the definitions adopted by RED.

We used the MapBiomias database (Collection 10), a public data source that is reportedly considered in the Guidehouse study, to examine land-use transitions in Brazil and to compare them with the results obtained by Guidehouse. Since MapBiomias does not have a default transition layer for the period in study, we combined the layers as shown below:

Table 1. Soy expansion in Brazil (ha)

<i>Period</i>	<i>Net expansion</i>	<i>Over forest⁴</i>	<i>Share over forest</i>
2014-2015	2.462.170	83.275	3,38%
2015-2020	6.287.093	447.978	7,13%
2020-2021	989.185	5.192	0,52%
Total	9.738.447	536.444	5,51%
Annual expansion	1.391.207		

Source: MapBiomias (Collection 10), 2025. Adapted by ABIOVE.

First, soybean expanded by 9.74 Mha in the period. More importantly, this increase in soybean area occurred over 0.54 Mha of forest—only 5.51%—rather than the 1.67 Mha reported by Guidehouse. This has a strong impact on soybean risk classification, placing soy in a low-to-high boundary. It is clear that Guidehouse’s result disproportionately harms soy.

To validate this, we also used mapping conducted by Serasa Experian (commissioned by ABIOVE) to compare expansion results and verify whether the analytical behaviour follows the same trend. Since Guidehouse considers Amazon and Cerrado as hotspots for soy expansion over high carbon areas and they are the most relevant for the oilseed production in Brazil, we also focused the analysis on those biomes. The results are in Table 2:

³ Soy risk analysis in Brazil for EUDR, by Serasa. Available at: <https://abiove.org.br/biblioteca/soy-risk-analysis-in-brazil-for-eudr/>

⁴ It includes forest and savanna formations.

Table 2. Soy expansion between 2013/14 and 2020/21 (ha)

<i>Period</i>	<i>Net expansion</i>	<i>Over forest⁵</i>	<i>Share over forest</i>
Amazon	2.921.786	93.682	3,21%
Cerrado	4.400.000	252.650	5,74%
Other biomes	2.267.114	-	-
Total	9.588.900	346.332	3,61%
Annual expansion	1.369.843		

Source: Agrosatélite (Serasa Experian), 2021. Conab, 2025. Adapted by ABIOVE.

Considering Brazil’s historical deforestation data, it is reasonable to say the amount of soybean over forest in this mapping would hardly double. Using the available numbers, the share of expansion over forest is 3.61%, meaning that—even with a different data source and methodology—the overall deforestation footprint attributed to soybeans is consistent with MapBiomias and remains below the share adopted by the Commission.

Our calculations illustrate how the analysis should have been conducted—evaluating land-use transitions within the timeframe in scope (2014–2021). We also compiled data from Serasa’s maps to emulate Guidehouse’s method, which crosses soy expansion from 2014 to 2021 with deforestation since 2008, as shown in Table 3:

Table 3. Soy (2020/21) over deforestation since 2008

	<i>Net expansion</i>	<i>Over forest</i>	<i>Share over forest</i>
Amazon	2.921.786	195.563	6,69%
Cerrado	4.400.000	798.810	18,15%
Other biomes	2.267.114	-	-
Total	9.588.900	1.661.269	10,37%

Source: Agrosatélite (Serasa Experian), 2021. Conab, 2025. Adapted by ABIOVE.

This approach clearly inflates results: when past deforestation is considered, the amount allocated to soy roughly triples. The effect stems from assumptions about possible indirect land-use changes triggered by soy expansion, evidenced when we take into consideration Guidehouse study clearly states that the findings should be interpreted with caution given the uncertainties surrounding the mapping methodologies applied, small-scale versus subsistence agriculture and the attribution of drivers.

The approach used by Guidehouse to measure iLUC risk effectively multiplies expansion over deforestation by a factor of about three. By using a longer period in the numerator (2008–2021 planted area over deforestation) and a shorter period in the denominator (2014–2021 planted-area expansion), the resulting ratio is biased upward for crops with the largest expansion—such as soy. This is evidenced by soybean being the only crop whose ratio for expansion over deforestation is substantially higher in the Phase II report (14%) than in Phase I (9%), where the periods were compatible. Not coincidentally, soy is the crop with the largest expansion, as shown in Table 6-1 of the Guidehouse report. In fact, Table 6-1 shows corn with the largest planted-area expansion, but recognition of multi-cropping—corn as a second crop after soy—substantially reduced the expansion over deforestation from Phase I to Phase II.

⁵ It includes forest and savanna formations.

3. Soybean productivity factor calculation

Another aspect requiring revision is the soybean productivity factor (PF), since it affects risk classification. This factor is based on commodity yields, and there are strong reasons to conclude that the value of 1 attributed by Guidehouse to soy is inconsistent and should be revised.

Not only the study does not bring any scientific reason on why soy PF should be 1, we have that in Brazil, a soybean–maize multi-cropping system is common practice. As a result, a significant share of energy that should be allocated to soybean is not considered. This is well known to the European Commission: in 2018, the Brazilian think-tank Agroicone reported that net soybean area increased by 3.3 million ha more than the total annual crop expansion between 2012 and 2017, which can be explained by the replacement of first-crop maize area with the soybean–maize multi-crop system.

Translating this into numbers, ABIOVE used national data to calculate an adjusted soybean PF, weighted by the maize-area share.

Table 6. Brazilian soybean and maize data

<i>Crop</i>	<i>Soybean</i>		<i>Maize (1st crop)</i>	
	<i>2014</i>	<i>2021</i>	<i>2014</i>	<i>2021</i>
Area (ha)	30.173.100	39.762.000	6.617.700	4.348.400
Production (t)	86.172.800	140.179.300	31.652.600	24.726.500
Yield (t/ha)	2,856	3,525	4,783	5,686

Source: Conab, 2026.

To do so, it is necessary to identify the amount of first-crop maize area and production displaced by soybean (evidenced by differences between the 2008 and 2019 periods), attribute those values to soybean, and compute the adjusted soybean yield used to calculate the PF:

Table 6. Calculating soybean adjusted yield

<i>Crop</i>	<i>Unit</i>	<i>Result</i>
Maize area loss	ha	-2.269.300
Maize production loss	t	-12.904.021
Soybean Yield (ajust.)	t/ha	3,620

Applying this adjusted yield to the PF formula results in a soybean PF of 1.3 instead of 1.0, as shown in table 7:

Table 7. Productivity Factor (PF) Calculation

<i>Crop</i>	<i>Yield (kg/ha)</i>	<i>LHV (MJ/kg)</i>	<i>Moisture (%)</i>	<i>Energy (MJ crop/ha)</i>	<i>PF</i>
Maize	7,584	18.50	15	119,258	2.1
Soybean	2,803	23.53	15	56,061	1.0
Soybean (ajust.)	3.620	23,26	15	71.562	1,3

Soybean is the reference, so the calculation still considers soybean-only energy in the denominator; thus, other commodities are not affected and their analysis is preserved. It is worth noting that ABIOVE presented this in 2022 when providing inputs to Guidehouse after Phase I.

A simpler way to demonstrate that the soybean yield needs revision is to consider official national data for the historical performance of soybean crops in Brazil and compute the average. Using the average soybean yield, the PF would be 1.2.

Table 7. Historical Brazilian soybean yields (kg/ha)

	2014	2015	2016	2017	2018	2019	2020	2021	Avg. Yield
North	2.877	2.976	2.423	3.061	3.112	3.092	3.270	3.164	2.997
Northeast	2.557	2.852	1.774	3.115	3.647	3.312	3.521	3.626	3.051
West-Center	3.005	3.008	2.948	3.333	3.540	3.419	3.649	3.557	3.307
Southeast	2.530	2.784	3.262	3.467	3.707	3.350	3.675	3.698	3.309
South	2.792	3.145	3.047	3.582	3.446	3.272	2.920	3.477	3.210
Brazil	2.856	3.025	2.878	3.392	3.507	3.337	3.382	3.525	3.238

Source: Conab, 2026.

4. Soybean area and production databases

It is clear that the issues identified stem from choices made by Guidehouse regarding the databases used in the study. Based on the available documents, we highlight the following points for the Commission’s consideration:

- (a) **Global mapping resolution:** according to EU Report⁶, the primary crop data were sourced from the 10×10 km MapSPAM 2010 dataset, which provides information at a global scale. The resolution is not ideal for local analyses and is also outdated. To mitigate this, the study used the 5×5 km GEOGLAM 2015 soybean layer to assess coverage, incorporating regional mapping for South America; however, this still provides insufficient resolution to capture local expansion behaviour.
- (b) **Mapping of soybean expansion:** aggregating all soy maps from 2015 to 2021 and subtracting the 2014 crop to analyse expansion can lead to an area larger than reality. In Brazil, soy “expands” and “retracts” from certain areas over the years due to multi-cropping, crop rotation, or producers’ decisions. As a result, deforestation can be double-counted with this methodology, overestimating the allocation of soy on deforested land.
- (c) **Usage of deforestation data:** Guidehouse delivered a document detailing the methodology used during the study⁷. When assessing soy-driven deforestation, they performed a simple overlay of expansion polygons and compared them with Hansen et al.’s global tree-loss dataset. Global layers are not suitable for assessing local expansion

⁶ Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions. Brussels, 20.1.2026, COM(2026) 36 final.

⁷ Guidehouse, 2026. Support for the implementation of the provisions on ILUC set out in the Renewable Energy Directive Lot 1 – HILUC, A review of the feedstock expansion report. Final Report Phase 2.

due to their limited resolution and granularity. Regional mapping (e.g., PRODES in Brazil) is better suited to represent local specificities.

Since one of RED's goals is to halt imports of biofuel feedstocks associated with deforestation into the EU—significantly affecting market flows—it is vital to use the best available sources and maps to evaluate local realities and avoid unjust outcomes.

5. **Conclusion: request for data revision**

When applying all concepts presented in this document and recalculating the share of expansion over land with high-carbon stocks, used to classify commodities, we have the following results for soybean:

Table 8. Revised share of expansion over high-carbon areas for soy

	X_f	X_p	PF	X_{hcs}
Guidehouse	14,1%	-	1,0	14,1%
ABIOVE	10,4%	-	1,3	7,9%
ABIOVE (2014-21)	3,6%	-	1,3	2,8%
MapBiomass (2014-21)	5,5%	-	1,3	4,2%

Note: calculation done as stated in the formula of the directive.

Important to note that we are proposing a new share considering soy expansion over forest in the same methodology as Guidehouse's study, putting soybean at a low-risk classification. If we took expansion proportional to the timeframe in scope (2014-2021), as explained in item 2 of this technical note, the share would be even lower using either ABIOVE's or MapBiomass' data.

Putting aside the lack of justification for the arbitrary threshold deduction or statistical analysis of the data used in the study, ABIOVE presents in this technical note evidence more than enough for Guidehouse to revise their study, mitigate uncertainties, and provide more accurate results. RED is a necessary regulation, but it deeply affects market flows if the best data available is not used to calculate risks and classify commodities.

About ABIOVE

ABIOVE – Brazilian Association of Vegetable Oil Industries, for 45 years, represents the companies that process oilseeds and produce meal, vegetable oils and biodiesel. Our member companies are among the country's largest exporters, adding value to Brazil's oilseed and grain chains and stimulating sustainable production practices.