Guidehouse

Low ILUC-risk certification: Pilot report and recommendations

Colombia, Oil palm yield increase, March 2021

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1. Pilot Introduction

1.1 Feedstock and Geography

This pilot tests the low ILUC-risk biomass methodology for yield increase of oil palm on a large plantation. The chosen plantation is a large (3,400 ha) plantation integrated with a palm oil mill, and located at 10°06' 05.23"N y 74°00' 38.32"W in the Northern Oil Palm Zone in Colombia (Figure 1-1). The plantation and mill owner is Palmeras de la Costa. The plantation was established in 1971. The plantation is currently ISCC EU, RSPO and Rainforest Alliance certified.

The pilot is also supported by Fedepalma, the association of Colombian palm oil producers, who helped to identify suitable plantations for the pilot in Colombia.

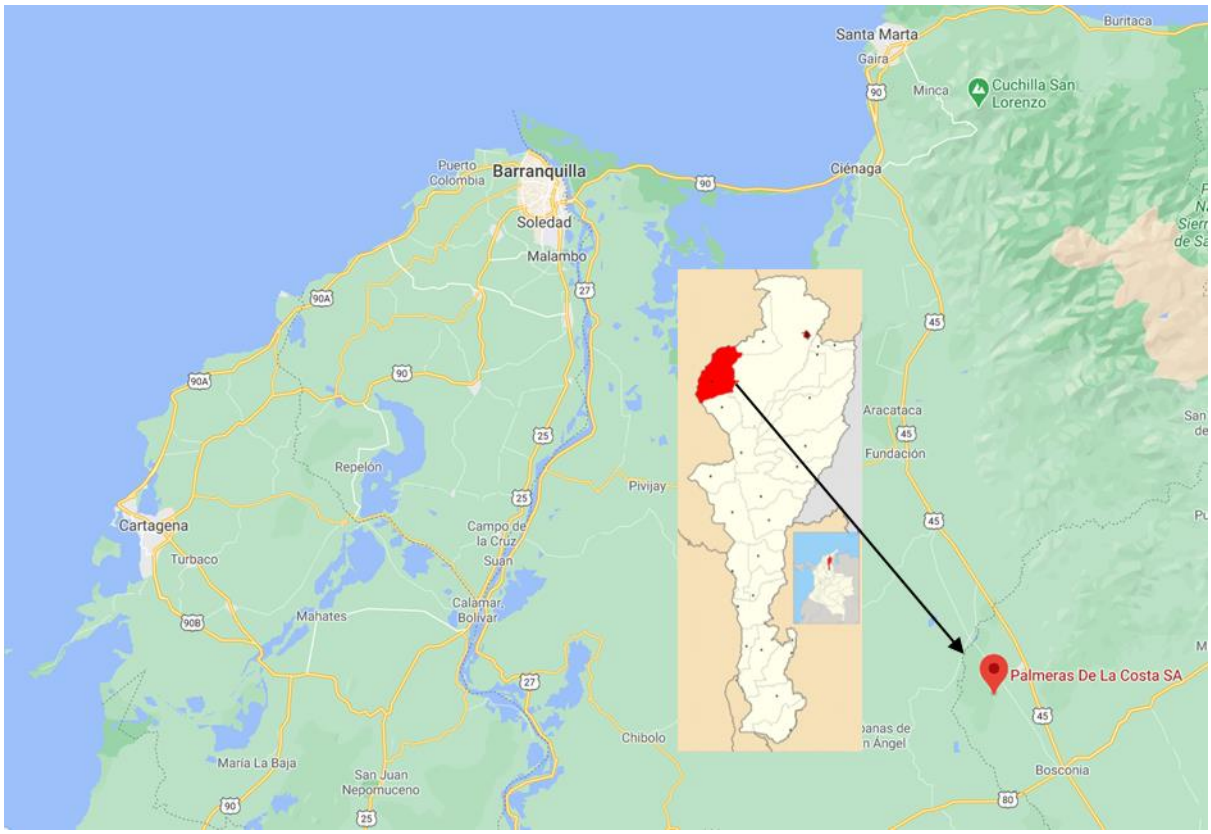

Figure 1-1. The pilot plantation is located in the Copey region in the Northern Oil Palm Zone of Colombia.

1.2 Additionality Measures

The additionality measure tested was **improved irrigation**. This measure explored the installation of a micro aspersion irrigation system in 3,000ha of Palmeras de La Costa plantation (see Figure 1-2). This is an area where rainfall and water are relatively low.

The irrigation system was installed in 2018, although it started operating at full capacity in late 2020. Therefore, the current data does not yet show the full effect of the measure. Now

that the additionality measure has been implemented, the annual yield is expected to increase from 15 mt fresh fruit bunches per hectare (FFB/ha) to around 19 mt FFB/ha.

The audit was therefore able to test both the setting of the baseline ("baseline audit") and, partially, the calculation of additional biomass ("additionality audit").

Figure 1-2. Ground water pump feeding the micro aspersion system

1.3 Audit

The pilot audit was performed between the **24 and 26 of February 2021** by Ignacio Falcone, an ISCC-trained auditor working locally for Control Union. The audit was performed **on-site**, between the local auditor and Palmeras de la Costa's sustainability team. Note that other members of the project consortium joined the audit remotely due to COVID-19 restrictions.

1.4 Key issues tested

The key issues that the pilot aimed to test were:

- **Data availability.** To test whether sufficient historical yield data is available and the degree of granularity (e.g. block, whole plantation)
- **Additionality test.** To test whether the additionality measure can be demonstrated as additional through a financial attractiveness assessment or a non-financial barrier analysis.
- **Methodology to determine dynamic yield baseline and additional biomass for perennial crops.** To test how to construct a dynamic yield baseline for palm which does not have a linear growth curve.
- **Sustainability of additionality measure.** To test that the additionality measure is conducted in a "sustainable manner", as required by the Delegated Regulation 2019/807.

1.5 Relevant documents

During the audit, a number of documents were collected including:

- Management plan (pilot company)
- Audit checklist (Control Union)
- Summary Audit Report (Control Union)
- Dynamic yield baseline and additional biomass calculation (pilot company)
- Financial attractiveness assessment (pilot company)
- Maps and kml files (pilot company)
- Planting scheduling of blocks and kml files (pilot company)
- ISCC certificate (supplied by pilot company)
- RSPO certificate (supplied by pilot company)

2. Findings

2.1 Availability of data and evidence

Palmeras de la Costa is a medium-sized local enterprise that has invested in information systems to track their own operations and have performed other sustainability audits in the past. Therefore yield data was readily available and at a granular level. Yield data could be obtained as far back as 2016 at a plantation level.

Data for the financial attractiveness assessment was also readily available, including labour costs, material costs, and other costs. Overall, availability of verifiable data was not a challenge in the pilot.

2.2 Financial attractiveness assessment

The net present value (NPV) of the additionality measure was relatively easy to calculate as CAPEX and OPEX data were readily available and could be verified.

Palmeras de la Costa used the price of the products (crude palm oil (CPO), palm kernel oil (PKO) and cake) instead of the price of fresh fruit bunches (FFB), as they are an integrated plantation-mill business, so they use the FFB they produce in their own mill. Revenues could be verified for year 0 (Y0) by providing the tonnes of CPO, PKO and cake produced from the internal information system and the published palm oil prices for the local area and data about the additional yields. The calculation for future years was based on Y0 prices and the forecast of additional biomass based on analysis they conducted prior to implementation of the irrigation system.

The CAPEX of the additionality measure was simple to prove, as this was a one-time cost and the plantation had a bill of work provided by the micro aspersion system installer.

The OPEX actually falls when the new irrigation system is implemented because the new system is less labour intensive compared to the old irrigation system.

The financial calculation showed a positive NPV when all the products and co-products of the milling process were included, therefore not passing the financial attractiveness assessment. This result was further impacted due to the palm oil prices seen in 2020, which are at their highest level of the last 5 years. Note that if the price of the Palm Kernel Oil (PKO) is excluded from the calculation, the NPV calculation would give a negative result. The calculation was based on a 16% discount rate, calculated over five years, matching the length of their loan. Lowering the discount rate to 5.5%, the rate recommended for developing countries in the draft low ILUC guidance, improves the profitability of the project even further.

Palmeras de la Costa commented that the financial additionality test would not be possible to pass without some long-term certainty of a price premium that would cover the cost of the additionality measure and the certification process. Otherwise the level of risk for the plantation would be too high to invest in the measure if the NPV result is negative. As long as the price with or without certification remains the same, a plantation would only implement additionality measures that are financially attractive (positive NPV). This issue is further exacerbated by the relatively small amounts of additional biomass that can be obtained through additionality measures.

2.3 Non-financial barrier analysis

Palmeras de la Costa did not attempt to provide a non-financial barrier analysis for their project but suggested that other plantations might face financial constraints like lack of capital or access to debt to invest in an irrigation system. In this regard, they do not expect that low ILUC-risk certification would change the situation as any potential additional revenue from accessing the European biofuels market is difficult to estimate.

2.4 Determining the dynamic yield baseline

The dynamic yield baseline (DYB) was calculated for oil palm cultivation at Palmeras de la Costa Farm. The volumes used to set the baseline were the average FFB yields from the last 5 complete years, from 2016 to 2020. The data was obtained from the internal system (reception weight at the oil mill) and the cultivated area. Data was not available on a plot-by-plot basis, thus the analysis was performed at a whole plantation level.

Palmeras de la Costa calculated their DYB using both option 1A (the provided standard yield curve) and option 1B (using a yield curve based on their own plantation). Their own estimate was based on the observed historical yields captured in their database. Palmeras de la Costa plantation consist of trees planted between 1997 and 2020, with 40% consisting of trees over 25 years old, 20% between 10 and 15 years old and 40% below 10 years old.

The average growth curve (option 1A) and the one provided by the plantation (option 1B) only differ slightly in terms of growth rates (see Figure 2-1). The main difference was that the standard yield curve assumes a faster increase in yields in year 4 and 5 of the life of a tree. The slight difference in growth rates leads to a slight difference in the resulting DYB (see Figure 2-2). For example, in 2022 the difference between the yields of the two curves is 5% (15.12 vs 15.81 FBB tonne/ha). This ultimately leads to slightly different volumes of additional biomass (low ILUC biomass) that could be claimed if the plantation was certified.

Palmeras had data on the different ages of their trees. This shows a mix of old (over 20 years) and young trees (under 7 years). This why the DYB goes down for the first five years (as the old trees are replaced with younger ones) and then up (as the young trees reach peak production (more than 7 years and less than 20 years).

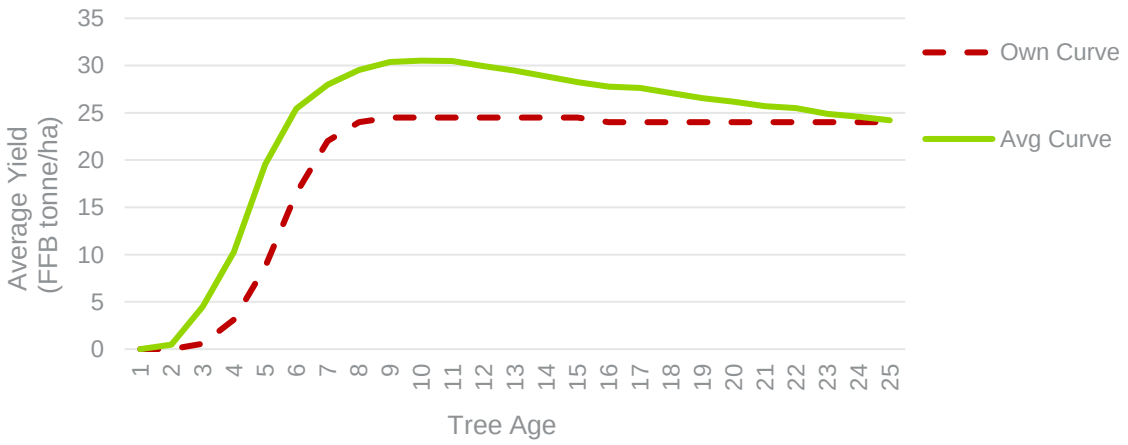

Figure 2-1. Comparison of standard growth curve (option 1A, green) and growth curve provided by the economic operator (option 1B, dashed red)

Figure 2-2. Resulting dynamic yield baseline from standard growth curve (green) used for option 1A and growth curve provided by economic operator used for option 1B (dashed red)

One aspect of the DYB methodology that was brought to attention through this pilot and will need to be addressed is the historical yield data used to determine the starting yield of the DYB. In this pilot, an average of the 5-year historical yield was used rather than 3-year historical yield because the economic operator found that the 3-year historical yield was impacted by weather events.

2.5 Calculation of additional biomass

The additionality measure was fully implemented in 2020. Palmeras de la Costa provided the actual yield data year for 2020 (Y0), the year the irrigation system became fully operational; and their own yield *forecasts* for the upcoming four years, based on analysis they performed before the additionality measure was implemented.

While the forecasted yields are significant, actual FFB yields are expected to be erratic compared to the dynamic yield baseline, thus the low ILUC-risk biomass that can be claimed across a 10-year period of certification is also erratic as the plantation, despite the irrigation system, partially relies on rain water.

The plantation recommended that this should be taken into account in the economic calculations for financial additionality. Figure 2-3 shows that the additionality measure implemented is expected to provide a significant increase in yields compared to the dynamic yield baseline, reaching a 78% increase on the fifth year from the year in which the additionality measure was implemented, this figure uses the forecasted yield data from option 1A.

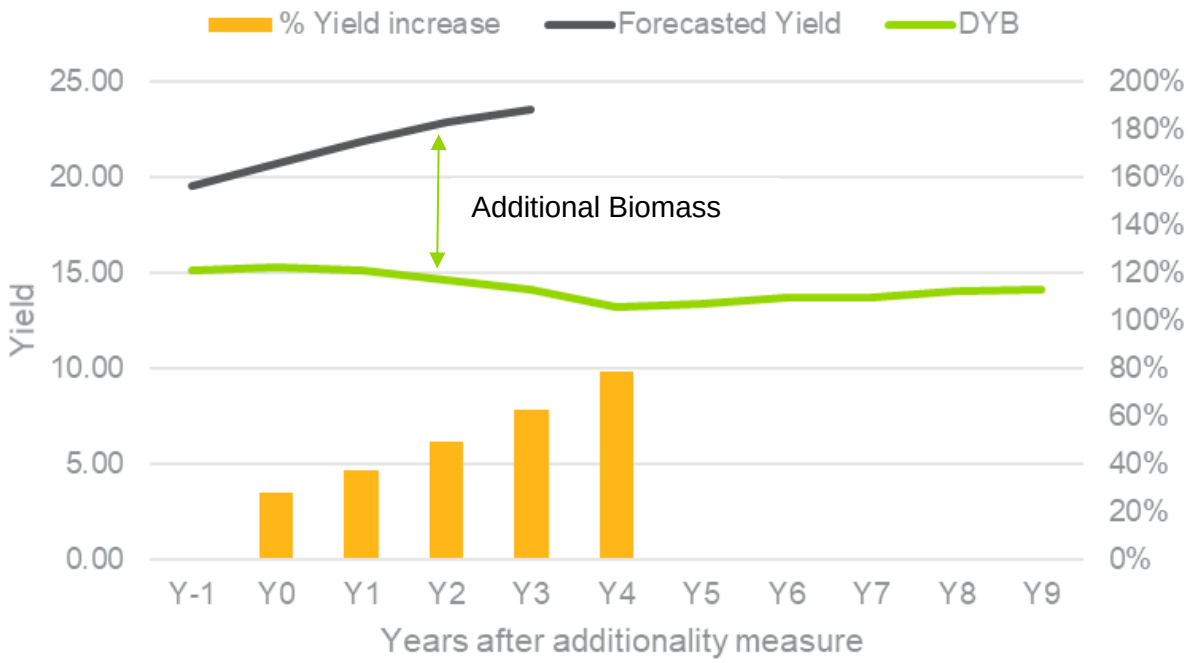

Figure 2-3. Forecasted yield of the plot with the additionality measure compared to the dynamic yield baseline. The green arrows indicate the additional yield that could be claimed as low ILUC-risk biomass. The yellow bars represent the % increase compared to the DYB.

2.6 Sustainability of additionality measure

Local water boards have to approve the use of water – either ground water or extracted from local rivers. In the case of this pilot, Palmeras de la Costa shifted from using water from a local river for gravity irrigation to extracting ground water to feed the new irrigation system. The local water board authorized this change. The use of micro aspersion irrigation can be considered more sustainable, as it reduced water consumption by 70% compared to the previous practice, which consisted of soaking water into the ground in conduction channels.

The current RED-related certifications that Palmeras de la Costa hold (RSPO, ISCC EU) only check whether the plantation complies with the law.

3. Conclusions and recommendations for low ILUC-risk methodology

Good, verifiable data. The pilot plantation had good, verifiable data available, relating to historical FFB yields and tree ages that were used to determine the yield baseline. Yield data was available from the weigh bridge at the mill, so for the plantation as a whole (not for individual sub-plots), although this worked well for this plantation as the additionality measure impacted the whole plantation. The pilot plantation also had CAPEX and OPEX data available for the additionality measure and forecasted yields, which could be used for the NPV calculation for the financial attractiveness test. For the pilot, we also used the forecasted yields to estimate the volume of additional (low ILUC-risk) biomass that could be claimed, if the plantation was certified (although in practice, the actual volume would be calculated based on observed yields after the additionality measure is implemented).

Low volumes of certifiable biomass. The plantation felt that the volume of additional biomass that could be claimed as low ILUC-risk (based on forecasted yields) is relatively small compared to the total production and somewhat unpredictable, and therefore may not be worth the administrative burden to get low ILUC-risk certified.

Financial additionality is challenging to pass. The financial attractiveness calculation for this additionality measure showed a positive NPV when all the products and co-products of the milling process were included, therefore not passing the financial attractiveness test. The plantation considered that the financial additionality test would not be possible to pass without some long-term certainty of a price premium that would cover the cost of the additionality measure and the certification process. Otherwise the level of risk for the plantation would be too high to invest in the measure if the NPV result is negative. As long as the price with or without certification remains the same, a plantation would only implement additionality measures that are financially attractive (positive NPV). The discount rate used by the plantation was also considerably higher than proposed in the guidance.

Differences in dynamic yield baseline calculation options. Although the standard growth curves was tested (option 1A), the plantation considered that this did not reflect the local conditions well and in general, what plantations expect in Colombia. Their main concern was the speed at which the yield grows in the early years of the plantation. Their own data suggested a lower year on year yield growth at that stage.

Palmeras de la Costa also tested option 1B, using their own data to produce a growth curve. They recommended that the methodology should include a validation process for growth curves that can be used during the audit or include growth curves that reflect local conditions as part of option 1A. The use of these different options led to slightly different volumes of low ILUC biomass that could be claimed. Although it creates more flexibility, option 1B is also harder to verify because an auditor would need to understand where and how the growth curve provided by the economic operator was constructed, and whether it provides a proper comparison to the plantation being assessed. For consistency, and to avoid economic operators simply choosing the option that results in higher low ILUC biomass, a single option should be developed. This single option however would need to be very robust and still be applicable to all plantations globally.

Dynamic yield baseline and weather effects. The plantation suggested that the dynamic yield baseline methodology should reconsider how to incorporate weather events that may influence yields to a higher degree than yield increase measures. To determine the yield increase that is solely due to an additionality measure is challenging considering the multitude of factors, including weather, that can affect a crop yield from year to year.

4. Next phase of the pilot

Measuring the actual effect of the additionality measure could be improved by gathering yield data from 2021 in a second audit, as now the additionality measure is working at full capacity and this should be reflected in the observed yields this year.

In addition, more examples could be gathered of additionality measures that oil palm plantations could implement for low ILUC-risk certification. For example, Palmeras de la Costa acquired a piece of land that was previously used for low level grazing and Palmeras is working to improve the soil conditions, reduce the salinity level and add organic matter. An option for Phase 2 could be to explore whether this piece of land would meet the definitions of abandoned or severely degraded land.

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