Crowdfunded project on Life cycle assessment of RSPO certified palm oil

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Certified palm oil matters – but how much?

19% of global palm oil production is certified by RSPO. But what are the quantifiable benefits of sustainable palm oil? … throughout the product life cycle?

- How much are GHG emissions reduced?
- How much more nature is conserved - and what is the biodiversity benefit?
- What are the reductions in other impacts, e.g. particulates etc.?

Ongoing crowdfunded project answers this!

Scope

The study includes a detailed comparative LCA of RSPO certified palm oil and non-certified palm oil in Indonesia and Malaysia with 2016 as base year. The functional unit is defined as 1 kg refined palm oil (and additionally 1 kg crude palm oil). The LCA addresses key issues, such as methane from POME treatment, CO_2 from peat drainage, N_2O from fertilizer application, and it quantifies benefits from nature conservation.

Methods

- **Guidelines:** The LCA is carried out following the ISO 14044 allocation hierarchy (consequential LCA) and the PalmGHG method (attributional LCA).
- **Estates:** Land use changes included (Schmidt et al. 2015). Detailed nitrogen balances. Emissions following tier 2 of IPCC's Guidelines for National Inventories. Peat emission factors based on extensive data.
- **Palm oil mills:** POME emissions based on detailed COD balance.
- Data are collected for the total industry and for RSPO certified producers. Data for non-certified producers are calculated as the difference between the above.

Data collection

Non-certified: Detailed inventory for palm oil production in Indonesia and Malaysia in 2016, based on update of Schmidt (2015).

RSPO certified: Data for 634 certified estates and 165 certified palm oil mills. This corresponds to 66% and 51% of all certified estates and oil mills. The data are collected from RSPO assessment reports.

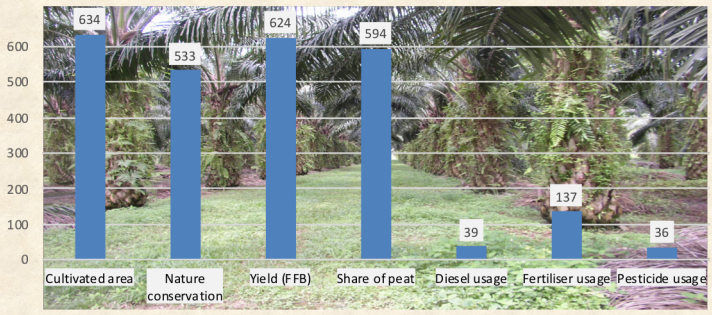
Results from data collection

Table 1: Key performance indicators for certified and non-certified palm oil.

Key data	Unit	RSPO certified	Non-certified
Estates			
FFB production	million ton	41	206
FFB yield (mature)	ton/ha*year	21.1	18.6
Land bank, HCV conservation	%	3.1%	0%
N-fertiliser	kg N/ha*year	116	88
P-fertiliser	kg P_2O_5/ha*year	64	22
K-fertiliser	kg K_2O/ha*year	242	117
Palm oil mills			
Crude palm oil production	million ton		
Oil extraction rate (OER)	%	21.9%	20.2%
Kernel extraction rate (KER)	%	5.6%	5.4%
POME treatment with biogas capture	%	18%	3.6%

Data coverage

Estate data frequency



Palm oil mill data frequency

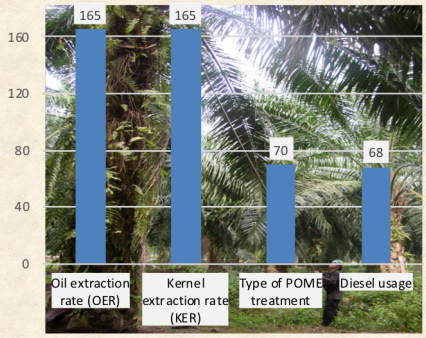


Figure 1: Data are collected for 634 estates (above) and 165 oil mills (left). The charts show how many of these estates/oil mills selected key data are identified for.

Discussion

Limitations

Current main limitations relate to data availability, coverage and quality in RSPO assessment reports. Data on oil palm on peat are decisive for the results, while available data are not sufficient for determining the share of oil palm on peat. Future efforts will focus on better data availability and quality.

Expected LCA results

Certified palm oil is expected to perform better than non-certified because of:

- higher FFB Yields
- higher OER and KER
- higher share of POME treated with biogas capture
- certified producers set aside land with High Conservation Value (HCV)

Join the crowdfunded project!

Get access to data and have influence on the project. Anyone can subscribe. The price of subscription is a onetime amount at 3,000 €. The funds from new subscriptions are used to expand the scope of the project. Read more: https://lca-net.com/clubs/palm-oil/

References

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Current members

- Beiersdorf
- ERASM(1)
- Novozymes
- Unilever
- DuPont
- Ferrero
- RSPO(2)

(1) ERASM is a research partnership of the Detergents and Surfactants Industries (A.I.S.E. and CESIO)
(2) RSPO is actively involved to get access to accurate and up to date data, but not a sponsoring member.

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- for high quality decision support