

TFA EU DEEP DIVES

GEOLOCATION & TRACEABILITY SESSION – PALM OIL

1. PALM OIL PRODUCTION AND SUPPLY CHAIN

Global

Global palm oil production is dominated by Indonesia (61%) and Malaysia (23%) according to FAO data for 2020, followed by Thailand (4%), Nigeria (2%) and Colombia (2%).

Looking at the value of palm oil exports in 2021 using UN Comtrade data for the HS codes covered by the proposed regulation again exports are dominated by Indonesia (63%) and Malaysia (33%) (excluding countries that do not produce palm oil).

Note that 90% of value of exports is HS code 1511. 1511 is palm oil and its fractions, whether or not it has been refined, but is not chemically modified. Other products are coded as follows: 1207 10 which is palm nuts and kernels; 1513 21 which is crude palm kernel and babassu oil and fractions thereof; 1513 29 which is palm kernel and babassu oil and their fractions, whether or not refined, but not chemically modified (excluding Crude oil); 2306 60 which is oilcake and other solid residues of palm nuts or kernels, whether or not ground or in the form of pellets, resulting from the extraction of palm nuts oils or kernels oils. See also our simplified graphic below for an overview of palm products.

EU

Focusing in on the EU and again looking at UN Comtrade data it shows that in 2021 the majority of imports are from Indonesia (43%) and Malaysia (28%), followed by Guatemala (8%), Papua New Guineaⁱ (7%), Honduras (5%), and Colombia (4%). Imports are dominated by HS code 1511 (83%).

Looking at imports (rather than consumption) in 2021 by value the EU-27 (21.8%) was second largest market after China (21.9%), ahead of China (16%), Pakistan (8%) and the USA (5%). Although this excludes domestic markets which are significant in Indonesia and Malaysia.

Certified supply

More than half of EU palm oil imports in 2020 was for use as biofuels, which is therefore required to meet the EU Renewable Energy Directive II. Of the remainder, i.e. the palm oil used for food, cosmetics, oleochemicals etc, 90% were certified.

Global coverage by certification standards continues to increase – ISPO certification covers 42% of Indonesia's 13.3 million ha palm oil production area, MSPO 98% of Malaysia's 5.2 million ha palm oil production area (although this is disputed), and RSPO 18% of the 23.5 million ha global palm oil production areaⁱⁱ.

FFB PRODUCERS	DETAILS
MILL-OWNED AND MANAGED CONCESSIONS	<ul style="list-style-type: none"> » Total landholdings above the thresholds defined for smallholders. » Range from a few hundred to several thousands of hectares, in some cases cumulative of scattered smaller plots, to large contiguous blocks of land. » Associated with a mill either through ownership, joint venture or via parent companies
INDEPENDENT CONCESSIONS	<ul style="list-style-type: none"> » Total landholdings that are above the thresholds defined for smallholders. » Not associated with any mill and operate within their own business. » Range in size may be similar to that of mill-owned concessions.
SCHEME SMALLHOLDERS	<ul style="list-style-type: none"> » Structurally bound by contract, by a credit agreement or by planning to a particular mill. » Typically, do not have freedom to choose which crop they develop. » Often organised, supervised or directly managed by the managers of the mill, estate or scheme to which they are structurally linked.ⁱⁱⁱ » Typically receive technical, processing and marketing support, as well as financial assistance from their umbrella organisations.^{iv}
INDEPENDENT SMALLHOLDERS	<ul style="list-style-type: none"> » Typically those with cumulative landholdings of less than a certain hectareage typically 50ha or by national legislation. » Make up to 40% of the oil palm supply base^v and there are more than 3 million making their living from palm oil globally. » Characterised by their freedom to choose how to use their lands, which crops to plant and how to manage them. » Self-organised, self-managed and self-financed; and not contractually bound to any particular mill or any particular association.

As can be seen from the table above, smallholders represent an important proportion of palm oil production in both Indonesia and Malaysia. In Malaysia in 2019, independent smallholders made up 16.7% of total planted palm oil area and comprised 260,000 farmers with a further 16.6% of area under organised smallholders that have support from government agencies including FELDA, FELCRA or RISDA^{vi}.

In Indonesia smallholders are estimated to cover 36% (5.9 million ha) of the total planted palm oil area that is estimated at 16.24 million ha (this is different to Indonesian government data that estimates at 40% - 6 million ha) of a total of 14.7 million ha)^{vii}. Indonesian smallholders include independent smallholders and plasma smallholder systems where companies managing plantations allocate a proportion of the land to smallholder farmers. A recent mapping by Auriga identified 2.5 million hectares of independent smallholders (excluding plasma and large smallholders).

Other countries with important smallholder production of palm are Thailand, Ecuador, Colombia, Mexico, Honduras, practically all producer countries in West and Central Africa, and there often with plot sizes of 1-2ha only.

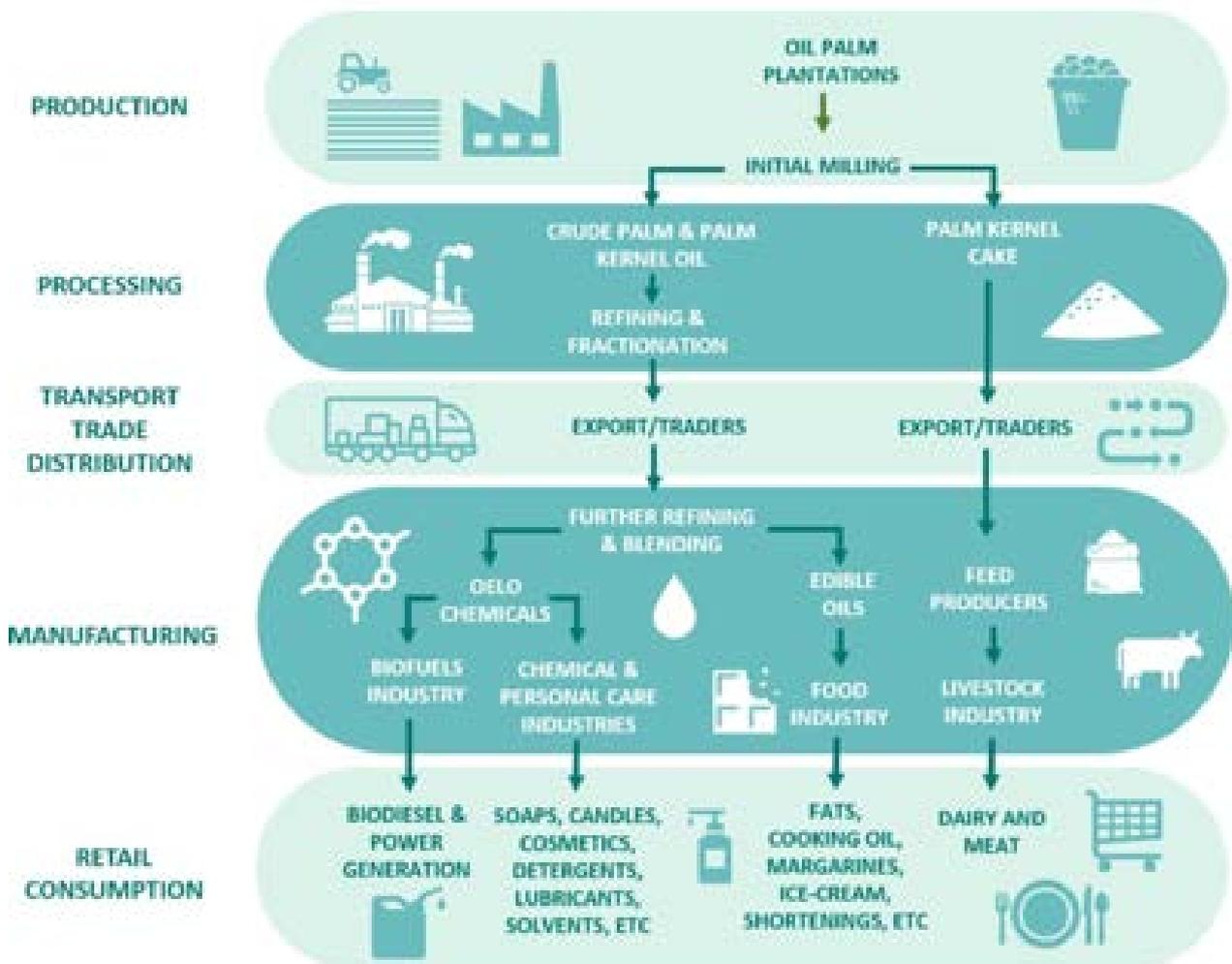
This is important to highlight here as tracing source product is of course more complicated the more potential producers there are in the supply shed.

Palm oil supply chain and traceability

As described above the palm oil supply chain has a diverse production base with smallholders providing a significant proportion of production. Additionally, in many countries intermediaries are the ones who collect the FFB from smallholders, i.e. the smallholders have no direct connection to mills. These intermediaries are considered aggregators (and there may be more than only one level of aggregators): they compete for business and smallholders change who they sell to depending on the prices offered. Often there is a differentiation between direct suppliers (i.e. those producers who sell directly to a mill) and indirect suppliers (i.e. those producers who sell to an aggregator).^{viii}

There are also hundreds of corporate groups that own mills and plantations. In contrast, refining and trade is controlled by a much smaller number of groups, forming a bottleneck in the supply chain.^{ix}

Palm Oil Supply Chain



Adaption from GCP's illustration: Palm Oil Supply Chain

ACCOUNTABILITY FRAMEWORK (AFI)X	Traceability is the ability to follow a product or its components through stages of the supply chain (e.g., production, processing, manufacturing, distribution, etc.). Traceability allows companies to link product volumes to specific attributes of suppliers and/or production sites.
TRACEABILITY WORKING GROUP (TWG)XI	Knowing all palm sources within one’s supply chain all the way to plantation level (including smallholders), and traceability to mill as an intermediary step in achieving full traceability.
TRACEABILITY TO MILL (TTM)	Traceability of all palm oil sources back to the mills. This is seen as the first step towards traceability back to the FFB supplier (TTP). Information requirements include
TRACEABILITY TO PLANTATION (TTP)	This is traceability of all palm sources back to the FFB suppliers that includes both plantations and smallholders (although some existing corporate definitions of TTP may well exclude smallholders).
TRACEABILITY TO PRODUCTION REGION	This is traceability of all palm sources back to a region (e.g. a village, township or other administrative unit) where many smallholder producers are based.

Status of traceability in Europe

A recent report by IDH and the European Palm Oil Alliance on the state of play for European palm oil suggests that major European palm oil refiners could trace back 100% of their palm oil for Europe to mills. For five major refiners that release data for Europe and global supply chains on TTM and TTP, it shows that TTP was lower at 55-90% for their European supply chains (noting the caveat on the definition of TTP)*.

In updating its map of supply chain for Indonesian palm oil exports Trase found that 43 refineries provided traceability reports to mills (identifying 958 mills sourced from) and that in 2020 nearly 70% of Indonesian palm oil exports could be linked to a refinery with a traceability report.

2. TOOLS AVAILABLE FOR GEOLOCATION AND TRACEABILITY

Certification RSPO

In 2021 RSPO produced 14.9 million tonnes of certified sustainable palm oil (CSPO), this translated in terms of sales to

- » 2.92 million tonnes were Identity Preserved (IP) segregation
- » 1.58 million tonnes were segregated but non-IP
- » 2.66 million tonnes were mass balance
- » 2.38 million tonnes were book & claim
- » 3.62 million tonnes were sold under other schemes

90% of Europe’s palm oil imports in 2020 (excluding biofuels) were certified as sustainable palm

oil but this includes purchases under book and claim and mass balance models that may not meet traceability requirements under EU regulations.

In the RSPO system, it is the mill that holds the production level certificate (plus there are groups of independent smallholders that may be certified). Therefore note that **IP RSPO certified** is uniquely identifiable to a single RSPO certified IP mill. Segregated RSPO certified palm oil will come from multiple certified RSPO mills, i.e. **segregated RSPO certified** palm oil is traceable back to multiple certified RSPO mills.

Mass balance allows for mixing of certified and uncertified palm oil, so at present it is not possible to claim that all of the oil complies with RSPO certification requirements (but see also box on P&C requirement 2.3 below). And **book & claim** is online certificate trading, i.e. the end user purchases credits that correspond to the amount of physical palm oil used in their product and no claim about traceability of the physical product is possible.

WHAT CAN WE SAY ABOUT UNCERTIFIED VOLUMES IN RSPO MB AT MILL LEVEL?

To ensure that third party FFB supplies operate legally the 2018 RSPO Principles & Criteria included the following criterion for palm oil mills to comply with:

Criteria 2.3 - All FFB supplies from outside the unit of certification are from legal sources.

2.3.1 (C) For all directly sourced FFB, the mill requires:

- » Information on geo-location of FFB origins
- » Proof of the ownership status or the right/claim to the land by the grower/smallholder
- » Where applicable, valid planting/operating/trading license, or is part of a cooperative which allows the buying and selling of FFB.

2.3.2 For all indirectly sourced FFB, the unit of certification obtains from the collection centres, agents or other intermediaries, the evidence as listed in Indicator 2.3.1.

It should also be noted that RSPO recently commissioned a study to evaluate the Robustness of its MB model and will be looking at options to strengthen data and information about the non-certified portion in MB palm oil.

MSPO

The Malaysian Sustainable Palm Oil (MSPO) certification scheme is the national scheme and was made mandatory in 2017 by the Malaysian government by the end of 2019, this was later extended to 2022 for smallholders.

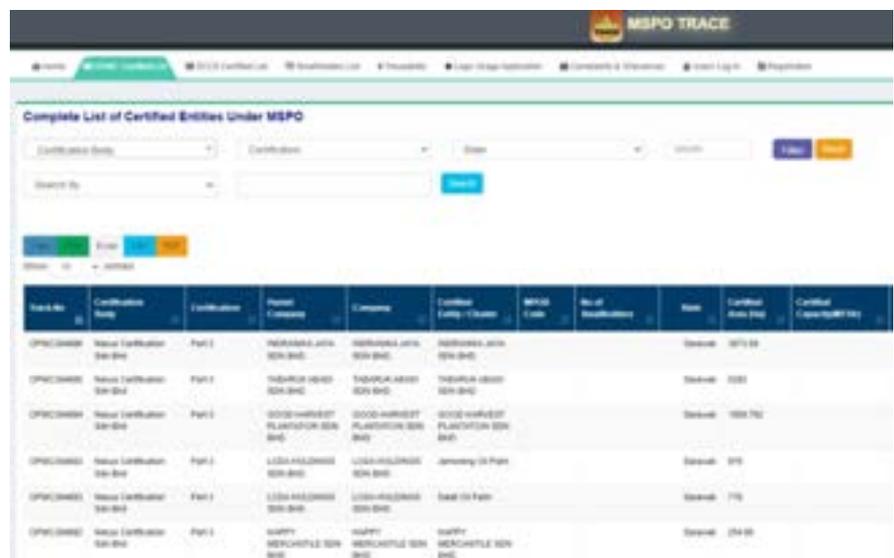
As of September 2020 92.9% of the oil palm areas in Malaysia have been MSPO certified, including (a) 24.9% of independent oil palm smallholders, (b) 98.5% of organised oil palm smallholders, (c) 99.8 % of oil palm plantations, and (d) 92.9 % of palm oil mills^{xi}.

MSPO includes traceability to the FFB supplier and plantation. MSPO includes both segregation and mass balance models. MSPO Trace has been developed as a system to facilitate traceability. The Malaysia Palm Oil Certification Council (MPOC) has stated that it aims to achieve 100% traceability to plantation by 2025^{xii}.

MSPO TRACE^{xv}

As part of MSPO certification^{xvi} mandated in Malaysia, all certified entities are required to record their traceability information in the online platform MSPO Trace.

If a MSPO-certified product is purchased, the MSPO code can be used to provide its specific traceability to plantation. The information on all certified entities is publicly available. Further information specific to a company's supply chains are available through portal access that is granted along with MSPO certification status, especially for downstream buyers.



Entity No.	Certification Type	Certification Part	Plant Company	Company	Certified Entity / Owner	MPOC Code	No. of Smallholders	Area	Certified Area (ha)	Certified Capacity (t/yr)
OPN000001	MSPO Certification (SM-BM)	Part 1	INDONESIA JAYA SDN.BHD.	INDONESIA JAYA SDN.BHD.	INDONESIA JAYA SDN.BHD.			Sumrah	1870.88	
OPN000002	MSPO Certification (SM-BM)	Part 1	TAPOLAH ABEST SDN.BHD.	TAPOLAH ABEST SDN.BHD.	TAPOLAH ABEST SDN.BHD.			Sumrah	322	
OPN000003	MSPO Certification (SM-BM)	Part 1	GOOD HARVEST PLANTATION SDN.BHD.	GOOD HARVEST PLANTATION SDN.BHD.	GOOD HARVEST PLANTATION SDN.BHD.			Sumrah	1000.752	
OPN000004	MSPO Certification (SM-BM)	Part 1	LEGA HOLDINGS SDN.BHD.	LEGA HOLDINGS SDN.BHD.	Jember 13 Palm			Sumrah	875	
OPN000005	MSPO Certification (SM-BM)	Part 1	LEGA HOLDINGS SDN.BHD.	LEGA HOLDINGS SDN.BHD.	Sum 13 Palm			Sumrah	775	
OPN000006	MSPO Certification (SM-BM)	Part 1	HAPPY MERCHANTS SDN.BHD.	HAPPY MERCHANTS SDN.BHD.	HAPPY MERCHANTS SDN.BHD.			Sumrah	274.85	

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Figure 8: List of MSPO-certified entities on the MSPO Trace platform. (Image source: MSPO Trace; retrieved in January ^{xvi})

ISPO

The Indonesian Sustainable Palm Oil (ISPO) standard was introduced in 2011 by the Indonesian government - it is mandatory for all plantations including smallholders (although smallholders have until 2025 to comply). Despite being revised in 2020 ISPO does not include any traceability requirements.

Refinery traceability reports and UML

It has become the industry norm for refineries to publish traceability reports that list all of the mills from which they have sourced palm oil in the year. This provides traceability to the mill if the refinery is known, although without volumes this often provides a significant potential supply base.

In order to support harmonisation of such disclosures, the Universal Mills List, a partnership across multiple organisations, includes 2000 palm oil mills globally with a unique ID (UML_ID) for companies to use in their reporting to ensure consistency in the identification of mills that is not always possible using names.

Data includes latitude and longitude, GPS coordinates and other location information e.g. province, district, as well as information on the corporate ownership and related RSPO or ISO standards.

UNIVERSAL MILL LIST (UML)^{xvii}

The Universal Mill List (UML) is a database of palm oil mill locations across the world with associated group, company, and mill names, RSPO certification status and unique "universal IDs".

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The list currently contains the details for almost 2000 mills worldwide and is updated regularly. The list is available for download and also can be viewed spatially from the Global Forest Watch Pro online platform.



Figure 5: Mills mapped out on the GFW Pro platform as per the UML (Image source: Global Forest Watch Pro; retrieved in January 2022^{xviii})

Plantations & smallholder mapping

Concessions data is also not widely available publicly due to concerns on the legality of published such concessions and issues around data privacy, particularly for smallholders. Although MPOC has made a statement in the context of allowing RSPO to publish RSPO concession data that they are working towards publishing concession data^{xix}.

The following public databases on oil palm concessions exist:

- » [RSPO GeoPortal](#):

RSPO GEOPORTAL^{xix}

RSPO has mapped out all certified concessions and mills, as well as those of RSPO members who are not yet certified.

Proforest Palm Oil Toolkit Briefing Note O2B: <https://palmoiltoolkit.net/element-2b-understand-the-supply-chain>

The maps are viewable and provide information on the parent company name, location and certification status. As RSPO certified production accounts for about 20% of total palm oil traded, the locations of certified and member companies provide a good indication of production regions.^{xx}

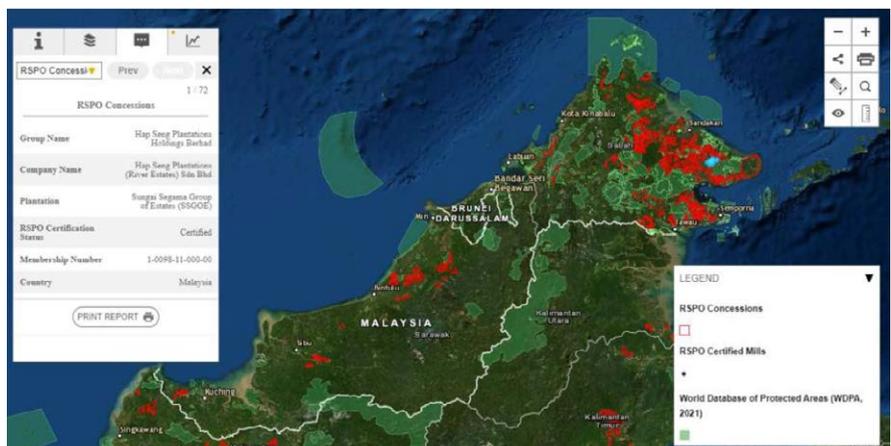


Figure 7: RSPO members' concessions mapped on the RSPO GeoPortal (Image source: RSPO; retrieved in January 2022)

» Nusantara Atlas

NUSANTARA ATLAS^{xxi}

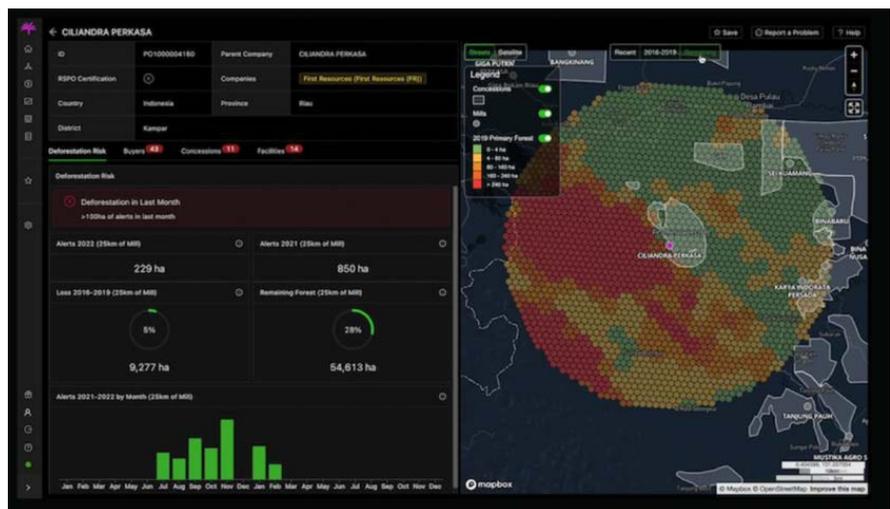
shows oil palm concessions across the islands of Sumatra, Borneo, Kalimantan and New Guinea. Information on each concession is provided.



» Palmoil.io

PALMOIL.IO^{xxii}

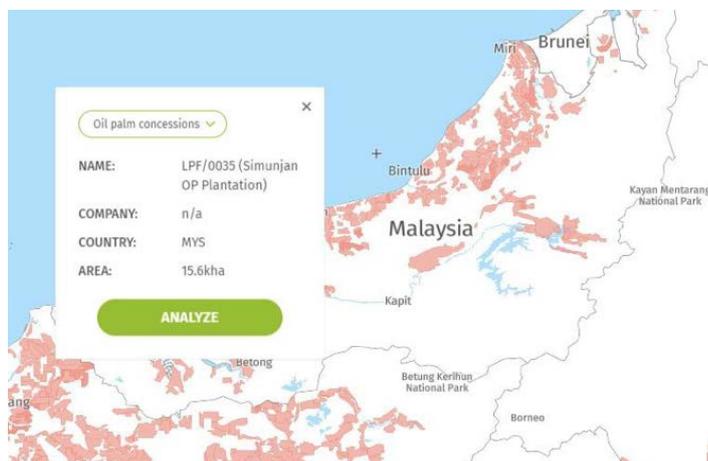
enables monitoring of deforestation in Indonesian palm oil concessions. It is not freely available with a license required.



» Global Forest Watch

GFW CONCESSION MAPPING^{xxiii}

shows oil palm concessions in certain production regions. Information on each concession is provided.



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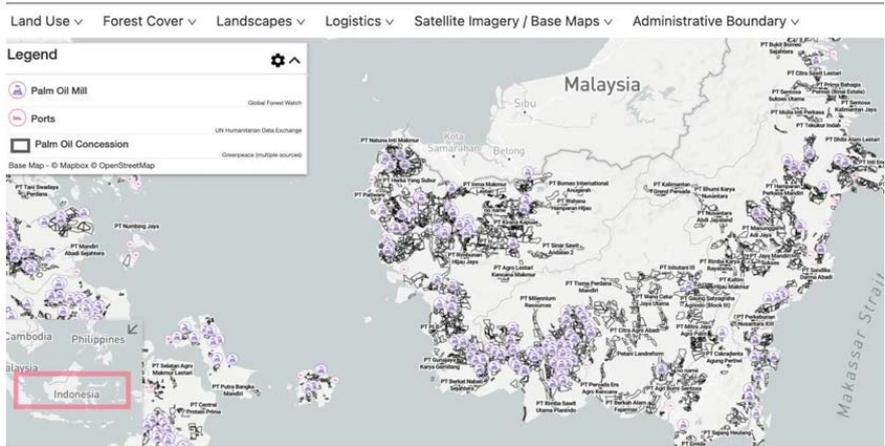
Figure 6: Concessions mapped out on the GFW platform (Image source: Global Forest Watch; retrieved in January 2022)^{xxiv}

» [Kepo Hutan Greenpeace \(includes smallholders\)](#)

KEPO HUTAN^{xxv}

shows oil palm concessions in Indonesia sourced by Greenpeace. Information on each concession is provided

Explore the map



Commercial traceability solutions

To support the implementation of their ZDC/NDPE commitments a number of companies and commercial providers have developed traceability tools. These include

- » **Sime Darby:** [Crosscheck](#) aims to make full traceability possible in the palm oil industry. It includes plantations and mills that supply Sime Darby refineries, who own these mills, and the deforestation risks around mills, it also provides data on TTM and TTP by region Who owns each mill and the group company relationships throughout our supply chain.
- » **Unilever** is running [a pilot in Indonesia](#) with Orbital Insight, a California-based tech company that specialises in geospatial analytics, to use cell phone geolocation data to track the palm oil moving between individual farms and plantations that supply mills in their supply chain.
- » [GFW Pro](#)

GFW CONCESSION MAPPING^{xxvi}

shows oil palm concessions in certain production regions. Information on each concession is provided.

Concession data is only available for certain concessions in Indonesia, Sarawak in Malaysia and Liberia, Republic of Congo and Cameroon.

Proforest Palm Oil Toolkit Briefing Note 02B: <https://palmoiltoolkit.net/element-2b-understand-the-supply-chain>

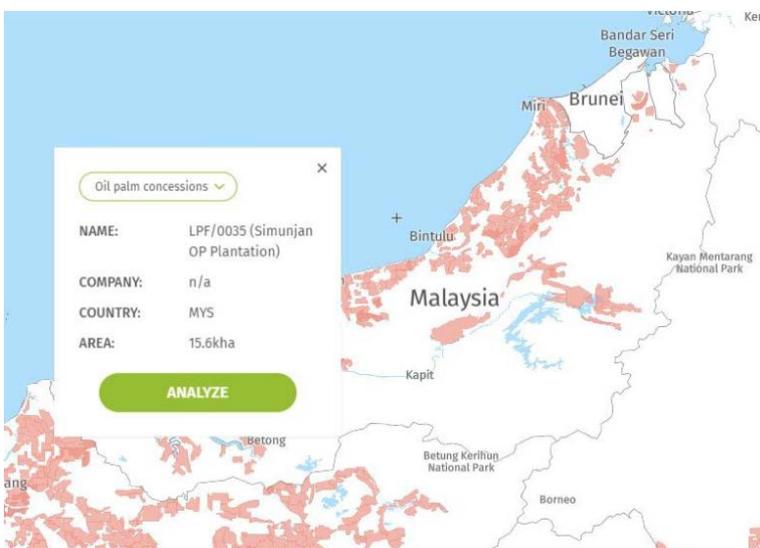


Figure 6: Concessions mapped out on the GFW platform (Image source: Global Forest Watch; retrieved in January 2022)^{xxvii}

» [Source Map](#)

There are also several further examples of private sector/individual company efforts. Please go to [Proforest Palm Oil Toolkit Briefing Note 02B](#) for some examples.

3. CHALLENGES / GAPS

Traceability to plantation

The significant number of smallholders, particularly independent smallholders, in the supply chain brings the main challenge for traceability to all FFB production sites due to the time and costs required. This is further exacerbated in cases of indirect supply, i.e. where intermediaries/aggregators collect the FFB from smallholders and sell on to the mills at times with chains of aggregators before the FFB reaches its final destination mill.

An [industry response](#) to the proposal highlighted that any traceability to plantation requirements would lead to the exclusion of smallholders from supply chains to the EU. It suggests that the regulation be adapted so that “segregated flows of deforestation-free supply should be required, with traceability to plantation as the ultimate goal but allowing for enhanced traceability to mill as an alternative to traceability to plantation wherever smallholders are concerned for a period of at least 5 years”.

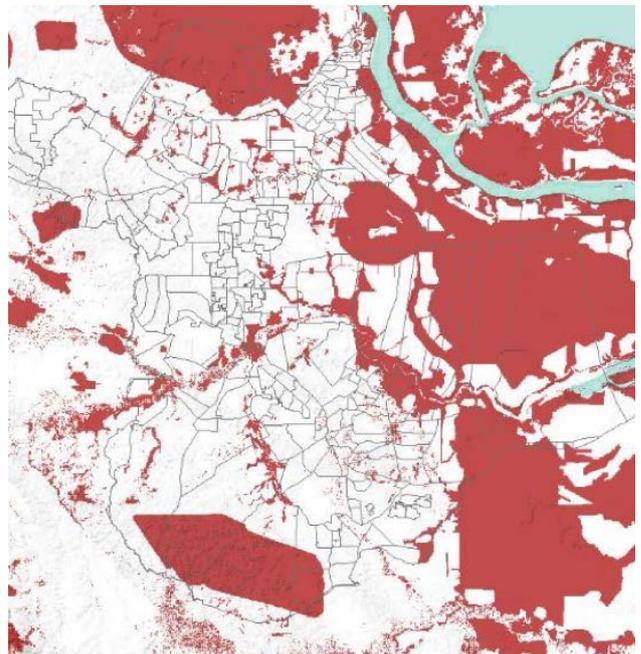
Other challenges identified include

- » Land ownership and land titling gaps and confusion, particularly for smallholders.
- » Developing systems to manage significant volumes of information.

Smallholder traceability provides a much greater challenge than traceability to plantations with traceability for independent smallholders the most challenging. One attempt by Daemeter Consulting and Proforest to address this was the Risk Calibrated Approach to Traceability to Plantation (RCA TTP).

THE RISK CALIBRATED APPROACH TO TRACEABILITY TO PLANTATION (RCA TTP)

Figure 3: Visualisation of high-risk areas (red) mapped in Riau, Indonesia, based on the RCA TTP approach (Image source: Daemeter)



Lessons learnt from RCA for TTP

The RCA method would work well in regions that have high granularity in terms of the demarcated administrative units. In regions where the administrative unit is relatively large the RCA may yield the whole unit as high risk and the lack of granularity may impact traceability efforts.

The RCA helps in determining areas of low risk that could lead to more inclusion of smallholders in supply chains without the need of individual farm mapping. For areas classified as high risk, the method prescribes engagement and monitoring to mitigate risks to facilitate inclusion of smallholders. A verification process is also incorporated to both verify the results of the risk analysis and the traceability data collected.

The uptake of RCA is slowly gaining momentum however most supply chain companies are prioritizing on data collection, analysis and reporting and have yet to move on to the engagement and verification phases. In Indonesia, with multiple requests with different level of details of information that requested for TTP in the past, resulted mill as primary subject of TTP raised their concern about data exchanges between requesters. This has been solved by using “portal” where its capable to share TTP information with different requesters with certain data sharing protocol that has been developed by this system. However, the adoption of this portal from downstream actors will be the key to ensure data sharing between users can happened.

Supply chains in Malaysia face particular challenges in engaging with FFB dealers to gain traceability information from them. Dealers will not share individual supplier data with mills as they see them as competition for their supply base, but ground-testing of the RCA method through dealers’ engagement resulted in cautiously positive responses.

Furthermore, risk at administrative unit (such as village in Indonesia or Mukim in Malaysia) will help supply chain actors to collaborate each other and share responsibility to mitigate future risk within these areas regardless the competition between them. As such more widescale engagement and endorsement and buy-in from industry authorities beyond supply chain companies will support increased uptake.

Data privacy

There are challenges on the legality and ethics around sharing maps on concessions and smallholder plots. While some public data on concessions is available (including for RSPO concessions) and Malaysia has made noises on making available concession information this is not yet the case. In Indonesia there is still legal disputes on making concession data publicly available^{xiv}.

In the case of smallholder mapping concerns have been raised over compliance with personal data protection laws, and lack of clarity on laws on the collection, sharing and use of such data.

ENDNOTES

- i Papua New Guinea export data is not available on UN Comtrade.
- ii <https://www.idhsustainabletrade.com/uploaded/2021/11/2021-Palm-Oil-Report-21.6-Small.pdf>
- iii RSPO (2013). Definitions of smallholder and proposal on adapting the group certification system in Honduras. Link: https://www.rspo.org/file/PDF/honduras/Smallholder_Proposal_Honduras_v1_2.pdf
- iv Rahman, S. (2020). Malaysian Independent Oil Palm Smallholders and their Struggle to Survive 2020. ISEAS – Yusof Ishak Institute, 144, 1-16. Link: https://www.iseas.edu.sg/wp-content/uploads/2020/12/ISEAS_Perspective_2020_144.pdf
- v RSPO website – RSPO Smallholders. Link: <https://rspo.org/smallholders>
- vi https://www.iseas.edu.sg/wp-content/uploads/2020/12/ISEAS_Perspective_2020_144.pdf
- vii <https://assets.researchsquare.com/files/rs-143515/v1/187e3c51-326e-47e7-8791-67787adf7ddd.pdf?c=1648578310>
- viii <https://palmoiltoolkit.net/element-2b-understand-the-supply-chain>
- ix <https://auriga.or.id/resources/reports/66/corporate-ownership-and-dominance-of-indonesia-s-palm-oil-supply-chains>
- x AFi website – Traceability. Link: <https://accountability-framework.org/the-framework/topics/traceability/>
- xi IDH The Sustainable Trade Palm Oil Traceability Working Group (2016). Achieving Traceability in Palm Oil: Palm Oil Traceability Working Group (TWG) Concept Note. Link: <https://www.idhsustainabletrade.com/uploaded/2016/07/TWG-concept-note.pdf>
- xii <https://www.idhsustainabletrade.com/uploaded/2021/11/2021-Palm-Oil-Report-21.6-Small.pdf>
- xiii Sanath Kumaran Kolandai (2021). Moving forward with mandatory MSPO certification standards.
- xiv <https://themalaysianreserve.com/2019/12/16/mpocc-to-publish-palm-oil-concession-maps/>
- xv MSPO Trace website. Link: <https://mspotrace.org.my/Home>
- xvi MPOCC website – MSPO Certification Scheme. Link: <https://www.mpocc.org.my/about-mspo>
- xvii MSPO Trace website – Complete List of Certified Entities under MSPO. Link: https://mspotrace.org.my/Opmc_list
- xviii Global Forest Watch Pro website. Link: <https://pro.globalforestwatch.org/map>
- xix Ibid
- xx RSPO website – GeoRSPO: RSPO Mapbuilder App. Link: <https://rspo.org/members/georspo>
- xxi Nustantara Atlas website - <https://map.nusantara-atlas.org/>
- xxii Palmoil.io website - <https://www.palmoil.io/>
- xxiii Global Forest Watch website – Topics: Commodities. Link: <https://www.globalforestwatch.org/topics/commodities/#intro>
- xxiv Global Forest Watch website – Map. Link: <https://www.globalforestwatch.org/map/>
- xxv Kepo Hutan Greenpeace (includes smallholders) - <https://kepohutan.greenpeace.org/commodities#5.27/-2.776/107.466>
- xxvi Global Forest Watch website – Map. Link: <https://www.globalforestwatch.org/map/>
- xxvii <https://news.mongabay.com/2021/06/final-court-ruling-orders-indonesian-government-to-publish-hgu-palm-oil-plantation-data/>