Smallholder Readiness for Roundtable on Sustainable Palm Oil (RSPO) Jurisdictional Certification of Palm Oil by 2025: results from field studies in Sabah's Telupid, Tongod, Beluran & Kinabatangan Districts

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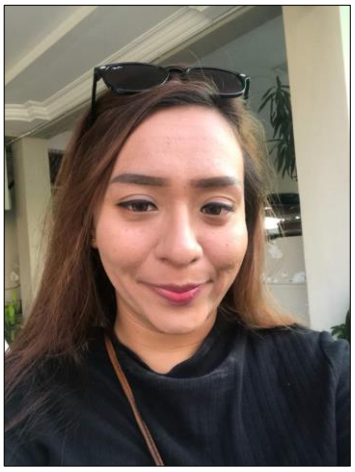

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ACRONYMS AND ABREVIATIONS

BMP	Best Management Practices
CL	Country Lease (a category of land title)
CPO	Crude Palm Oil
CSPO	Certified Sustainable Palm Oil
DID	Department of Irrigation and Drainage
DO	District Offices
DoA	Department of Agriculture
DFO	District Forest Officers
FELCRA	Federal Land Consolidation and Rehabilitation Authority
FELDA	Federal Land Development Authority
FFB	Fresh Fruit Bunch (converted to tonnes/hectare as a measure of productivity)
FLAP	Facilitated Land Application Process
FMU	Forest Management Unit (a Class II Forest Reserve leased to the private sector)
FR	Field Register (a category of land title)
FPIC	Free Prior and Informed Consent
Kg.	Kampung (meaning village)
GPS	Global Positioning System
ha	Hectare (= 2.47 Acres)
HCV	High Conservation Value (a categorisation of land, usually under forest cover requiring special management measures according to RSPO and Forest Stewardship Council)
IUCN	International Union for Conservation of Nature
JCSC	Jurisdictional Certification Steering Committee
JCSPO	Jurisdictional Certified Sustainable Palm Oil
JV	Joint Venture
JVA	Joint Venture Agreement
KBT	Supervised Fertiliser Cluster
KPD	Koperasi Pembangunan Desa
LA	Land Application (a formal written request for land title)
MESEJ	Mini Estet Sejatera
MPOB	Malaysian Palm Oil Board (a federal agency)
MSPO	Malaysian Sustainable Palm Oil
NCR	Native Customary Rights (in Sabah, the basis on which claims to title over specific land areas, in perpetuity, are made under the provisions of the Land Ordinance 1930)
NGO	Non-Government Organisation
NT	Native Title (a category of land title, issued on the basis of confirmation of NCR)
OPNCC	Oil Palm Nursery Competency Certificated
P&C	Principles & Criteria (for RSPO Certification)
PL	Provisional Lease (a category of land title)
PORIM	Palm Oil Research Institute of Malaysia (a federal agency)
PORLA	Palm Oil Registration and Licensing Authority (a federal agency)
PT	Permohonan Tanah (the Bahasa Malay term for Land Application)
RISDA	Rubber Industry Smallholders Development Authority (a federal agency)
RM	Malaysian Ringgit

RSP	Register Survey Paper (a processing stage for a formal request for land title)
RSPO	Roundtable on Sustainable Palm Oil
SBABB	Quality Oil Palm Seedlings Assistance Scheme
SITS	Skim Tanam Sawit (a mechanised clearance programme under the MPOB for second generation oil palm)
SLDB	Sabah Land Development Board
SPOC	Sustainable Palm Oil Cluster
tFFB	Per Metric Ton of FFB
TL	Town Lease (a category of land title)
TTBK	The pilot area described in this Report comprising Telupid, Tongod, Beluran, Kinabatangan Districts
TUNAS	TUnjukajar NAsihat Sawit (an aid scheme to teach 'Good Management Practices' under MPOB)
WHO	World Health Organisation
Yr	Year

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EXECUTIVE SUMMARY

Context: Sabah - in Malaysian Borneo - produces about 10% of the world's palm oil and its government has committed to ensuring all palm oil production under its jurisdiction meets the Round Table for Sustainable Palm Oil (RSPO) standards or beyond by 2025. One of the central opportunities – and challenges – of this Jurisdictional Certification of Sustainable Palm Oil (JCSPO) process will be enabling and ensuring that this includes all the state's smallholders. The Malaysian Palm Oil Board (MPOB) had registered some 34,866 smallholders with under 40 hectares (ha) in 2016; given that 33% of our sample were not registered we believe the actual number may range around 53,000. These smallholders, mostly recent planters of indigenous descent, are seeking, through oil palm, to participate in Malaysia's economic transition while facing diverse challenges of low productivity, loss of subsistence livelihoods, environmental degradation, marginalisation and dependence on patronage and subsidised inputs.

Box 1: The Smallholders

Estimated 53,000 smallholders state-wide

33% in TTBK sample unregistered with the MPOB (equivalent to 13,000 state-wide)

Oil palm provides a third to half household income

Only 16% still produce their own food

Smallholders choosing oil palm as their best option

Yet their current oil palm production systems leave most still in poverty & with livelihoods less resilient

These Indigenous Peoples are now seeking better oil palm & better development pathways

Purpose: The purpose of this report is to make more visible the realities and aspirations of Sabah's oil palm smallholders, and most particularly to identify the gaps between their current practices and the social, environmental and legal standards now required by this commitment to Jurisdictional Certification, and indeed by our wider society.

Methods: To develop systems to assist smallholders meet these standards the Jurisdictional Certification Steering Committee (JCSC) selected four districts of east central Sabah (Telupid, Tongod, Beluran and Kinabatangan; TTBK) as representative of the diverse situations across the state's twenty-three Districts. Forever Sabah, took on the task of getting to know the situation on the ground in these four districts, developing agreements with the local authorities and twenty smallholder village communities, including to gather the data presented in this report (from 134 households) and start to develop the local capacity and systems to tackle the problems jointly revealed.

Smallholders as Success Story: Over the last several decades – and especially the last 15-20 years - oil palm has become the dominant land use for smallholders over large parts of Sabah. In TTBK it now occupies 81% of the surveyed smallholder's land, with all but 16% of such smallholders having essentially abandoned food production and all but 22% having cleared all their forest, scrub or existing tree cover to plant oil palm (with 80% saying they want to clear their remaining land). In TTBK oil palm now provides between one third and one half of all

Box 2: Production Practices

81% of smallholder land now under oil palm

Yields (10 tFFB/ha/yr) are half the achievable

Poor access to markets for FFB

Reliance on herbicide (glyphosate) to suppress forest regeneration

Fertiliser subsidies & extension not performing

Conflicts with wildlife that eat palms & fruits

smallholder household income, outstripping any other single source and greatly increasing cash availability at household level. Government has promoted the expansion of smallholder oil palm, but only 14% say that Government influence is why they produce: the rest say that they entered production because of opportunity and a pathway illuminated by the experiences of family and acquaintances.

Oil palm typically first spread in TTBK through the leadership of indigenous migrants from other districts into areas made accessible by the expanding road network, either on their (historic) own land or on other tribal groupings' customary land; these pioneers were soon followed by the locals, convinced that oil palm outstripped previous commodity crops and forest products in terms of income generation. Although oil palm is now everywhere, the intensity of cultivation and the success of the crop still varies widely across the region, in large part due to the degree of connection to the outside world and distance to fresh fruit bunch (FFB) processing facilities. In favoured areas it dominates the lives and landscapes of these tribal peoples.

Smallholder's Challenges: Despite the cash oil palm brings in, smallholder's median incomes are only (in Malaysian Ringgit) RM 1500/month, way under Sabah's median income (RM 5000/month). Even as oil palm cash improves homes and buys vehicles, most (92%) said that revenues are not enough to cover basic needs. This reflects low average yields of FFB (around ten tons/ha/year) on small average landholdings (just under three hectares or 7.3 acres) and low grades of FFB sometimes sold at distant facilities with high transport costs. Dependence on any single commodity crop is always associated with low resilience, and this is a concern frequently expressed in the face of volatility of FFB price, production and input costs.

Smallholder Aspirations: Although only 17% of smallholders had previously heard of RSPO and few previously knew much of what certification involved, two thirds readily embraced the idea because they believed it would bring Government and societal attention to tackling persistent issues dogging their wellbeing: especially unresolved land tenure and low productivity.

Yield Gap: FFB yields in TTBK average about half what smallholders can achieve; the causes of this gap are multiple and persistent, but mostly reflect smallholders' struggles to

Box 3: Gaps to Certification

Only 17% of smallholders have heard of RSPO

Two thirds sample want RSPO certification: seeking land tenure & support for productivity

20-30% of smallholders employing non-legal labour

Possibly 2,300-5,100 undocumented workers harvest smallholder oil palm alone

Illicit use of controlled agrochemicals

Inadequate health & safety protocols

Substantial smallholder forest clearance using fire (80%), since 2005 (40%) and on peat soils (17%)

manage soil fertility, weeds, labour, harvesting and grading, general financial liquidity and planning. Some of these management weaknesses reflect problems of small scale operations, while many reflect the whole context of smallholder cultural life, marginalisation, and an effort to maximise return on unit effort rather than yield per unit area. Most smallholders are not approaching palm oil production with the assets and orientation of a business proposition. Hired labour, for example, usually appears to substitute family labour rather than to intensify production; the highest yields are not in the wealthiest households.

Challenging Practices: In contradistinction to RSPO Principles & Criteria, more than 80% of smallholders have used fire to clear their land to plant oil palm; 40% of those consulted here have cleared land - much of which would have been under High Conservation Value (HCV) forests – since 2005; and 17% of the land opened since 2005 was planted on what smallholders call peat. Some 13% of farmers use an herbicide, paraquat (Gramoxone), not accepted by RSPO (and controlled in Sabah). 50% of smallholders experience wildlife conflict in their oil palm plantations with four species listed as "threatened" by the International Union for Conservation of Nature (IUCN) (a criterium for the RSPO), namely elephant, pig-tailed macaque, bearded pig and sambar deer, as well as with porcupines and other rodents (even as clearance of primary forest for an oil palm mosaic increases food supply/populations of several of these species). Furthermore, we estimate that between 20 and 30% of smallholder households in the TTBK employ undocumented labour (immigrant and stateless).

Box 4: Training and Support

Only 52% of smallholders have received any training; much of it superficial

MPOB seedlings & training under-performing

DoA seedlings yield 40% more than do MPOB

Smallholders trained by DoA & other agencies produced twice the yields of MPOB trainees

Training needs to be demand-driven with new understandings of farmer needs & learning styles

Training and Assistance with Inputs: Although 75% of oil palm field plots had been planted only since the year 2000, 70% of the famers told us that they had a fairly good knowledge of oil palm production. However, in the course of our work it became clear that many smallholders struggle with issues like effective handling of agricultural chemicals, FFB grading, and long-term planning (especially its financial elements). In this context, around half said that they had received no training, and few reported comprehensive training. Although MPOB provides most of training in this sample, its programs were not associated with improved productivity, while smallholders trained by the Department of Agriculture (DoA) and other agencies produced double the FFB yields of smallholders who had gone through MPOB training. Our studies also suggest there is unevenness in the quality and usefulness of subsidised inputs compared to what farmers buy for themselves (about which they are smarter).

- Few smallholders access regular commercial seedlings. Smallholders who gathered or pilfered naturally regenerating seedlings from oil palm estates or fellow smallholders experience much lower yields than those who received hybrid seedlings through MPOB or others; but those with planting material through the DoA produced yields over 40% higher than those provided with seedlings through MPOB.

- Smallholder's use of fertiliser was found to be driven almost entirely by the receipt of subsidised or gifted packages, mostly from MPOB, but also from other government agencies (including those distributing fertiliser for rice and rubber). The type and timing of fertiliser distributions were little matched to soil types, stage of growth or application timing, and we found no correlation between FFB yields and the amount or frequency of fertiliser application. Smallholders currently find fertiliser purchase not economic and/or beyond their means. Given the importance of good soil management to productivity and environmental health, significant opportunities are being missed to improve soil health by integrating non-chemical-based approaches.
- Weed control and suppression of forest regeneration, on the other hand, are met by farmer purchases of herbicides; and 85% of smallholders made these purchases, with 13% taking the trouble to illicitly acquire the controlled herbicide paraquat because of its reduced toxicity to soil (paraquat is of concern because of high toxicity to mammals when drunk). Most farmers, however, are using Glyphosate to keep the ground clear between their palms, despite its uncertain ecosystem and long-term health risks (and impact on the palms). Farmers purchase herbicides because clearing undergrowth is heavy labour; using herbicides increases their yields but with environmental costs.

These findings suggest that current MPOB systems of training and subsidised inputs are struggling to meet the task of increasing smallholder yields and raising standards, despite many skilled staff and substantial resources. Smallholders are grateful to MPOB (which also includes mechanised clearance for second-generation planting), but the contrast between the poor results of fertiliser, with which they are assisted, and the good results of herbicides, with which they are not, are telling of the need for a new model to build farmer knowledge and responsibility. So too are the gaps in performance between the MPOB and the DoA and other training programs. Perhaps the MPOB approach is too top-down, too linked to whatever hand-outs are available, and insufficiently demand-driven. Meanwhile, intensive training and support with establishing storage facilities, disposing of containers and protective gear will be necessary to meet existing Malaysian and RSPO agrochemical standards. There are an estimated 13,000 unregistered smallholders in Sabah: new efforts are needed to engage these "invisible" producers if Jurisdictional Certification is to be achieved.

Land Tenure and MPOB Registration: 61% of smallholders in these TTBK villages are growing their oil palm with Land Application (LA) status, namely on land for which they have applied but to which they do not have title. This insecurity of tenure is a problem for the farmers and the environment: insecurity of tenure is associated with vulnerability and low levels of investment in production and land care. It is also a major problem for the society as it creates instability, risk of conflict, and propensity to dependence and on patronage. And it is, of course, not acceptable under RSPO standards. An additional 2.5% of smallholders were

Box 5: Land Tenure

Only 36% of smallholders have land titles

Lands & Survey Department overwhelmed

22% smallholders claiming rights to clear land in Forest Reserves (and 2.5% farming there)

Estimated 100,000-210,000 hectares of smallholder oil palm on State Land

Titling smallholder land could generate up to RM 100m annually in yield improvements

cultivating in a Forest Reserve and some were using Riparian Zones. MPOB has registered 63% of the users of this untitled land for oil palm production, for while cultivation of oil palm on state land is of questionable legality under the Land Ordinance, these farmers need support. MPOB has meanwhile not registered 23% of producers on titled land. Unregistered producers do not qualify for support and typically have to sell through informal channels and for lower prices. This points up the role of Weighing Centres, which buy more smallholder FFB than Mills in this TTBK sample, including the entire FFB produced by 13 of the 20 villages studied, whether MPOB registered or not. These legality problems reflect deep histories; their solution would bring multiple benefits to the state as well as to the smallholders. If TTBK is typical and 61% of smallholder land in Sabah is on LA land, and average smallholders have 3 hectares of land, then a mere 5% increase in productivity on that land due to settling the title issue, at RM 500/ton for FFB, would earn those smallholders and the state economy nearly RM 25 million a year (if we use MPOB statistics for land area and yield the total is RM 105 million).

Joint Ventures: Joint Ventures were not a major feature of the study villages, and none were involved in out-grower schemes (both are important elsewhere in Sabah). Most Joint Ventures (JVs) in TTBK are with Government (8% of smallholders) through the Sabah Land Development Board (SLDB) and entities such as Agropolitan and Mini Estet Sejatera (MESEJ). Although most JVs here involved smallholders who had land available but were no longer resident in a particular village, there were also many examples where the smallholders had entered Joint Ventures in circumstances that would not meet RSPO standards of FPIC and transparency, since too many are unable to access or understand their contracts, the justification for their dividends (or lack of them), and may have entered these arrangements at the direction of village heads, for example as part of a "condition" for receiving recognition of their Native Customary Rights (NCR). Nevertheless, 70% of smallholders said they were reasonably happy to very happy about their JV arrangements.

Box 6: Free, Prior and Informed Consent

93% of Smallholders strongly value "adat" (customary law/practice) for regulating their lives

FPIC equates well with the indigenous concepts of "Sumuku" (and equivalents) for readier use

Joint Ventures with Government Agencies often have FPIC & transparency challenges

7% of smallholders reported tenure & access issues with commercial plantations

FPIC for Smallholders: 93% of those interviewed said that customary procedures (adat) for securing mutual consent through respectfully asking permission remain vibrant; for these communities "Sumuku" is the most frequent word used for this in the various Dusun dialects spoke in the TTBK and beyond. As a culturally-grounded living concept Sumuku is more easily applied than the legally-defined international Free Prior and Informed Consent (FPIC) process, at least for interactions among locals. Some 22% of smallholders reported believing they had rights in gazetted Forest Reserves and 7% reported conflicts with Commercial Plantations.

1 Introduction

Palm oil's bad rap is becoming as perennial as the plant. Despite being in a league of its own in terms of yield, used in 50% of packaged goods on supermarket shelves, and consumed the world over, it doesn't get any breaks. The global narrative has become polarised into bad and good, black and white, and us and them. While this storyline bombards airspaces, dominates columns and stages, and the world is divided in half, it has been arduous to create a safe space within which we as Sabahans can scrutinise, build self-awareness and develop our own understandings of the challenges of palm oil to our sustainability.

To face up to, acknowledge and address our challenges and issues, we in the region are increasingly crafting our own initiatives to reform and shift our policies and practices to better balance our economies and ecologies. This includes recognising the diverse aspirations of our indigenous and local communities who are now deeply engaged in oil palm.

Thus, when Sabah decided in October 2015 to begin the move of the entire state towards fully certified sustainable palm oil to RSPO standards by 2025, it was clear that one of the biggest challenges and opportunities was in accessing and mobilising the Smallholder corps. In a state just smaller than Scotland, producing approximately 10% of global supply of crude palm oil (CPO) across a range of terrains with varying levels of accessibility, connecting with and organising every single oil palm smallholder might seem an almost impossible task. Yet if it were to be attempted anywhere at this scale right now, Sabah would be the place.

Sabah began its effort to operationalise this commitment in early 2016 with the establishment of the Jurisdictional Certification Steering Committee (JCSC) with equal representation from government, industry and civil society, co-chaired by the Sabah Forestry Department and the Natural Resource Office of the Chief Minister's Department. In its very first convening, the Smallholder topic was placed front and centre, and the decision made to form the Smallholder Working Group, concurrent with the Free Prior and Informed Consent (FPIC) and High Conservation Value (HCV) Working Groups.

In the latter half of 2016, as a result of a planning workshop with all three Working Groups, the pilot area comprising the four contiguous districts of Telupid, Tongod, Beluran and Kinabatangan (TTBK) was identified to launch the exploration into methodologies and models for the overall process. Key reasons were that this was the region of "the lowest hanging fruit": it spans zones of old oil palm all the way to new frontiers; it comes under one (Sandakan) administrative region; and it was where some smallholder certification work had already begun.

Forever Sabah made the institutional call to step up to the smallholder task. Our mission is to facilitate Sabah's transition towards a diversified, equitable circular economy over 25 years. We considered it imperative to initiate and engage this game changing moment when the issues are put on the table to address and transform one of the state's core economic sectors on our own terms. A couple of key principles guided our work: the process was going to be ground up, and it would be long term. To do this would mean getting to grips with the people and issues as they actually are on the ground through a smallholder survey; our partnership

has been working in these areas for some years and we knew the situation was much different than often assumed.

Raising adequate funds, recruiting and training a team, crafting a plan, and requesting relevant official permissions were more challenging than anticipated. Landing in the districts and villages, advancing each small step required giving information, building awareness and trust, and more often than not, in very fragmented, disenfranchised and disgruntled environments. Land is a burning issue, and livelihoods are a constant stretch and struggle. Clear information and consistent guidance is scarce; lines of responsibility are blurry and the waters of leadership murky. Asking people to stop their daily toil to listen and enter a new conversation was a big ask.

After navigating the intricacies and sensitivities of rural politics – between District Officers, local politicians and village leadership – and obtaining the all-important blessing to proceed, the hard work could begin. A small, young team of indigenous field coordinators, armed with cautious naiveté, open hearts, good intentions, and a very comprehensive survey questionnaire, hit the ground with the mission to meet smallholders from 20 TTBK villages (5 from each district), and to understand their lives, livelihoods and landscapes. They came to this after an earlier survey in 2015 of three hundred households in the 42 villages found in Telupid District (and neighbouring areas of Ranau and Tongod), which brought the oil palm and marginalisation issues vividly to light; but now they combined their outreach efforts to know these villages and build capacity for change with a 36-page questionnaire for smallholders in the five sample villages in each district. These people received them with welcome and hope; some shooed them away with disdain. Interviews would sometimes lead to excited confiding conversations and at other times to fatigued, snoring respondents. The field coordinators lived in the villages, experienced life in real time rural Sabah, witnessed the pains and pleasures, ploys and politics of kampung (village) society. Through this they came to understand the glories and contradictions of oil palm and the reasons why it has become the single largest plank to the indigenous rural economy in large parts of Sabah. And they witnessed the hope that this jurisdictional process to RSPO standards stirred in the hearts of most smallholders towards addressing the issues of land tenure, effective state support and quality training they feel they so desperately need.

The other almost crushing challenge that the team had to contend with was the perceptions and assumptions around the (federal) Malaysian Palm Oil Board (MPOB) and the Malaysian Palm Oil Standard (MSPO). Our RSPO process was often regarded as at odds with what was official, intrinsically Malaysian, and was promising the smallholders funds and resources.

Land and agriculture are State matters and Sabah is sovereign and autonomous in its right to decide and define its development path. The RSPO-MSPO matter is a significant, self-determining moment in Sabah's history and one which requires imminent and unambiguous resolution.

This study was part and parcel of gathering information and meeting and getting to know the farmers, walking with them, and starting a new discourse of possibility and potential. It was not done by professional researchers and there were many hard lessons to be learned in the pursuit of well-crafted questions and statistically valid data. But then it was not just about

extracting data and elaborate analysis but instead it sought to build awareness and agency, and capacity to organise and mobilise. Each of the 20 villages has now formed active committees to tackle the issues identified in this report working closely with their designated Forever Sabah district field coordinator. Good relationships with key local authorities and actors have been established and continue to grow as the team consistently shows up. With new funding streams, we have recruited 4 young, local smallholders from TTBK into the FS field team. The picture we have collectively created for this report rings true to those who know our landscapes and communities.

This report is first of a series to be produced from this deep cauldron of data and field experience. In the coming years, and with support from Forever Sabah colleagues, we will begin building capacity to deploy participatory research, stronger statistics as necessary, and citizen science methods to co-labour with smallholders in the reform of the palm oil sector.

The story that all too often gets told about Smallholders on international stages tends towards the simplistic and one-dimensional: they are romanticised or demonised by a patronage narrative that manipulates and controls sound bites for its gain. These soundbites have not helped smallholders, and certainly not helped us to understand what they themselves regard as the problems and solutions in the palm oil sector. Our intention is that this report shows how much more complex and layered are the realities on the ground: how solutions can be humanised and prioritised, through the active participation of the smallholders in tackling the gaps between what the sector needs – for which we see the RSPO standards as the best first approximation – and where we currently are.

1.1 Research methods

1.1.1 FPIC/Sumuku

This report is based on field experiences with oil palm smallholders in 20 villages, five villages within each of the four districts of Telupid, Tongod, Beluran and the Kinabatangan (TTBK; see Figure 1). A step-wise process was used to prepare for this research.

Firstly, on the 5 February 2017, Forever Sabah sent formal letters of the project's scope and intention to TTBK District Officers (DO) and District Forest Officers (DFO) and meetings were requested. At these meetings, the Jurisdictional RSPO process was discussed in general, then details on this smallholder project were outlined (e.g. its scope, methods, data use). The twenty selected villages were approved by the DOs and official letters were provided by the DOs permitting the study within their respective districts.

Next, and for each selected village, Free Prior and Informed Consent (FPIC, locally known as *sumuku*) was initially conducted with the village head. Discussions mirrored those had with the DOs/DFOs. If the village head gave his/her permission, then FPIC/*sumuku* was conducted with each and every respondent to enable full disclosure and transparency. Within the FPIC process a full description of the project, methods, and a wider discussion on the Jurisdictional RSPO certification process in general was given. Importantly, respondents were provided information on why the data was being collected, who would have access to it and how it

would be used. The estimated time to conduct the survey was also stated; as was the fact that certain questions were likely going to be sensitive and the general survey themes were outlined. The potential respondents were able to ask questions and seek clarity before agreeing to undertake the survey. Furthermore, a printed hard copy of key aspects pertaining to this project and the collated data was given to each surveyed smallholder for their keeping and reference.

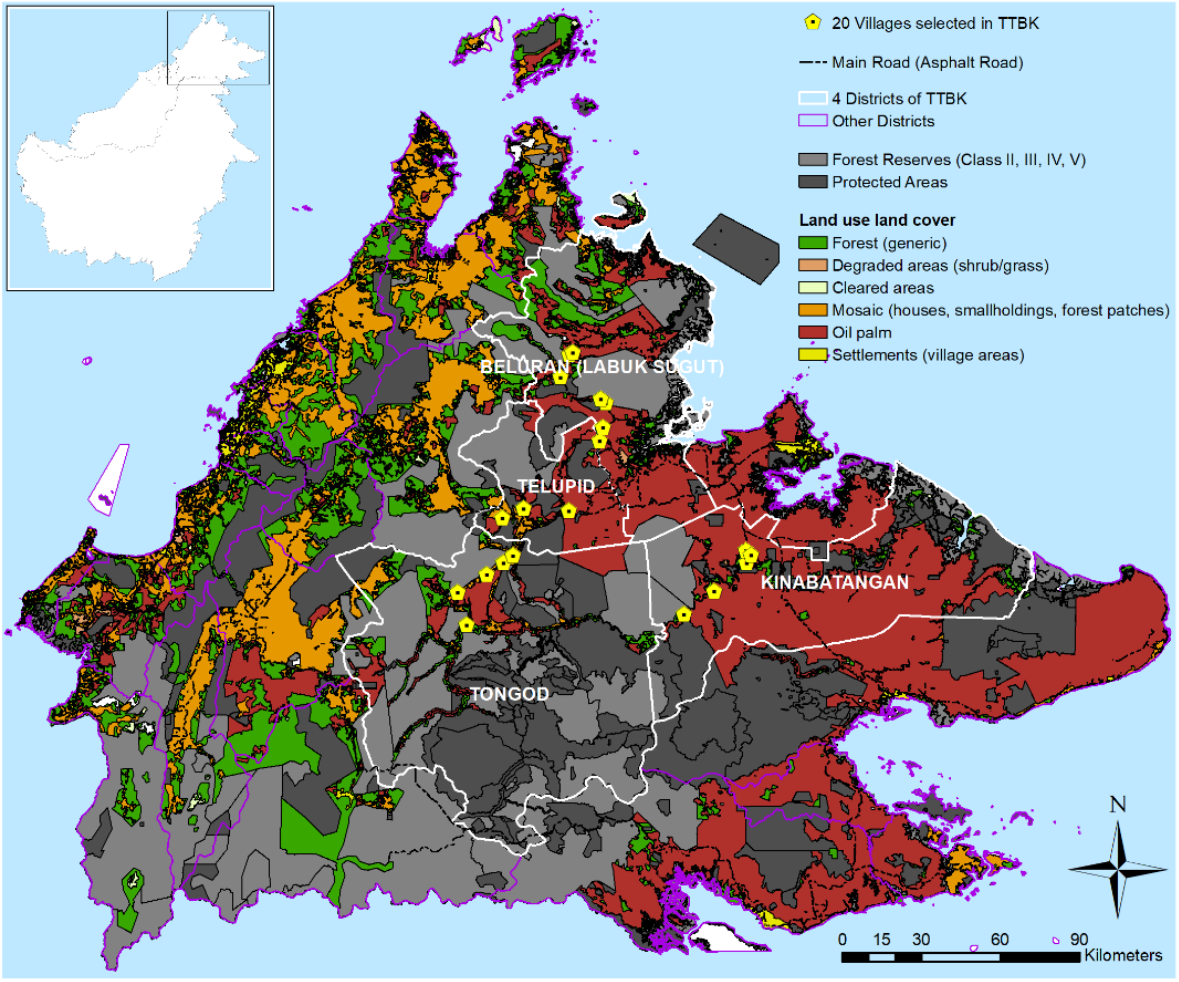

Figure 1: Map of Sabah (northern Borneo) with the 20 selected villages in the four districts of Telupid, Tongod, Beluran and Kinabatangan (TTBK); overlaid with Protected Area's (dark grey), Commercial Forest Reserves (light grey), and other land use/cover associations for remaining land.

1.1.2 Survey

The questionnaire from which the data in this report is drawn was 36 pages in length and encompassed various thematic subjects that related to: household socio-economic information; smallholders knowledge and agronomic practises; knowledge of RSPO; land issues; socio-culturally important sites; aspects that relate to peoples' use of forest resources; and, perceptions on changes within their environment in general and due to oil palm. We present here relevant parts of the data collected in these surveys. Although this sample is of modest size we are reassured by the similarity to core findings with our preliminary surveys of 301 households in the Telupid and adjacent areas in late 2015.

The twenty villages were selected to cover a range of circumstances for smallholder oil palm production, including to issues pertaining to land and legalities, wildlife, access to markets etc. Per village, a sample size of 10% of households was sought as a rule of thumb, but the final sample was dependent on the size of the villages and of availability of willing respondents. Details on village names, total number of households per village and the number of smallholders surveyed per village can be seen in Table 1). A total of 134 oil palm smallholders were surveyed in the twenty villages, and Global Positioning System (GPS) points of their house locations and smallholdings were collected where possible. Preliminary feedback from this research has been ongoing in the villages and with relevant stakeholders in Sabah. This fuller analysis of the data will be presented to the communities in the weeks following the finalisation of this report, for their feedback and to promote active discussions on issues and ways forward.

Smallholder showing his oil palm plot

Table 1: Twenty villages (Kg. meaning Kampung) included in this study, five within each of the four districts Telupid, Tongod, Beluran and Kinabatangan that make up TTBK; along with their coordinates, number of households within the village and the number of smallholders surveyed in this study.

District	Village name	Lat	Long	No. of households in village	No. of oil palm smallholders surveyed
Telupid	Kg.Kopuron	5.6499345	117.0065927	51	5
	Kg.Malapi	5.6802217	117.0776760	45	5
	Kg.Liningkung	5.6710205	117.2324018	50	5
	Kg.Tarasak	5.9533580	117.3521590	40	4
	Kg.Bakong Bakong	5.9079510	117.3399830	45	5
Tongod	Kg.Langkabong	5.4581907	116.9508003	160	16
	Kg.Linayukan	5.4974590	117.0073466	80	10
	Kg.Semundoh	5.5214398	117.0404723	52	6
	Kg.Maliau	5.3976072	116.8504431	80	8
	Kg.Tampasak	5.2871145	116.8809183	100	10
Beluran	Kg.Chandramata	6.0504631	117.3448891	38	4
	Kg.Rancangan Cocos	6.0383666	117.3613158	52	5
	Kg.Sungai Rungus	6.1263751	117.2097455	55	5
	Kg.Dampiron	6.2023773	117.2402478	40	5
	Kg.Melapi	6.2110198	117.2514555	27	3
Kinabatangan	Kg.Sinar Jaya	5.5150140	117.8495783	118	12
	Kg.Kasih Sayang	5.5296212	117.8332623	80	8
	Kg.Muhibah	5.4881068	117.8352200	50	5
	Kg.Sangau	5.3923015	117.7227294	48	5
	Kg.Balat	5.3160453	117.6192418	79	8

2 Brief Background to Oil Palm Expansion in TTBK

The expansion of smallholder oil palm among the indigenous communities of Sabah has flowed from its astonishingly rapid expansion as a large-scale plantation crop in Lahad Datu, Kinabatangan and other suitable districts from the 1960s, and especially from the 1980s/90s. For indigenous smallholders it was both very new but also somehow familiar, being a palm, and as a perennial they could plant in cleared land. It was also experienced as only the latest way to generate significant income from the forest areas that had made been accessible by the expansion of Sabah's road networks after the Second World War, when following the departure of the Japanese the North Borneo Chartered Company was obliged to hand over Sabah to the British Government. Despite its supposed business acumen and philanthropic instincts, the Company had been extraordinarily averse to opening the country, something which the British (and later the Malaysian) Governments soon set about changing (Tregonning, 1965). The road through Telupid that traverses Sabah to connect the current and former capitals of Kota Kinabalu and Sandakan was opened only in the early 1960s and led to subsequent road connections into Tongod and Beluran, while other roads penetrated the Kinabatangan. This transport network expanded steadily after Sabah's independence as part of the Malaysian Federation.

As the roads opened up forests the various Dusun and other peoples of the east-central interior, who had previously lived along the rivers, began to shift their villages to the lines of communication to access services and explore the promised economic expansion. Thus, and under the mantra of independence and economic development, their previous lives as hunter-gatherers, fishers, and forest farmers gave way to strategies to turn forest assets into cash incomes. As they did so these people of the interior met immigrants from Sabah's coastal regions who comprised in part interior peoples returning now that there were signs of development, but also other indigenous Dusun from crowded areas of the west coast who were seeking adequate land to build new lives. These people came with greater experience of the contemporary economy and the migrant's eye for opportunity. While both migrant and local participated in the various natural resource, illegal logging and rubber rushes in the interior, it was typically the migrants who led the charge and captured most of the benefits, even as their numbers and clout helped locals attract government and commercial services.

The impact of this rather particular history is still seen across the villages of TTBK. Migrants are concentrated in the most accessible villages like Kg. Liningkung in Telupid District (where people are mostly from Kiulu and Tambunan) and have incomes and oil palm incomes visibly higher than their autochthonous neighbours. Some of these migrant populations are strongly involved in particular churches, such as the Seventh Day Adventists, wo value self-betterment through labour and eschew alcohol consumption; others such as those in Kg. Bakong Bakong mostly came to the area as highly motivated settlers assisted by smallholder schemes. This contrasts with villages that have not received motivated migrants, and instead, for example, lost much of their land to plantations and forest gazettement, and for understandable reasons (including the pollution of their rivers by forest clearance) become stuck in a depressing cycle of hopelessness, alcohol abuse and weak leadership.

Conflicts between these migrants and locals are mediated by strong social bonds, including of marriage and patronage, but there is no doubt that the migrants have secured most of the

benefits from (and paid fewer of the costs of) the transformation of the forest economies in these areas. The Indigenous communities of these regions had depended substantially on forest products and fisheries for their subsistence needs and cash incomes until only two to three decades ago. The conversion of most of their land from forest and mixed farming to oil palm, coupled with the gazettement of forest reserves and development of oil palm estates has greatly reduced the ability to rely on forests for food, building material, medicines etc., and (in some areas) breakdowns in fishery management and pollution of the rivers by land clearance have decimated fisheries. Current forest products for extraction with a growing market in and China are gaharu (a fragrant wood used for incense) and pangolins. In the absence of adequate oil palm income, or ability to meet their subsistence needs, many households find themselves reliant upon accessing Forest Reserves, pilfering commercial estates, receiving compensation payments from government for development activities, selling their remaining land, and sourcing financial distributions from local politicians. Many are also in significant debt in regard to consumer goods and the countless motorcycles, Kancil cars and pick-up trucks that have transformed rural life in Sabah.

But this process of development by penetration has not been spatially even. There are still villages far from good roads and/or from palm oil mills, and in these more isolated areas the landscape change process is much less advanced. These villages have lower cash incomes, but this is compensated by a substantial subsistence economy. One consequence of this, however, is differential investment, including in oil palm, further increasing inequality. In Tongod District, for example, this framework explains the gap between Kg. Lingkabong which is doing well and Kg. Tampasak which is 60km from a Fresh Fruit Bundles (FFB) collection centre.

At the same time as these diverse communities (who comprise different Dusun groups – such as Tindal, Dumpas, Labuk, Mangkaak, Minokok and Orang Sungai – as well as Cocos, Bugis, Bajau, Suluk, Kegayan, Kadazan, Jawa, Iban, and Brunei), are pursuing transition to a monetary economy, they are simultaneously also experiencing resurgent indigenous identities and the desire for development that is more on their own terms and respectful of their cultural and environmental heritage. Although they sense the need to diversify away from such high reliance on oil palm, and freely bemoan the environmental cost of this crop, most in the community now see oil palm as core to meeting their welfare needs and enabling them to remain on their traditional lands. They also see the way that they grow oil palm as having less environmental impact than the large estates. And they want to do it better.

2.1 TTBK Smallholders Transition to Oil Palm

When we asked the smallholders what had influenced their decision to transition into oil palm we found that whilst there have been some government land development schemes and promotion efforts (see below), only around 10% of smallholders said they had begun planting oil palm because of encouragement by a government agency; though a further 4% said that they had been influenced by an elected representative/politician or a combination of government and politicians. Instead they told us that by far the largest influence was that of observing the benefits of oil palm in their communities; with almost half saying that it was the experience of their acquaintances that drew their interest in planting (40%) or gave this

reason and one other reason (8%). And just over one-third (37%) said they became interested in planting oil palm because of other influences such as family heritage, entrepreneurship, oil palm company encouragement, and the desire to improve their domestic economy.

Whilst smallholders within the oil palm industry are defined as land owners with less than 40 ha of planted oil palm, rarely do smallholders in TTBK have land approaching that size. In Malaysia, the average size of independent oil palm smallholdings is recorded as 2.6 ha (with 89% of smallholders having less than 4 hectares) (MPOB 2017). For households within this TTBK sample, the size of total area of oil palm per household ranged from 0.2 ha to 13.35 ha, with the average size being 2.98 ha (this is somewhat below the average calculated for survey we undertook in Telupid in 2015 with 268 different oil palm smallholders where average sizes per household were 3.63 ha). Given that MPOB data (most recently from 2016) suggests a much larger figure for Sabah, of 6.4ha/smallholder, and a recent MPOB survey of smallholders in Sabah and Sarawak similarly found 54% of holdings above 4ha, (Ali Zulhusni et al. 2017), it seems possible that these TTBK selected villages are smaller than the average of Sabahan smallholders as a whole. Land areas certainly varied significantly between villages and the Kinabatangan district had the smallest average smallholding size of 2.1 ha. Perhaps field areas are larger in villages with development schemes.

In terms of when smallholders established their fields, nearly 80% of the oil palm plots in TTBK were reported as “first generation”, planted between 1970-2017, with the remaining “second generation” planted from 1983-2017. Despite oil palm being within the region since the 1970s, Figure 2 demonstrates just how recently many smallholders have transitioned to this crop, with 75% of plots being planted since the year 2000, and 40% of these within the past 7 years. Indeed, MPOB figures record that the number of registered smallholders in Sabah more than doubled between 2007 (15,689) and 2016 (34,866) (Rahman, 2008; Warta Sawit, 2016). This means that smallholders in Sabah provide a challenge to the 2005 cut-off date for forest clearance under RSPO guidelines (see later).

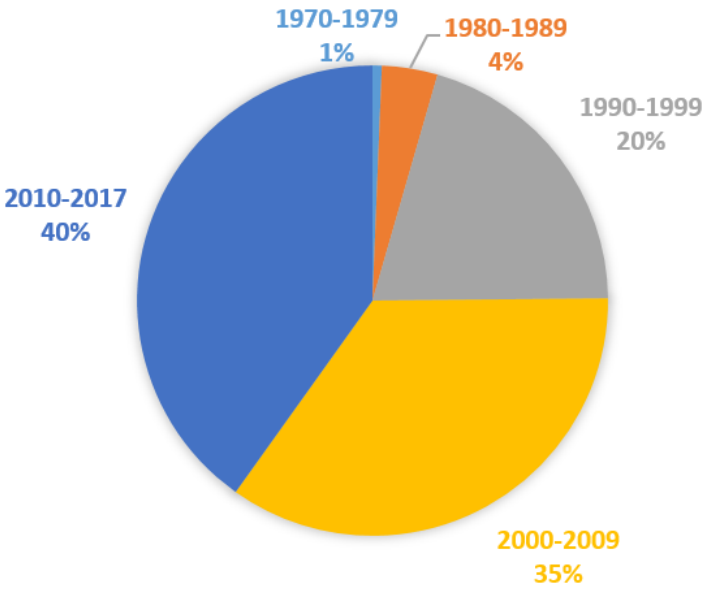

Figure 2: Percentage breakdown of time periods (in years) when smallholding plots were planted with oil palm.

Even as the common narrative that indigenous smallholders in Sabah were persuaded to grow oil palm by government (for good or for evil) is clearly not accurate, it is also the case that government engagement and facilitation of various kinds of joint ventures has had a significant impact in the development of oil palm in TTBK, including in ways that Jurisdictional Certification will have to address. Below we provide a brief summary of the experience in TTBK with a number of schemes to encourage oil palm expansion on smallholder land in east and central Sabah.

The largest of these efforts in TTBK has been land development programs of MPOB. 44% of TTBK smallholders - across 16 of the 20 villages – had been involved in some type of program (activity) associated with MPOB, from the years 2007 to 2017. We were told that it was the villagers themselves who had requested that the MPOB engage with them, but when and how these programs operated varied considerably and it must be noted that some activities were as minimal as brief and one-off talks on how MPOB functions. When asked about other activities, there were accounts of workshops and talks on oil palm management including how to use fertiliser and agrochemicals that are part of MPOB's various extension programs (Warta Sawit, 2010). There were also accounts of significant assistance with second generation replanting of oil palm (launched as Skim Tanam Sawit – SITS), and the provisioning of seedlings and fertiliser/herbicide. Additionally, two villages even had "talks on RSPO" (Kg. Langkabong and Kg. Maliau in Tongod) though perhaps this would have been in reality about MSPO certification.

According to field studies supportive of MPOB these programs have provided a variety of significant benefits to smallholders. For example, a study conducted by Lyndon et al. (2015), in Sarawak found that MPOB has helped to improve the technical skills of smallholders through information sharing that assisted oil palm cultivation, improving the quality of life and raising self-confidence in decision making. In their trainings, MPOB officers provided information on suitable soils for the cultivation of oil palm, yield, seeds, how to use pesticide and fertiliser, and also to introduce companies that supply seed and basic agricultural needs. In addition, MPOB has implemented a palm integration program with cropping and livestock systems in an effort to assist smallholders in increasing income. Zaimah et al. (2017), found most smallholders they spoke to agreed that the palm integration program increased income.

Current MPOB programs target the transfer of sustainable technology to independent oil palm smallholders as well as to channel government aid schemes using TUNAS officers as extension agents. TUNAS officers are to teach "Good Agriculture Practices", many of which are long established and equate well to RSPO P&Cs and the "Best Management Practices " (BMPs) proposed in this work. In a study conducted in Perak and Sarawak, Good Agriculture Practices were found to increase yields from 15 metric tons of FFB (tFFB) per hectare (ha) per year (yr) to 19.17 tFFB/ha/yr (Fatin Umaira Muhamad Azian, et al., 2017). We shall return further below to our assessment of these kinds of MPOB contributions to smallholder productivity and wellbeing in the TTBK.

One other governmental program concerning oil palm involved four villages with the DoA (Kg. Kopuron and Kg. Malapi in Telupid, and Kg. Sinar Jaya and Kg. Kasih Sayang in Kinabatangan). However, only 4 smallholders (one in each village) had been a part of any DoA program and all were some time ago (e.g. between 1999 and 2007). These kinds of programs were designed

to encourage and subsidise smallholders on their own lands. It is unclear whether they were cost-effective in increasing smallholder capacity and productivity, but they do represent learning and relationships that can be valuable today.

Another set of land development programs effectively alienated smallholder lands, and then, for the most part, delivered benefits that did not satisfy the smallholders. For example, Kg. Balat in the Kinabatangan entered a program in 2005 with the Mini Estet Sejatera (MESEJ) under the Ministry of Rural Development's poverty eradication program. This programme was joined by half of the surveyed smallholders in this particular village. According to the smallholders in this programme, the villagers had themselves invited MESEJ to come to the village. "*MESEJ planted oil palm and built houses for each household but the villagers have to work on their oil palm plantation. They told us that each member will get 7 acres of land but until now, we don't know which one our plot is in the plantation. We only receive a house but have never yet received a dividend. We also don't know how much dividend we will get. The oil palm has been being harvested since 2012. In our recent meeting, we planned to stop the workers at MESEJ estate for a while so that the relevant party will take action. There are no written agreements between the villagers and the Sabah Land Development Board (SLDB)*." There was also one communal title programme that one smallholder had joined with Agropolitan in 2013 (also under SLDB), with the land actual being in a differing village to the one in which we surveyed this smallholder. We also found three others that were supported by these Centres back in 1999, 2003 and 2007 in three villages, but again these only involved one of the smallholders surveyed in each of these villages. In these schemes the SLDB or its identified Company manages the land, and the community involved forfeits rights to access it. They are in effect a Joint Venture but without the legal arrangement. Some of these schemes in which smallholders have given up land to an SLDB without full clarity over rights and dividends will clearly require attention under FPIC and Land Rights clauses of the RSPO P&C. SLDP and its partners will also need to engage in discussion of oil palm production practices on these lands.

In addition to the above there were some formal Joint Venture Agreements (JVA) described by participants in the surveys.

Government: Eleven (8%) of respondents stated they were in a JVA with government for their oil palm, all of whom had oil palm in different villages to the ones where the questionnaires were conducted. Clearly smallholders are more interested in Joint Ventures when they are unable to farm the land themselves because they are now living so far from their land. These arrangements may have a variety of specific arrangements that involve Agropolitan and the SLDB, mostly established in the years 2010-14. The lands in question were split between Communal Title, Native Title and Provisional Title, and were entered into not by the individual smallholders but by the village heads. Smallholders gave varying accounts as to whether they had entered into these Joint Ventures voluntarily or had been forced by these village heads, who, in Sabah, often have the ability to gain significant financial advantage from committing the lands of the people in their villages, and/or have been under considerable pressure from Government to make these deals. Most of the agreements were said to be written in Malay, while others were in a mix of Malay and English, and there was one account of the agreement being in English and the smallholder not understanding it but signing it all the same. Vastly different timeframes were referenced as having been provided to the smallholders to

consider whether to enter the agreement from signing right away to having two years to consider; and, there were mixed claims as to the level of understanding of the actual agreements, with several smallholders saying that they had no understanding of what they had entered into. While 70% of those interviewed said that they were reasonably to very happy with the agreement, it is clear that the procedures followed to enter into these arrangements fell well below RSPO standards and will require attention under FPIC.

Two respondents from Kg. Linayukan (Tongod) had 8 and 9 acres, respectively, under a 2009 JVA with SLDB in Kg. Lalampas within a "communal title" there, with one stating this agreement was for a period of 30 years and the other saying they had not seen the agreement. Both respondents said that they received RM 1,000 per year dividend. These types of arrangements are often the result of Native Customary Rights (NCR) land claims, where government officers use an amendment to the Land Ordinance to facilitate the award of land titles to a community on the basis that the lands in question are then be allocated under Joint Venture to third parties rather than remaining in the hands of the community. The official reason for this is to ensure that these lands are development productively. A study of these arrangements in Kg. Lalampas published in 2012 made it clear that such arrangements would not meet FPIC requirements (Abdul Majid, 2012). A third respondent was in a JVA with FELCRA (Federal Land Consolidation and Rehabilitation Authority) and despite this smallholder now living in Kg. Liningkung in Telupid, the oil palm under this agreement (9 acres on Native Title; NT) was in Kg. Kiabu. The agreement was for 25 years with the Village Head and a sum of RM 6,000 per year was the reported income. Villagers may also receive a cash payment at the time of signing of these leases. Official documents suggest that Agropolitan grants the land owners 30% or 40% in its JV TTBK arrangements, but smallholders on the ground are apparently unaware on what basis they are earning revenue.

Company: The smallholders interviewed reported four cases (3% of households) in Joint Ventures with private companies, two with Kim Loong and two with Bayu Bumi Mas. These arrangements are all in Kg. Tampasak, were entered into in 2017, and involve thirty-year leases (a single oil palm cycle) upon which the smallholders earn 40% (presumably of gross return/sale of FFB). According to the smallholders these arrangements were based on legal agreements, though they had been drawn into the scheme by the Village Head rather than on individual account. Two of these lands were NT and one Communal Title.

Individual or local cooperative: There were also a couple of cases of joint ventures among villagers, including one with the smallholder's brother, and another with a local cooperative organisation (a family cooperative), both on Native Titles at 15 acres and 3 acres in size respectively.

3 Household Incomes and Oil Palm

The TTBK Survey used a variety of methods to estimate household incomes and the contributions that palm oil was making to those incomes. The principal findings from these surveys are as follows:

- Oil palm smallholders in these four districts mostly fell within the bottom 40% of Malaysians by household income; in fact, reported cash incomes (doubtless somewhat under-reported) was calculated at a median of RM 1500/month compared to Sabah's official median value of RM 5,354/month (Department of Statistics, Malaysia 2016). This result is similar to a recent MPOB-associated study which found 63.1% of household monthly incomes of smallholders in Sabah and Sarawak below RM 2500 (Ali Zulhusni et al. 2017). The Government target for Oil Palm smallholder incomes by 2020 is at least RM 4,000/month (Zaimah et al. 2017).
- Reported incomes were highly variable both within and across villages and districts. Compared to the historic residents of these areas, incomes are thought to be significantly higher for those Indigenous people who have migrated into the TTBK region from land-hungry coastal areas since the opening of the roads in the early 1960s (see above).
- Wage incomes in these households are low. 80% were farmers (36%), students (25%) or housewives (19%) highlighting constraints of households to diversify incomes outside of farming. Wage earning professions among the rest included factory workers, teachers, labourers, clerks and government employees. Although many young people migrate to urban areas, Peninsular Malaysia and Singapore for work, remittances and return investment in TTBK are not significant at present.
- Oil palm is now by far the dominant crop consisting of 81% of the total of the smallholder farmed land. Other crops include rubber (10% of smallholder land), fallow areas (2%), hill rice (1%), and seasonal fruits, cocoa, banana, wet rice, vegetables, pineapple and corn all reported on negligible areas. It was not the case that most smallholders grew their own food and then had an area of oil palm. In fact, only 8% of households planted rice (for subsistence purposes), 8% planted vegetables (mostly

Box 7: Financial Challenges

Some accounts from smallholders on their general income include:

"We just make it enough." "All of our money use to paid AIM loan." "Enough to prepare family needs." "Only cover food." "My son is sick, he has to go to hospital every month." "Just enough for basic needs." "Depends on the price of FFB." "The price of goods and fuel are increased." "Little income" "Only cover food and education." "The price of goods are increased." "Sufficient to buy food." "Much depending on my husband's salary." "Increased since planting oil palm." "Inconsistent income." "Able to cover all of our needs." "Only covered for food and medicine when people are sick."

for subsistence), 9% grew seasonal fruits (for sale and subsistence), with a handful of other households planting other food crops. This means most households now have to buy most of their food using palm oil or other income sources.

- Within TTBK, income recorded from oil palm contributed to 48% (RM 720/month) of household's reported monthly median income, but this varied significantly between households and villages. Notwithstanding likely respondent biases given the survey focus on oil palm, we believe that oil palm contributes between one-third and half of total income for smallholders in TTBK. Indigenous commitment to the crop is now substantial. Indeed, studies elsewhere have shown that, if properly managed, oil palm can raise rural smallholders income and assets by 60% or more (Susila 2004).
- However, when asked if their incomes, including that from oil palm, were sufficient to cover their basic needs only 8% of the surveyed smallholders said that their current income covered most or all of these costs; and, nearly one-third of households said that their income covers less than 40% of their basic needs. Whatever is actually happening in the survival of these households it is clear that these Indigenous communities have become heavily dependent on cash, struggle to have enough cash, and are looking to oil palm to bridge this gap.
- Despite this reported daily "subsistence gap" the highly visible ownership of vehicles, the construction of houses with commercial materials, and the widespread presence of other modern assets are the norm in these households indicate the extent to which they are meeting their needs by taking credit, selling assets (such as land), engaging in non-legal activities (which often deplete their natural resources), and relying on the patronage of government agencies and political leaders.

Dependence on any one source of income always means reduced resilience. The price of Crude Palm Oil, like any commodity, is always fluctuating, and in fact is closely associated to the price for petroleum. According to MPOB data in 2016 the average price for CPO was RM 2,783/tonne, but it went up to RM 3,268/tonne in Jan 2017 but then declined to RM 2,407/tonne by December 2017. Furthermore, market price rises may not translate into improved farm-gate prices: the CPO price in 2017 was up 4.9% on 2016 but FFB only increased 2% in value. These market fluctuations are felt very keenly by these smallholders who are so dependent upon palm oil. As a perennial crop, oil palm yields do fluctuate less with the weather than many cash crops, but MPOB data shows that the El Nino of 2016 nevertheless depressed yields by around 15%. Input prices can also increase substantially: for example, the cost of fertilisers in Malaysia for smallholder oil palm nearly doubled between 2006 and 2008 (Rahman, 2008) with significant consequences for viability (Simeh, 2010). Needless to say, a major pest outbreak or declines in global demand for Sabahan palm oil would now be devastating to these indigenous smallholder families. It is important to diversify incomes in the face of such volatility (Ahmed et al. 2016).

Smallholder from Kg. Langkabong in Tongod in front of his house

Quite apart from this vulnerability to price, the low incomes earned by smallholders from oil palm reflect the limited size of holdings (average 2.98 ha), the low crop yields (at an average of around 10 tFFB/ha) and the poor prices they earn for their FFB in the market place. In regards to low productivity we shall report in some detail in later sections the potential causes behind TTBK's variable and mostly low smallholder yields which are only around half those that might be expected (namely 20 tFFB/ha per year), a level only achieved by one of the twenty villages we surveyed in TTBK. We will first turn to the issue of the price of FFB.

3.1 Prices for Fresh Fruit Bunches (FFB)

Whilst the price of FFB varies over time, smallholders were asked to give the price they received from their last FFB sale in RM tFFB to glean an understanding of current prices, and any variation across the area.

Within TTBK prices widely varied from a very low price of RM 60 to RM 700 per tFFB; with a mean price of RM 493 tFFB. The variation in FFB prices mainly reflected the location of villages relative to the buying centres and palm oil mills; the consequences of this can be seen in Table A1 in the Appendix. Kg. Balat in the Kinabatangan had the lowest price of tFFB and this is likely related to the fact that 80% of the smallholders surveyed sell to an individual who collects their FFB due to issues with distance from buying centres. There were mixed accounts of perceptions on the price of FFB. Many smallholders said they were generally satisfied with the price (49%). Others (31%) stated it was too low and they were dissatisfied with the price they received, with some smallholders stating it was not worth it, or that transport costs were higher than what they received, or that it used to be a higher price (e.g. RM 600-700 tFFB).

Interestingly, it was not the price of FFB that was the most influential factor in where smallholders sold their FFB. Rather, for 64% of smallholders it was distance to the point of sale. Distance and price combined was important for a further 5%; but price alone was only important for 8%. The importance of distance from smallholding to point of sale is understandable considering that the fruits deteriorate very quickly after harvesting and must be processed at the mill within 24 hours, with the grade (ripeness and time since harvest) determining the final price. Distance to weighing centre was recorded, and there was often great variation within the village according to which weighing centre the smallholder used, the range and mean can be seen in Table A1 in the Appendix. Villages identified as being far from the weighing centres and/or mills include Kg. Sangau (45 to 80 km away), Kg. Langkabong (15 to 49 km) and Kg. Balat where smallholders have to pay high rates for a middleman to collect the FFB whilst others have stopped harvesting because they report costs are too high. It is in securing better prices for FFB that cooperatives and other forms of smallholder organisation might be particularly effective (Azman and Nazirah, 2015).

Regarding who smallholders sell to. Rather significantly, 13 out of 20 villages in TTBK sold their FFB exclusively to weighing centres. The remaining villages sold a proportion of their FFB to a weighing centre and a proportion to a cooperative mill or individual; apart from Kg. Balat who exclusively sold to an individual due to distance and transportation issues. As discussed in section 9.2 many smallholders are not MPOB registered yet these FFB are passing through these weighing centres regardless. Understanding how these – often – independent weighing centres must function legally and to enable Jurisdictional Certification is critical, as these centres are the points of entry for significant proportions of Sabah's palm oil.

Smallholder FFB loaded onto a truck

4 Smallholder Readiness for the RSPO

4.1 Knowledge of the RSPO

Figure 3: The 8 Principles for Oil Palm Growers who wish to become RSPO certified.

Knowledge of the RSPO among smallholders is limited. Of those surveyed, only 17% said they had ever heard of the RSPO. Two-thirds (12%) of these respondents reported that they knew the purpose of RSPO certification; and 7% said that they knew the criteria (i.e. Figure 3) for obtaining RSPO certification. As few as 2% of respondents said they had someone in their family who was RSPO certified. 10% in six villages stated that a representative from either a Non-governmental organisation (NGO) or a company had visited their village to inform them about RSPO certification.

Despite this limited knowledge about RSPO, but in the context of these interviews, the vast majority of respondents said that they would like to become RSPO certified or would be open to it with more information. Insofar as some smallholders had reservations these were mainly in regard to their financial situation and the likely costs. There were also some concerns in some villages around the differences between RSPO and Malaysian Sustainable Palm Oil (MSPO) certification (surfaced in large part by recent MPOB messaging). MSPO certification is also known only by a few smallholders in some villages, for example in Tongod where the "Sustainable Palm Oil Cluster" (SPOC) program has been active.

Smallholders were asked about their hopes around outcomes from the RSPO Jurisdictional Certification process and/or in Forever Sabah's engagement with them in this. In Telupid (37%) and Tongod (34%) the most frequent response was that they hoped it would enable them to expedite resolution of their land tenure issues, most especially to enable them to

secure Native Title on the lands that they had already planted under Land Application. Land tenure resolution was also important in Beluran (27%). The highest expectation in Kinabatangan (48%) and Beluran (37%), however, was that the obligation to achieve higher standards of land-use and crop management would be associated with training, extension and other support which would enable them to become more productive and sustainable. This was also important in Tongod (28%) and Telupid (29%). Meanwhile about one third of households interviewed did not provide a response to this question about Jurisdictional Certification, this lack of response being highest where uncertainty as to the government's commitment to RSPO was most debated (Kinabatangan). In some districts small numbers of villagers hoped certification might encourage a diversification of cropping away from oil palm dependence, or, alternatively, the possibility of opening even more land for oil palm.

A deeper understanding of the reasons for smallholder interest in engaging with the Jurisdictional Certification process will become clearer as we go through this report, as will the nature and size of the gaps between current practice and RSPO standards.

One of the field coordinators (Joannes) explaining about RSPO to smallholders in Tongod

5 Smallholder Oil Palm Production Practices

5.1 Yield Gaps for Smallholders

PRINCIPAL 3: COMMITMENT TO LONG-TERM ECONOMIC AND FINANCIAL VIABILITY
Criterion 3.1 There is an implemented management plan that aims to achieve long-term economic and financial viability.

The Principles & Criteria around the planting, management and harvesting of oil palm that have been so thoroughly hammered out over the years by the participants of the RSPO promote practices that aim to achieve both high yields and social and environmental sustainability. While these are based primarily on conditions in the commercial plantation sector there have been both informal and formal efforts to adapt them to the conditions of smallholders. This means that through the lens of smallholders the achievement of RSPO standards is equated with efforts to close the yield gap between what they currently achieve (10 tFFB/ha/year) and a target of (say) 20 tFFB/ha/year, which is the baseline for commercial plantations (which can achieve up to 30 tFFB/ha/year). (These gaps are typical in South East Asia, for example smallholders in Sumatera were found to produced 35-40% less crude palm oil per hectare than government or private plantations, Molenaar et al. 2010).

This section looks at the broad factors behind the FFB yield gap among TTBK smallholders as foundation for examining in subsequent sections the gap between practices acceptable under RSPO certification and the current situation of smallholders in Sabah. This can identify what could be the most meaningful ways to work with smallholders to increase their oil palm productivity while ensuring that further conversion of forest and landscape degradation do not occur.

Since oil palm is a long-lived crop, yield in FFB has to be examined against age of the crop. To do this we modified a yield curve based on predicted yields for oil palm within commercial estates in eastern Sabah (for details see Abram et al. 2014); and inserted annual yield estimates provided by TTBK smallholders for comparison (on a three-year rolling average to compensate for small data size) (Figure 4). Within this graph, commercial estate yields are based on 136 palms per hectare (as recommended by MPOB), and 103 palms per hectare to reflect thinner stands of productive oil palm. The graph shows commercial yield across a 25 year generation period as used by industry (MPOB 2012); with yields included for TTBK smallholders still harvesting FFB from palms up to 32 years old. Smallholder yields between 4 and 25 years in TTBK, at just 10.8 tFFB/ha/year, were less than half those smallholders could target, or significantly less than half of that predicted for estates. Yields were notably highly variable across these lands.

This average yield is low not only by estates standards, but in comparison with other yield data for independent smallholders within Malaysia and Indonesia, where field studies have reported figures in the range 13.1-18.8 tFFB/ha/year (Ayat, et al. 2008; Molenaar et al. 2010; Lee et al. 2014; Molenaar et al. 2013; Rahman et al. 2008; see also Ali Zulhusni et al. 2017 who found 43% of smallholders producing 10-20 tFFB/ha/year and 23% above 20 tFFB/ha/year). It is possible that the reason our sample has on average lower yields than those

in other studies is because our study included (rarely studied) isolated villages with very poor results alongside more organised producing villages with figures around those reported in the literature. Indeed, studies in Malaysia of smallholders affiliated with settlement schemes - such as those of FELCRA, Federal Land Development Authority (FELDA), and Rubber Industry Smallholders Development Authority (RISDA) - find they often achieve higher yields than average (Vermeulen & Goad 2006).

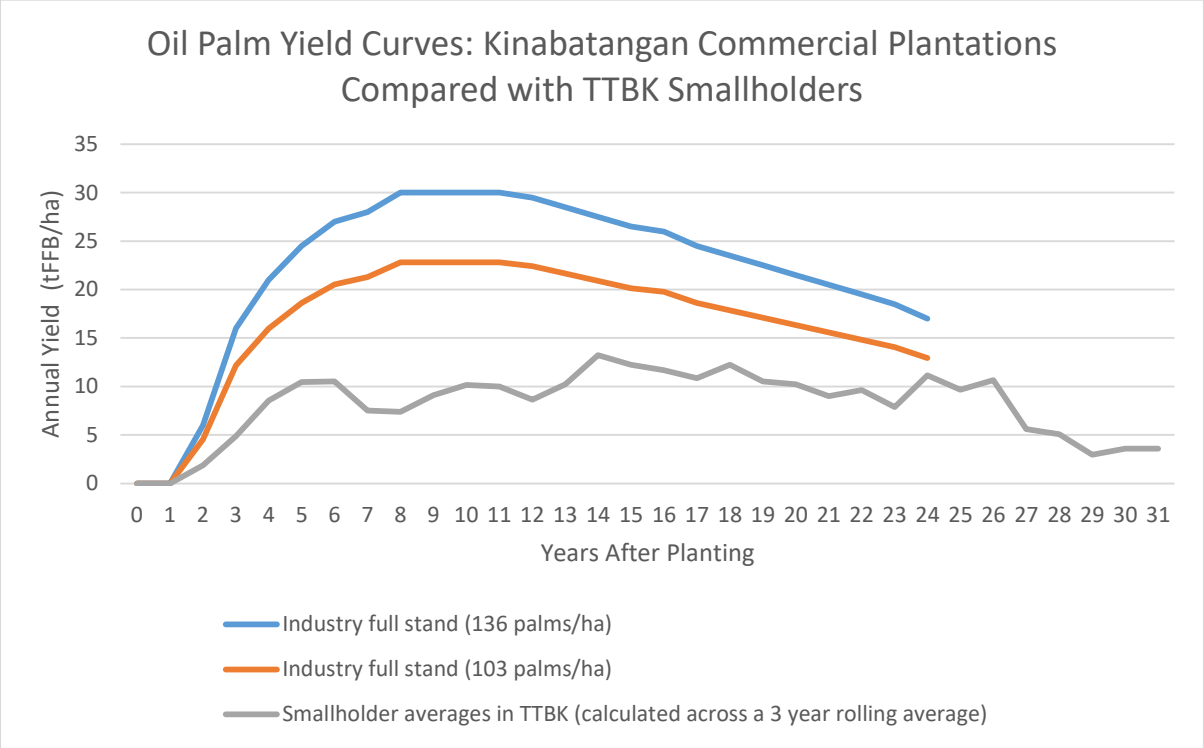

Figure 4: A modified graph from Abram et al. (2014) showing predicted annual yield values (tFFB/ha) across palms over 25 years for areas of 136 and 103 per hectare (as per industry standards); with average annual yield estimated from smallholder data within TTBK using a three-year rolling average.

In the absence of detailed long-term data (with good controls) on actual on-farm practices and yields the TTBK field team reviewed together the various potential causes of the yield gaps based on their field observations and discussions with farmers and extension agencies. These estimates are notional, even as many are supported by the data from this and other studies (such as the thorough studies of Ayat et al. 2008 and Ali Zulhusni, et al. 2017), and they are useful because they can help direct attention to the most significant yield-gap issues so that the JCSPO effort can focus where it is most appropriate to secure improvement.

First the team listed and sorted all the individual variables (see Table 2), identifying which are likely to be most significant in the TTBK region, and whether the data existed to explore them.

Table 2: Identified potential causes of yield gaps by the TTBK field team.

	Categories of the Yield Gap	Potential Causes of the Yield Gaps	Significance of Issue in TTBK/Data Sources
1.	Land Endowment	1a. Soil Type	Important issue, only limited data available
		1b. Slope	Only locally important, data available
		1c. Altitude	Not important
		1d. Wildlife attack	Locally important, particularly elephants at establishment phase, and monkeys at fruiting
2.	Initial Investment	2a. Seedling quality	Major issue; study data show effects
		2b. Plant distance	Probably issue; data unavailable
		2c. Stand monocrop	Probably minor issue; data unavailable
		2d. Delay in re-planting after 25 yrs	Significant issue; good data
		2e. Non-use of pesticide to control insects at establishment	Probably issue; data available
3.	Management (technical, financial and planning)	3a. Soil fertility	Major, limited data
		3b. Financial plans & accounts	Major, limited data
		3c. Harvest times & grades	Minor, limited data
		3d. Control weeds	Major, limited data
		3e. Retain land cover	Minor, no data
		3f. Access to/control over labour supplies	Major, limited data

Next, the team compared the three main categories: (a) the quality of land/locations available for smallholders; (b) the quality of investment into establishing the crop; and, (c) the quality of on-going management of crop. They were asked to estimate how much each of these factors was responsible for the yield gaps of the three notional TTBK smallholders: the five-ton producer (poor), the ten-ton producer (average), and the fifteen-ton producer (success) (see Figure 5).

From the point of view of improving smallholder yields the views presented in Figure 5 are initially encouraging. Low smallholder yields are potentially not the result of their land being significantly lower quality than that available to the commercial estates. It is only a small proportion of smallholders who have cleared, for example, ultramafic soils or steep slopes. Nor is low initial investment (including in poor quality seedlings) an irreversible dominating influence. Instead the big differences in yield seem driven by on-going management practices, especially management of soil fertility, weeds/undergrowth, financial planning and labour. Since some smallholders do readily achieve better results, perhaps their preferred practices and experience can be used to teach the low producers how to do much better.

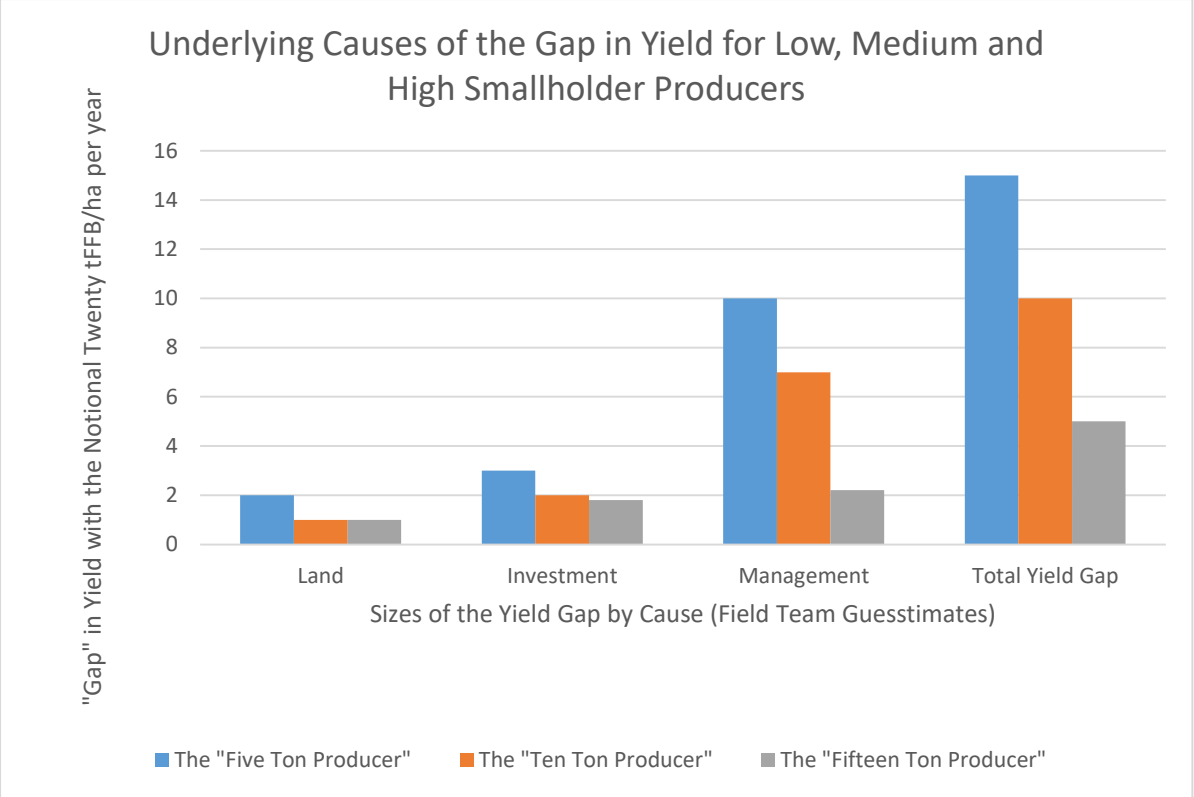

Figure 5: Major Factors behind the Yield Gap for TTBK Oil Palm Smallholders - Field Team Views.

But these observations can also discourage. It is clear from a deeper discussion that it is not easy for many smallholders to transform or enhance their financial, management and technical practices. And the shortfalls in management are quite likely not mainly because smallholders are ignorant of what should be done. Smallholders are favouring oil palm in part because they know that they can get away with intermittent management and low labour and planning inputs compared to other crops, and this sits well with busy modern lives and a shortage of young adults (who have often migrated or have other jobs). This is why they can report poor management as their main productivity challenge (Ali Zulhusni, 2017) but not overcome it.

As such many smallholders are choosing to practice the infamous “Triple T” philosophy (“Tanam, Tunggu, Tuai”; “Plant, Wait, Harvest”) because they find this approach adds more to the quality of their lives than the maximising yield (or income) approach. Financial management and planning skills are both technically challenging and run counter to social obligations in extended families where resources cannot be easily reserved for regular allocation to future cops while ignoring ever-present immediate human needs. Most people who employ labourers do not have the time, energy or perhaps heart to adequately supervise that labour, and anyway the scale of the operation prevents that being done efficiently (which is possible only in large teams under a supervisor). This means the local teacher with money to invest in oil palm cannot stop their labourers harvesting only the more accessible FFB or ensure that fertiliser is properly applied rather than pilfered or given only to the most visible trees. Meanwhile labour can only be afforded because it is provided by undocumented foreign migrants, but on the same count that makes it hard to rely upon (let alone invest in

training) that labour. Smallholders may find it even more difficult to oblige family members to do heavy tasks like harvesting in a thorough way. Overall, it would be reasonable to posit that most smallholders – except perhaps with the smallest landholdings - are focused therefore not on maximising yield per unit land area, but instead on optimising yield per (modest) management time/energy input. This effect is seen in Figure 6 that looks at yield per unit land area by size of smallholding, and shows up as yields being highest in the smaller holdings.

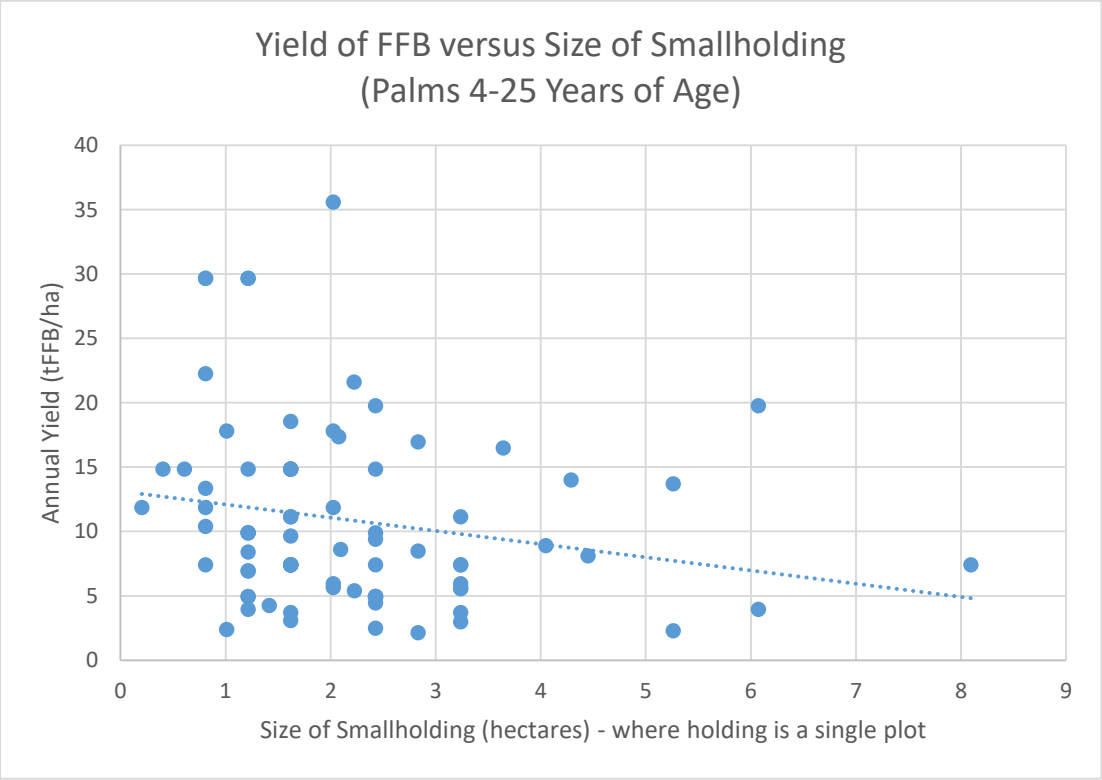

Figure 6: Annual yield of FFB against the size of the smallholding plots.

These results mean that approaching the yield gap through the lens of "smallholder ignorance" to be fixed by technical training is not likely to be an effective silver bullet. Returns on investment in inputs will be a factor – it is long known that by skimping on inputs smallholders can have lower unit costs per ton of FFB produced (Azman et al. 2003) and that efficiency on inputs is a crucial economic measure (Ali Zulhusni, 2017). An interesting example from this comes from the smallholder studies in Peninsular Malaysia where ethnic Chinese smallholders outperform other ethnic groups on efficiency and yield, despite using 10% less fertiliser than Indian smallholders (Ramli Abdullah, 2013). Cultural factors as well as scaling dimensions of what works are likely to also be significant in Sabah. This view is further reinforced by analysing the relationship between the educational level of the household head and FFB yield. If "technical ignorance" were a big issue more educated household heads should have much higher yields, but in fact there is little relationship between education and yield. Nor does a simplistic understanding of lack of financial means explain low yields; the highest FFB yields are actually for households in the middle-income range. This is perhaps

because higher income households are wealthy enough to avoid some of the drudgery of producing even higher oil palm yields, and so slacken off in effort.

Oil palm is not a traditional crop in Sabah, and, as described above, only expanded recently in TTBK districts with 75% of plots planted since 2000. This is often used to explain why smallholders might have inadequate knowledge of the crop and need further training. We therefore tested whether villages that have been growing oil palm for longer (i.e. have a large percentage of "second generation" oil palm plantings) have higher yields, on the grounds that this might reflect accumulated knowledge of the crop. The result (Figure 7) is surprising, and perhaps disappointing. Yields decline the longer oil palm has been produced rather than increase, suggesting that soils (and farming watersheds) degrade faster than people learn how to do grow oil palm any better. A similar result is obtained with the individual plot data, with the yields during the second cycle a substantial 2.6 tFFB/ha/year lower for palms aged three to ten than during the first growing cycle (notwithstanding that insufficient data are available to really establish this relationship statistically since there are only 11 plots of second generation fields with adequate data, all of ten years of age and younger). Perhaps this indicates that smallholders quickly manage the basic skills of oil palm production and are not highly motivated to learn much more under current conditions. Meanwhile, for economic and other reasons they fail to make the nutrient and soil management investments necessary. Clearly if extension and training is to transform their productivity it will have to be done in way that will motivate smallholders to actually apply such knowledge. Careful work with smallholders who have been able to consistently break the 20 tFFB/ha/year production barrier as well as with plantation experts with practical experience in these ecologies may enable us to find which improvements in management are both technically and culturally sound, and economic at the small scale at which Sabahan smallholders operate.

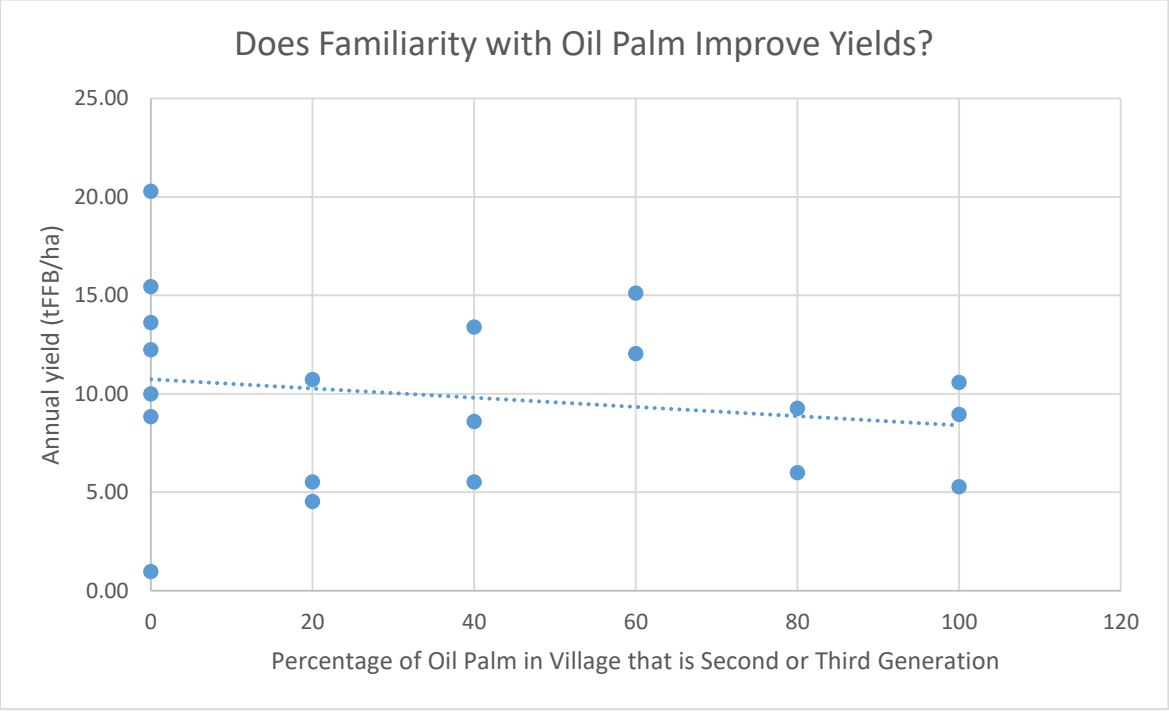

Figure 7: Graph showing lower annual yields (in tFFB/ha) rather than higher in villages where oil palm has been produced for longer.

With these caveats that Sabahan smallholders may be operating with their own logics that discourage the closing of the "yield gap", even as they also want to earn more from their crop, let us now look at each of these issues in turn, starting with the reported levels of knowledge among smallholders, and exploring how these interface with RSPO certification requirements.

5.2 Knowledge in Oil Palm Cultivation

In terms of how they ranked themselves in knowledge, the majority (70% or more) of smallholders rated themselves as good or very good (by their ranking) for land clearance, planting, fertilising, sowing in the nursery, and spraying pesticides. This is despite the fact that only just over half (52%) of the surveyed smallholders said that they had not received any briefing or training in oil palm cultivation. Of smallholders who had received training, well over half named MPOB as a provider; the Department of Agriculture was the second most important, with Pertubuhan Peladang and RISDA also mentioned (Figure 8).

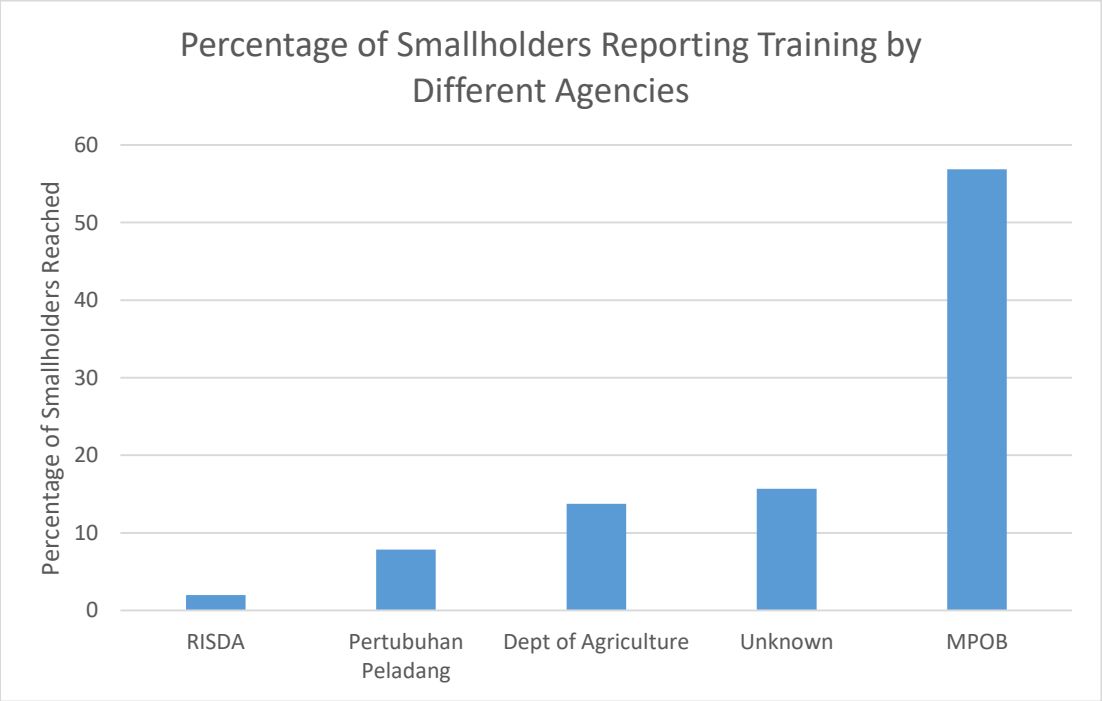

Figure 8: Percentage of smallholders reached by different funding agencies

Without our participation in these trainings it was difficult to evaluate their quality and relevance, even as we heard from smallholders that they ranged from simply briefings to systematic trainings that were followed up annually. Generic categories of the briefings/trainings can be seen in Figure 9 (a). Trainings covered a wide variety of topics from mechanisation to replanting. One of the most reported was training in agrochemical use (fertiliser, pesticides, herbicides), but only 23% stated that they had received this (we did not record what training was obtained in 20% of smallholders). Sadly we found that this training

has barely increased yields (from 10.6 tFFB/ha/yr to 11.1 tFFB/ha/yr) for smallholders with oil palm from 4-25 years of age with accurate plot-based yield data. We also found that smallholders who reported receiving more training had on average no yield improvement on those who had received zero or only one training.

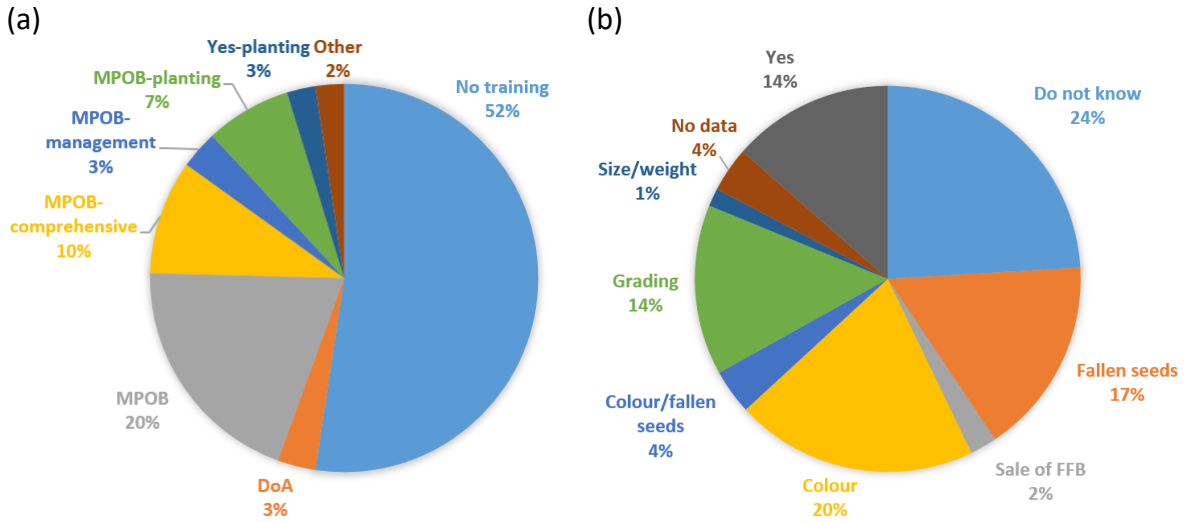

Figure 9: Percentage breakdown of general categories of subjects of those smallholders who had received some trainings from a government authority on planting oil palm (a); and, Breakdown into categories of the responses of those smallholders on the grading of oil palm FFB (b).

This survey also enables us to compare the impact on yields of training received from different training agencies. This produced striking findings in our small sample (Figure 10). Training and briefings from MPOB was not found to increase FFB harvests compared to no training, whereas training associated with other providers (Department of Agriculture, Pertubuhan Peladang and RISDA) appeared to very significantly increase yields. Further studies are necessary to understand whether this is a pattern across smallholders in Sabah and whether different results are caused by differences in what is taught or in the teaching methods used (for example whether teaching is provided in field situations around topics requested by organised farmers).

MPOB has many years of experience with linking training to subsidised (or credit) inputs, including through working with millers and dealers. One example is the Supervised Fertiliser Cluster (KBT) approach, launched in 2003, which included eight clusters in Sabah. This sought to increase yields by connecting smallholders with fertiliser on credit through the people who purchased their FFB. According to one evaluation of the program by MPOB research staff the program was popular with smallholders who said that it provided them confidence and knowledge, especially in regards to the quality of FFB delivered (fewer unripe bunches). However, the MPOB evaluators approach had not increased FFB yield or fertiliser use and that "most of the success factors are in qualitative not quantitative terms." (Roslan Abas et al. 2010).

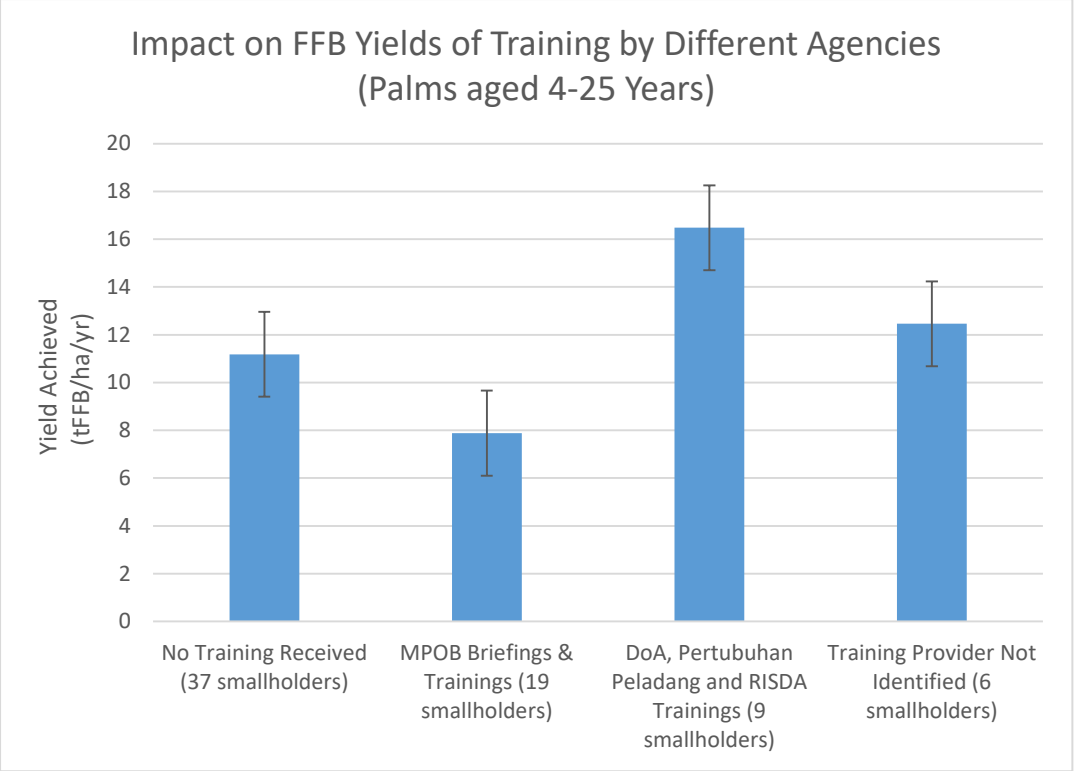

Figure 10: Impact of training by different agencies on FFB yields.

Knowledge ranking in FFB grading was mixed with around 40% of smallholders being very confident in their skills, while 31% said their knowledge was average, and 28% said their knowledge was either poor or very poor. Knowing when the fruit bunches are ready for harvesting is critical to the price at sale. Smallholders who say that they know how to grade point to different factors in how grade is determined, see Figure 9 (b). Responses included: colour (though this ranged from eggshell yellow to red); size and a number (which ranged from 3 to 10 seeds) of fallen seeds/fruits; and with a few smallholders saying that grading was based on fruit weight (Figure 9 (b)). (In fact, readiness is best judged on looseness of fruits.) Around a quarter said they did not know or they only knew how good their fruit was when this was done for them at the point of sale (i.e. at the weighing centre). The lack of FFB grading knowledge may be contributing to the gap in smallholder's ability meeting their income potential from this crop, regardless of their actual management practises (Ayat et al. 2008).

Essential to the process of farmer learning, especially with a perennial crop, is the ability to monitor outcomes in relation to practices, and, except in a few individuals of exceptional clarity and memory, this requires record keeping. As with other studies (Kannan et al., 2017) we found most smallholders do not prioritise record keeping. Only 43% of our interviewees said that they even kept records/receipts on the sales of their FFB, though some would only keep last receipts of the last sale. Moreover, only a quarter of smallholders said that they had some type of filing system for these records and 37% of smallholders said that they saw no value in keeping such records. The other 63% said that they saw the importance of these records with answers largely orientating around the value of these for applying for loans, and as a general reference and for detecting price changes in FBB. For the most part they did not see the value of this for calculating what worked or returns on investment. Thus, when asked

about keeping records and/or receipts on the purchase of any fertiliser, pesticides and/or herbicides some 80% of smallholders said they did not and almost all smallholders (96%) said that they do not have a filing system for agrochemical use.

MPOB has also long been aware of the challenges caused by the lack of smallholder record keeping (Ayat et al., 2008), and amongst other things is seeking to develop a "Kad Informasi Pekebun Kecil Sawit" system using dealers as the intermediary; an approach their studies show still requires fine tuning to enable adoption (Kannan et al., 2017). Continued work in this arena is clearly important, perhaps both for the monitoring of sales and for enhancing farmer interest and ability in keeping records.

Smallholder in Tongod explaining his experience with oil palm

5.3 Land Clearance for Oil Palm

5.3.1 Use of Fire to Clear for Oil Palm

PRINCIPLE 5: ENVIRONMENTAL RESPONSIBILITY AND CONSERVATION OF NATURAL RESOURCES AND BIODIVERSITY

Criterion 5.5 Use of fire for preparing land or replanting is avoided, except in specific situations as identified in the ASEAN guidelines or other regional best practice.

Of the 134 smallholders surveyed, 87% said they used traditional methods such as slash and burn to clear land for oil palm, while a few used existing cleared areas, such as old paddy fields. Smallholders reported using machinery to clear the land for second generation of oil palm and one quarter used modern methods such as using grass cutter machine, excavator

Hitachi and chainsaw to clear land. Most of these latter smallholders (18%) were assisted by MPOB in replanting oil palm, with applications made through village leaders.

The Malaysia Interpretation of the RSPO Principle 5.5 prevents oil palm planters using fire for clearing areas for oil palm post 2003. To understand the degree to which this would affect the smallholders in our survey, we cross references those plots that have been cleared on or since 2003 by slash and burn. Around 62% of the plots in our survey fall outside of this guideline. Whilst we did not ask what type of land cover was on these plots prior to planting, it is likely that many would have been forest classified as High Conservation Value. High Conservation Value Areas are locations with biological, ecological, social or cultural values which are outstandingly significant or critically important at the national, regional or global level.

5.3.2 The High Conservation Value Areas

PRINCIPLE 7: RESPONSIBLE DEVELOPMENT OF NEW PLANTINGS
Criteria 7.3 New plantings since November 2005 have not replaced primary forest or any area required to maintain or enhance one or more High Conservation Values

We found 78% of smallholders have already removed standing forest from their land holdings. Of the total oil palm plots planted, 40% had been planted - as first-generation oil palm - since 2005. Whilst we did not ask smallholders specifically what the land cover was prior to planting oil palm, it is highly likely that for most of these areas there would have been forest containing certain High Conservation Values, posing a significant challenge for the Jurisdictional Certification process.

The remaining unplanted lands were described by the smallholders as being mostly logged areas, somewhat degraded but nevertheless often in reasonable state. These forests are also highly likely to be classified as of High Conservation Value. Meaning that under RSPO criterion 7.3 these areas cannot be converted to new plantings of oil palm. Regardless, around 80% of the people who still had some forest on the land owned or claimed by them told us that their plan was to clear, and mostly to plant more oil palm. Three quarters of the remaining forest were on smallholder land that was not legally-titled, mostly on land claimed under Native Customary Rights as Land Application but also in land in a Class II Forest Reserve (FMU-5). The implications of Jurisdictional CSPO on further forest clearance on smallholder lands will need to be addressed. Another team at Forever Sabah are currently involved with the Sabah Forest Department, the Concession Holder and the smallholders involved to address oil palm encroachment through community forestry at FMU-5.

Almost all of the smallholders said that they had large oil palm estates around their village. Whilst two-thirds of smallholders saw positive aspects of large-scale oil palm (with these being orientated around job and income opportunities), around 30% emphasised the negative impacts. Indeed, the smallholders were eloquent on the environmental consequences of large-scale forest conversion, notably on forest loss and the resources they get from the forests, as well as on pollution, lamenting on the previously good water quality of their streams and rivers in yesteryears – central to indigenous communities in Borneo – and noting how prevailing air temperatures are now much higher. Further to this, the TTBK smallholders

articulated clearly how they still value the forest in both economic and cultural/spiritual terms, and the scale of the impact that its loss has had on their wellbeing.

Small-scale oil palm typically has less negative impact on overall environmental quality, because human use of land tends to be less intense in space and time compared to large monoculture plantations (for example, re-planting oil palm a few hectares at a time rather than across an entire watershed). Nevertheless, 21% of smallholders also noted the negative impacts from small-scale forest clearance again stressing the issues that oil palm development is having on their environment (including increase in temperatures). This emphasises the point that despite the relatively small scale of smallholder oil palm, negative environmental impacts are likely and the trade-off between potential financial improvement for planters and the negative environmental impacts is perhaps still yet to be fully understood.

5.3.1 Peat Soil Associations

PRINCIPLE 7: RESPONSIBLE DEVELOPMENT OF NEW PLANTINGS
Criterion 7.4 Extensive planting on steep terrain, and/or marginal and fragile soils, including peat, is avoided.

In addition to the prohibition of use of fire to clear land for oil palm RSPO has strict criteria on slopes restricting oil palm to less than 20 degrees and avoiding areas of peat soil. Whilst details on precise soil type and degree of slopes are unavailable smallholders did give descriptive information on soil. We found that 17% of these plots opened since 2005 were associated with peat specifically, and if we grouped associations of peat with 'swampy' this increases to 22% of the post-2005 plots. In our study region, peat is largely topogenous, meaning that it is rather shallow and receives water from surrounding lands as well as from rainfall. Farmer descriptions of "peat" may not surpass the trigger for "peat" under RSPO definitions (in terms of depth and organic content), but this is nevertheless clearly an issue. A recent study of smallholders across Sabah and Sarawak reported that 10.8% of smallholders were on peat soils (Ali Zulhusni et al. 2017). Only 6% of smallholding plots were described as hilly in our TTBK interviews, though this may or may not be above the prohibited 20-degree slope threshold stipulated in the RSPO Principles and Criteria. 21% of Sabah and Sarawak smallholdings were reported as hilly (above a 6-degree slope) by Ali Zulhusni et al. (2017).

5.4 Sourcing of seedlings

The sourcing and use of high quality hybrid seedlings is essential for securing good yields, perhaps making more of a difference than any other single technical factor because high quality oil palm cultivars have been developed as hybrids. The 20% of farmers who attempt to grow their own seedlings or obtain them by "stealing" naturally regenerating seedlings from high quality commercial plantations (or from their neighbours) suffer severe yield depression. According to village-level data in those communities where half the smallholders relied on such seedlings, village yields were down to nearly half those where the villagers accessed purposely raised hybrid seedlings. Careful analysis of plot data collected during this study found that plots deriving from self-seeding actually produced 45% less FFB when

mature than the average produced by hybrid sources. Purchasing seedlings would be a large upfront cost for smallholders, so the majority of smallholders secure their seeds/seedlings through donations or subsidised purchases from the authorities namely MPOB (28%) and DoA (27%), Local Politicians (6%), the Government input agency Peladang (7%), the Koperasi Pembangunan Desa (2%), or as donations from adjacent private oil palm estates (11%). Only 1.2% told us they purchased their own seedlings from a private nursery. See Figure 11 for annual yield comparisons of seedlings from different sources.

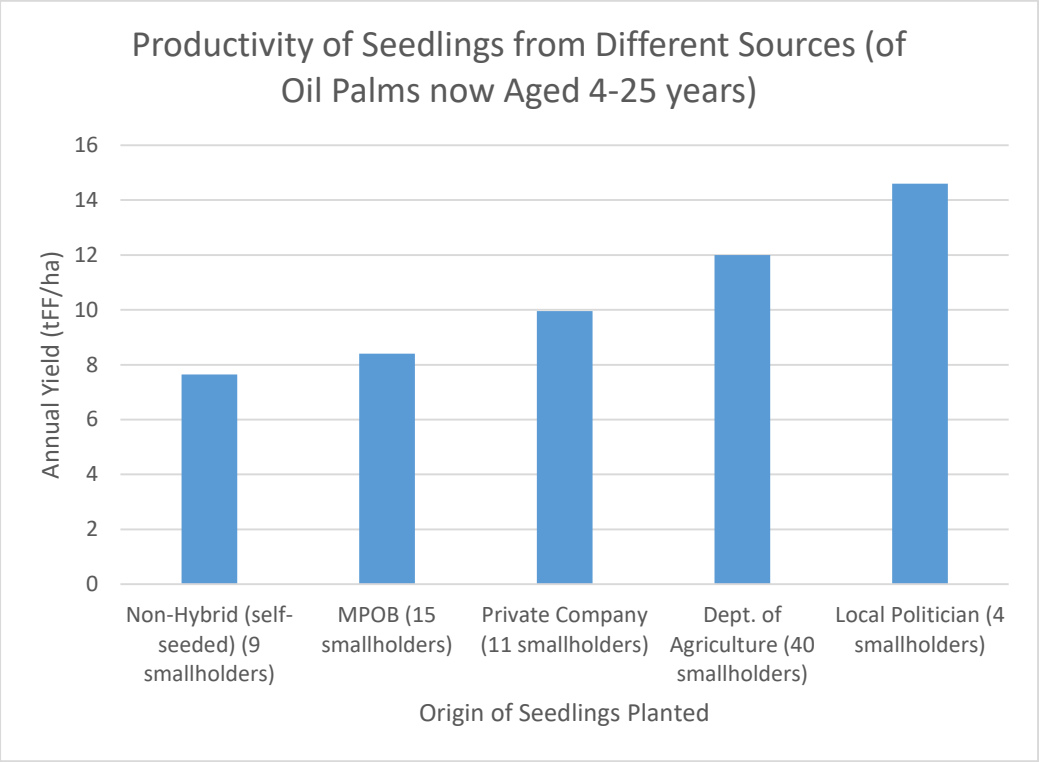

Figure 11: Graph showing annual yield (tFFB/ha) for seedlings reported provided by different agencies.

The dependence of smallholders on oil palm seedling handouts indicates their lack of financial and managemental autonomy, but at the same time indicates that increased efforts to provide quality seedlings would likely have ready acceptance for both new plantings and re-plantings. On the other hand, not all gifted seedlings are equal. Analysis at village level found use of Department of Agriculture hybrid seedlings were associated with improved yields, but that this was not the case with MPOB, Peladang, Koperasi Pembangunan Desa (KPD) and local politician distributed seedlings. Villages where half or more of the smallholders had received seedlings from the Department of Agriculture showed yields more than fifty per cent higher than in villages where few had DoA seedlings. The proportion of smallholders receiving MPOB seedlings, in contrast, showed no relationship to village yields.

The oil palm plot data, meanwhile, showed that where seedlings had been established from the Department of Agriculture materials, FFB yields in subsequent years were nearly 50% higher than for oil palm grown from MPOB-supplied seedlings. Since the current oil palm age of the small sample of seedlings provided by local politicians indicated these were seedlings

provided between 1997 and 2006 it seems likely that these also originated from the Department of Agriculture or private plantations, with the seedlings donated by private plantations also out-performing the self-seeding and MPOB-provided materials. The MPOB-provided palms are all below ten years; in case this lower yield was a function of age we compared them with the subsample of DoA-provided palms that were also below ten years, and found that the yield advantage was still clear (DoA palms between four and ten years old yielded still 12.3 tFFB/ha/year).

Oil palm seedlings subsidised by MPOB

Although the data presented here are drawn from small sample sizes and are from only a few parts of Sabah they suggest that the Sabah Department of Agriculture is better at producing quality hybrid seedlings and/or at getting them reliably to farmers (without their being mixed with seedlings of lower provenance). Under the Ninth Malaysia Plan, the Quality Oil Palm Seedlings Assistance Scheme (SBABB) was rolled out by MPOB with RM 37.6 million in 2005 to supply smallholders, initially in Sabah and Sarawak with seedlings of assured quality by Oil Palm Nursery Competency Certificated (OPNCC) private nurseries, alongside fertiliser and extension training. The first of many similar efforts, some 1,716 smallholders were reported reached in Sabah by 2010, and follow-up studies reported initial results worth twice the yield of unassisted smallholders, who presumably were growing self-seeded plants (Zulkifli Abd Manaf et al. 2013). Currently MPOB is distributing more than one million germinated seeds/month in Sabah and Sarawak combined (MPOB, 2018); it is not known whether studies have been undertaken by MPOB of its effectiveness. Efforts to improve smallholder productivity as part of Jurisdictional Certification in Sabah need to explore if the DoA has enhanced protocols that can ensure that delivery of planting material reaches full potential.

5.5 Agrochemical use

Effective use of agrochemicals is important both to short and long-term productivity in oil palm (IFC 2013). The use of incorrect formulations of fertiliser or inadequate amounts in the first few years can impact yields throughout the trees' lifetime. Since agrochemical use can negatively impact human and environmental health, proper practices figure significantly in RSPO criteria (4.5); likewise proper soil management is a key requirement of RSPO (criterion 4.2) to ensure optimal and sustained yields.

Almost all (91%) smallholders said that they used agrochemicals (fertiliser, herbicide and/or pesticide), most (84%) saying that they usually read the labels and understood the information (79%). Users of agrochemicals had modestly higher FFB yields (10.5 tFFB/ha versus 8.2 tFFB/ha) than those who did not use them.

5.5.1 Fertilisers

PRINCIPAL 4: USE OF APPROPRIATE BEST PRACTICES BY GROWERS AND MILLERS
Criterion 4.2 Practices maintain soil fertility at, or where possible improve soil fertility to, a level that ensures optimal and sustained yield.

Much of Borneo has shallow heavily leached poor soils and the application of the correct type and frequency of fertiliser (sometimes in the context of soil acidity management) is associated with significantly higher productivity. Soil types vary greatly both locally and across the state, and commercial plantations have discovered the need to tailor what are often quite substantial fertiliser applications to specific soils and plant needs at different points in their growth cycle (Ali Zulhusni et al. 2017). Oil palm is a nutrient demanding crop with high nitrogen, phosphorous and potassium requirements and vulnerable to a host of micro-nutrient deficiencies at different stages of growth (Behera et al. 2017), in a situation where

precise nutrient requirements can matter, for example, with sulphur (Sabir et al. 2015). Studies of smallholders elsewhere in Malaysia point to low chemical fertiliser use as a major constraint on yield (Azman et al. 2003). A thorough study by Ayat et al. (2008), when fertilisers were less expensive and 99% of smallholders reported fertilising to some level, reported that amount of fertiliser use by smallholders the single best predictor of yields with a 1% of fertiliser use resulting in a 0.64% of yield increase, with steep increases occurring until a total of 7kg per oil palm plant per year is reached. Doubtless the benefits of organic fertilisers, properly applied, would be even higher, given the structural challenges of most Sabah soils (very low organic matter and high clay content).

Around 25% of smallholders in the TTBK reported that they did not use fertiliser. Although three quarters of the surveyed smallholders did use fertiliser within all, or part, of their smallholdings we did not find that most smallholders were able to deploy fertiliser effectively, and the average rate of use (twice per year) is deemed "insufficient" in the industry (Ayat et al. 2008). Analysis of fertiliser impact on FFB yield in the TTBK sample showed no consistent relationship with either the frequency of fertiliser application or the total amount of fertiliser applied for these households (see Figure 12). In fact, the most shocking result of our findings on fertiliser use is the absence of any correlation whatsoever between fertiliser application and FFB yield.

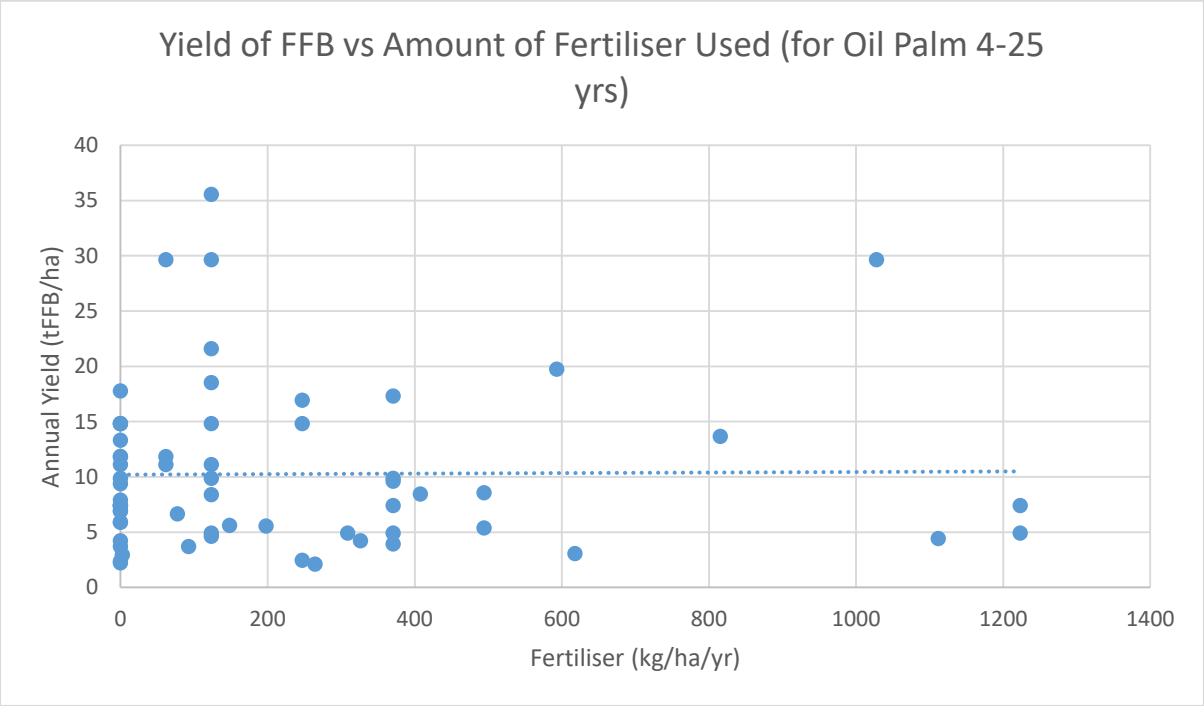

Figure 12: Fertiliser impact on annual yield of FFB for plots of mature palm with known fertiliser application rates.

We believe this poor performance with fertiliser amongst these smallholders is because there is limited capacity to match fertiliser type to specific local soil requirements, or the stage of growth of the oil palm. In fact, the overwhelming majority of fertiliser used in the TTBK today is received as donations from MPOB or other agencies/politicians or is re-purposed from fertiliser provided by other Government agencies for use with their rubber or rice crops. The

rest of the fertiliser used is whatever is available at low prices, perhaps from that pilfered by workers at nearby commercial estates or from other clandestine sources which may be adulterated or degraded. Therefore smallholders (and their suppliers) were not being selective in determining which types of fertiliser to apply (of which we were told of 28 kinds/brand labels). Furthermore, of those smallholders who did use fertiliser, the average frequency was twice per year, therefore half or less than half the dose frequency usually recommended (due to rainfall and soil types fertiliser nutrients are transient in most Borneo soils). Moreover, the range in answers spanned from less than once per year to twelve times per year (i.e. more than three times the frequency recommended).

It appears smallholders cannot afford fertilisers at their current level of capitalisation and perhaps rates of return (see Ishola et al. 2012 for a similar finding); not least because it has long been established that fertiliser applications typically constitute 40-50% of total field upkeep costs (Sabir et al. 2015, p361). Indeed, for the smallholders studied by Ayat et al. (2008) fertiliser purchase comprised more than one third of their average plantation maintenance cost per hectare per year of RM 3,106.30. Recent MPOB-related studies of smallholders in Sabah and Sarawak had broadly similar findings with 87% applying fertiliser three times or less per year with the majority applying less than 2kg fertiliser per palm per annum (as opposed to the recommended 3.6-6.9kg per immature palm and 7.0-9.0kg per mature palm), on the grounds that their soil had enough fertility and that fertiliser was too expensive (Ali Zulhusni et al. 2017). While acknowledging that the high cost of production was a major constraint reported by smallholders Ali Zulhusni et al. argue that applying more fertiliser is the main way that they could increase the efficiency of production as well as yield (2017). Another detailed statistical study on smallholder efficiency and fertiliser use by smallholders (in Peninsular Malaysia) argues that it is not just amount but also relevance of type and quality of application:

> "[For inefficient smallholders] focus can be given to educate them in improving their fertiliser application technique. In addition, independent smallholder knowledge needs to be updated especially in choosing the types of fertiliser to be used. It is suggested that successful independent smallholders should become a model for other independent smallholders to emulate. The successful ones probably have better fertiliser management which includes usage of different types of fertiliser and their technique in applying their fertiliser." (Ramli Abdullah, 2013)

We conclude that our TTBK findings that these smallholders are tied into poor approach with fertiliser that is holding down their returns. The causes of this are likely both economic and cultural, in a context where these smallholders lack the resources to invest in fertilisers, and instead wait for subsidised hand-outs which typically prove poorly timed, targeted and anyway insufficient. Any development and extension of "best practices" therefore needs to go beyond just telling farmers to apply more fertiliser. As one of our interviewees from Kg. Sungai Rungus in Beluran stated in response to a question about fertiliser training "*Yes, I have received training. We are supposed to use 5kg per palm. But we cannot afford the fertiliser. So, we just fertilise based on how much fertiliser we have*." For additional training to have impact, some attention is needed to the underlying economics as well as to combining soil science and traditional ecological knowledge to find ways for farmers with different soils to work out how they should fertilise with organic (e.g. animal manure) as well as limited

chemical fertilisers in ways that actually deliver commensurate benefits. One significant opportunity here is to reappraise current subsidised fertiliser distribution systems to find ways to more effectively promote good use.

5.5.2 Pesticides and Herbicides

PRINCIPLE 4: USE OF APPROPRIATE BEST PRACTICES
Criterion 4.5 Pests, diseases, weeds and invasive introduced species are effectively managed using appropriate Integrated Pest Management techniques

Smallholders in TTBK use pesticides much less frequently than other agro-chemicals: in our survey only 11% of households applying pesticides, and then only once or twice per year on an "as-needs" basis. Our interviewees reported that they believed pests are not a major factor in smallholder oil palm yields, excepting as grasshoppers in the planting/early establishment phase. This finding may be linked to the fact that the TTBK smallholdings are new, and the first plantings after forest clearance. They did not report the Ganoderma, rhinoceros beetle, bagworms and other pests and diseases identified in other smallholder studies as significantly impacting yields and requiring treatment (compare to Ali Zulhusni et al. 2017).

In contrast with the limited use of pesticides, 85% of smallholders used herbicides with frequency of application ranging from once to six times per year (with an average of 2.24). Another recent survey of Sabahan and Sarawak smallholders pegged this herbicide use rate at 68% of all smallholders (Ali Zulhusni et al. 2017). Unlike seedlings and fertiliser, herbicides are one input that smallholders expect to purchase for themselves unsubsidised, because the regular clearance of grasses and regenerating forest is otherwise heavy manual labour and crucial to maintaining access and productivity of the plantation. The reason why smallholders are ready to spend money on these chemicals is illuminated by Figure 13 below: increases in frequency of herbicide application have a close relationship to FFB yield (a similar strong relationship is shown with amount of herbicide used).

Herbicide used by a smallholder for his oil palm

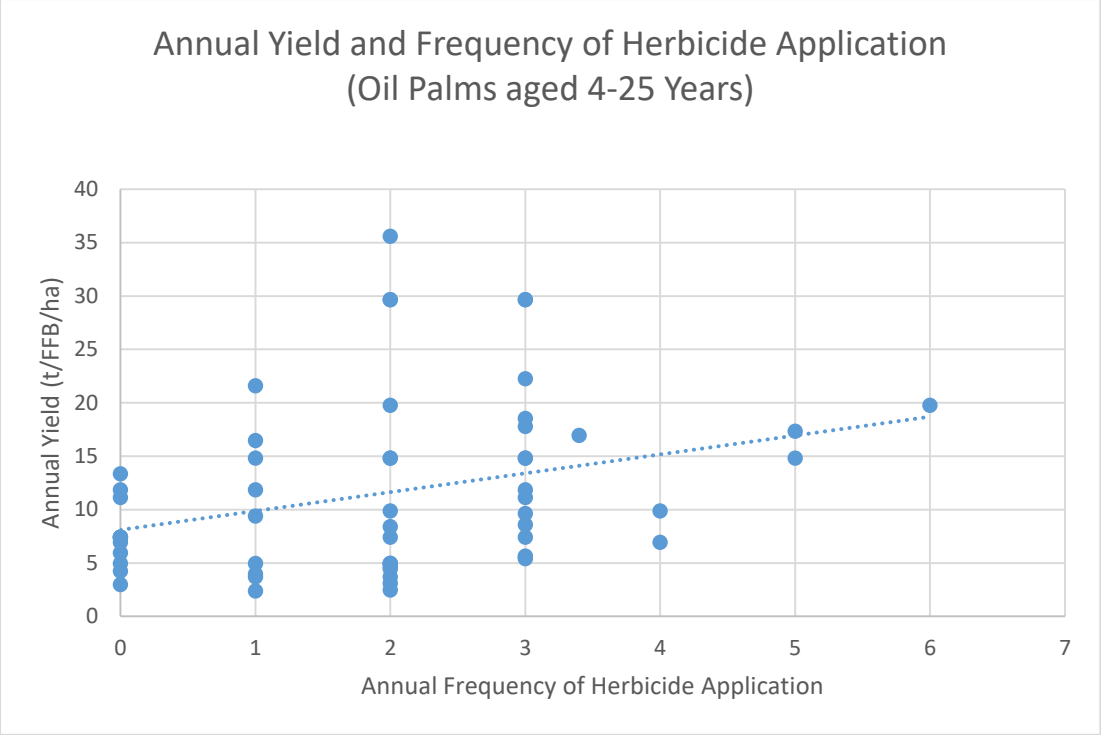

Figure 13: Annual yield relationship (tFFB/ha) with the frequency of herbicide application.

Smallholders have two main herbicide options. The first is Monsanto's glyphosate, which is sold in a variety of formulae under names such as Roundup and Sentry and was reported used by two thirds of smallholders. The second is paraquat, which is also sold under the name Gramaxone, and was reported used by 13% of the sample. Paraquat is only available in Sabah under special license because of its high LD50 (toxicity to mammals) and hence use as a suicide drug, so smallholders can only obtain it through clandestine channels, including from supplies pilfered from licensed commercial estates. Under Jurisdictional Certification paraquat would be banned as it is under category 1b of the World Health Organisation (WHO) and it is specifically mentioned under the Principles & Criteria. However, most smallholders prefer it to glyphosate because paraquat is a contact herbicide that does not impact the health of the soil and the oil palms themselves. Glyphosate, on the other hand, is viewed by indigenous smallholders as "killing" the soil while destroying plants down to their roots, and visibly reduces oil palm productivity for a period after spraying. On the other hand, because of this toxicity, plantations need to be sprayed with glyphosate less frequently than they would with paraquat. Although paraquat appears the most immediately dangerous of the two chemicals, glyphosate (currently category three with WHO on the basis of its LD50) is under increasing restriction and surveillance globally as a cancer-causing endocrine disrupter in which minute quantities in the food and water system can possibly cause grave harm to humans and other species. Smallholders have little awareness of these issues.

Strategies for reducing human and environmental exposure to these herbicides are required by RSPO standards, though in ways that still allow their substantial application in these village lands. Advocates for environmental health will want to explore further ways to reduce their use while being obliged to recognise that to produce oil palm the farmers have to control rigorous competition from weeds and returning forest.

5.5.3 Health and safety of agrochemical use

PRINCIPLE 4: USE OF APPROPRIATE BEST PRACTICES BY GROWERS AND MILLERS
Criterion 4.7 An occupational health and safety plan is documented, effectively communicated and implemented.

In the light of these potential human and environmental health hazards, RSPO Guidelines mandate safety procedures. There is a substantial gap between smallholder current practice and these safe practice guidelines. Almost half of the smallholders who reported using agrochemicals have never had any formal training in the agrochemical use (including around safety), though 6% of smallholders said they had work experience in using these chemicals in other contexts, such as on commercial plantations.

5.5.3.1 Storage of agrochemicals

PRINCIPLE 4: USE OF APPROPRIATE BEST PRACTICES BY GROWERS AND MILLERS
Criterion 4.6 Pesticides are used in ways that do not endanger health or the environment.

Of the smallholders who did use agrochemicals, half said that they stored these agrochemicals within some kind of storage facility outside of the home. Alarmingly, however, there were also accounts of people storing fertiliser (1%) or herbicide (3%) inside their house, even in their kitchen, and 42% of smallholders said they stored fertiliser under their house usually in the open though sometimes this was within a store cupboard (Table 3). Clearly there is a significant gap here that needs to be closed.

Table 3: Summary of responses by the smallholders who use agrochemicals of where they store their fertiliser, pesticide and/or herbicide; and a summary column of these.

	Place where smallholders store:			
	Fertiliser	Pesticide	Herbicide	Summary
Use it immediately	6%	-	2%	3%
Inside the house	1%	-	3%	2%
Under the house	42%	27%	33%	36%
Outside the house, in the backyard, at home (outside house)	8%	7%	7%	7%
In a storage: away from the house/near the house/at the smallholding/or unknown location	42%	67%	54%	50%
In smallholding but not in storage	1%	-	3%	2%

Smallholders were therefore asked would they/and their village be willing to build a storage place for these chemicals in order to comply with RSPO standards? Within TTBK, 81% of the smallholders said yes, 10% said no and 9% said maybe, notwithstanding that 30% said there would be financial constraints to doing this.

5.5.3.2 Application of agrochemicals and protective gear

Respondents reported that smallholder agrochemical use is either the responsibility of the husband solely (i.e. for 82% of the households that use agrochemicals), with a further 7% of households having a mix of the husband and/or paid workers applying the agrochemicals to

their oil palm holdings. This complies with avoiding exposure of women and children to agrochemicals.

The Malaysian Ministry of Health recommends eight kinds of protective clothing/gear that people should wear when using agrochemicals (i.e. overalls, gloves, goggles, mouth and nose mask, cap/hat, boots/shoes, apron, and face shield). Of the smallholders using chemicals around 70% said they wear boots/shoes and mouth & nose mask, nearly half wear gloves, 25% wear goggles, 12% wear overalls, 6% wear cap/helmet, and 2% wear face shields, and aprons. These levels of protection are inadequate.

11% of smallholders said that they hired paid labour for applying agrochemicals either all the time or some of the time. Of these households, only one third said they provided some form of protective gear (though for three households it was restricted to a facemask or boots, and a couple said the labourers had their own); and less than one quarter said that they provided some form of health and safety training. Though this is hardly surprising given the lack of training and knowledge smallholders have within this area themselves.

85% of smallholders said that when they spray agrochemicals they spray along the wind direction. While 4% of smallholder told us that they spray randomly based on the land surface, and they do not spray if it is too windy. Those who hired help for this purpose said that they did not know the direction their workers sprayed.

5.5.3.3 Ailments after spraying

Fertilisers, pesticides and herbicides can be toxic when ingested or exposed to the skin and mucus membranes. We asked about any health issues smallholders had experienced after spraying fertiliser, pesticide or herbicides. Smallholders reported: skin rashes (affecting 32% of those that sprayed); dizziness (30%); headaches (8%); difficulty breathing (6%); vomiting (4%); blurred vision (3%); one or two for excessive salivation, diarrhoea irregular heartbeat; and, other health issues. It is not only the individual spraying who is exposed. Nearly one third of respondents told us that they can perceive changes in air quality in the village when there is spraying of agrochemicals by neighbouring smallholders or commercial plantations. Asked what people might do in a case of agrochemical poisoning most said they would see a doctor, travel to a clinic or use modern medicine (72%). Some said they would follow the instruction on the label such as wash or take a bath (10%); whilst others said they use local remedies such as drinking coconut water (12%); and, some said they would not know what to do (6%). As such smallholders are acutely aware of the short-term risks of these chemicals even as they are uninformed about long-term and indirect exposures, and lack most of the protocols necessary to protect themselves and their territories.

5.5.3.4 Disposal of containers

PRINCIPLE 5: ENVIRONMENTAL RESPONSIBILITY AND CONSERVATION OF NATURAL RESOURCES AND BIODIVERSITY

Criterion 5.3 Waste is reduced, recycled, re-used and disposed of in an environmentally and socially responsible manner.

Agrochemical containers left in an oil palm smallholding

Appropriate disposal of containers that have contained fertiliser, pesticide or herbicide is imperative to prevent risks to humans, domestic animals and the environment. Of the smallholders using chemicals, only 3% said they throw them in the dust bin (not that these villages have effective waste collection and disposal facilities) and nearly a quarter said that they keep them in a store room (23%), not that this represents a long-term solution. The most common response however, was to burn them (29%), and quite a few people said they throw them into the river "or somewhere" (13%), or bury them (7%), or leave them at their smallholding (3%). Some smallholders reused the containers for the water storage for the next spraying (17%); to store fuel (10%); to store oil palm seeds or as a bowl to store latex (7%); to refill with new pesticide or herbicide (3%); or even to turn into a flower pot. Around one quarter (27%) of those interviewed said that they had seen empty containers in rivers, along the main road, left within people's smallholdings, as well as in the village and paddy fields. This is what we and other visitors routinely encounter in visits to smallholder villages.

Migrant workers reusing agrochemical containers for water collection

6 Paid Labour

PRINCIPLE 6: RESPONSIBLE CONSIDERATION OF EMPLOYEES AND OF INDIVIDUALS AND COMMUNITIES AFFECTED BY GROWERS AND MILLERS

Criterion 6.5 Pay and conditions for employees and for contract workers always meet at least legal or industry minimum standards and are sufficient to provide decent living wages

It is important to recognise that more than half TTBK smallholders (61%) said that they hired labour for one or more activities, mostly on a part time basis, to supplement the family labour upon which the remaining 39% entirely rely. Studies in Peninsular Malaysia (Azman et al. 2018) report even higher rates of smallholders employing workers (92%), mostly using Indonesian migrants. As indicated in Figure 14, the engagement of paid labour is not associated with higher yields. This suggests that paid labour in the TTBK is essentially a substitute for family labour, rather than a way of increasing productivity. Other smallholder studies in Malaysia have noted, for example, the use of hired labour for harvesting where plot holders are too old for such strenuous work (Kannan et al. 2017:73).

The greatest arena in which smallholders require hiring assistance is transport (and the associated labour) for taking the FFB to market. Almost half (47%) of the smallholders we interviewed hired transport and this is an important local income earner for those with available vehicles, with the prices ranging from RM 25 to RM 130 pertFFB depending on the distance/road quality between the smallholders and the point of sale. This can be contrasted with the fact that only 32% of households interviewed in TTBK hired field labourers.

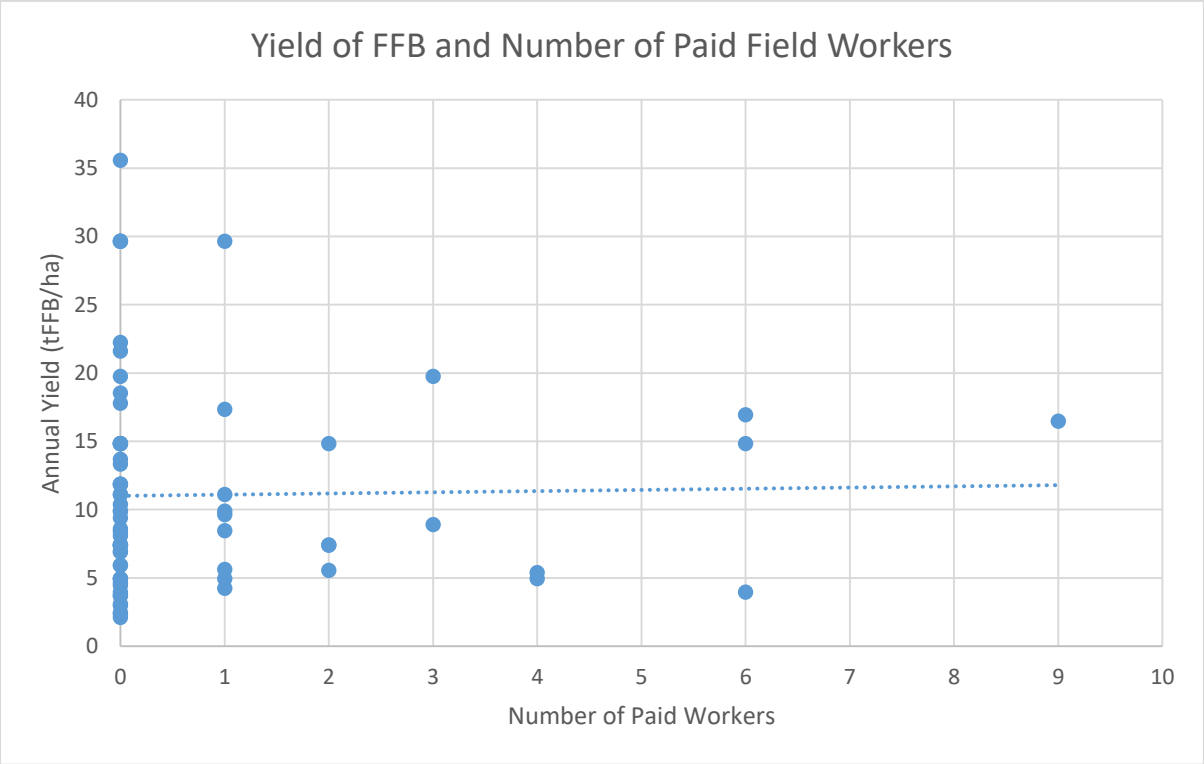

Figure 14: Shows the relationship between annual yield (tFFB/ha) for palms between 4-25 years and number of paid field labourers per household.

For activities related to field labourers, harvesting was the most common activity for hired labour (with 29% of households interviewed hiring such help) which was paid mostly by tFFB at RM 40 to 100 (with a mean of RM 60). 10% hired labour for clearance of trees prior to planting with pay by acre averaging at RM 97, from RM 30 up to RM 150 with the respondents stating that the price depends on the type of forest being cleared 12.6% hired labour for pruning activities, who were paid either by number of trees (RM 1-4 per tree) or by acre (RM 30 to RM 100, average at RM 70); 12% hired labour for applying fertiliser, pesticides or herbicides and paid by acre at around RM 43 (RM20 to 80); and, only 4% employed help for planting (at RM 2 or RM 3 per palm planted), with three households saying that "MPOB had planted their oil palm" (presumably with contract labour).

Table 4: Summary of the number of households who paid labour, and the total number hired; along with information on pay scales per activity.

			Range of wage in RM (average)		
Activity	Total number of labour hired	Number of households who hired	per tree	per acre	per tFFB
Clearing trees	18	14	-	30-150 (97)	-
Planting	10	6	2-3	80	-
Applying agrochemicals	19	16	2	20-80 (43)	-
Harvesting	50	39	-	50-83 (64)	40-100 (60)
Pruning	26	17	1-4 (2.1)	30-100 (70)	-
Cleaning trees	17	10	1-4	50-100	-
Transporting	70	64	-	-	25-130 (54)

According to our respondents, most of the people (75%) hired for transporting their FFB were Sabahan with 11% being foreigners, and the remaining percentage "unknown". In contrast around 60% of hired field labour were said to be foreigners - almost exclusively from Indonesia and the Philippines – and only 36% were reported to be from Sabah. Of those who admitted having foreign workers most stated that these labourers had valid visas/work passes. However, it should be stated that while undertaking this research we only observed immigrant or stateless labourers being hired in these ways, and not Sabahans, and we assume that the smallholders did not report this because of the legality issues. This dependence on undocumented labour – with perhaps 20-30% of smallholder households hiring such workers – is a basic structural feature of the Sabahan economy across most sectors that depend on manual labour and resolving the status of smallholder hired labourers will thus be a significant challenge to meeting RSPO labour standards. Undocumented labour in Sabah includes people migrant from neighbouring countries without the necessary authorisation to work in Sabah, people born in Sabah from previous generations of migrants without Sabahan identity documents (and now stateless), and people belonging to stateless communities such as "Sea Gypsies" and other peoples of marine territories that are not recognised as countries.) The solution to the labour issues currently under exploration by MPOB is mechanisation (especially for fertiliser application and harvesting/FFB collection), to be promoted by training and subsidies on equipment purchase (Azman, 2018). This transition, if it becomes economically viable in Sabah, would likely take many years to happen.

Studies in Peninsular Malaysia suggest that one worker can manage 1.5ha for harvesting and FFB collection; working on a 26-day work month and a 15-day harvesting cycle this suggests each labourer is covering about 19.5 ha of smallholder land if employed continuously. If there are approximately 53,000 smallholders in Sabah, and 29% engage such labourers then if each can manage 19.5 hectares the number of immigrant labourers involved in harvesting smallholder oil palm is somewhere between 2,300 and 5,100 depending on whether average land holdings are around the 2.98ha found in this survey or the 6.5ha reported by MPOB.

Harvested Fresh Fruit Bunches in an oil palm smallholding

7 Threats from Wildlife

PRINCIPLE 5: ENVIRONMENTAL RESPONSIBILITY AND CONSERVATION OF NATURAL RESOURCES AND BIODIVERSITY

Criterion 5.2 The status of rare, threatened or endangered species and other High Conservation Value habitats, if any, that exist in the plantation or that could be affected by plantation or mill management, shall be identified and operations managed to best ensure that they are maintained and/or enhanced.

Around 50% of households said they had some wildlife conflict in their oil palm smallholdings with on average issues with two different species. Most of the threats identified were associated with wildlife such as elephants, bearded pigs, pig tailed and long tailed macaques, squirrels, deer species and rats. Plot data showed slightly lower average yields by 0.4 tFFB/ha per year in those that had reported persistent wildlife threats.

Table 5: Percentages of smallholders reporting conflicts with different species of wildlife in their palm oil holdings

Types of wildlife identified as causing conflict in smallholdings	Percentage of households with conflict
Bearded pig	27
Long-tailed macaques	25
Pig-tailed macaques	19
Elephant	8
Squirrels	6
Rats	4
Sambar deer	4
Hedgehog	2
Birds	1
Beetles	1
Porcupine	1

Eight percent of households said they had issues with elephants in their smallholdings (in Kg. Balat in Kinabatangan, Kg. Tampasak in Tongod and Kg. Liningkung in Telupid). These elephants have recently returned to this region of the country and were reported as using the Forest Reserves as refuges during the day, but then, because of inadequate food sources, during the night they would visit the smallholder oil palm areas (commercial plantations being protected by electric fences). Elephants were reported as coming in as frequently as once per month to once per year per smallholding, primarily to eat young palms, causing significant financial losses. Some said they contacted the Wildlife Department and some said they tried to chase them away (even with a chainsaw). As a result of this situation, a sister-team at Forever Sabah are currently working with these smallholders in the impacted villages of Telupid around practical ways to build "Human Elephant Harmony" through building understanding of elephant needs and establishing a Community Elephant Ranger Team to ensure that these can be met and conflict averted.

Both macaque species seem highly problematic on a daily basis for many smallholders damaging the crop and eating the FFB. Indeed, some smallholders reported that there can be as much as 15% loss of FFB do to them being eaten by macaques. Another problematic species was the bearded pig that impacted some smallholdings on a daily basis, with reports of crop damage especially to young palms and smallholders chasing or shooting them to eradicate the problem.

It must be noted that elephant, pig-tailed macaque, and even sambar deer and bearded pig are classified as threatened according to the IUCN Red List. This means that these species will likely be identified as HCV 1 indicator species (i.e. concentrations of biological diversity including endemic species, and rare, threatened or endangered species that are significant at global, regional or national levels). As a result, the treatment of these species, and others that are identified as HCV 1, must be within the guidelines of the forthcoming HCV Assessment (led by Sabah Forestry Department). This is particularly challenging for smallholders who can be significantly affected by wildlife in terms of crop damage and at the extreme risk to human life. A rule-based approach like this does not do well in complex human ecological circumstances. For example, bearded pigs and pig-tailed macaques are more common in oil palm and forest edge sites than they were in virgin forests because disturbance and establishment of oil palm increases feed supply.

Elephant in oil palm smallholding

8 Smallholdings, Land Tenure and Registration

PRINCIPLE 2: COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS
Criterion 2.1 There is compliance with all local, national and ratified international laws and regulations.

One dominant set of findings from this study concerns the issues surrounding land legalities of existing oil palm smallholdings, and the number of Sabahan smallholders who are unregistered with MPOB.

8.1 Smallholder Land Tenure

The introduction of a series of land laws adapted from the Indian Acts and Ordinances of the Straits Settlements and imposed by the British North Borneo Company from 1881 located the emerging state as the primary holder and adjudicator of land in the territory so to allow the steady allocation of forest land for commercial development, and later conservation, while seeking to regularise indigenous land holdings. During the colonial period land increasingly became a commodity and many experiences with the risks of land tenure insecurity changed the indigenous concept of land from a largely communal and significantly spiritual into one of increasingly individual 'property'. As a result of changes in land-use, particularly logging and oil palm development, as well as the migration of indigenous and other peoples into promising areas, the frontier for new farmland gradually closed, and many prime lowland rice areas lost to urban development and roads. Rivers which the indigenous communities rely on for fish and water have been polluted and non-timber forest products, which met the basic needs of the local communities for generations, both subsistence of commercial, have become scarce (Human Rights Commission of Malaysia 2013).

According to the Land Ordinance of Sabah (Chapter 68) 1930, there are two broad categories of land tenure in Sabah; State Land (Section 12) and Native Customary Land or Tanah Adat Anak Negeri (Sections 14, 15, 65 and 66). Under State Land there are five types of land titles, namely: Town Lease (TL), Country Lease (CL), Provisional Lease (PL), Native Title, Field Register (FR). Meanwhile NCR land can be either "Communal" or "Individual" and are secured by various specific evidences of historic and customary use (such as fruit trees or burial grounds). The first three types, TL, CL and PL are open to all citizens and non-citizens of Malaysia whereas the later three categories, NT, FR and NCR are specifically meant to sustain the rights of the indigenous peoples of Sabah; the Land Ordinance originally conceiving that only State lands free of proven NCR claims are eligible for lease either in the country or in towns under the other types of title.

In the context of high land values and economic pressures for development it has often been difficult for the indigenous peoples to establish title over their customary lands. Indeed, procedures for making these claims have been undermined over the years, starting in the late 1960s. Additional complexities include high mobility of indigenous peoples over the last century (into and out of areas they now wish to claim) in the context of uneven colonisation and infrastructural development, as well as the gazettement of extensive forest and conservation areas. All this has led to Sabah's inherited system of land allocation being overwhelmed by large numbers of complex claims which the current Lands and Survey

Department has been increasingly unable or unwilling to process, in a situation where unscrupulous officials, politicians and clerks have found many ways to gain advantage.

To understand how most oil palm land is held, requires explanation that what is supposed to happen is that claimants, like the indigenous smallholders in the TTB, register "Land Applications" (known as LA or PT) for specific land parcels to which they believe they have legitimate rights, for subsequent evaluation by the Lands and Survey Department. NCR rights derive from evidence of historic occupation, in particular the presence of planted fruit trees or cleared land. When the system works, these applications are then reviewed and field surveyed and become classified "Register Survey Paper (RSP)", before, and after a further due process, the claimant achieves title. In the decades following Sabah's independence both the private and indigenous desire for title exploded, and Lands and Survey Department fell behind. Since "possession is nine-tenths of the law" and given that most indigenous farmers in TTBK have no titled land, smallholders then proceeded to clear and plant oil palm on their LA land despite the lack of title. Clearance and planting often, in turn, inflamed local disputes, making the task of the Lands and Survey Department even harder. The resultant sheer scale of the accumulated claims – and the fact that overlapping indigenous and private land applications often end up central to the processes of local politics – only entrenched the problem, alongside the fact that many are ready to ask for and/or pay bribes for land access or title in such circumstances. This is the origin of the situation whereby most land planted with oil palm by smallholders in the TTBK, and doubtless most of Sabah, has no legal title. If this summary fails to capture the complexity and passion that the land issue holds for every Sabahan it can at least indicate what will have to be addressed to legalise smallholder oil palm in the state.

As indicated in Table 6 across 20 sampled villages in TTBK only 36% of the smallholders had legal title to their oil palm land holdings (almost entirely under Native Title). This is a problem for the farmers and for the environment: insecurity of tenure is associated with vulnerability and low levels of investment in production and land care. It is also a major problem for the society as it creates instability, risk of conflict, and propensity to political patronage. And it is, of course, not acceptable under RSPO standards. Resolving the land tenure problem in an equitable manner will almost certainly lead to increased yields because smallholders will invest more in improving production when they are assured of the benefits. Although the data gathered in this survey are not structured in a way that can calculate existing differences between production levels on different land tenure arrangements, even a difference of just 5-10% in yields would amount to tens of million ringgit that could be gained annually by the state economy to the benefit of many of its poorest citizens.

This problem has been recognised for some time by field researchers. For example, a study published in 2012 on growers in the TTBK concluded:

> *Oil palm in Sabah is grown in large plantations or smallholdings, the latter mostly managed by indigenous peoples on untitled customary land. Government development agencies have long focussed on improving the productivity of smallholders for poverty alleviation. For most smallholders, the main issue is tenure insecurity: as long as lands remain untitled they are subject to changes in land allocation and land use at the discretion of the State Government. Indigenous claimants seek recognition of the right to use and occupy ancestral lands via individual*

Native Titles (NT), as provided for in the Sabah Land Ordinance (SLO) (Abdul Majid, 2012)

Table 6: Plot level information for oil palm smallholdings and their land status in percentage of plots.

Land status and registration		**Percentage of plots in TTBK**
Titles	Country Lease Title	<1%
	Native Title	34%
NCR	Communal title	<1%
	Native Customary Rights	<1%
State Land Under Application	Land Application	59%
	Register Survey Paper	1.8%
River Reserve/Riparian Zone		<1%
Class II Forest Reserve		2.5%
Unknown		<1%

Our survey shows that the situation varies widely from village to village, reflecting local history. With decades of complexity each land case can only be understood – and addressed – on the basis of detailed documentation and review, and through both socio-economic and legal lenses. This will have to be done in a manner that is deeply collaborative with the Lands and Survey Department and other relevant Government agencies if this issue is to be successfully addressed at scale. Two land issues need highlighting for resolution under the Jurisdictional Certification process.

1. 61% of smallholder households say that they are cultivating on plots with "Land Application" status (59%) or with "Register Survey Paper" (2%) and so lack legal title.
2. 3% of smallholder households in the survey did not have title because they were farming on Class II Forest Reserves (Production Forests leased to the private sector), while some include or Riparian Zones, upon which they have no rights to cultivate under Malaysian/ State Law or RSPO P&Cs. The Forest Reserves concerned are Mangkuwago (FMU 17C) and Lingkabau (FMU 3). The Sabah Forest Department (and the private lease holders) are vigilant in monitoring such incursions but dealing with them in a humane manner is not straightforward, especially in the presence of strong historic claims to the area. A negotiated solution to these situations is usually necessary. River Reserves are defined in the Sabah Water Resources Enactment 1998; it is not yet clear how cultivation in these riparian zones needs to be addressed.

Map of land titles in Kg. Bakong Bakong in the Telupid District

8.2 Registration by MPOB

MPOB is the federal government agency entrusted to promote and develop the country's oil palm industry. It was incorporated by an Act of Parliament (Act 582) and established on 1 May 2000, taking over, through a merger, the functions of the long-standing Palm Oil Research Institute of Malaysia (PORIM) and the Palm Oil Registration and Licensing Authority (PORLA). During the 2000s MPOB also took over the extension roles of the State's Department of Agriculture, excepting some provision of hybrid seedlings and some training by invitation.

MPOB has a broad portfolio which includes:

- Licensing of refineries, mills, plantations;
- Licensing (regulating) the buying and selling of FFB;
- Research and development;
- Assisting growers and industry players.

As has been apparent throughout this report MPOB is the lead provider of support to smallholders in TTBK, and its importance is well understood by the smallholders who therefore register with it whenever possible. Registration can be achieved at the nearest office or through MPOB's e-licensing (Smallholder) website. Applicants fill out a smallholder licensing form and they must attach their land title. Where applicants do not have land title they can submit their LA, RSP and NCR documents with, it is said, the support or written approval from Lands and Survey Department or District Officer. After submission, registration takes five days to process. The authorities are currently reviewing whether MPOB registration of smallholders without title is straying into land matters that are under the constitutional purview of the State not the Federal Government.

Across the TTBK some 67% of smallholders claimed to be registered with the MPOB; just over half of whom were unable or unwilling to show us their papers (Table 7). This indicates that 63% of land holdings without title were likely successfully registered with MPOB, while at the same time some 23% of the land with title was not MPOB registered (which suggests that this titled land did not perhaps legally belong to the farmers who were using it – e.g. it belonged to deceased parents but the deeds had not been signed over). These figures on registration suggest that progress will be needed on the clarification of land tenure rules between the Sabah State Government and MPOB if a smoothly functioning legality and RSPO certification is to be achieved.

Table 7: Plot level information for oil palm smallholdings and their MPOB registration status in percentage of plots.

MPOB Registered	TTBK
Yes registered (evidence given)	30%
Yes registered (no evidence)	37%
Not registered	33%

MPOB registration qualifies producers to sell their FFB and to receive inputs and technical support from this agency, including with re-planting. The one third of smallholders who are currently unable to register with MPOB have to operate without this support, and to sell their FFB through relatives or non-legal channels at lower prices. Non-registration of producers also makes it difficult for the authorities to track the actual scale of the smallholder sector. Lack of producer legality feeds into other challenges of governance and empowerment in rural Sabah and is not in keeping with Sabah's enviable reputation for seeking to advance the rule of law in its natural resource management sector. For example, official weigh-centre documents with regular sale can be used by smallholders to access credit. This issue of lack of MPOB registration also requires sorting out for Jurisdictional Certification.

8.3 Smallholder Land Rights Issues with Their Neighbours

PRINCIPLE 2: COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS

Criterion 2.2 The right to use the land is demonstrated, and is not legitimately contested by local people who can demonstrate that they have legal, customary or user rights

Criterion 2.2.3 Use of the land for oil palm does not diminish the legal, customary or user rights of other users without their free, prior and informed consent.

We asked smallholders about their land rights relationships with Forest Reserves, neighbouring villages, and neighbouring oil palm estates.

First, we asked generally about knowledge of land tenure boundaries, and 84% told us that are well aware of their boundaries due to physical demarcation on the ground, documents and the like. Those who do not know the boundaries were mainly cases where there was uncertainty or dispute about Forest Reserves, and/or where there was a lack of adequate documentation in circumstances where this did not matter for the present.

In regards to disputes over land with government the key issue in this region is with the Forest Reserves. On the encouraging side we found that 78% of smallholders said they do not consider that they have land on the Forest Reserve. They told us that there had been more conflicts in the past but that these were now already settled. Of the 22% who did have land claims in these Forest Reserves (even if they are not farming there now), the largest number were with Deramakot, the FSC certified globally-leading sustainably logged tropical forest. (Meanwhile 23% of villagers also referred to their having user-rights in Forest Reserves to access natural resources, and 6% saying they were not sure if they did.) When asked what villagers would like to do with these disputed Forest Reserve lands were they to gain access, the vast majority said they would plant oil palm or rubber, with smaller numbers in favour of other more diverse and sustainable land uses (one saying they would like to restore tree cover in the disputed forest and three saying they would use it for tourism). As noted in the Land Tenure section, 2.5% of the sampled households are currently growing oil palm within Forest Reserves; these results suggest that nearly a quarter of TTBK's smallholders feel ready (and justified) to convert Forest Reserves to oil palm if there is any faltering in the efficiency and vigilance of that Department.

These Forest Reserve issues evoke strong feelings in these villages, with most respondents arguing that people had a right to claim lands historically within their territories if they were in need, either demanding de-gazettement or simply proposing that they would squat on the Forest Reserves. Only 13% of smallholders interviewed said they did not have claims and were not interested in confronting the Forestry Department and only 21% proposed negotiation, with compensation through due legal process on the cards. Clearly there will be challenges in resolving these issues, including between RSPO guidelines on non-conversion of forests (especially those under protection) and those guidelines that focus on respect for indigenous land rights. An interesting finding in this regard is that few villagers said they thought that government officials, their elected representatives or legal processes should resolve these land issues. Instead this was seen as the purview of their village head, with smaller numbers believing land rights claims could be addressed by the aggrieved individuals or that the Forestry Department should take the initiative. Additional evidence to underline the importance of the concept of collective heritage as the basis for land claims is that the vast majority interviewed said that outsiders should have no rights to make claims in Forest Reserves, while nearly half of those who answered felt that even long-standing migrant members of their communities should have less rights to Forest Reserves than the autochthonous people of the area.

Meanwhile only 5% of smallholders referred to land conflicts within the village collective community area, and there are also clearly conflicts within and between families over individual plots, but we did not collect data on the frequency of these. There is no indication that these issues will be important for the Jurisdictional Certification process.

In regards to commercial oil palm plantations one striking finding was that 93% of smallholders declared no land issues with these estates. The 7% who did have issues were mostly with the Kunsia, Mutu Sejahtera, Rasa Mutu, Muncul Maju and MYCOM estates. Clearly those conflicts will require investigation and adjudication. Meanwhile 6% of smallholders said that they had user rights within an oil palm estate in their village; the implication being that these are also recognised by the plantation management. This right is based, they say, on pre-existing use rights in those areas. Some villagers were also claiming that they had rights to protect the river within oil palm estate; the protection of rivers being a core cultural responsibility for Dusun and many other Sabahan indigenous communities. Another issue with the oil palm estate in Kg. Balat (Kinabatangan) is one of rights to traverse the estate, which blocks their access to the outside world. The villagers complain that if their relatives come, they need to pay RM 20 at the estate gate.

8.4 Free Prior and Informed Consent (FPIC) in the Smallholder Context

Free Prior and Informed Consent is the bedrock for the United Nations Declaration on the Rights of Indigenous Peoples (2007) and other international legal instruments, and it is a key strand of RSPO P&Cs. The legacy of conflict between indigenous communities and the development of large scale plantations means that the mechanisms for identifying and addressing FPIC issues have tended to address plantation issues and not as yet focused on the

smallholder sector. This is something that Jurisdiction CSPO will have to rebalance if all dimensions to the issue are to be addressed. One of the challenges with the application of FPIC, particularly when one seeks to apply it within a village environment, is its translation into locally meaningful cultural norms and traditional jurisprudence.

Forever Sabah has found the concept of "*Sumuku*" a useful way of conveying FPIC among Kadazan-Dusun peoples (who comprise the majority in the TTBK districts). This indigenous term evokes a particular way of respectfully asking for permission. During the survey we therefore asked respondents about their understanding of "Sumuku" and whether it was still being practiced in their community. What we learned was that 93% of the interviews affirmed it was still a living cultural and legal tradition ("adat"), but that while half of the smallholders used the word "Sumuku" some of the Dusun dialect groups used different terms, including "Mokitaak Kolilaan" in the Dumpas Language of Telupid, "Dumuat" in the Labuk and Mangkaak languages in Tongod (and other areas) and "Mongudizo" in the Minokok Language in other parts of Tongod district.

When the team asked the TTBK smallholders of their opinion regarding the use of "*Sumuku*" concept in implementing RSPO certification readiness, they learned that almost half (45%) of the respondents believed it was necessarily to engage through "*Sumuku*" in order to proceed with RSPO certification readiness, with most of the others arguing that more explanation of RSPO would be needed before they could proceed with that same "*Sumuku*", or that the Village Head would have to decide about this. In contrast only 1.4% answered "No" about the use of "*Sumuku*", and only 1% said they just agreed to proceed RSPO without "*Sumuku*" or asking permission with leaders or villagers if it's good and beneficial for them. Our interpretation of this finding is that smallholder communities in the TTBK, and likely other parts of Sabah, still strongly value the traditional principle of open and collective consultation and the right of those requested to deliberate on the issue and, if necessary, to refuse. We suggest that "*Sumuku*" and its variations among the "adat" (customary law) of the different peoples of Sabah be supported as a way for these communities to deal with their internal and external agreement making and conflict around oil palm and is used as a more accessible framework than is formally-defined FPIC.

9 Conclusions and Next Steps

This report on smallholder readiness is intended to contribute to the Jurisdictional Certification process in Sabah by providing the stakeholders with information and guidance for discussion and to help strategize. The report both quantifies realities and challenges already known in Sabah and the region and provides new data and insight into the gaps between smallholder practice and both RSPO standards and better oil palm yields.

The Smallholder Working Group – which comprises Government, Private Sector and Civil Society like the JCSC as a whole – takes lead responsibility for seeking to address these issues, bringing in other Working Groups and the wider JCSC as necessary. Fortunately, these agencies are not addressing this challenge alone. One consequence of the participatory and capacity-building process followed by the CSPO Smallholder Team has been that each of the twenty pilot TTBK villages now has a working Village Committee charged by the smallholders themselves with finding ways to advance this transition. These committees – and the smallholders more generally – can add significantly to the necessarily creative problem solving as well as to the reach of human problem-solving ambition.

Progress with many of the issues identified in this report awaits deliberation (post-elections) by the State Government's cabinet. In particular we anticipate decisive policy decisions in respect of the role of the MPOB in Sabah and on how the Departments of Agriculture and Lands and Survey can best advance the 2015 Jurisdictional Certification commitment.

Meanwhile Forever Sabah's Smallholder CSPO Team and partner agencies will continue to work with the other members of the Smallholder Working Group, and the smallholders themselves, on advancing the technical issues necessary, and on ensuring that Sabahan (and global) society better understands how the Jurisdictional process dovetails with the needs of the state and the aspirations of its mostly indigenous smallholders. This will include on-going smaller-scale participatory and action-research efforts to understand relevant issues.

Some Aspects on The Size of the Challenge

- **Numbers of Smallholders**: MPOB has registered around 40,000 smallholder (households) in Sabah, but if the data for TTBK are replicated state-wide the true figure may be over 53,000 across Sabah's twenty-three districts, including many thousands who have previously been invisible to MPOB.

- **Transform Practices & Productivity**: these estimated 53,000 smallholders need to organise to radically reform planting, fertilising, weeding, harvesting, chemical use, financial planning and land clearance practices far beyond that achieved through many years of well-resourced engagement by the MPOB; and even by the better performance by the Sabah Department of Agriculture and other agencies.

- **Land Tenure Reform**: if the figure of 61% of oil palm smallholdings being on LA land is replicated across Sabah then land titles need to be granted (or denied) on between

96,000 and 211,000 ha of land (depending on whether this survey's or MPOB's average land holding figure is most accurate).

- **Labour Issues:** it is likely that 20-30% of smallholders in Sabah are engaging undocumented workers in transport and production; if one wage labourer can support harvest and collection on 19.5 ha of smallholder land (as calculated from a study in Peninsular Malaysia) then the number of largely undocumented labourers supporting the 29% of smallholders employing such workers (if TTBK is typical) that will have to be replaced or regularised is between 2,300 and 5,100 (depending on average size of Sabahan smallholder landholdings), with other workers required for other tasks.

These estimates will, of course, not prove precisely accurate when we roll out activities in Sabah's diverse districts, but they can well serve to identify the scale of the issues.

The next steps for Forever Sabah and our many partners in this process will include:

Improving Smallholder Production while Meeting RSPO Standards:

- Further work to understand **Joint Ventures and Outgrower Schemes** in the TTBK and beyond, and the **experience, successes and challenges of the various agencies** who have sought to apply subsidies, training and other support to oil palm smallholders.
- Work with the Sabah Department of Agriculture to bring together expertise from extension officers, MPOB, WildAsia and the private sector to work on identifying **Palm Oil BMPs** with proven appropriateness for smallholders that meet RSPO P&Cs and improved yield objectives; and then integrate these recommendations with those deriving from the experience of the most successful smallholders in the TTBK villages.
- Work together with experienced extension staff and smallholders to identify effective **teaching methods** for imparting these BMPs to smallholders, by studying what has worked and not worked in the past and building smallholder organizations who can drive a demand-driven approach to learning and change.
- **Experiment with implementing** the extension/teaching of these BMPs in the 20 TTBK Villages, and jointly evaluate the effectiveness of the program with the smallholders.
- Work in partnership with Wilmar and others through the private plantations and palm oil mills to evaluate the **experience of the private sector with smallholder outreach** around BMPs, including through the contracting of third parties such as WildAsia.
- Work with the Department of Agriculture (and in consultation with MPOB where necessary) to **identify, evaluate and train a cohort of extension staff** able to deliver the training modules necessary with the methods determined most effective.
- On the basis of this experience, working together with all the relevant parties, craft a **roadmap for a revamped extension** process for smallholders across Sabah that is up to the challenge of meeting Jurisdictional CSPO to RSPO standards.
- Meanwhile the role of the **Weighing Centres** that receive most smallholder FFB in the TTBK needs evaluation to understand its impact on income and extension opportunities.

Tackling Land Tenure:

- Work with the Sabah Lands and Survey Department to identify what a **"Facilitated Land Application Process"** (FLAP) Program needs to look like for the Oil Palm sector

to resolve uncertainty/legality in land claims and plantings so as to meet RSPO standards and provide smallholders with the tenure security they need to raise yields and look after their native customary land.

- Work with the Sabah Department of Forestry (SFD), relevant smallholder communities and other stakeholders to develop a systematic program to resolve – in appropriate ways – the planting of oil palm by smallholders in **Forest Reserves**.
- Work with the Sabah Department of Irrigation and Drainage (DID), relevant smallholder communities and other stakeholders to develop a systematic program to resolve – in appropriate ways – the planting of oil palm by smallholders in **River Reserves** as defined in the Sabah Water Resources Enactment 1998.
- Work with the **SLDB, Agropolitan, MESEJ** and the other agencies engaged in smallholder Joint Venture and partnership arrangements to identify where and how existing and future schemes may require upgrading to meet the State's commitment to FPIC and transparency.
- Complete **detailed field documentation of the outstanding land legality** issues in the 20 villages of the TTBK according to the protocols agreed with the Department of Lands and Survey, Sabah Forestry Department and DID so that these cases can be presented for resolution.

Environmental Issues:

- The Smallholder Working Croup of the JCSPO will need to meet with its sister Working Group on **High Conservation Value and Compensation Issues** to determine how the jurisdictional process can address smallholder forest clearance since 2005, and clearance of HCV and peat lands. The recommendations from those discussions will need to be shared with smallholders and other stakeholders at state-level and internationally from a variety of technical and policy viewpoints.
- How to address issues with conflicts over **wildlife crop damage** and the past and on-going use of **fire** for clearing smallholder lands will have to be discussed at JCSC level. Forever Sabah's program on "Human Elephant Harmony" in the Telupid District may have much to offer in terms of how to handle the presence of elephants in oil palm landscapes.

Free, Prior and Informed Consent:

- Work with the FPIC Working Group to see how "**Sumuku**" and its equivalents can be built into the smallholder engagement process across the Jurisdictional Certification program.

Labour Issues:

- Work with the soon-to-be-established Labour Working Group around the issue of **undocumented migrant workers** in the smallholder sector, as well as their employment conditions and health and safety.

Forever Sabah's Smallholder CSPO Team hopes this report will generate more realistic engagement in the challenges faced on the ground by our indigenous smallholder farmers, both from within the state and from the international community. Please join us in seeking to understand and tackle these issues.

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11 APPENDICIES

Table A1: Summary table on the range (and mean) of the FFB price of last sale for smallholders per village; as well as the proportion (%) of smallholders who transport their FFB themselves, or rent a vehicle, or have it collected and the associated costs of collection.

				% of smallholders who:			
District	Village name	Range (mean) price for last FFB sale (RMtFFB)	Distance to weighing centre (km)	Transport FFB themselves	Rent a vehicle	FFB is collected	If FFB is collected, associated costs (RM tFFB)
Telupid	Kg.Kopuron	410-470 (442)	1-19	60	80	20	RM50
	Kg.Malapi	400-540 (448)	3-29	40	60	0	0
	Kg.Liningkung	410-520 (440)	0-5	20	80	20	RM30
	Kg.Tarasak	540-550 (543)	2-15	25	75	0	0
	Kg.Bakong Bakong	540-550 (545)	2-20	60	40	20	Rm25
Tongod	Kg.Langkabong	300-500 (468)	15-49	56	50	13	RM60-80
	Kg.Linayukan	450-550 (483)	2-10	60	40	0	0
	Kg.Semundoh	450-560 (515)	0.1-2	83	17	0	0
	Kg.Maliau	300-500 (433)	1-20	38	75	13	RM40
	Kg.Tampasak	470-500 (483)	5-34	50	50	30	RM90
Beluran	Kg.Chandramata	500-665 (555)	0.1-1.5	50	50	0	0
	Kg.Rancangan Cocos	500-670 (625)	1.5-8	0	100	0	0
	Kg.Sungai Rungus	500-660 (541)	5-10	20	80	0	0
	Kg.Dampiron	500-700 (600)	2	0	80	0	0
	Kg.Melapi	600 (600)	2	0	67	0	0
Kinabatangan	Kg.Sinar Jaya	350-685 (543)	5-17	25	58	8	RM35
	Kg.Kasih Sayang	400-600 (548)	1-19	25	75	0	0
	Kg.Muhibah	400-655 (542)	2-29	60	20	20	0
	Kg.Sangau	400-500 (472)	45-80	0	100	0	0
	Kg.Balat	200-400 (236)	-	0	0	88	0