Journal of Positive School Psychology http://journalppw.com
2022, Vol. 6, No. 9, 2341-2362

The Readiness Of Smallholders To Pursue The Malaysian Sustainable Palm Oil Certification For Conservation And Sustainability Initiative: A Qualitative Study In 2020

Siti Rahyla Rahmat[1]*, Farah Purwaningrum[2] Anas Muhammad Salim[3], Mohamad Shaharudin Shamsurijan[4], Lim Chee Ann[5], Mohd Fikri Bin Mohamad[6]

[1*]*School of Social Sciences, Universiti Sains Malaysia, rahyla@usm.my*
[2] *School of Social Sciences, Universiti Sains Malaysia, fara.arum@gmail.com*
[3] *School of Social Sciences, Universiti Sains Malaysia, anasmsalim94@gmail.com*
[4] *School of Social Sciences, Universiti Sains Malaysia, msdin@usm.my*
[5]*Universiti Sains Malaysia, limcheeann@usm.my*
[6]*School of Social Sciences, Universiti Sains Malaysia, fik237@gmail.com*

Corresponding Author: rahyla@usm.my

ABSTRACT

MSPO is a compliance certificate for oil palm farming activities. MSPO certification is a critical component of the Malaysian palm oil industry, providing clear guidelines for a sustainable plantation management and administration. In Malaysia, palm oil players are classified into two categories: (i) private actors, who account for the majority of the industry's revenue, and (ii) smallholder actors, who are further classified into two subgroups: independent and organised smallholders. The main objectives of this study are to ascertain the level of readiness for and implementation of Malaysian Sustainable Palm Oil (MSPO) by organised smallholders and participating agencies, as well as to gain an understanding of the issues confronting the palm oil industry, including the challenges posed by Climate Change and the COVID-19 pandemic. Between March 9th and April 17th, 2020, there were five in-depth interviews conducted with individuals with experience and competence in the palm oil sector, government agencies, and organised smallholders. This in-depth interview was also supported by secondary data. This study showed that the readiness of smallholder to pursue the MSPO was still low as most of information is still not well received by the small holders. The findings indicated that the EU's decision to ban the use of palm oil in Europe prompted Malaysia's palm oil sector to convert into a more sustainable one. MSPO will increase awareness and comprehension of the requirements, terms and rules, benefits, and procedures that are critical for smallholders who wish to comply with MSPO.

Keywords: Sustainable Oil Palm, Climate Change, Organised Smallholders, Independent Smallholders, MSPO

1. INTRODUCTION

Palm oil is a versatile oil that is frequently used in cooking and cosmetics. Oil palm trees can grow in any type of soil. Their fruits are gathered throughout the year, making oil palm one of the highest yielding crops per acre. Exports of palm oil products were up to RM64.84 billion to the income of Malaysia. This “red gold” contributed to the economic growth and the socioeconomic of independent smallholders (Yap et al., 2021). Palm oil is considered a sustainable substitute for fossil fuels, and it is used as a biofuel to generate heat and electricity for automobiles. Despite its importance and benefits, palm oil has been

shown to have detrimental effects on the environment covering, but not limited to; biodiversity decline, greenhouse gas emissions, air pollution, and contribution to climate change (Meijaard et al., 2020).

There are notable negative impacts of oil palm plantations, namely, soil degradation, loss of biodiversity, loss of natural habitat, increased carbon and methane emissions, and water pollution. As a result of these negative impacts on the environment, the European Parliament agreed in January 2018 to ban palm oil from entering the European biofuels market. On the one hand, the European Parliament specifically stated that the ban is motivated by deforestation and discrimination against employees in the palm oil industry. Deforestation is a direct contributor to land-use change, as it affects the land cover, resulting in erosion and soil degradation. Deforestation contributes significantly to climate change by emitting greenhouse gases such as CO2, CH4, and N20, as well as aerosols such as smoke and dust particles (Tinker et al., 1996). Malaysia, on the other hand, as a sovereign nation and one of the world's top producers of palm oil, had opted to bring legal action against the European Union for alleged free trade infringement (Borneo Post, 2020). Malaysia demonstrated during a two-ways meeting with EU officials that it had developed serious initiatives to produce sustainable palm oil. This transition is comprehensive, encompassing all elements of palm oil production, including pre-and post-planting activities, production, processing, and cultivation.

Aligned with its intention to further the initiatives, Malaysia created the Malaysian Sustainable Palm Oil (MSPO) certification scheme in an attempt to address different issues in the palm oil business, such as climate change. While the Roundtable on Sustainable Palm Oil (RSPO) certifies palm oil, the RSPO's high costs and onerous regulations make it unaffordable to medium and smallholder growers. Ayompe's study (2021) exemplified that to ensure the sustainability of palm oil industry responsible consumption and production, negative social impacts on palm oil and social impact need to addressed. As a result, the Malaysian government established the Malaysian Sustainable Palm Oil (MSPO) certification programme, which is affordable to medium- and small-scale producers and is a national initiative (Rahmat et al., 2021). Badrul et al (2017) further added that commercial certification should not be the source to determine the sustainability of palm oil production hence, the certification process should be re assessed.

2. PALM OIL PLAYERS IN MALAYSIA

Malaysia's palm oil industry players comprise private players and smallholders. Private players consist of big companies that own 40.46 to 1000 hectares of palm oil plantation and process mills for palm oil and represent 61% of the planted area, while the smallholder group represents 39% of the planted area (Kumaran, 2019). The smallholder group is further divided into two subgroups, namely organized smallholders and independent smallholders. The organized smallholders are registered under various executive agencies in Malaysia, for example, Federal Land Development Authorities (FELDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), Rubber Industry Smallholders Development Authority (RISDA), and state agencies.

While independent smallholders depend on their initiative to run their plantation, they would still need to be registered with the Malaysian Palm Oil Board (MPOB). Malaysia's agricultural sector contributed 7.3% or RM99.5 billion to the Gross Domestic Product in 2018. Out of which, 37.9 % were from the palm oil industry, followed by other agriculture industries, Others (25.1 %), livestock (14.9 %), fishing (12.5 %), forestry & logging (6.9 %), and rubber (2.8 %) (Mahidin, 2019). The EU prohibited palm oil

owing to environmental and social issues, utilizing a non-tariff barrier to "educate" consumers about environmental protection (Sasmita, 2021). Key players in the Malaysian palm oil business must ensure 5.74 million hectares of planted land are undeniably sustainable and comply with both internal and external legislations to remain viable for the oilseeds industry.

Although RSPO has already been implemented, there are prohibitive costs and onerous requirements, making vulnerable groups like smallholders to find it difficult to comply with RSPO. Hence, the Malaysian government augmented MSPO (a national initiative) for the betterment of a sustainable palm oil industry, especially the smallholders.
This study has two-fold objectives namely first to determine how to increase sustainability practices among smallholders. Second to determine how organized smallholders and relevant agencies can implement Malaysian Sustainable Palm Oil (MSPO) for environmental conservation initiatives and understand the issues affecting the palm oil industry. In order to meet these objectives, the paper is organised as follows: section three is a methodology section outlining mixed qualitative approaches used and interview data. Section four delves into key findings of the study. Whereas section five deep dives into the discussion. Summary and recommendation are provided in the sixth section.

3. METHODOLOGY

This study used a mixed qualitative approach, which includes literature review, notes-taking and in-depth interviews with a total of five (5) informants. These informants have long-standing experience and expertise in the palm oil industry and government agencies such as MPOB, MPOC, FELDA, and FELCRA. Access and contacts to these informants were obtained from the lead author, who has completed extensive research on the topic of palm oil. The interviewees were directly involved in managing the organised smallholders so that the former eventually obtains the MSPO certificate.

In-depth interview conceptually allows an interviewer to engage with an interviewer (lead author) to probe specific questions deeply. In this manner, what has been conducted were in-depth semi-structured interviews from 9 March 2020 to 17 April 2020. Semi-structured interviews guided the fieldwork as there were in fact dialogues between an interviewer and an interviewer instead of an interview process solely guided by questions. Since the field study was conducted during the Movement Control Order (MCO) due to the Covid-19 Pandemic, in-depth semi-structured interviews were performed both via telephone interview and online platform teleconference. Both were conducted in a synchronous (real-time) manner, carefully recorded and required preparation at stages before the interview, during the interview and after the interview (see Burke and Miller 2001, Janghorban et al., 2014). There was notetaking carried out for teleconference interviews. Increasingly, studies have shown that synchronous online interviewing is a useful addition or, if one may be so bold to say, replacement to face-to-face interviews (Deakin and Wakefield, 2013). That being said, one aspect that distinguishes a phone interview from a teleconference is that during a teleconference when a camera is utilized, one's expressions, gestures and body language can be captured in the interview process. Hence, inasmuch as possible, processes of synchronous interviewing is to incorporate unspoken words, expressions, gestures to be able to gauge social cues. A rationale as to why teleconference and telephone interview was opted was due to difficulties in arranging for a meeting which stemmed from interviewees' lack of time and a compact daily schedule and the government's Restrict Movement Order due to the Covid-19 pandemic.

For each interview carried out, a transcription was made. There were five transcriptions in total and on the basis of these transcriptions, a thematic analysis was carried. In this regard, “theme" can be portrayed as the subjective meaning and cultural-contextual message of data (Vaismoradi and Snelgrove, 2019). Codes with shared points of reference, a high degree of transferability, and through which ideas can be put together throughout the study phenomenon could well be transformed into a theme (Vaismoradi and Snelgrove, 2019). Themes that arose incorporate, included but were not limited to compliance with MSPO, monitoring of palm oil by the EU, and upheavals in implementing MSPO. On the basis of these themes, coding was systematically carried out within transcriptions, literature review and notes taken during interviews. Coding and themes were then checked by other co-authors to ensure objective data analysis. Saturation which is a phase in qualitative research to ascertain that there is completion and thoroughness of data collection was reached when there was no more new theme emerging. In this regard, an inductive thematic saturation was implemented in that as a mode of reaching saturation it concentrates on the identification of new codes or themes and is based on the number of such codes or themes rather than the completeness of existing theoretical categories (Saunders et al., 2017). And indeed, this was very much the base as this study does not seek to embolden existing theorems. Having discussed methods employed, the ensuing section outlines findings of the study.

4. RESULTS

This section summarises the four key findings and discusses them in light of the paper's goals. These four key findings; first, the political game in the oilseeds business has compelled Malaysian smallholders to follow the MSPO; second, MSPO as a national initiative for a sustainable palm oil industry; third, smallholders’ compliance with the MSPO Seven Principles; and fourth twists and turns to implement MSPO are the three primary conclusions. Each of these findings are described in the coming sections.

4.1.1: Political Game in the Oil Seeds Industry that Sparked the Malaysian Smallholders to Implement MSPO

The study finds that the most obvious cause for the palm oil industry's exclusion from the European biofuel market i.e., deforestation and labour discrimination in the palm oil industry. As an expert 1 tells in an interview, “As with the challenges faced in the agriculture and food sectors, the palm oil industry is no exception to these issues and challenges. Among the issues that have arisen are anti-palm oil campaigns caused by factors such as deforestation, human-life conflict of liars, exploitation of laborers, sustainability, and others” (Interview with Expert 1, 5 March 2020). However, during the interview it was also revealed that the European Union's intervention pushed the Malaysian government to compel smallholders to get MSPO compliance certifications as a way to ensure the sustainability of all oil palm planting activities. Although implementing MSPO is challenging and costly for smallholders, they are nonetheless willing to do so. This finding is supported by Naidu and Moorthy (2021) who in their study posits how an anti-palm oil campaign may affect the palm oil industry.

Moreover, this study further inquired about the European Union's defamation of Malaysia's oil palm business from an Expert 3, according to him, the ban was imposed to safeguard their (EU) cooking oil harvest. The EU, as a matter of fact, is a major producer of vegetable oil from oilseeds, particularly rapeseed, sunflower seeds, soybean, and linseed (FEDIOL, 2020). An Expert 3 said in an interview, “I think based on expert’s way on this, it was primary driven by the political kind of and protection on other cook oil crop. Basically, pull a ban on

the palm oil is mainly to protect their (EU) own crop." (Interview with Expert 3, 18 March 2020). Therefore, it is clearly revealed that all this banning action is motivated by some political movements from the EU wishing to protect their crop in the market. This interview is corroborated in a study by Naidu and Moorthy (2021) who contend that oil is exposed to bias by non-tariff barriers from importers countries to protect their oil seeds oil thus disrupt the competitiveness in the international market.

The crucial role of palm oil is another factor which underlines the political game/motive. In an interview, expert 3 explained the importance of palm oil to the world compared to EU oil crops. Palm oil is the most productive oil in the world because one can produce many products from palm oil, from food to other daily used items. This statement is in line with with Rahmat (2016) who finds that palm oil is productive in terms of production per hectare, per labour and tonne basis. The expert, expert 3, claims the universality of palm oil as a value-added product as, "Which means, indirectly is... is... not able to pick the world without palm oil, and palm oil is only… not only using for food, it's also using for other... other application especially like the soap... industry detergent and so on so for." (Interview with Expert 3, 18 March 2020).

In order to explain further as regards the value of palm oil, Table 1 depicts the potential of palm oil as a value-added product in food applications, oleochemical and energy, biomass and other sectors.

Table 1 Value-Added Products from Oil Palm

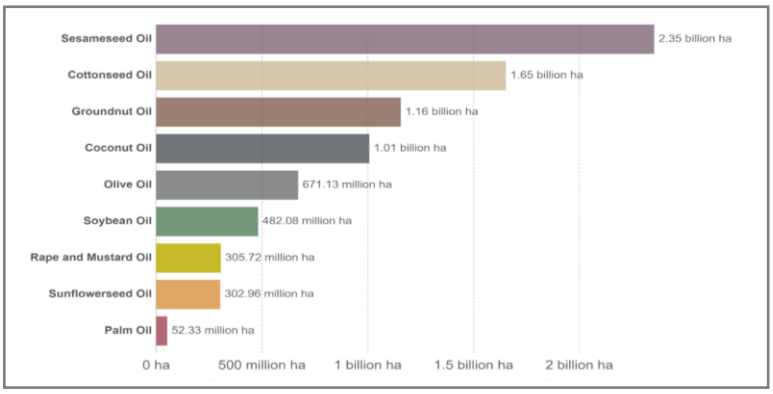
Food Applications	Oleochemical	Energy, Biomass & others
Cooking Oil	Surfactants	Biodiesel
Industrial Frying Fats	Personal Care	Furniture
Margarine	Cosmetics	Charcoal
Vegetable Ghee	Agrochemical	Pulp and paper
Confectionary Fats	Lubricant/ Grease	Animal Feeds
Ice Cream	Toilet Soap	Bio-composite
Non-dairy Creamer	Industrial Cleaning	Fertilizer
Salad Dressing	Printing Ink	Briquettes
Cheese Analog	Polyols	
Supplements/ Vitamins	Polyurethane	

Source: Palm Oil World, 2011

EU used a satellite image to monitor, but they misused that image, which is being labelled as illegal logging, and used it to attack the whole palm oil industry. Such way of the EU monitoring the Malaysian palm oil was criticized by the Expert 3 in an interview he criticizes, "They are just okay…ya... their killing oil overtime, so we are barring them, so is more on the kind of the… measure then the land…they use the satellite imaging, viewing the land, most of the time they staring on the land. But most of the time they staring at land, not due to palm oil plantation, its due to illegal…illegal logging. A lot of a... all this coming in, people are accusing, and then use the part of images and then making a big brouhaha, primary I said, they are trying find fault of palm oil and then, their killing oil over

time, their creating a video something like that, so they trying to get people aware of that, on top of that, we as a researcher we use scientific evidence, we also agree that some illegal planting enforcement should be stop."(Interview with Expert 3, 18 March 2020).

It is suggested that the best solution for a particular problem palm oil sustainability is government intervention on illegal logging; and enforcement of certifications and laws pertaining to palm oil sustainability. The laws, for example, should be more rigid and tightened by the government regarding illegal logging activity, which is a step forward in environmental sustainability Ruggeri and Samoggia, (2018) corroborated this solution and aired that the debate on palm oil sustainability in Europe has strongly intensified in the latest years involving several agri-food chain actors and stakeholders.In an interview, expert 3 states, "So as government as a country and industry what is the best actually enforcement, so we should avoid any illegal planting logging, that would actually reduce deforestation, all that happen and then eventually become avoid, or something like that, so we should avoid that, I think that enforcement has to be taken place and to kick in. Meanwhile, I think that industry has to get our-self equipped on how do we ensure that we are actually protecting the environment and the ecosystem for.... sustainability perspective." (Interview with Expert 3, 18 March 2020). Being proactive in palm oil sustainability, prioritising enforcement and having a self-equipped industry as a finding is supported by Noor et al. 2021 in their study. They alluded that illegal logging and deforestation activities can be curbed through internal regulatory measures, namely forest law enforcement.



4.1.2: MSPO as a National Initiative for Sustainable Palm Oil

Sustainability refers to what people require today and how as well as what they do to meet sustainability-related requirements in a way that does not adversely affect the needs of future generations. Nevertheless, this study discovered that sustainable agriculture is the only solution to this challenge. Sustainable agriculture is a collection of activities and technology that protect and conserve the environment for future generations. Moreover, this study emphasised that through practising sustainable agriculture, smallholders may ensure the preservation of better earth for future generations. This finding is in line with Gasfi et al's study (Gafsi et al., 2006) who argued that awareness of harmful implications of conventional agriculture techniques had led sustainable agriculture to become a norm in developed countries. Extending Gasfi et al's study and using findings of this study, sustainable agriculture is an emerging norm in developing country. Moreover, sustainable agriculture, according to Schindler et al.

(2015), is critical, particularly in the food industry. This is because many countries that import food are concerned about agriculture's ability to safeguard the environment while also serving as the world's primary source of food. Additionally, sustainable agriculture must be conducted to ensure food security without jeopardising the environment. As a result, MSPO was developed to help Malaysian smallholder farmers develop sustainable agriculture methods.

MSPO was introduced to overcome any problem associated with developing sustainable agriculture methods in Malaysia and to set a standard for palm oil players so that they will remain sustainable based on the seven principles (Kumaran and Suparyono, 2019). MSPO certificate is a national scheme that controls sustainable elements in Malaysian palm oil production. MSPO controls sustainable elements for all palm oil players in Malaysia, including palm oil-related facilities such as process mills.

MSPO is managed and developed by the Malaysian Palm Oil Certification Council, which was appointed by the government to study and develop a standard for palm oil production (Kumaran and Suparyono, 2019). MSPO was created to help 600,000 smallholders who might lose their income if the EU continued banning palm oil since the EU is the second-largest destination for Malaysian palm oil exports, after India. Thus, smallholders need to comply with MSPO for their future benefit. This is alluded in an interview with Expert 1; "Therefore, to ensure that all palm oil supply chains (including private smallholders) in Malaysia can produce sustainable palm oil products and are in line with government aspirations and overseas market demands, the government, through the Malaysian Palm Oil Board (MPOB), has introduced and implemented the Malaysia Sustainable Palm Oil (MSPO) Certification Scheme. In addition, MPOB has also established a Sustainable Palm Oil Cluster (SPOC) to collect and standardize the agricultural practices of private smallholders in preparation for the production of more sustainable palm oil BTS." (Interview with Expert 1, 5 March 2020).

The implementation of MSPO involves all industry players involved in the palm oil industry at all levels. Smallholders to factories processing palm oil products must comply with the MSPO.

"The implementation of the MSPO Certification Scheme is targeted at all industry players or oil palm operators in Malaysia, namely Private smallholders with an area of less than 40.46 hectares, oil palm plantations and organized smallholders, with an area of more than 40.46 hectares, and also palm oil processing plants, including downstream chains (refinery, crusher, biodiesel plant)" (Interview with Expert 5, 17 April 2020).

The Malaysian government is enthusiastic and committed to transforming the palm oil industry to improvise its sustainability and gain the trust of customers (Kumaran and Suparyono, 2019). This enthusiasm is reflected in the creation of MSPO, which has a very strict and long audit process but is still affordable.

4.1.3 The Challenges of Smallholders' Compliance towards Seven Principles of MSPO

In order to earn an MSPO certification, applicants must complete seven procedures. The applicant must first apply to MPOC for MSPO certification. Following that, the application must proceed through Stages 1 and 2 of the audit procedures. After that there is an audit session, wherein a candidate will be subjected to peer assessment. Thereafter, there is a peer review step, the MPOC will award the certification to the applicant and conduct audit sessions every year to ensure an applicant continues to adhere to the MSPO's seven principles. Finally, the MPOC will issue the applicant with the final certification. These steps are described in Figure 2.

Figure 2 MSPO Steps for Malaysia Sustainable Palm Oil Certification

Source: MPOCC, 2020

MSPO has its 7 key principles, and suffice to say it is rather a meticulous process. The Triple Bottom Line of People, Planet and Profit (also known as the 3Ps, TBL or 3BL) is applied in the procedures. As expert 5 mentioned in an interview, "To achieve the balance of Planet, Human and Economic sustainability, the MSPO has taken on 7 key Principles that must be adhered to in its implementation." (Interview with Expert 5, 17 April 2020). However, the question is how MSPO can sustain smallholders? The elaboration of the 7 MSPO key principles will be the chief tool to sustain smallholders.

Previous to that, MPOC, as the organizer of the MSPO, had divided the need to be met by oil palm players into two categories, the first category is for oil palm plantation owners and organized smallholders, while the second category is for private smallholders. These two categories are different in terms of the requirements for obtaining an MSPO for each policy. These differences were created to facilitate the palm oil industry players, especially smallholders.

5.4 Twists and Turns in Implementing MSPO

The study also unfolded numerous hindrances encountered by smallholders who manage their oil palm fields from a relevant agency's perspective. During an in-depth interview, Expert 4 discussed the issues the organisation faces when assisting smallholders participating in their programme in complying with the MSPO. Among the difficulties they encountered was resolving the issue of oil palm smallholders who manage their farms under the organization's program. Due to their complete control over their plants, smallholders confront challenges complying with the MSPO. There are two sorts of smallholders in this organization. The first category is those in which the organisation cultivates the crops, from planting to harvesting, and manages the entire process.

The second type is made up of smallholders who are members of this organisation and develop their plantations and sell their products to this organisation.

Challenges faced by smallholders in implementing MSPO was highlighted in an interview with Expert 4, in which it was described: "For us, the challenge is for smallholders under our program who manage their own farms. There are two types of smallholders in our organisation, one is a group of smallholders who allow their farm to be managed by our organisation and another group manages their own farm by themselves. The second group has a problem of complying with MSPO" (Interview with Expert 4, 9 April 2020). In addition, a problem in assembling all the stakeholders to explain what is MSPO was also found. This is a similar problem faced by all organizations involved in managing MSPO for their stakeholders. Expert 4 further stated; "We also have a problem of educating them because of the difficulties in assembling them." (Interview with Expert 4, 9 April 2020).

It was also observed that the most challenging part faced by all relevant parties is to educate smallholders. The smallholders need to be educated about the need to stop practicing what they have been practicing for a long time. For example, smallholders tend to practice open burning during the preparation and land clearing process before they replant their crops. This is because the burning of leftover crops can lower production costs and prevent pest attacks (Rohadi, 2017; Ali & Ngah, 2015). Therefore, it is a high-intensity task for relevant agencies to educate their stakeholders to comply with the zero-burning policy, which is one of the principles in MSPO.

Another challenge faced by relevant parties is to overcome the problem of ownership, as some smallholders lease the land to a third to plant oil palm (Manaf and Choy, 2015). As expert 2 eloquently put it, "The challenge is to change the status of the land. We do not have the power to do so, but what we can do is facilitate the process." (Interview with Expert 2, 9 March 2020). Therefore, question is abound: what is their strategy for implementing MSPO in their smallholdings? There are numerous methods of implementing MSPO in the smallholdings planned by the relevant authorities. However, before going further into this topic, this study intends to understand the factors that influence smallholders to comply with MSPO.

Smallholders are, in fact, agricultural entrepreneurs who cultivate agricultural land (PRPM, 2020) that does not exceed 40.4686 hectares. According to the Food and Agriculture Organization (FAO, 2017), smallholders are those who operate under structural constraints, such as limited resources, minimal technology, and small markets. The FAO also defined four types of smallholders, namely;

1. Dependent on production factors such as land, market etc.
2. Type of company management
3. The relationship between the garden and the market
4. The economic size of the enterprise (production value)

Definition-wise, Kirsten and Zyl (1998) describe smallholders as people who have a small operating farm or land and are unable to enhance their productivity without enlisting the assistance of the government. This term was developed as a result of South African research wherein smallholders were oppressed since every government policy benefited huge landowners, putting smallholders at a disadvantage. They are unlikely to readily comply with the MSPO due to certain elements such as age, cost, level of education, comprehension, and knowledge, as well as government support, all of which can impact smallholders' ability to comply with the MSPO (Ni et al., 2016).

As regards adherence to MSPO and smallholders, Ni et al. (2016) found six important factors pertaining to compliance towards MSPO, which are: first, elderly smallholders have a lower tendency towards MSPO compliance; second, better knowledge about MSPO poses a higher chance of MSPO compliance by smallholders. Third, the higher the education level, the higher the level of MSPO implementation. Fourth, if the government is willing to provide incentives or any kind of aid, then they are willing to comply with MSPO. Fifth, the higher the cost, the lower the level of MSPO implementation. Lastly, the higher the perceived benefit, the higher the level of MSPO implementation. As a result, relevant agencies must develop appropriate and effective initiatives to ensure smallholders adhere to the MSPO. The relevant agencies' initial strategy is to educate smallholders about the MSPO idea. Agencies must begin an advocacy campaign with their smallholders to ensure that they understand and agree to comply with the MSPO. This aspect was underlined in an interview: "We do provide face-to-face explanation to the villagers. We explained from a-z to them until they successfully agree to comply with the MSPO" (Interview with Expert 2, 9 March 2020).

MSPO officials designed a simple but well-structured process for smallholders to obtain the certificate, which is a process designed to facilitate MSPO compliance by smallholders. "We created a group called the MSPO Group, which involves several smallholders nearby. The main members of the group consist of the Manager, Chief of the Settlers, Chief of the Women Settlers, Youth and NGO Representatives in the area and several representatives of the block leaders in that area. Within the group will be appointed group leader consisting of one of our organisation managers who will coordinate the preparation for the MSPO certification of each group" (Interview with Expert 4, 9 April 2020)

Next, in an effort to learn more about MSPO, smallholders should attend workshops led by smallholders who run their farms. MPOB funds this kind of educational initiative. Then the awareness program is staged to incorporate all levels of society in the organisation. Aside from educating smallholders on the MSPO concept, they also teach them sustainable agriculture and harmful farming methods such as open burning and chemical fertiliser use. Other educational programs include social media and booklet distribution. In all of their work with smallholders, MSPO officials emphasize environmental sustainability and MSPO. Ensuring and increasing smallholders awareness of the pronounced role of MSPO certification through education is pinpointed by Rahmat et al. (2021), who in their study concluded that establishing and implementing a local palm oil certification standard as a substitute for the RSPO is not as simple and clear as it appears, and that increasing smallholder awareness of the significance of MSPO certification is critical.

There are multiple layers of governance involved in ascertaining the critical role of MSPO certification. And these layers ought to develop a web of effective communication. Rahmat et al. (2021) stated that MSPO may facilitate more effective and transparent communication between the federal government and oil palm farmers at the community level, particularly smallholders. The federal government, state authorities, and MPOB must educate smallholders about the value of MSPO certification. Expert 4 stresses the need of supporting the MSPO at the management level and to disseminate awareness of the importance of MSPO including MSPO certifications: "In addition to activating awareness programs conducted through various mediums such as joint meetings, social media, pamphlets, matters regarding MSPO are often emphasized as the main agenda that requires attention every time our organisation plans to organize any activity". This can to some extent spread

awareness to our settlers. The things that become the daily routine are explained about the importance of fulfilling the matter and why it should be avoided. Apart from that, the management also provides recommendations and guidance to the settlers on these matters." (Interview with Expert 4, 9 April 2020).

A key strategy is to lower the cost of MSPO. That being said, government intervention is needed to make this strategy feasible. Initially, the relevant agencies need to bear their costs for the MSPO process, and after a while, MPOB decided to fund the cost of RM50@acre. This strategy was iterated by Expert 4: "We need to bear those costs and minimize costs as much as possible so as not to burden the settlers. However, after MPOB provided an allocation of RM 50/ acre, this matter to some extent can resolve certification matters for us" (Interview with Expert 4, 9 April 2020) This step will help the relevant agencies in different layers of governance to convince smallholders to comply with MSPO. Smallholders will feel less burdened because of this incentive from the relevant agencies and MPOB. This corroborates with what Ni et al. (2016) found in that the fourth factor is significant, whereby a higher incentive from the government will increase the number of MSPO compliant participants.

Another strategy is that the relevant agencies will also need to strengthen their staff's capacity. This means that their staff will need to have a good understanding of MSPO, which will better enable the staff to deal with smallholders, motivate them, and raise their willingness to become MSPO compliant. This step was also supported by Ni et al. (2016), who said that greater knowledge about MSPO will lead to greater MSPO compliance. Expert 4 emphasized this aspect of knowledge: "We need to train our staff at the state level to handle this certification process. Some briefings and courses are given at the early stages. In terms of managing the documentation process, every area under our jurisdiction was provided with complete documents and information to further facilitate the staff in handling the documentation. For this certification phase, the internal audit process is first carried out by our organisation before the external audit is conducted. Therefore, there are areas for improvement in issues that might arise."- Interview with Expert 4, 9 April 2020.

Hence, this study identifies that both relevant agencies had proper procedures and internal initiatives, such as internal audits before an external audit. It could be deduced that the relevant agencies are committed to ensuring all their staff fully understand the MSPO requirements, while smallholders under their scheme become MSPO compliant. To reach a good grasp of knowledge of MSPO amongst smallholders, several factors must be taken into account ranging from strengthening MSPO's staff capacity in understanding MSPO, lowering the cost of MSPO, the call for supporting the MSPO at the management level and governance levels and to disseminate awareness of the importance of MSPO including MSPO certifications across different levels.

5. DISCUSSION

Smallholders and farm labours during the Covid-19 pandemic

The presence of the COVID-19 pandemic threat has placed significant strain on smallholders. These smallholders' plantation activities have been hampered by movement restrictions and during movement control order (MCO) some of inputs could not be reached out. However, situation gets better after the MCO. Most of farm labourers are migrants from Indonesia, Philippines and Myanmar. Some of them were sent home during pandemic and some were quarantine due to affected by Covid-19.

Fortunately for the palm oil sector, the presence of the Covid-19 pandemic did not harm the industry. Since the announcement of the MCO on 18 March 2020, the palm oil industry has had the advantage of continuing to operate despite strict SOPs. The government had given agriculture sector entrepreneurs a leeway to carry out agricultural activities since the agriculture sector is vital to the country's economy (Hamid, 2020).

Cultivating MSPO practices among independent small holders

Among all key players in palm oil industry, independent small holders are the cohort need to be targeted by the government in terms of knowledge transfer and sustainability practices thus increase readiness to practices MSPO in their oil palm farms. Organised small holders are well trained by the respective agencies such as FELDA, FELCRA and RISDA. However, independent small holders are the one who are so independent, flexible yet do not obligated to any internal SOPs.

Continuously guidance to small holders

As most of independent small holders are getting used to their comfort zone and some are not so sure the right practices for inputs application and MSPO practices. Hence, continuously guidance needs to be shared by respective agencies such as farmers organisation authority, department of agriculture on the sustainable practices.

Controlling issues of climate change and habitat disruption

Most of smear campaign conducted against palm oil industry are related to climate change and habitat disruption. Smear campaign such as "safe the Orang Utan safe the forest" and climate change due to deforestation which lead to carbon emission.

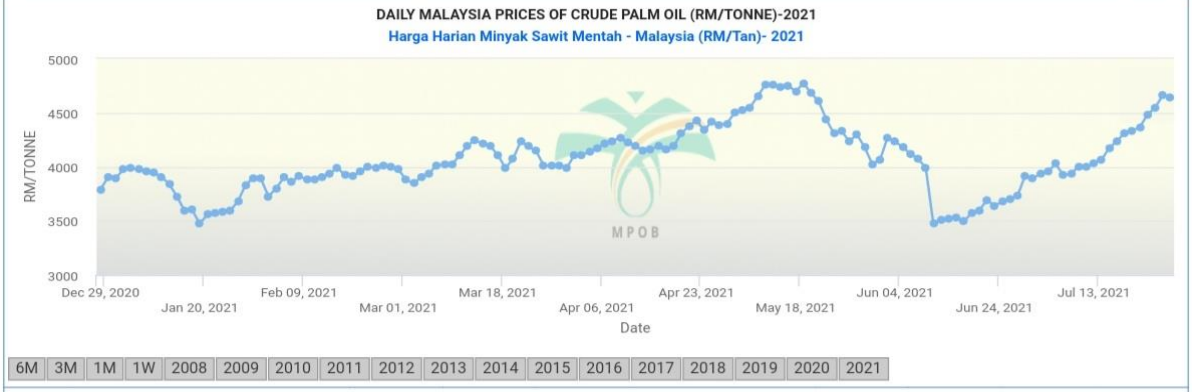
MSPO maintains sustainability

Commodity crops, such as oil palm, are important crops that were allowed to operate, but with strict SOPs. Therefore, the price of fresh fruit bunches for oil palm remained increased for 2020 and 2021. If we observe the price movement from February to May 2021, the price increase occurred while in February to May 2020, the price of crude palm oil decreased. The MCO in Malaysia came into force in February 2020.

Figure 3 Crude Palm Oil Price for 2021,

MPOB DAILY MALAYSIA PRICES OF CRUDE PALM OIL (RM/TONNE)
Harga Harian Minyak Sawit Mentah - Malaysia (RM/Tan)
2021

MYR 4644.50 | Latest Price: 28 July 2021



Crude Palm Oil (Local Delivered)
Minyak Sawit Mentah (Hantaran Tempatan)

Date	January	February	March	April	May	June	July	August	September	October	November	December
01	PH	3,895.50	3,976.00	4,108.50	NT	4,026.00	3,888.50	PH	-	-	-	-
02	NT	3,888.50	3,878.00	4,111.00	PH	4,061.50	3,938.50	-	-	NT	-	-
03	PH	3,725.00	3,845.50	NT	4,502.00	4,270.00	NT	-	-	PH	-	-
04	3,903.00	3,800.50	3,906.00	PH	4,525.50	4,236.00	PH	-	NT	-	-	NT
05	3,893.00	3,900.00	3,935.50	4,141.00	4,548.50	NT	3,956.00	-	PH	-	-	PH
06	3,973.50	NT	NT	4,172.00	4,652.00	PH	4,027.00	-	-	-	NT	-
07	3,986.50	PH	PH	4,212.00	4,758.50	PH	3,921.50	NT	-	-	PH	-
08	3,974.50	3,863.00	4,015.00	4,235.00	NT	4,177.50	3,936.50	PH	-	-	-	-
09	NT	3,909.50	4,022.50	4,270.00	PH	4,122.00	4,000.50	-	-	NT	-	-
10	PH	3,882.50	4,021.00	NT	4,758.00	4,070.00	NT	-	-	PH	-	-
11	3,961.50	3,879.00	4,103.00	PH	4,740.50	3,993.50	PH	-	NT	-	-	NT
12	3,944.50	PH	4,193.00	4,220.50	4,749.50	NT	3,998.00	-	PH	-	-	PH
13	3,908.00	NT	NT	4,193.50	PH	PH	4,029.50	-	-	-	NT	-
14	3,840.00	PH	PH	4,153.50	PH	3,471.50	4,063.00	NT	-	-	PH	-
15	3,726.50	3,908.50	4,247.50	4,163.00	NT	3,508.00	4,174.50	PH	-	-	-	-
16	NT	3,931.00	4,215.00	4,188.00	PH	3,522.50	4,235.50	-	-	NT	-	-
17	PH	3,993.50	4,192.00	NT	4,698.00	3,529.00	NT	-	-	PH	-	-
18	3,594.50	3,921.00	4,109.00	PH	4,773.50	3,498.00	PH	-	NT	-	-	NT
19	3,599.50	3,917.00	3,988.50	4,158.00	4,681.50	NT	4,314.00	-	PH	-	-	PH
20	3,474.00	NT	NT	4,188.50	4,605.00	PH	PH	-	-	-	NT	-
21	3,556.50	PH	PH	4,306.50	4,434.00	3,568.50	4,334.00	NT	-	-	PH	-
22	3,572.00	3,952.50	4,072.50	4,376.50	NT	3,597.00	4,364.50	PH	-	-	-	-
23	NT	3,996.00	4,236.00	4,428.50	PH	3,691.00	4,481.50	-	-	NT	-	-
24	PH	3,991.50	4,187.50	NT	4,307.00	3,640.00	NT	-	-	PH	-	-
25	3,578.50	4,013.50	4,145.50	PH	4,329.00	3,675.00	PH	-	NT	-	-	NT
26	3,592.50	4,000.00	4,014.00	4,338.00	PH	NT	4,547.00	-	PH	-	-	PH
27	3,682.00	NT	NT	4,418.00	4,234.00	PH	4,659.00	-	-	-	NT	-
28	NT	PH	PH	4,389.50	4,298.50	3,704.50	4,644.50	NT	-	-	PH	-
29	3,832.50		4,005.50	4,400.00	NT	3,727.50	-	PH	-	-	-	-
30	NT		4,006.00	NT	PH	3,918.00	-	-	-	NT	-	-
31	PH		3,985.00		4,180.50		NT	-		PH		-
Average	**3,748.50**	**3,895.50**	**4,041.50**	**4,220.00**	**4,572.00**	**3,830.50**						

Source: MPOB

Figure 4 Crude Palm Oil Price 2020,

MPOB DAILY MALAYSIA PRICES OF CRUDE PALM OIL (RM/TONNE)
Harga Harian Minyak Sawit Mentah - Malaysia (RM/Tan)
2020

	Crude Palm Oil (Local Delivered) *Minyak Sawit Mentah (Hantaran Tempatan)*											
Date	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
01	PH	NT	PH	2,472.50	PH	2,366.00	2,396.00	NT	2,885.50	2,914.00	PH	3,501.50
02	3,053.00	PH	2,394.50	2,454.00	NT	2,374.00	2,420.50	PH	2,885.50	2,841.00	3,209.50	3,485.50
03	3,056.50	2,658.50	2,377.50	2,366.00	PH	2,389.50	2,414.00	2,822.50	2,936.50	NT	3,304.00	3,502.00
04	NT	2,696.00	2,432.00	NT	PH	2,389.50	NT	2,855.00	2,916.50	PH	3,354.00	3,601.00
05	PH	2,790.50	2,517.00	PH	2,037.00	2,379.50	PH	2,847.00	NT	2,857.50	3,357.00	NT
06	3,064.00	2,873.50	2,491.00	2,334.50	2,025.50	NT	2,422.50	2,852.00	PH	2,906.00	3,424.00	PH
07	3,061.50	2,885.00	NT	2,356.50	PH	PH	2,423.00	2,853.50	2,904.50	2,950.00	NT	3,640.00
08	3,043.50	NT	PH	2,420.00	2,036.50	PH	2,438.00	NT	2,916.00	2,980.00	PH	3,645.00
09	3,084.50	PH	2,274.00	2,432.00	NT	2,413.00	2,451.50	PH	2,899.00	3,004.00	3,343.50	3,622.00
10	3,111.00	2,859.50	2,366.50	2,355.50	PH	2,404.50	2,445.50	2,846.00	2,874.50	NT	3,412.50	3,647.00
11	NT	2,774.50	2,345.50	NT	2,036.50	2,390.00	NT	2,834.50	2,875.00	PH	3,436.00	3,662.00
12	PH	2,703.00	2,323.00	PH	2,021.50	2,387.00	PH	2,781.50	NT	3,050.50	3,462.50	NT
13	3,093.00	2,694.50	2,307.00	2,326.00	2,037.00	NT	2,454.50	2,858.50	PH	3,042.50	3,500.00	PH
14	3,033.00	2,683.00	NT	2,284.50	2,030.50	PH	2,492.00	2,784.00	2,905.50	3,043.00	NT	3,636.50
15	3,014.50	NT	PH	2,322.00	2,081.00	2,369.00	2,541.50	NT	2,931.00	3,019.00	PH	3,622.00
16	2,985.00	PH	2,280.50	2,290.00	NT	2,403.50	2,607.00	PH	PH	3,000.50	3,501.50	3,633.00
17	2,971.50	2,709.00	2,322.50	2,291.50	PH	2,415.00	2,630.00	2,791.00	2,982.50	NT	3,511.50	3,604.50
18	NT	2,708.50	2,300.50	NT	2,138.50	2,419.50	NT	2,773.00	3,053.50	PH	3,498.00	3,648.50
19	PH	2,694.50	2,264.50	PH	2,183.00	2,483.00	PH	2,830.00	NT	2,931.00	3,581.50	NT
20	2,963.00	2,649.00	2,311.00	2,308.50	2,182.00	NT	2,703.50	PH	PH	2,954.50	3,516.50	PH
21	2,931.50	2,667.00	NT	2,171.00	2,191.00	PH	2,714.00	2,785.50	3,074.00	3,028.00	NT	3,651.00
22	2,974.00	NT	PH	2,131.00	2,208.00	2,486.00	2,728.50	NT	2,951.00	3,047.00	PH	3,661.00
23	2,991.50	PH	2,316.00	2,131.50	NT	2,502.00	2,739.00	PH	2,933.00	3,049.50	3,441.00	3,701.50
24	2,984.00	2,645.00	2,370.50	2,162.00	PH	2,515.00	2,795.00	2,776.00	2,841.50	NT	3,451.50	3,835.50
25	NT	2,545.00	2,429.50	NT	PH	2,470.00	NT	2,751.50	2,879.50	PH	3,429.00	PH
26	PH	2,509.50	2,423.50	PH	PH	2,460.50	PH	2,730.00	NT	3,134.00	3,429.50	NT
27	PH	2,486.50	2,445.00	2,049.00	2,254.50	NT	2,791.50	2,784.00	PH	3,185.00	3,437.50	PH
28	2,736.00	2,413.50	NT	2,046.50	2,273.00	PH	2,702.50	2,822.50	2,915.50	3,243.50	NT	3,780.50
29	2,777.50	NT	PH	2,058.00	2,283.00	2,391.00	2,677.50	NT	2,909.50	PH	PH	3,788.00
30	2,689.00		2,482.00	2,096.50	NT	2,392.00	2,719.50	PH	2,857.50	3,250.00	NT	NT
31	2,680.00		2,392.50		PH		-	PH		NT		NT
Average	**3,013.50**	**2,714.50**	**2,382.00**	**2,299.00**	**2,074.00**	**2,411.50**	**2,519.00**	**2,815.00**	**2,924.00**	**2,979.50**	**3,422.00**	**3,620.50**

Source: MPOB

6. CONCLUSION

The EU's decision to ban palm oil imports and the impact of palm oil on climate change should catalyse for Malaysia's palm oil business to become sustainable. The Malaysian government introduced MSPO, a national initiative certification process, in response to the EU's non-tariff barrier and the climate change issue. Climate change also poses a problem for farmers since it has the potential to affect the productivity and efficiency of oil palm fruit bunch production. Sustainable agriculture is critical for both the social and environmental economy. MSPO is a lengthy, methodical, and rigorous process; hence, its application requires well-trained oil palm growers, particularly independent smallholders.

The implementation of MSPO is more straightforward and systematic for organised smallholders as they are well trained by the respective agencies, such as FELDA, FELCRA and RISDA, these agencies have the training, internal rules, regulation and SOPs. MSPO works as an effective line of communication between agencies and organised smallholders. However, this study found that agencies also faced challenges in organising smallholders who grow their oil palms. In a scheme, such as FELDA, there are two types of organised smallholders, namely smallholders who register under the scheme and have their oil palm plantations fully managed by the scheme. However, the challenge comes from organised smallholders who manage their oil palms.

Conversely, as for independent smallholders, respective government agencies need to ensure that this vulnerable group truly understands what MSPO is, the 7 principles of MSPO as well as undergo training to fulfil the certification scheme requirements. The MPOB could consider engaging other agencies at the meso level, such as the Farmers Organisation Authority, to monitor the progress of independent smallholders. The respective farmers' organisations might understand farming systems and labour situations in the respective meso level, and the most vulnerable smallholders. This organisation is connected to local collection centres, as well as farmers' organisations and cooperatives and could play a pivotal role as an effective and efficient mediator, disseminator of information and coordinator of pandemic prevention and risk management strategies among smallholders (ECLT, 2020)

Another challenge for smallholders is the Covid-19 pandemic. They are already struggling to understand and adhere to the MSPO certification scheme and they faced difficulties in obtaining inputs and carrying out farming activities during the first MCO. But, in a struggle, they have been blessed with a spike in Crude Palm Oil prices compare to 2020.

Acknowledgement:

This work was supported by the Ministry of Higher Education Malaysia for Fundamental Research Grant (FRGS) Scheme with Project Code: [**203.PSOSIAL.6711783**]

REFERENCES

1. Ahmad, S., & Hashim, N. M. (2006). Kebakaran hutan dan isu pencemaran udara di Malaysia: kes jerebu pada Ogos 2005. E-BANGI: Jurnal Sains Sosial Dan Kemanusiaan, 1(1), 19. http://journalarticle.ukm.my/1503/

2. Aini, I. N., & Miskandar, M. S. (2007). Utilization of palm oil and palm products in shortenings and margarines. European Journal of Lipid Science and Technology, 109(4), 422–432. https://doi.org/10.1002/ejlt.200600232

3. Ali, M. A. N. dan M. Z. (2015, October 5). Henti pembakaran terbuka elak jerebu setiap tahun. Berita Harian. https://www.bharian.com.my/taxonomy/term/61/2015/10/86597/henti-pembakaran-terbuka-elak-jerebu-setiap-tahun

4. Anwar, M. R., Liu, D. L., Macadam, I., & Kelly, G. (2012). Adapting agriculture to climate change: a review. Theoretical and Applied Climatology, 113(1-2), 225–245. https://doi.org/10.1007/s00704-012-0780-1

5. Azhar, B., Saadun, N., Prideaux, M., & Lindenmayer, D. B. (2017). The global palm oil sector must change to save biodiversity and improve food security in the tropics. Journal of

Environmental Management, 203, 457–466. https://doi.org/10.1016/j.jenvman.2017.08.021

6. Basiron, Y. (2007). Palm oil production through sustainable plantations. European Journal of Lipid Science and Technology, 109(4), 289–295. https://doi.org/10.1002/ejlt.200600223

7. Baydar, N., White, M. J., Simkins, C., & Babakol, O. (1990). Effects of Agricultural Development Policies on Migration in Peninsular Malaysia. Demography, 27(1), 97. https://doi.org/10.2307/2061555

8. Carroll, E., Chang, J., Lodi, L., Rapsomanikis, G., Zimmermann, A., & Blandford, D. (2018). The state of agricultural commodity markets 2018: agricultural trade, climate change and food security. The State of Agricultural Commodity Markets 2018: Agricultural Trade, Climate Change and Food Security.

9. Chin, C. (2020). The Impact of Food Supply Chain Disruptions amidst COVID-19 in Malaysia. Journal of Agriculture, Food Systems, and Community Development, 1–3. https://doi.org/10.5304/jafscd.2020.094.031

10. Cooper, H. V., Evers, S., Aplin, P., Crout, N., Dahalan, M. P. B., & Sjogersten, S. (2020). Greenhouse gas emissions resulting from conversion of peat swamp forest to oil palm plantation. Nature Communications, 11(1). https://doi.org/10.1038/s41467-020-14298-w

11. Department of Statistic Malaysia. (2018). Department of Statistics Malaysia Official Portal. Dosm.gov.my. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=72&bul_id=SEUxMEE3VFdBcDJhdUhPZVUxa2pKdz09&menu_id=Z0VTZGU1UHBUT1VJMFlpaXRRR0xpdz09

12. Department of Statistic Malaysia. (2019). Department of Statistics Malaysia Official Portal. Dosm.gov.my. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=72&bul_id=SEUxMEE3VFdBcDJhdUhPZVUxa2pKdz09&menu_id=Z0VTZGU1UHBUT1VJMFlpaXRRR0xpdz09

13. Department of Statistic Malaysia. (2018). Selected Agriculture Indicator. Dosm.gov.my. 2018. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=72&bul_id=SEUxMEE3VFdBcDJhdUhPZVUxa2pKdz09&menu_id=Z0VTZGU1UHBUT1VJMFlpaXRRR0xpdz09

14. Department of Statistic Malaysia. (2019) Selected Agriculture Indicator. Dosm.gov.my. 2019. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=72&bul_id=SEUxMEE3VFdBcDJhdUhPZVUxa2pKdz09&menu_id=Z0VTZGU1UHBUT1VJMFlpaXRRR0xpdz09

15. ECLT. (2020). Small-scale farmers, children & COVID-19: What can be done? Www.eclt.org. https://www.eclt.org/en/news/small-scale-farmers-children-and-covid-19-what-can-be-done

16. European Environment Agency. (2021, May 11). Agriculture and climate change. European Environment Agency. https://www.eea.europa.eu/signals/sig

nals-2015/articles/agriculture-and-climate-change

17. Fadholi, A. (2013). Studi Dampak El Nino Dan Indian Ocean Dipole (Iod) Terhadap Curah Hujan Di Pangkalpinang. Jurnal Ilmu Lingkungan, 12(2), 43. https://doi.org/10.14710/jil.11.1.43-50

18. FAO. (2017). On the Cost of Being Small. Www.fao.org. https://www.fao.org/agrifood-economics/en/

19. FAO. (2018) The State of Agricultural Commodity Markets 2018. Agricultural trade, climate change and food security. United States? The Food and Agriculture Organization of the United Nations.

20. Federal Land Development Authority. (2019). FELDA - Mengenai Felda. Www.felda.gov.my. https://www.felda.gov.my/umum/felda/mengenai-felda

21. FEDIOL. (2020, October 17). Latest News. Www.fediol.eu. https://www.fediol.eu/

22. Gafsi, M., Legagneux, B., Nguyen, G., & Robin, P. (2006). Towards sustainable farming systems: Effectiveness and deficiency of the French procedure of sustainable agriculture.
23. Agricultural Systems, 90(1-3), 226–242. https://doi.org/10.1016/j.agsy.2006.01.002

24. Government of India-United Nation Development Program. (2009). Government of India - UNDP Disaster Risk Management Programme 2002-2009 : Evaluation and Review of Lessons | United Nations Development Programme. UNDP. https://www.undp.org/india/publications/government-india-undp-disaster-risk-management-programme-2002-2009-evaluation-and-review-lessons-0

25. Gregorio, G., & Ancog, R. (2020). Assessing the Impact of the COVID-19 Pandemic on Agricultural Production in Southeast Asia: Toward Transformative Change in Agricultural Food System. Asian Journal of Agriculture and Development, 17(1), 1–14. https://doi.org/10.37801/ajad2020.17.1.1

26. Hardwick, S. R., Toumi, R., Pfeifer, M., Turner, E. C., Nilus, R., & Ewers, R. M. (2015). The relationship between leaf area index and microclimate in tropical forest and oil palm plantation: Forest disturbance drives changes in microclimate. Agricultural and Forest Meteorology, 201, 187–195. https://doi.org/10.1016/j.agrformet.2014.11.010

27. Hasbullah, N. A., & Ab Rahman, A. (2020). Peranan Pemegang Taruh dalam Menjaga Kebajikan Ekonomi Rakyat Semasa Pandemik COVID-19 dari Perspektif Ekonomi Islam. The Journal of Muamalat and Islamic Finance Research, 71–89. https://doi.org/10.33102/jmifr.v17i3.285

28. Hashemvand Khiabani, P., & Takeuchi, W. (2019). Supporting Oil Palm Replanting Programs Using UAV and GIS in Malaysia. Unmanned Aerial Vehicle: Applications in Agriculture and Environment, 71–84. https://doi.org/10.1007/978-3-030-27157-2_6

29. Hassan, M. S. (2018). Self-Determination And Free, Prior And Informed Consent Of The Orang Asli. https://doi.org/10.15405/epsbs.2018.12.03.83

30. Hauser, S., & Norgrove, L. (2013). Slash-and-Burn Agriculture, Effects of. Encyclopedia of Biodiversity, 551–562. https://doi.org/10.1016/b978-0-12-384719-5.00125-8

31. Hossain, S. T. (2020). Impacts of COVID-19 on the Agri-food Sector: Food Security Policies of Asian Productivity Organization Members. Journal of Agricultural Sciences – Sri Lanka, 15(2), 116. https://doi.org/10.4038/jas.v15i2.8794

32. Isa, S. Z. M. (2020). Pastikan Anda DIBANCI. In The Department of Statistics Malaysia. https://www.dosm.gov.my/v1/uploads/files/6_Newsletter/Newsletter%202020/DOSM_BPPAS_1-2020_Siri-18.pdf

33. Jabatan Meteorologi Malaysia. (2021). Laman Web Rasmi Jabatan Meteorologi Malaysia. Www.met.gov.my. https://www.met.gov.my/pendidikan/iklim/perubahaniklim

34. Kalam, M. A., & Masjuki, H. H. (2002). Biodiesel from palmoil—an analysis of its
35. properties and potential. Biomass and Bioenergy, 23(6), 471–479. https://doi.org/10.1016/s0961-9534(02)00085-5

36. Karfakis, P., Ponzini, G., & Rapsomanikis, G. (2017). On the costs of being small: Case evidence from Kenyan family farms.

37. Kirsten, J. F., & van Zyl, J. (1998). Defining Small-Scale Farmers In The South African Context. Agrekon, 37(4), 551–562. https://doi.org/10.1080/03031853.1998.9523530

38. Kumaran, K., & Mohd, H. S. (2019). Malaysian sustainable palm oil certification standards. Planter, 95(1117), 239–249.

39. Kumaran, S. (2019). The dynamics for mandatory MSPO certification scheme to be successfully implemented. Journal of Oil Palm, Environment and Health (JOPEH), 10.

40. Kushairi, A., Loh, S. K., Azman, I., Hishamuddin, E., OngAbdullah, M., Izuddin, Z., Razmah, G., Sundram, S., & Ahmad. (2018). Oil palm economic performance in Malaysia and R&D progress in 2017. J. Oil Palm Res, 30(2), 163–195.

41. LIN, B., & ZHANG, Y. Y. (2020). Impact of the COVID-19 pandemic on agricultural exports. Journal of Integrative Agriculture, 19(12), 2937–2945. https://doi.org/10.1016/s2095-3119(20)63430-x

42. Maclaurin, J., & Sterelny, K. (2008). What Is Biodiversity? University Of Chicago Press.

43. Mahidin, M. U. (2015). Department of Statistics Malaysia Official Portal. Www.dosm.gov.my. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=72&bul_id=SEUxMEE3VFdBcDJhdUhPZVUxa2pKdz09&menu_id=Z0VTZGU1UHBUT1VJMFlpaXRRR0xpdz09.

44. Malaysian Palm Oil Board. (2011). Welcome to the Malaysian Palm Oil

Board // Environmental Impact // Washington, DC // 1-202-572-9768. Www.palmoilworld.org. http://www.palmoilworld.org/environment.html

45. Malaysian Palm Oil Certification Council (MPOCC). (2020). Tentang MSPO. https://947f1e9a-cdce-49fa-ac6f-bba3863f98eb.filesusr.com/ugd/3ef157_fb05c6945b9a48328a2d70eb32d9da5a.pdf

46. Manaf, Azima Abdul, & Choy, E. A. (2017). Isu pemilikan tanah dan implikasinya terhadap produktiviti pekebun kecil: Kajian kes pekebun kecil di Lahad Datu, Sabah (Land ownership issue and its implications for smallholder productivity: The case of oil palm smallholders in Lahad Datu, Sabah). Geografia, 11(9).

47. Mastura, M. (2008). Greenhouse gas emissions from a land use change activity during a haze episode in Southeast Asia. Jurnal EBangi, 3(3).

48. Ministry of Health (MOH). (2021). COVID-19 Malaysia Updates. COVID-19 MALAYSIA. https://covid-19.moh.gov.my

49. MPOB. (2021). Malaysia Prices Of Crude Palm Oil. Bepi.mpob.gov.my. https://bepi.mpob.gov.my/admin2/price_local_daily_view_cpo_msia.php?more=Y&jenis=1Y&tahun=2020

50. MPOC. (2019). The Oil Palm Tree. Malaysian Palm Oil Council. https://mpoc.org.my/the-oil-palm-tree/

51. Naidu, L., & Moorthy, R. (2021). A Review of Key Sustainability Issues in Malaysian Palm Oil Industry. Sustainability, 13(19), 10839. https://doi.org/10.3390/su131910839

52. Ni, L. X., Ali, F., & Zainudin, Z. H. (2016). Factors Influencing the Implementation of Malaysia Sustainable Palm Oil (MSPO) Among Oil Palm Smallholders in Malaysia. International Journal of Academic Research in Business and Social Sciences, 6(12). https://doi.org/10.6007/ijarbss/v6-i12/2495

53. Noor Fzlinda Fabeil, Khairul Hanim Pazim, & Langgat, J. (2020). Impak Krisis Covid-19 Terhadap Sektor Pertanian: Strategi Saluran Pengagihan bagi Kesinambungan Perniagaan. Jurnal Dunia Perniagaan, 2(1), 1–8. https://myjms.mohe.gov.my/index.php/jdpn/article/view/9476

54. Noor, Kadir, R., & Muhamad, S. (2020). Illegal logging and forest offences in peninsular Malaysia: perceived opportunity factors. Journal of Nusantara Studies (JONUS), 5(2), 86–102.

55. Nordin, R., & Ibrahim, M. S. (2014). Exercising the Principle of Free, Prior and Informed Consent (FPIC) in Land Development: An Appraisal with Special Reference to the Orang Asli in Peninsular Malaysia. Pertanika Journal of Social Sciences & Humanities, 22.

56. Our World in Data. (2021). Area of land needed to meet global vegetable oil demand. Our World in Data. https://ourworldindata.org/grapher/area-land-needed-to-global-oil?tab=chart&stackMode=%20absolute%C2%AEion=World

57. Pagano, M., & Röell, A. (1996). Transparency and liquidity: a comparison of auction and dealer

markets with informed trading. The Journal of Finance, 51(2), 579–611.

58. Palm oil world, Food & Non-Food. (2020). Welcome to the Malaysian Palm Oil Board -Applications. Www.palmoilworld.org. http://www.palmoilworld.org/applications.html

59. Paterson, R. R. M. (2020). Depletion of Indonesian oil palm plantations implied from modeling oil palm mortality and Ganoderma boninense rot under future climate. AIMS Environmental Science, 7(5), 366–379. https://doi.org/10.3934/environsci.2020024

60. Post Online, B. (2020, July 3). Malaysia to take legal action against EU over palm oil campaign. Borneo Post Online. https://www.theborneopost.com/2020/07/03/malaysia-to-take-legal-action-against-eu-over-palm-oil-campaign-2/

61. PRPM, Pekebun Kecil. (2020). In Pusat Rujukan Dan Persuratan Melayu. Prpm.dbp.gov.my. https://prpm.dbp.gov.my/Cari1?keyword=pekebun+kecil

62. Rahmat, S. R. (2016). Global Value Chains and the Role of Innovation for Sustainable Palm Oil: An International Bioeconomy Analysis for Malaysia. Bonndoc.ulb.uni-Bonn.de. https://hdl.handle.net/20.500.11811/6593

63. Rahmat, S. R., Mat Yasin, S., Mad' Atari, M. F., & Tayeb, A. (2021). Seeking for sustainability: Actor's perspective on the Malaysian Sustainable Palm Oil Certification Scheme (MSPO). Malaysian Journal of Society and Space, 17(2). https://doi.org/10.17576/geo-2021-1702-06

64. Ramdani, F., Moffiet, T., & Hino, M. (2014). Local surface temperature change due to expansion of oil palm plantation in Indonesia. Climatic Change, 123(2), 189–200. https://doi.org/10.1007/s10584-013-1045-4

65. Reidsma, P., Ewert, F., Lansink, A. O., & Leemans, R. (2010). Adaptation to climate change and climate variability in European agriculture: The importance of farm level responses. European Journal of Agronomy, 32(1), 91–102. https://doi.org/10.1016/j.eja.2009.06.003

66. Rohadi, D. (2017). Zero-burning policy hurts small farmers – a flexible approach is needed. The Conversation. https://theconversation.com/zero-burning-policy-hurts-small-farmers-a-flexible-approach-is-needed-77969

67. RSPO. (2020). Free, Prior and Informed Consent and Oil Palm Plantations: a guide for companies Free, Prior and Informed Consent and the Roundtable on Sustainable Palm Oil A Guide for Companies. https://www.rspo.org/files/resource_centre/FPIC%20and%20the%20RSPO%20a%20guide%20for%20companies%20Oct%2008%20(2).pdf

68. Ruggeri, A., & Samoggia, A. (2018). Twitter communication of agri-food chain actors on palm oil environmental, socio-economic, and health sustainability. Journal of Consumer Behaviour, 17(1), 75–93.

69. Sabajo, C. R., le Maire, G., June, T., Meijide, A., Roupsard, O., & Knohl,

A. (2017). Expansion of oil palm and other cash crops causes an increase of the land surface temperature in the Jambi province in Indonesia. Biogeosciences, 14(20), 4619–4635. https://doi.org/10.5194/bg-14-4619-2017

70. Sasmita, R. P. (2021). Why The EU Should Lift Its Ban On ASEAN Palm Oil. The ASEAN Post. https://theaseanpost.com/article/why-eu-should-lift-its-ban-asean-palm-oil#:~:text=The%20EU%20decided%20to%20use

71. Schindler, J., Graef, F., & König, H. J. (2015). Methods to assess farming sustainability in developing countries. A review. Agronomy for Sustainable Development, 35(3), 1043–1057. https://doi.org/10.1007/s13593-015-0305-2

72. Shanmugam, S., Dalal, R., Joosten, H., Raison, R., & Joo, G. (2018). SOC Stock Changes and Greenhouse Gas Emissions Following Tropical Land Use Conversions to Plantation Crops on Mineral Soils, with a Special Focus on Oil Palm and Rubber Plantations. Agriculture, 8(9), 133. https://doi.org/10.3390/agriculture8090133

73. Sudarma, I. M., & As-syakur, Abd. R. (2018). Dampak Perubahan Iklim Terhadap Sektor Pertanian Di Provinsi Bali. Soca: Jurnal Sosial Ekonomi Pertanian, 87. https://doi.org/10.24843/soca.2018.v12.i01.p07

74. Surmaini, E., & Faqih, A. (2016). Kejadian iklim ekstrem dan dampaknya terhadap pertanian tanaman pangan di Indonesia. Jurnal Sumberdaya Lahan, 10(2).

75. Tinker, P. Bernard., Ingram, J. S. I., & Struwe, S. (1996). Effects of slash-and-burn agriculture and deforestation on climate change. Agriculture, Ecosystems & Environment, 58(1), 13–22. https://doi.org/10.1016/0167-8809(95)00651-6

76. Uning, R., Latif, M. T., Othman, M., Juneng, L., Mohd Hanif, N., Nadzir, M. S. M., Abdul Maulud, K. N., Jaafar, W. S. W. M., Said, N. F. S., Ahamad, F., & Takriff, M. S. (2020). A Review of Southeast Asian Oil Palm and Its CO2 Fluxes. Sustainability, 12(12), 5077. https://doi.org/10.3390/su12125077

77. United Nations. (2015). The 17 Sustainable Development Goals. United Nations. https://sdgs.un.org/goals

78. United State Geography Survey (USGS). (2017). Why is climate change happening and what are the causes? Usgs.gov. https://www.usgs.gov/faqs/why-climate-change-happening-and-what-are-causes-1?qt-news_science_products=0#qt-news_science_products

79. Wang, J., Shao, W., & Kim, J. (2020). Analysis of the impact of COVID-19 on the correlations between crude oil and agricultural futures. Chaos, Solitons & Fractals, 136, 109896. https://doi.org/10.1016/j.chaos.2020.109896

80. Wilcove, D. S., & Koh, L. P. (2010). Addressing the threats to biodiversity from oil-palm agriculture. Biodiversity and Conservation, 19(4), 999–1007. https://doi.org/10.1007/s10531-009-9760-x

81. Wilson, E. (2017, January). What is Social Impact Assessment?Indigenous Peoples and Resource Extraction In The Arctic: Evaluating Ethical Guidelines. Coursehero.com. https://www.coursehero.com/file/93941589/What-is-Social-Impact-Assessment-Wilson-E-2017pdf/

82. World Health Organization. (2021). Coronavirus disease (COVID-19) pandemic. World Health Organization. https://www.who.int/emergencies/diseases/novel-coronavirus-2019

83. World Wild Foundation (WWF). (2018, November 12). 8 Things to Know about Palm Oil. WWF; WWF. https://www.wwf.org.uk/updates/8-things-know-about-palm-oil

84. Yap, P., Rosdin, R., AbdulRahman, A., Omar, A., Mohamed, M., & Rahami, M. (2021). Malaysian Sustainable Palm Oil (MSPO) Certification Progress for Independent Smallholders in Malaysia. IOP Conference Series: Earth and Environmental Science, 736(1), 012071.

85. Zaimah, R., Sarmila, M., Hussain, M. Y., & Lyndon, N. (2018). Sumbangan Integrasi Sawit Dalam Meningkatkan Pendapatan Keluarga Pekebun Kecil Sawit di Sabah. GEOGRAFI, 6(3), 15–22.