



Implementation Strategy of Indonesia Sustainable Palm Oil (ISPO) Certification: A'WOT Analysis Approach

Ahmad Zainuddin^{1*}, Fuad Muchlis², Resti Prestika Destiarni³, Ahmad Syariful Jamil⁴, Araz Meilin⁵, Dwi Nurul Amalia², Muhammad Abdul Aziz⁶

(Received January 2024/Accepted April 2025)

ABSTRACT

The Indonesian Sustainable Palm Oil (ISPO) program was established in 2011 in response to the adverse environmental impacts caused by the expansion of palm oil production in Indonesia. To date, the ISPO implementation in Jambi Province is still relatively low. This is because there are many weaknesses and challenges in implementing the ISPO. This study aimed to identify implementation strategies for sustainable palm oil certification in Jambi Province. This analysis uses the A'WOT approach, which integrates the Analytical Hierarchy Process (AHP) and SWOT analysis. Based on the A'WOT analysis, 23 external and internal factors were obtained, which are strengths, weaknesses, opportunities, and threats. In addition, the A'WOT analysis results show that the priority strategy that can be implemented is to involve MBKM (Merdeka Belajar-Kampus Merdeka, Freedom of Learning-Independent Campus) students in helping farmers. This strategy is because independent smallholders' understanding of ISPO is low and the number of ISPO extension workers or assistants is also limited. Therefore, the choice of strategy that can improve understanding of ISPO implementation is to involve MBKM students to help provide counseling and understanding related to ISPO.

Keywords: AHP, independent smallholders, ISPO, oil palm, SWOT

INTRODUCTION

Palm oil is a commodity of concern related to its sustainability. This is because oil palm plantations contributed 16% of forest loss in Indonesia in 1990 and 2005 (Fitzherbert *et al.* see also Doctrine and Covenants, Nov. 2008; Koh and Wilcove 2008) and are a major driver of the conversion of peatlands into fire-prone landscapes with high levels of carbon emissions (Miettinen *et al.* 2016). While the global demand for palm oil continues to increase, Indonesia needs 6 million hectares of additional oil palm land by 2025 (Khatiwada *et al.* 2021). Therefore, sustainable palm oil production is urgently needed in Indonesia.

Certification is a new way to protect the environment through sustainable management in the palm oil supply chain. Palm oil certification has currently developed quite rapidly as a government and private initiative to

maintain the market and realize sustainability (Schouten 2014; Sevik *et al.* 2021). Several certification systems have been implemented in the agricultural sector to ensure sustainable and environmentally friendly palm oil production. Palm oil certification in Indonesia is conducted by the Roundtable on Sustainable Palm Oil (RSPO) and sustainable palm oil certification or ISPO (Indonesia Sustainable Palm Oil). The existence of the RSPO and ISPO aims to reduce the negative environmental and social impacts of oil palm cultivation (Majid *et al.* 2021; Saswattecha *et al.* 2015).

ISPO is an oil palm plantation business system that is economically viable, socio-culturally feasible, and environmentally friendly based on the provisions of laws and regulations. ISPO is a domestic certification scheme that contributes to improved economic performance and better management practices for oil palm smallholders (De Vos *et al.* 2021). However, in Indonesia, where smallholders are an important part of the oil palm sector (Abazue *et al.* 2019), there are still major problems in the certification process due to the low understanding of certification, the high cost for certified farmers, and the lack of farmer groups to be certified. The relatively low understanding of smallholder farmers regarding the implementation of ISPO has a low consequence of the implementation of ISPO certification at the farmer level. Yusmini and Heriyanto (2011) stated that the ISPO principle is only adopted by a small percentage of farmers, ranging from

¹ Agribusiness Study Program, Faculty of Agriculture, Universitas Jember, Jember 36122, Indonesia

² Agribusiness Study Program, Faculty of Agriculture, Universitas Jambi, Jambi 36122, Indonesia

³ Agribusiness Study Program, Faculty of Agriculture, Universitas Trunojoyo Madura, Bangkalan 69162, Indonesia

⁴ Obihiro University of Agriculture and Veterinary Medicine, Inada-cho, Obihiro, Hokkaido 080-8555, Japan

⁵ Center for Horticulture and Plantation Research, National Research and Innovation Agency, Jakarta 10340, Indonesia

⁶ Environmental Study Center, Universitas Jambi, Jambi 36122, Indonesia

* Corresponding Author:

E-mail: zainuddin91.faperta@unej.ac.id

10% to 19.15%. The same condition is also shown in the results of Sibarani *et al.* (2015), who state that only 43.5% of independent smallholders have implemented the ISPO criteria. Dharmawan *et al.* (2019) showed that independent oil palm plantations are generally not ready to undergo ISPO certification. In general, the implementation of ISPO in Indonesia has been implemented in 16 provinces, mostly on the islands of Sumatra and Kalimantan (Table 1). The number of ISPO implementations in Jambi Province is still moderate, where the total number of farmer groups that have been ISPO-certified is 55. In other provinces, such as North Sumatra, Riau, West Kalimantan, and South Sumatra, the number exceeded that of Jambi Province, while other provinces were still under Jambi Province. This shows that many independent farmer groups in Indonesia have not obtained ISPO certification. The data imply that there is a need to develop ISPO implementation in Indonesia, especially in Jambi Province. Therefore, it is important to conduct research related to the ISPO implementation strategy in this province.

Research related to strategies to increase the implementation of ISPO has been conducted by Hadi *et al.* (2023), which analyzed the strategy to accelerate ISPO certification in Indonesia. Yurisinthae and Oktoriana (2021b) stated that the implementation of ISPO in Indonesia is still low, so there is a need for a strategy to accelerate the implementation of ISPO. Wahyudi *et al.* (2022) studied oil palm development strategies in Jambi and only focused on oil palm development with a series of discussions related to ISPO. The above research discusses more strategies for accelerating ISPO in Indonesia and oil palm development in Jambi. The novelty of this research focuses more on the strategy of implementing ISPO certification, especially in Jambi Province, using A'WOT analysis. This study aims to determine the

implementation strategy of sustainable palm oil certification (ISPO) in the province.

METHODS

This study was conducted in Jambi Province because it is one of the central provinces producing palm oil in Indonesia. This study aims to identify strategies that can be implemented by the provincial government to improve the implementation of sustainable palm oil certification (ISPO). This study used a descriptive analysis method by studying the problems, strengths, weaknesses, opportunities, and threats in improving the implementation of ISPO in Jambi Province. The data used in this study were primary and secondary data. Primary data were obtained through questionnaires and interviews with experts, while secondary data were obtained from literature studies from relevant sources.

The sample used consisted of respondents who were competent in the field of palm oil and had an interest in sustainable palm oil certification. Samples were deliberately selected (purposive method). The respondents selected included the Head of the Jambi Provincial Agriculture and Plantation Office and a Senior Researcher in the Field of Agriculture. The A'WOT method was used for analysis. The A'WOT method is a combination of the AHP and SWOT methods (Kangas *et al.* 2001; Pesonen *et al.* 2001). This analysis was preceded by identifying the strengths, weaknesses, opportunities, and threats in the implementation of ISPO in the province. The data were obtained from the results of the focus group discussion conducted by involving stakeholders in the palm oil industry. The strengths, weaknesses, opportunities, and threats are then given weights and ratings by the selected experts.

Table 1 Number of Indonesian Sustainable Palm Oil (ISPO) acquisitions in all provinces of Indonesia in 2022 (Kementerian Pertanian 2023)

Province	Number of ISPO	Land area with ISPO (ha)
Aceh	25	85,941.72
Bangka Belitung	15	88,468.61
Bengkulu	15	88,871.03
Jambi	55	174,730.42
Jawa Barat	1	7,768.30
Kalimantan Barat	100	653,182.01
Kalimantan Utara	8	73,634.56
Kepulauan Riau	1	1,055.61
Papua	8	134,510.38
Papua Barat	4	47,947.54
Riau	142	779,186.65
Sulawesi Barat	10	45,478.13
Sulawesi Tengah	7	47.41.22
Sumatera Barat	31	165,635.85
Sumatera Selatan	71	424,412.79
Sumatera Utara	145	661,075.39
Indonesia	863	5,308,175.13

The selection of alternative strategies was obtained through SWOT factor evaluation using the AHP. The stages of A'WOT analysis are as follows (Kangas *et al.* 2001; Oreski 2012):

- (a) The problem was defined, and the solution was determined by considering the dominant factors that affect the ISPO implementation strategy in Jambi Province.
- (b) Creating a hierarchical structure, like in AHP, started by defining goals, then inserting the SWOT component at Level 2, the factors of each SWOT component at Level 3, and then inserting the alternative strategy at Level 4.
- (c) Creating a matrix of pairs between SWOT factors was done separately for each SWOT group. Each factor and strategy alternative created a separate paired matrix.
- (d) Perform pair-based comparisons of the results. This comparison determined which factors were considered more important. This comparison was used to determine the priority of the factors that were calculated. This pairwise comparison used scaling rules (Table 2).
- (e) Calculating vector values
- (f) Alternative strategies were selected based on the consideration of each SWOT factor using the AHP analysis. Priority strategies were selected with reference to the A'WOT hierarchy.
- (g) The Consistency Ratio was calculated as follows: This value was useful for measuring the consistency of expert answers using the following consistency ratio (CR) formula:

$$CR = \frac{CI}{RI}$$

where:

CI = consistency index

RI = random index

The expected CR value was below 0.10. The hierarchy of the A' WOT is shown in Figure 1.

RESULTS AND DISCUSSION

The A'WOT analysis to determine priority strategies for improving ISPO implementation in Jambi Province began with identifying internal factors (strengths and weaknesses) and external factors (opportunities and threats) in SWOT. Each factor was then given a weight, and a comparison between factors was carried out by experts using AHP analysis. The following factors were identified.

Strength

1. The availability of large and legal land

Oil palm plantations in Jambi Province are a leading commodity in Indonesia. The area of plantations in 2021 was 530,721.96 and increased to 1.1 million in 2023 (BPS Jambi Province 2023). This indicates that the area of oil palm in the province is large. In addition to having relatively large land, most of the land owned by plasma oil palm farmers, self-helpers, and companies is legally and certified. Only a small part of the land is still in conflict. The availability of relatively large tracts of legal land is a strength for the province to increase ISPO sustainable palm oil certification in Jambi. This is in accordance with the indicators to obtain minimum ISPO certification for a certain area and legal land. The A'WOT analysis results show that the availability of large legal land is the most important strength factor in the development of ISPO certification. This condition is slightly different from that in several other provinces, where the amount of legal land remains an obstacle. The legal land used as a requirement for ISPO in several provinces is still limited. This is similar to the land in Central Kalimantan and Riau, which reaches approximately 50–70% because there is some land that is a forest area (Apriyanto *et al.* 2019; Dharmawan *et al.* 2019).

• Soil conditions and climate support

Jambi Province is one of the regions with a strategically geographical location. In addition, the soil and climate conditions are very supportive of the development of oil palm plantations. Rainfall ranging

Table 2 Scale of importance comparison in A'WOT

Importance weight	Indicator	Conclusion
1	Equally important	Two criteria give equal importance to the goal
3	A little more important	One criterion is a little more important than the other
5	Quite more important	One criterion is quite more important than the other
7	Very much more important	One criterion is more important than the other
9	Very very much more important	Evidence that supports that one criterion is indeed the most important among the others and has the highest priority
2, 4, 6, 8	Middle values	Used to represent compromise among existing priorities
	Resiprocal	If one criterion has one of the above non-zero numbers given to one of the factors compared to the other criteria, then the criterion has the opposite value compared to the other criteria (e.g. if A is more important than 3, then B is 1/3 more important)

Source: Basset *et al.* 2018; Kangas *et al.* 2001

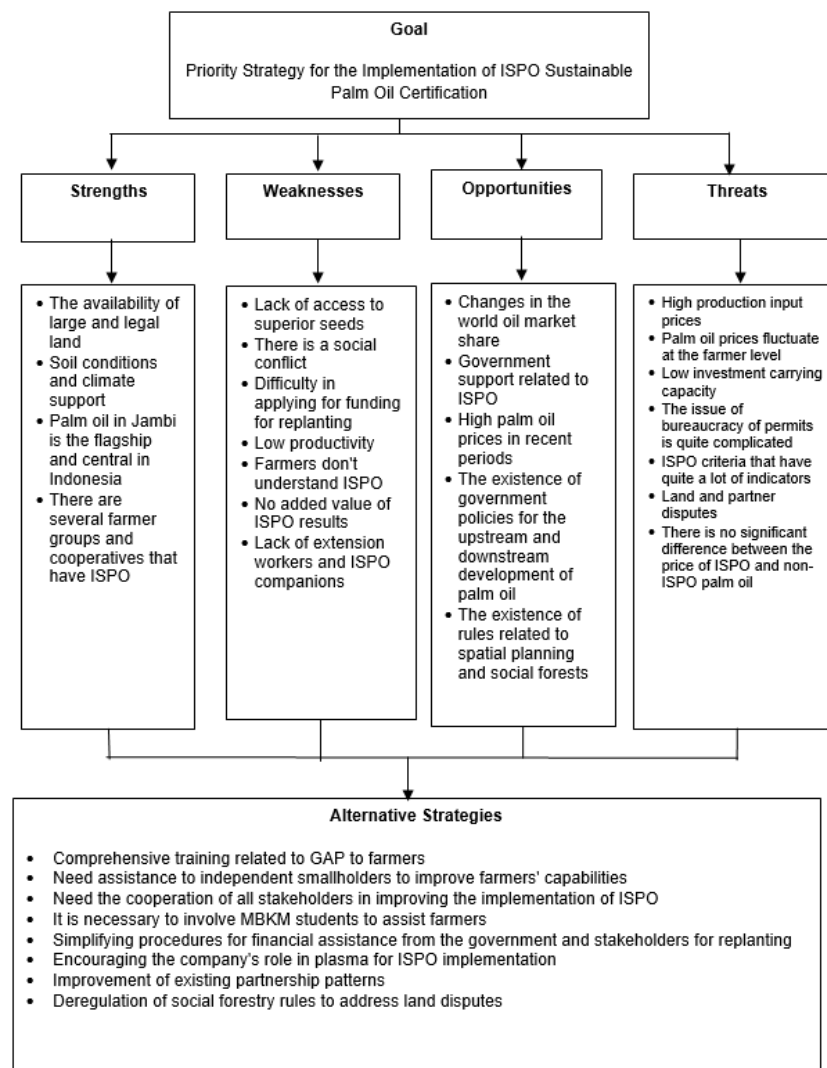


Figure 1 The hierarchy of the A' WOT.

from 1,250 to 3,000 mm/year (BPS Jambi Province 2023), which is highly supportive of oil palm growth. The soil conditions are types of Latosol, Lithosol, Andosol, and peat soils, are very suitable for the development of oil palms. This is a strength for the implementation of ISPO certification in the province because it can produce high and sustainable production levels. This power factor occupies the second most important priority in the implementation of the ISPO in Jambi Province.

- Palm oil in Jambi is the flagship and central in Indonesia

Palm oil in Jambi Province is a flagship and producer center in Indonesia, ranked 7th with a production of 2,884,406 tons in 2021. This significant contribution greatly supports the palm oil industry in Indonesia. Oil palm production in Jambi itself has several central areas such as Merangin Regency, Sarolangun, Batanghari, Muaro Jambi, East Tanjung Jabung, West Tanjung Jabung, and Tebo (Wahyudi *et*

al. 2022). The support of several central areas is the strength to continue to improve the implementation of sustainable palm oil/ISPO in the province. This factor was the fourth most important force in the development of ISPO certification in Jambi Province.

- There are several farmer groups and cooperatives that have ISPO

The third most important strength factor is the existence of farmer groups and cooperatives that are ISPO certified. Jambi Province already has several farmer groups and cooperatives certified by ISPO. These groups include KUD. Karya Mukti, KUD. Mutiara Bumi, Gapoktan Muji Makmur, Gapoktan Catur Manunggal, KUD Perkasa Nalo, and Gapoktan Tanjung Sehati. The existence of several ISPO-certified groups should encourage other groups to become ISPO certified. Based on this, several farmer groups and cooperatives that have been ISPO certified are a strength factor to increase the number of groups or cooperatives that will be ISPO-certified in the future.

Data on farmer groups that have ISPO in Indonesia states that there are 863 groups that have ISPO, dominated by farmer groups in North Sumatra, West Kalimantan, Riau, South Sumatra, and Jambi, which number up to 50 farmer groups. In other provinces, the number of farmer groups with ISPO is still below 25 (Ministry of Agriculture 2023).

Weaknesses

- Lack of access to superior seeds

Oil palm plantations in Jambi still use many original seedlings, so to register for ISPO certification, it is necessary to replant. This is because the number of certified seeds is insufficient to meet the needs of farmers (Kansrini *et al.* 2018). Several researchers and farmers have developed certified seeds, but the number of seeds is

insufficient to meet the needs of farmers in the province. This condition is a weakness in the development of the ISPO sustainable palm oil certification. Similar condition is also experienced by other provinces, where the availability of certified seeds in independent oil palm plantations is only 14.71% in BLG Village (Riau), 17.65% in NTB Village (Central Kalimantan), and 38.24% in BKM Village (East Kalimantan) (Dharmawan *et al.* (2019). This means that to increase the number of certified seedlings, the role of the Oil Palm Research Center (PPKS) is needed to carry out breeding in every region in Indonesia, and its availability needs to be sustainable. The A'WOT analysis results show that this factor is a weakness factor with the seventh priority.

- There is still a negative impact on oil palm development (there are social conflicts)

Oil palm development in Jambi Province is still facing several negative impacts. The impact is in the form of social conflicts that occur between partners and the government. Social conflicts between partners are usually caused by disagreements on amounts or prices (Basri and Nurhamlin 2013; Periady *et al.* 2020; Thomas *et al.* 2015; Wahyudi *et al.* 2022), while conflicts with the government are usually related to the use of forest land as oil palm plantations (Basri and Nurhamlin 2013). This is also a weakness of the ISPO development in the province. To overcome this, there is a need for a negotiator between the company and the farmers, and there is a need for laws or regulations that regulate the use of forests as oil palm land. This social conflict factor needs to be addressed immediately because it is a weak factor with the first priority.

- Difficulty in applying for funding for replanting

Many oil palm farmers in Jambi Province have complained about funding for oil palm replanting programs. Farmers who replant require enormously of

funds. This is because replanting requires relatively large number of seeds and labor costs. Currently, at least approximately IDR 30 million for replanting 1 ha of land (Fadhillah and Dewi 2020; Hasri and James 2020). Therefore, farmers need funding support for replanting. The funding can come from BDPKS, which provides funding to replant oil palm farmers. However, farmers also complained about the relatively difficult funding application procedures. This condition is a weakness in the development of coconut certification in the province. One of the indicators for ISPO certification is that oil palm seedlings must be certified through a replanting process. Therefore, a policy is needed to simplify the procedure for applying for replanting funds. This factor is the second priority, which is a weakness in the implementation of ISPO in

the province and needs to be addressed immediately so that farmers can replant.

- Low productivity

The average productivity of oil palm land in Jambi Province was 2 tons/ha/month. The average land productivity in mineral soil is 600 kW/ha/month, whereas peatland has lower productivity (BPS Jambi Province 2023; Nasution and Pinem 2020). This can be caused by the use of original seedlings, which will indeed produce relatively lower productivity. This is a weakness in the implementation of ISPO. Low productivity due to the use of uncertified seeds is also experienced by the Riau and Central Kalimantan Provinces, which still have relatively low land productivity (Apriyanto *et al.* 2019; Dharmawan *et al.* 2019). To increase productivity, intensive efforts are needed, including the use of certified seeds, regular use of fertilizers, and intensive maintenance.

- Farmers do not understand ISPO and its benefits

Most independent smallholders in Jambi Province do comprehend what ISPO is or its benefits, except the leaders of independent farmer groups. So far, farmers have not understood the benefits of ISPO (Dharmawan *et al.* 2019; Fahamsyah and Pramudya 2017; Majid *et al.* 2021; Mandasari *et al.* 2022; Nurliza and Fauyan 2021; Nuryanti *et al.* 2019; Sibarani *et al.* 2015; Vicki *et al.* 2021; Yurisinthae and Oktoriana 2021a). This is a weakness in the implementation of the ISPO in the province. This result also occurred in the Central Kalimantan region, which showed that there was 40–50% of farmers do not understand ISPO and its benefits (Dharmawan *et al.* 2019). To increase farmers' knowledge related to ISPO, counseling from related parties is needed, so that farmers understand the benefits that will be obtained after being ISPO certified.

- No added value of ISPO results

Farmers who have been ISPO certified complain that there has been no significant difference in the price of oil palm that has been certified ISPO and non-ISPO in Jambi Province. Farmers with ISPO and non-ISPO receive relatively similar prices. This problem is the fourth weakness that needs to be corrected to improve the implementation of the ISPO in Jambi. Only Mutiara Bumi KUD has agreed with partner companies to have a higher price, even though the price given is only different by IDR 40/kg. The government needs to make policies related to the price of palm oil that has been certified as ISPO and non-ISPO must be different. This aims to increase the number of farmers who carry out ISPO certification in Indonesia.

- Lack of extension workers and ISPO companions

Farmers' understanding of ISPO and ISPO submission procedures is low due to the lack of assistance and counseling from relevant parties. Independent oil palm farmers admitted that counseling by extension institutions was minimal. These results are in accordance with Nurhaliza *et al.* (2021), that the number of oil palm extension workers in Indonesia is still low. In addition, independent smallholders need assistance in obtaining ISPO certification. This is because the number of extension workers and special companions for oil palm in Jambi Province is still limited. A minimum of 1700 extension workers are needed to assist all farmers in the province. This condition is also experienced in several regions, such as Riau Province, where the number of agricultural extension workers is still considered insufficient to assist farmers in ISPO certification (Nurhaliza *et al.* 2021; Sirait *et al.* 2014). This is a weakness that needs

to be overcome to improve the implementation of the ISPO in Jambi Province. Based on this, the role of MBKM students is to carry out service and counseling as well as assistance to independent farmers to increase their understanding of ISPO.

Opportunity

- Changes in the world oil market share

Global vegetable oil production was estimated to be approximately 209.14 million metric tons from 2020 to 2021. Based on this quantity, the world's population consumes a large amount of oil derived from palm oil. In addition, the most commonly consumed oils are palm oil, soybean oil, canola oil, and sunflower seed oil (Ermawati and Septia 2013; Patone *et al.* 2020; Situngkir 2022). Palm oil is widely found in countries with tropical climates, such as Africa, South America, and Southeast Asia. The use of palm oil is estimated to be the largest (90%) for food consumption, while the rest is used for industrial consumption, such as cosmetic products, fuel, and diesel. Global palm oil consumption in the last five years has exceeded 50 million metric tons. Palm oil consumption from 2021 to 2022 is now estimated at 73.87 million metric tons, from the 2020/2021 period, which reached 73.22 million metric tons. The change in world oil consumption that leads to palm oil consumption is certainly an opportunity for palm oil and ISPO development in Indonesia, especially in Jambi Province (Figure 2).

- Government support related to ISPO

The Government of Indonesia, especially the province of Jambi and the district government in Jambi, has cooperated on the inclusion of independent oil

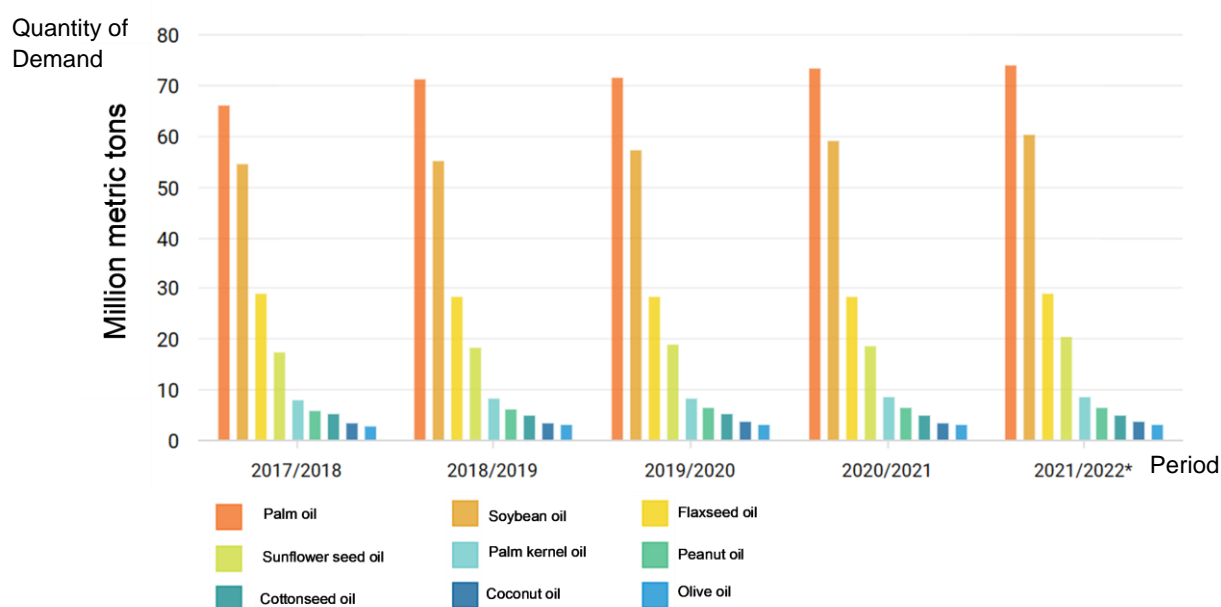


Figure 2 World vegetable oil demand by source material (2017–2022) (Databoks 2023).

palm planters in a sustainable ecosystem through the ISPO scheme. The MoU was carried out in three districts: West Tanjung Jabung, Sarolangun, and Tebo. The MoU also helps and mutually supports the implementation of ISPO certification for independent smallholders. This policy support is an opportunity for farmers or independent smallholders to obtain ISPO certification (Hadi *et al.* 2023). In addition, other government support has been issued in the form of several regulations related to community empowerment in the region, partnership regulations, and social forestry that support the implementation of ISPO.

- High CPO prices recently

CPO prices in the last few periods tended to increase, although they decreased in 2022. However, the upward trend in CPO prices has created an opportunity for ISPO development in Indonesia, especially in Jambi Province. The high CPO price above US\$ 1,000/ton is an opportunity for ISPO development, especially in the province (Figure 3).

- The existence of government policies for the upstream and downstream development of palm oil

The Government of Indonesia has made efforts to develop upstream oil palm by establishing an Oil Palm Research Center (PPKS) to support the availability of oil palm seeds for smallholders. In addition, the government has made efforts to develop the downstream palm oil industry, such as the development of the biodiesel agro-industry and cosmetic manufacturing. The existence of this potential for upstream and downstream development is an opportunity for palm oil certification in Indonesia, especially in Jambi Province. These results are in

accordance with the study of Robbani *et al.* (2015), which shows that there is a need for upstream and downstream development of oil palm in Indonesia. In addition, the existence of upstream and downstream oil palm development policies is the fourth opportunity that needs to be developed.

- The existence of rules related to spatial planning and social forests

Currently, the development of spatial planning and social forests in Jambi Province has changed. The Provincial Government stipulates that plants that can be planted on forest land are in the form of wooden plants. In addition, the government has set rules related to community forests, which cannot be converted from timber plants except to be planted with oil palm plants (Tamsil 2018). This regulation provides opportunities for the development of ISPO sustainable palm oil certification in Jambi Province.

Threat

- High production input prices

One of the threats to independent oil palm farming is the high price of production inputs. Currently, some inputs used by farmers are relatively expensive, such as fertilizer prices. The fertilizer used by independent smallholders is a non-subsidized fertilizer whose price can be double that of the subsidized fertilizer. In addition, the labor wages used are also relatively expensive, which has implications for increasing farming costs incurred by farmers. This is a threat to the implementation of ISPO because implementing Good Agricultural Practice (GAP) as an indicator of ISPO implementation requires production inputs that are used regularly. Therefore, partnerships and funding assistance from stakeholders are urgently needed by

World CPO Prices



Figure 3 World CPO price trends in 2013–2022 (FAOSTAT 2023).

farmers and are a threat to the implementation of the ISPO, especially in Jambi Province.

- Palm oil prices fluctuate at the farmer level

Another factor that threatens the implementation of sustainable palm oil certification is the price of palm oil at the farmer level, which tends to fluctuate. The price of CPO received by farmers tends to change quickly depending on the price determined by the company. This is also experienced by farmers in several provinces, such as North Sumatra and Central Kalimantan, where the price of palm oil at the farmer level tends to fluctuate (Ikhsan and Ismoyoati 2023; Sari *et al.* 2023; Sukowati 2022). Based on this, the government needs to conduct an official partnership so that the prices received tend to be in accordance with the joint agreement.

- Low investment carrying capacity

Oil palm plantations in Indonesia, especially Jambi Province, require a very large investment, especially the need for investment in replanting. Oil palm replanting is needed as an indicator of ISPO implementation, especially the use of certified seedlings, where farmers are still using original seedlings. Based on this, the support of stakeholders, both the government and the company, is needed to provide investment funds for the sustainability of oil palm farming. The low carrying capacity of this investment is the primary threat to the development of ISPO in the province. ISPO certification activities require high investment costs, both for human resource investment and for the implementation of cultivation (Robbani *et al.* Nov. 2015; Wahyudi *et al.* 2022).

- The issue of the bureaucracy of permits is quite complicated

One of the threats to ISPO implementation is related to licensing bureaucracy. Many documents are required as evidence to apply for ISPO certification. Documents related to ISPO certification are mostly related to legality (Azizah *et al.* 2020; Dharmawan *et al.* 2019). In this dive, independent smallholders have difficulty completing legal documents due to the bureaucracy of permits, which are quite complicated. Therefore, to improve the implementation of ISPO, it is necessary to simplify the bureaucracy related to licensing. The issue of the bureaucracy of permits occupies the number three position in terms of threatening the implementation of the ISPO.

- ISPO criteria that have quite lots of indicators

The ISPO certification system is a series of requirements consisting of 7 principles, 34 criteria, and 141 indicators covering legal, economic, environmental and social issues, as stated in Ministerial Regulation No. 11/2015. There are many criteria that must be met by farmers, accompanied by evidence (Anwar *et al.*

2016; Rosnita *et al.* 2022). This is a weakness in the implementation of ISPO because not all farmers can meet these criteria and indicators. Therefore, assistance is needed, and farmers must join farmer groups to meet these criteria and indicators.

- Land and partner disputes

Another threat that needs to be overcome to improve the implementation of ISPO certification is the existence of land and partner disputes in the industry. The land dispute in question is related to the legality of land in the regional forest. So far, land ownership in forest areas has been a conflict between the community and the government (Vanisha 2022; Wahyudi *et al.* 2022). However, currently, with the issuance of regulations or regulations related to social forestry, this land dispute case can be reduced. In addition, another problem is that farmers often face disputes with partners. Farmers face disputes with partners related to the transparency of prices provided by partners (Basri and Nurhamlin 2013; Periady *et al.* 2020; Thomas *et al.* 2015). Farmers have not formed partnerships because they consider the current partnership pattern to be unequal between their rights and obligations. This has had a significant influence on the development of palm oil, especially in Jambi Province. This problem is the fourth threat that needs to be overcome for the implementation of ISPO in the province.

- There is no significant difference between the price of ISPO and non-ISPO palm oil

One of the factors that farmers complained about related to the implementation of ISPO was the absence of a significant difference between the prices of palm oil produced by ISPO and non-ISPO. So far, the partner or company has provided the same price for palm oil that is ISPO and non-ISPO certified. Farmers consider their efforts to implement ISPO futile because there is no price difference. The price difference only occurs in the Mutiara Bumi KUD, where there is a price difference of IDR 40/kg if the farmer has obtained ISPO certification. This is certainly a consideration for farmers to carry out ISPO certification because farmers in the province will certainly calculate the advantages and economic benefits of the implementation of ISPO certification. This is also experienced by several provinces in North Sumatra and Central Kalimantan, where farmers have not felt the price difference between oil palm that has been ISPO and non-ISPO. The government has not made policies related to the price difference between farmers who have been ISPO-certified and those who have not been ISPO-certified (Ikhsan and Ismoyoati 2023; Sari *et al.* 2023).

The A'WOT analysis was preceded by comparing internal and external factors to obtain the priority of factors that must be improved or improved. The results of the A'WOT priority analysis are presented in Table 3. After comparing the internal and external factors in

SWOT, the next step is to compare the implementation strategies that can be used. The results of the pairing comparison between the alternative strategies are presented in Figure 4.

The selection of strategy priorities generated based on A'WOT analysis does not involve choosing one strategy. The A'WOT analysis will determine the priorities of the strategy that can be carried out by combining the AHP and SWOT. The results of the A'WOT analysis show the order of strategy implementation or strategy priorities that can be implemented. This means that the strategy occupying the first position indicates that the strategy is the most important strategy to be implemented immediately.

However, these priorities do not determine the timeline for implementing the strategy. The determination of the strategy for the implementation of ISPO sustainable palm oil certification in Jambi Province shows the priorities obtained from the use of strength factors, reduction of weaknesses, taking advantage of opportunities, and reduction of existing threats. The results of the analysis are shown in Figure 4.

- It is necessary to involve MBKM students to help farmers

The A'WOT analysis places the involvement of MBKM students to help farmers as the first strategic

Table 3 A'WOT results to determine the priorities of ISPO implementation strategy in Jambi Province

Category strategy	Priority (%)	Rank
1 Comprehensive training related to GAP to farmers	14.7	2
2 Need assistance to independent smallholders to improve farmers' capabilities	13.0	5
3 Need the cooperation of all stakeholders in improving the implementation of ISPO	13.5	4
4 It is necessary to involve MBKM students to assist farmers	25.5	1
5 It is necessary to simplify the procedure for financial assistance from the government and stakeholders for replanting	13.6	3
6 Encourage the role of plasma-related companies for ISPO implementation	6.9	7
7 Improvement of existing partnership patterns	7.7	6
8 Deregulation of social forestry rules to address land disputes	5.0	8

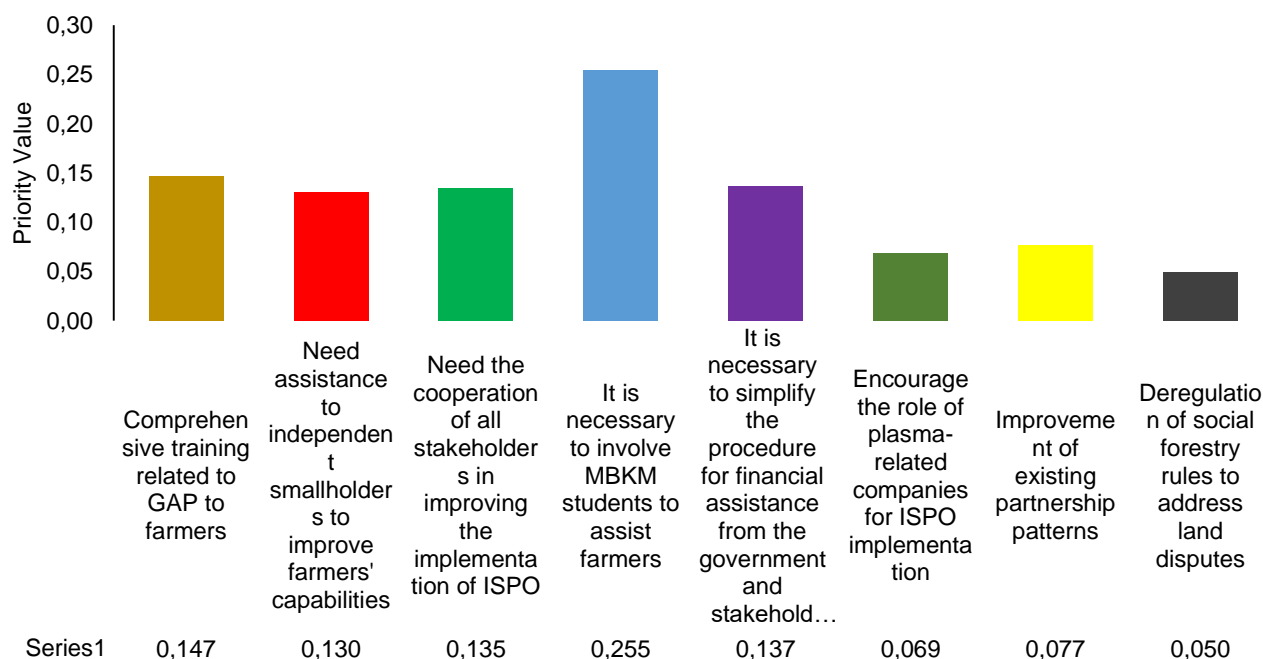


Figure 4 Priority strategy for the Implementation of ISPO certification in Jambi Province.

priority. Some weaknesses in the implementation of ISPO certification are the lack of farmers' understanding of ISPO and its benefits, as well as the lack of ISPO extension workers and companions. To overcome these weaknesses, a strategy is needed to involve MBKM (Merdeka Belajar-Kampus Merdeka, Freedom of Learning-Independent Campus) students from universities to aid independent smallholders in Jambi. Involving MBKM students by providing a conversion of 20 credit-semesters through community service activities will help increase the implementation of ISPO certification. MBKM students are involved in collaborating with NGOs, agriculture and plantation offices, and related stakeholders to provide counseling and assistance to farmers. This strategy is a top priority in the implementation of ISPO in the province because the existence of MBKM students will help extension workers increase the knowledge of independent smallholders.

- Comprehensive training related to GAP to farmers

One of the indicators of the implementation of sustainable palm oil certification is the implementation of Good Agricultural Practices (GAP). The implementation of GAP by independent smallholders is still relatively low; in fact, most farmers do not understand the application of GAP in their oil palm plantations. These results are in accordance with Azizah *et al.* (2020), that the implementation of GAP by independent oil palm farmers is still low. Therefore, the strategy of providing comprehensive training related to the implementation of GAP is the second priority for improving ISPO certification in Jambi Province.

- It is necessary to simplify the procedure for financial assistance from the government and stakeholders to carry out replanting

One of the weaknesses and threats of ISPO certification implementation is the difficulty of the procedure for applying for replant funding. Replanting is an absolute requirement to start the ISPO certification process because farmers are still using original or casual seedlings. The simplification of the procedure for financial assistance from the government through the BDPKPS is the third priority strategy that needs to be implemented. In addition, funding assistance from stakeholders, such as partners and NGOs, is needed to assist in the implementation of replanting on independent smallholder land.

- There needs to be cooperation from all stakeholders in improving the implementation of ISPO

The implementation of ISPO sustainable palm oil certification in Jambi Province requires the involvement of various parties and stakeholders. All parties have a responsibility to improve the implementation of ISPO certification (Hadi *et al.* 2023). Therefore, this strategy is in fourth place from the results of the A'WOT analysis. Farmers are responsible for implementing

GAP and achieving the quantity and quality of CPO produced. The government is responsible for making rules that make it easier for farmers and support funding for replanting, while NGOs need to be involved in the ISPO-related mentoring and counseling process. The plantation office is also interested in assisting farmers and implementing ISPO certification. The environmental agency is also required to mediate land conflicts, especially in regional forests. The academic community must also assist farmers. Based on this, all parties must be involved in the implementation of the ISPO certification.

- There needs to be assistance to independent smallholders to improve the capabilities of farmers

The fifth priority strategy based on the A'WOT analysis is the need to aid independent smallholders to improve their abilities and capabilities. Farmers urgently need assistance and training related to GAP and the implementation of ISPO (Nurhaliza *et al.* 2021). In addition, training needs to be provided to farmers as a condition for implementing ISPO certification. Training can include training related to farmers' skills or knowledge in the implementation of ISPO.

- Improvement of existing partnership patterns

The partnership problem faced by farmers is the occurrence of partnership conflict. Conflicts are caused by a lack of transparency between the rights and obligations of farmers and partners. Therefore, there is a need to improve existing partnership patterns. The existing partnership pattern needs to be improved in terms of transparency between the rights and obligations of farmers and partners.

- Encourage the company's role in plasma for ISPO implementation

The implementation of sustainable palm oil certification involves various parties, one of which is the company (Anwar *et al.* 2016). Partner companies must ensure the implementation of the ISPO certification. Companies can contribute to ensuring the implementation of GAP so that product quality is guaranteed. In addition, the companies need to support in the form of funding to support the implementation of ISPO.

- Deregulation of social forestry rules to address land disputes

Land ownership conflicts occur between farming communities around forests and the government. The overlap of oil palm land in the region causes land ownership conflicts (Vanisha 2022). This condition requires solutions to improve land ownership in the area. One strategy is to deregulate social forestry rules by encouraging social forest licensing. This policy needs to be implemented jointly by the forestry service, Bappeda, and the plantation service to record oil palm

plantations in regional forests so that independent smallholders are given permission to use social forests.

CONCLUSION

The A'WOT analysis identified 23 subfactors that affect the implementation of ISPO in Jambi Province, including strengths such as the availability of legal land, favorable soil conditions, and climate, and the existence of ISPO-certified groups. Identified weaknesses, such as lack of access to superior seeds, low farmers' understanding of ISPO, and lack of assistance hinder implementation. Opportunities for ISPO implementation, such as government support, high CPO prices, supportive palm oil upstream development policies, and threats, such as price fluctuations, complicated bureaucracy, and land disputes, need to be addressed immediately. Priority strategies that can be formulated include GAP training, farmer assistance, and the simplification of replanting assistance procedures. The involvement of MBKM students through community service programs, in collaboration with NGOs and related agencies, can be the main solution to increase farmers' understanding and strengthen the implementation of ISPO in Jambi Province.

ACKNOWLEDGEMENT

The authors would like to thank the Oil Palm Plantation Fund Management Agency (BPD PKS) for the financial support for this research through the Palm Oil Research Grant. We are also grateful to the Institute for Research and Community Service, University of Jambi, for providing research facilities.

REFERENCES

- Abazue CM, Choy EA, Lydon N. 2019. Oil palm smallholders and certification: exploring the knowledge level of independent oil palm smallholders to certification. *Journal of Bioscience and Agriculture Research*. 19(1): 1589–1596. <https://doi.org/10.18801/jbar.190119.193>
- Anwar R, Sitorus SR, Fauzi AM, Widiatmaka N, Machfud N. 2016. Pencapaian standar Indonesian Sustainable Palm Oil (ISPO) dalam pengelolaan perkebunan kelapa sawit di Kalimantan Timur. *Jurnal Penelitian Tanaman Industri*. 22(1): 11–18. <https://doi.org/10.21082/litri.v22n1.2016.11-18>
- Apriyanto M, Arpah M, Junaidi A. 2019. Analisis kesiapan petani swadaya dalam menghadapi Rancangan Peraturan Presiden No. 44 Tahun 2020 tentang pengelolaan kelapa sawit berkelanjutan ditinjau dari aspek status lahan, legalitas dan sumber bibit di Kabupaten Indragiri Hilir. *Jurnal Teknologi Pertanian*. 8(1): 38–48. <https://doi.org/10.32520/jtp.v8i1.970>
- Azizah A, Hadi S, Dewi N. 2020. Analisis penerapan ISPO pada perkebunan kelapa sawit pekebun swadaya di Kota Dumai. *Jurnal Agribisnis*. 22(1): 125–136.
- Basri B, Nurhamlin N. 2013. *Konflik Masyarakat dan Perusahaan Perkebunan Serta Alternatif Penyelesaiannya di Kabupaten Rokan Hulu*. in: Prosiding Konferensi Nasional Sosiologi 1, Pekanbaru, Riau, 20 Februari 2013.
- Basset MA, Mohamed M, Sangaiah AK, Jain V. 2018. An integrated neutrosophic AHP and SWOT method for strategic planning methodology selection. *Benchmarking*. 25(7): 2546–2564. <https://doi.org/10.1108/BIJ-08-2017-0232>
- BPS Provinsi Jambi. 2023. *Provinsi Jambi dalam Angka 2023*. Kota Jambi (ID): BPS Provinsi Jambi.
- De Vos RE, Suwarno A, Slingerland M, Van Der Meer PJ, Lucey JM. 2021. Independent oil palm smallholder management practices and yields: Can RSPO certification make a difference? *Environmental Research Letters*. 16(6): 1–11. <https://doi.org/10.1088/1748-9326/ac018d>
- Dharmawan AH, Nasdian FT, Barus B, Kinseng RA, Indaryanti Y, Indriana H, Mardianingsih DI, Rahmadian F, Hidayati HN, Roslinawati AM. 2019. Kesiapan petani kelapa sawit swadaya dalam implementasi ISPO: Persoalan lingkungan hidup, legalitas dan keberlanjutan. *Jurnal Ilmu Lingkungan*. 17(2): 304–315. <https://doi.org/10.14710/jil.17.2.304-315>
- Ermawati T, Septia Y. 2013. Kinerja ekspor minyak kelapa sawit Indonesia. *Buletin Ilmiah Litbang Perdagangan*. 7(10): 129–148.
- Fadhillah SN, Dewi N. 2020. Peran Penyuluhan pada persiapan peremajaan kelapa sawit petani swadaya sesuai konsep ISPO di Kabupaten Rokan Hulu, The role of extension in preparation for the replanting of independent smallholders oil palm by the ISPO concept in Rokan Hulu Regency. *Jurnal Sosial Ekonomi Pertanian*. 17(3): 75–82. <https://doi.org/10.20956/jsep.v17i3.13534>
- Fahamsyah E, Pramudya EP. 2017. Sistem ISPO untuk menjawab tantangan dalam pembangunan kelapa sawit Indonesia yang berkelanjutan. *Masyarakat Indonesia*. 43(1): 65–79.
- FAOSTAT. 2023. *Crops and Livestock Products: Crude Palm Oil*. Rome (IT): FAO United Nations. <https://www.fao.org/faostat/en/#data/QCL>
- Fitzherbert EB, Struebig MJ, Morel A, Danielsen F,

- Brühl CA, Donald PF, Phalan B. 2008. How will oil palm expansion affect biodiversity? *Trends in Ecology and Evolution*. 23(10): 538–545. <https://doi.org/10.1016/j.tree.2008.06.012>
- Hadi S, Bakce D, Muwardi D, Yusri J, Septya F. 2023. Strategi percepatan sertifikasi ISPO di perkebunan kelapa sawit swadaya. *Analisis Kebijakan Pertanian*. 21(1): 21–42. <https://doi.org/10.21082/akp.v21i1.21-42>
- Hasri D, James K. 2020. Indonesian palm oil replanting program will support achieving sustainable development goals. *American Journal of Humanities and Social Sciences Research (AJHSSR)*. 8(1): 1–8.
- Ikhsan N, Ismoyoati R. 2023. Persepsi petani kelapa sawit terhadap fluktuasi harga TBS di Kecamatan Sematu Jaya. *Jurnal Agribisnis*. 25(1): 16–25. <https://doi.org/10.31849/agr.v25i1.13705>
- Kangas J, Pesonen M, Kurttila M, Kajanus M. 2001. A'wot: Integrating the AHP with Swot Analysis. in: *Proceeding of 6th ISAHp 2021*, Berne, Switzerland, August 2–4, 2001. <https://doi.org/10.13033/isahp.y2001.012>
- Kansrini Y, Nursongko N, Sukanda AD. 2018. Sikap petani dalam penggunaan bibit unggul kelapa sawit (*Elaeis guineensis* Jacq): Studi kasus di Kecamatan Binjai Kabupaten Langkat. *Agrica Ekstensi*. 12(2): 68–73.
- Kementerian Pertanian. 2023. *Rekap Update Sertifikat ISPO Indonesia*. Jakarta (ID): Kementerian Pertanian.
- Khawwada D, Palmén C, Silveira S. 2021. Evaluating the palm oil demand in Indonesia: production trends, yields, and emerging issues. *Biofuels*. 12(2): 135–147. <https://doi.org/10.1080/17597269.2018.1461520>
- Koh LP, Wilcove DS. 2008. Is oil palm agriculture really destroying tropical biodiversity? *Conservation Letters*. 1(2): 60–64. <https://doi.org/10.1111/j.1755-263x.2008.00011.x>
- Majid NA, Ramli Z, Sum SM, Awang AH. 2021. Sustainable palm oil certification scheme frameworks and impacts: A systematic literature review. *Sustainability (Switzerland)*. 13(6): 1–10 <https://doi.org/10.3390/su13063263>
- Mandasari M, Hadi S. 2022. Keberdayaan dan kemandirian petani swadaya dalam peremajaan kelapa sawit di provinsi riau. *Jurnal Agribisnis*. 24(2): 199–209. <https://doi.org/10.31849/agr.v24i2.8500>
- Miettinen J, Shi C, Liew SC. 2016. Land cover distribution in the peatlands of Peninsular Malaysia, Sumatra and Borneo in 2015 with changes since 1990. *Global Ecology and Conservation*. 6(1): 67–78. <https://doi.org/10.1016/j.gecco.2016.02.004>
- Nasution MP, Pinem LJ. 2020. Analisis sikap dan kepuasan petani dalam menggunakan benih kelapa sawit (*Elaeis guineensis*) bersertifikat di Kabupaten Labuhan Batu Utara. *Agrimor*. 5(3): 40–44. <https://doi.org/10.32938/ag.v5i3.856>
- Nurhaliza N, Rosnita R, Dewi N. 2021. Peran penyuluh dalam penerapan ISPO pada petani kelapa sawit swadaya di Kabupaten Kampar. *JSEP (Journal of Social and Agricultural Economics)*. 14(2): 311–318. <https://doi.org/10.19184/jsep.v14i3.25705>
- Nurliza N, Fauyan F. 2021. Behavioral Changes of independent palm smallholders farmers through farmer institution. *Jurnal Penyuluhan*. 17(1): 1–11. <https://doi.org/10.25015/17202131699>
- Nuryanti S, Hutabarat S, Yusri J. 2019. Analysis on sustainability of oil palm independent smallholder (A case study of oil palm independent smallholder Kelompok Tani Petani Makmur at Lubuk Ogong Village, Bandar Sei Kijang Sub District, Pelalawan District). *Jurnal Sungkai*. 7(1): 61–78.
- Oreski D. 2012. Strategy development by using SWOT-AHP. *Technology, Education, Management, Informatics (TEM) Journal*. 1(4): 283–291. <https://doi.org/10.18421/TEM14-09>
- Patone CD, Kumaat RJ, Mandei D. 2020. Analisis daya saing ekspor sawit indonesia ke negara tujuan ekspor Tiongkok dan India. *Jurnal Berkah Ilmiah Efisiensi*. 20(3): 22–32.
- Periady E, Fatmawati F, Musa P. 2020. Konflik sosial masyarakat dengan perusahaan sawit Kecamatan Batu Ampar Kabupaten Kubu Raya. *Jurnal of Public Administration and Sociology of Development*. 1(1): 94–110. <https://doi.org/10.26418/jpasdev.v1i1.41498>
- Pesonen M, Ahola J, Kurttila M, Kajanus M, Kangas J. 2001. Applying A'WOT to forest industry investment strategies: Case study of a Finnish company in North America. *Managing Forest Ecosystems*. 3(1): 187–198. https://doi.org/10.1007/978-94-015-9799-9_12
- Robbani SF, Fahmi I, Suprayitno G. 2015. Sistem implementasi rencana aksi kebijakan pengembangan industri hilir kelapa sawit di Indonesia. *Jurnal Manajemen Dan Agribisnis*. 12(2): 137–149. <https://doi.org/10.17358/jma.12.2.137>
- Rosnita R, Andriani Y, Yulida R, Hadi S, Septya F. 2022. Persepsi petani kelapa sawit pola swadaya dalam penerapan Indonesia Sustainability Palm Oil (ISPO) di Kabupaten Kampar. *Jurnal Ilmu Lingkungan*. 16(1): 100–108. <https://doi.org/10.31258/jil.16.1.p.100-108>

- Sari CR, Puarada SH, Nadia R, Gurning S, Utami DR, Regency DS. 2023. Analisis perilaku petani sawit rakyat dalam fluktuasi harga di Kecamatan STM Hilir Kabupaten Deli Serdang. *JASc (Journal of Agribusiness Sciences)*. 7(2): 98–106. <https://doi.org/10.30596/jasc.v7i2.16254>
- Saswattecha K, Kroeze C, Jawjit W, Hein L. 2015. Assessing the environmental impact of palm oil produced in Thailand. *Journal of Cleaner Production*. 100(1): 150–169. <https://doi.org/10.1016/j.jclepro.2015.03.037>
- Schouten AM. 2014. Processes of legitimization in private governance arrangements: Examples from the roundtables on sustainable palm oil and responsible soy. In: *Proceedings of the 2014 Norwich Conference on Earth System Governance*. Norwich, United Kingdom, 1–3 July 2014.
- Sevik H, Cetin M, Ozel HB, Erbek A, Zeren CI. 2021. The effect of climate on leaf micromorphological characteristics in some broad-leaved species. *Environment, Development and Sustainability*. 23(4): 6395–6407. <https://doi.org/10.1007/s10668-020-00877-w>
- Sibarani DYT, Hutabarat S, Dewi N. 2015. Prospek dan tantangan petani kelapa sawit swadaya di Desa Air Hitam Kecamatan Ukui Kabupaten Pelalawan dalam menghadapi sertifikasi ISPO. *Jurnal Online Mahasiswa Fakultas Pertanian Universitas Riau*. 2(1): 1–9.
- Sirait K, Rosnita R, Arifudin A. 2014. Peran penyuluhan dalam pemberdayaan petani kelapa sawit pola swadaya di Kabupaten Kampar. *Jurnal Online Mahasiswa Fakultas Pertanian*. 1(1): 1–12.
- Situngkir DI. 2022. Daya saing minyak kelapa sawit Indonesia di pasar global. *Jurnal Agrotistik*. 1(1): 7–11.
- Sukowati NNS. 2022. Pengaruh fluktuasi harga tandan buah segar (TBS) terhadap efek kesejahteraan petani kelapa sawit di Indonesia. *Jurnal Ekonomi dan Statistik Indonesia*. 2(3): 282–296. <https://doi.org/10.11594/jesi.02.03.05>
- Tamsil. 2018. *Kajian Hukum Perkebunan Kelapa Sawit dalam Kawasan Hutan*. Palembang (ID): LBH Palembang.
- Thomas T, Sikwan A, Rahmaniah SE. 2015. Konflik sosial antara perusahaan perkebunan sawit PT Borneo Ketapang Permai dengan masyarakat Desa Semayang Kecamatan Kembayan, Kabupaten Sanggau. *Jurnal Tesis PMIS-Untan-PSS-2015*. 1(1): 1–10. file:///C:/Users/acer/Downloads/9622-ID-konflik-sosial-antara-perusahaan-perkebunan-sawit-pt-borneo-ketapang-permai-deng.pdf
- Vanisha D. 2022. Penyebab konflik lahan pada ekspansi perkebunan kelapa sawit di Desa Mendo. *Journal of Government and Social Issues (JGSI)*. 2(1): 2022.
- Vicki V, Nurliza N, Dolorosa E. 2021. Niat perilaku petani sawit swadaya dalam peningkatan usaha berkelanjutan di Kabupaten Sambas Provinsi Kalimantan Barat. *SEPA: Jurnal Sosial Ekonomi Pertanian dan Agribisnis*. 18(1): 112–122. <https://doi.org/10.20961/sepa.v18i1.48546>
- Wahyudi A, Tan S, Hidayat MS. 2022. Strategi pengembangan perkebunan kelapa sawit di Provinsi Jambi. *Jurnal Paradigma Ekonomika*. 17(1): 31–44. <https://doi.org/10.22437/jpe.v17i1.10744>
- Yurisinthae E, Oktoriana S. 2021a. Implementasi sertifikasi Indonesian Sustainable Palm Oil System (ISPO) pada petani kelapa sawit swadaya di Kabupaten Sanggau. Implementation of Indonesian Sustainable Palm Oil System (ISPO) certification for independent oil palm smallholders in Sanggau Rege. *Jurnal Sosial Ekonomi Pertanian (JSEP)*. 14(2): 166–179. <https://doi.org/10.19184/jsep.v14i2.21161>
- Yurisinthae E, Oktoriana S. 2021b. Implementation of Indonesian Sustainable Palm Oil System (ISPO) certification for independent oil palm smallholders in Sangau Rege. *Jurnal Sosial Ekonomi Pertanian (JSEP)*. 14(2): 166–179. <https://jurnal.unej.ac.id/index.php/JSEP>
- Yusmini Y, Heriyanto H. 2011. Analisis Kesiapan Petani Kelapa Sawit Swadaya dalam Penerapan ISPO di Kabupaten Indragiri Hilir. In: Seminar Nasional Universitas Riau "Mitigasi dan Strategi Adaptasi Dampak Perubahan Iklim Di Indonesia. Pekanbaru, Riau, Feb. 24–25 2010.