Application of Supply Chain Requirements for Smallholders: Impact on Sustainable Palm Oil Management Policies in Indonesia

Herdis Herdiansyah1*, Ratih Dyah Kusumastuti2, Palupi Lindiasari Samputra3, Neny Indriyana1, Nanik Ambar Suharyanti1

1 School of Environmental Science, Universitas Indonesia, Central Jakarta, 10430, Indonesia
2 Department, of Management, Faculty Economic and Business, Universitas Indonesia, Depok, 16424, Indonesia
3 School of Strategic and Global Studies, Universitas Indonesia, Central Jakarta, 10430, Indonesia

*herdis@ui.ac.id, ratih.dyah@ui.ac.id, palupi.ls@ui.ac.id, indriyana.neny@gmail.com, ambar.suharyanti@gmail.com

Abstract. The pressure of the global economic climate that is leading to the concept of sustainability by emphasizing traceability and reducing environmental impact has resulted in the ISPO standard not being fully recognized internationally. This is likely to exclude smallholders from national value chains and from international markets that demand certified commodities. Therefore, this policy brief aims to use ISPO certification to maintain the smallholders' position in the national value chain. The methods used are spatial analysis, field surveys, and in-depth interviews. The data obtained will then be analyzed with a qualitative approach through Focus Group Discussions (FGD) with experts in various fields to draw conclusions and decisions on policy improvements.

1. Introduction

The rapid growth of Indonesia's crude palm oil (CPO) production has changed Indonesia's position in the world palm oil market. In 2006, Indonesia succeeded in shifting Malaysia to become the largest CPO producer globally, and in 2016 Indonesia's market share reached 54% of world CPO production, Malaysia reached 14%, and other producing countries reached 32% [1]. Bentivoglio et al. (2018) stated that Indonesia and Malaysia currently control 85% of world palm oil production. Although Indonesia and Malaysia are the largest producers (36 and 21 million tonnes respectively), there has also been an increase in palm oil production in several countries in the world, for example in Thailand (around 2.2 million tonnes), Columbia (around 1.3 million tonnes) and Nigeria (about 1 million tonnes) [2]. This increase has led to various economic, social, and environmental impacts. The increase in oil palm encourages increased employment and community income. However, in addition to the positive economic impacts, there are also impacts such as conflicts in society and environmental impacts such as increased greenhouse gases, deforestation, and land-use changes caused by the increasing production of palm oil [3–5].
Smallholders in the palm oil industry in Indonesia (either plasma or independent) have a significant position. According to the Indonesian Plantation Statistics 2017 - 2019 issued by the Directorate General of Plantation, of the total estimated 14,677,560 Ha of oil palm plantations in Indonesia, 40.5% are smallholder plantations, while others are private plantations (49.8%), and the rest are state plantations [6]. Palm oil production from smallholder oil palm plantations reaches 14,845,112 tons or 34.63% of the national FFB production. It is also estimated that smallholders' contributions will continue to increase in the future [7]. However, compared to the yield of large plantations, smallholders' productivity is smaller, which is less than 50% [8]. In general, a significant determinant of the yield gap is management practice [7]. As a result, smallholders may be encouraged to illegally expand oil palm cultivation to increase income, leading to deforestation and the unauthorized use of peatlands [9].

The general structure of the supply chain for oil palm in Indonesia is as follows. Oil palm plantations, which are operated by independent smallholders, plasma smallholders, smallholder associations, cooperative oil palm growers, and private companies and state-owned companies, will produce fresh oil palm fruit bunches which will be sent to mills owned by plantation companies and mills owned by other companies (either directly or through collectors), as well as a kernel crusher plant to produce CPO and PKO which will then be processed in a refinery. From the value chain structure, it can be seen that smallholders have an important role to play in ensuring that the oil palm produced is of good quality and is produced in an environmentally friendly manner.

![Oil palm supply chain structure](image)

**Figure 1.** Oil palm supply chain structure [10]

In the last 15 years, the demand for palm oil from the international market has required NDPE (No Deforestation, No Peatland Development, and No Exploitation) policies and implementation to growers (palm oil producers), including the supply chain (both fresh fruit bunches and palm oil). The market pressure (initiated by the NGO) starts from the downstream, namely the last buyer. The intermediate buyer then goes to the upstream (oil palm plantations). The plantation companies and large-scale oil palm processing companies responded to this demand by making a sustainability policy, which in essence contains a commitment not to develop oil palm plantations in areas that contain conservation value and high carbon stock, not to develop the land peat (regardless of depth). Also, not exploiting the workforce. In addition, this sustainability policy also applies traceability to their suppliers (both FFB and palm oil suppliers), both from companies and smallholders, with a set procedure and time frame.
The improvement of remote sensing technology, in this case, the GIS (Geographic Information System), also has a significant effect on the monitoring and supervision of the implementation of the NDPE policy by buyers. GIS processing is done through WebGIS, especially spatial data visualization using WebGIS, which can be done by extracting data processing results in GIS software. Data processing starts from taking points to determine HGU boundaries or areas using GPS, then determining which oil palm trees are planted in each block. The next step is to complete the attribute data for each polygon and point that was previously created. After the attribute data has been filled in, data extraction can be performed into HTML format to be used as WebGIS development material.

The research was conducted on smallholder palm oil plantations in Jambi Province. Based on preliminary figures (Preliminary Figures) in 2018, the area of oil palm plantations in Jambi Province reached 772,843 ha, divided into large state plantations covering 20,014 ha, large private plantations covering 166,518 ha, and smallholder plantations covering 586,311 ha. Jambi is the area with the largest proportion of smallholder plantations (75.9% of the total plantation area in Jambi) compared to other provinces on the island of Sumatra. Therefore, smallholder plantations have an important role in the oil palm value chain in Jambi Province based on their potential area. However, in terms of CPO productivity, Jambi's smallholder plantations' achievements are still lower than the CPO productivity of smallholder plantations in other provinces such as North Sumatra (3.3 tonnes/ha CPO) or Riau (2.7 tonnes/ha CPO). The productivity of CPO in Jambi people's plantations is only 2.3 tonnes/ha.

2. Method

Based on the analysis results, decision-making was carried out using the Focus Group Discussion (FGD) method. Each member of the focus group discussion will be given the same data from the results of field surveys, in-depth interviews, and spatial analysis. Each member who participates in the discussion process is experts from various science fields, which can provide views from various perspectives. In order to arrive at correct and reliable conclusions, each member must adhere to a set of systematic and transparent procedures for organizing and processing raw material data. In the discussion process, an audio recording will be carried out, transcribed verbatim, so that systematic analysis results are obtained from the discussion process. The result of the decisions and conclusions from the discussion process is a policy that can maintain the smallholders' position in the supply chain so that they can survive and follow current global trends by utilizing ISPO standards.

3. Results and discussion

Sustainability standards need to be set to neutralize the social and environmental risks of oil palm expansion. One of the standards that can be applied is ISPO (Indonesia Sustainable Palm Oil) [11]. The ISPO standard is a standard that is mandatory for large companies, plantations without mills, mills without plantations, but voluntary for smallholders or planters. The principal requirements applied to smallholders are fewer than those that companies must apply [12]. The ISPO standard itself has not been fully recognized internationally due to less detailed or explicitly structured things to meet the sustainability of palm oil. The comparisons between the RSPO, ISPO, and MSPO include[12–14]:

1. ISPO and MSPO have far fewer (or less detailed) criteria when compared to RSPO
2. The ISPO or MSPO schemes do not include an explicit commitment to transparency and ethical behavior in business operations and transactions
3. Environmental requirements under ISPO and MSPO are not defined and are not clear, so the RSPO rules and criteria are more stringent and more inclusive in terms of regulations and criteria.
4. ISPO requires identification of High Conservation Value (HCV) soils but does not clearly define the identification process. MSPO makes absolutely no mention of HCV protection.
5. ISPO provides the least stringent comprehensive protection for biodiversity on land zoned for agriculture
6. ISPO does not include broad requirements for social impact assessments. Also, do not make explicit references to applying consent of the people involved (FPIC), and consent is carried out without coercion during the process of acquiring plantation land. MSPO stated that FPIC should be noted.
ISPO has no requirements for employee/worker contracts. Meanwhile, MSPO requires policies on workers' rights and provides some details about what to do. The ISPO sustainability framework is considered weak in supporting sustainability. Therefore, it is necessary to review the ISPO policy so that it can be entirely accepted at the international level. In addition, the ISPO application has also become a problem in itself when it is applied to smallholders. The development of systems and standards is a challenge for growers to comply with the written regulations, such as documentation of land legality, documentation of registration of planting processes, compliance with planting practices such as the use of pesticides and fertilization, membership of officially recognized farmer groups or cooperatives, use of official seed sources, and storage of the documents needed [15–17]. These local plantations' inability to meet the above requirements is not due to their unwillingness to meet the requirements, but due to limited information, knowledge, and limited funds to obtain this certification [18]. Therefore, it is necessary to study the ISPO policy so that it can be followed by smallholders and increase the competitiveness of the oil palm products they produce to be accepted by the recipient companies.

This market demand condition will immediately affect the community management of oil palm plantations. In addition, the oil palm value chain with unclear terms and conditions that do not benefit smallholders makes smallholders vulnerable to manipulation by companies and government officials, resulting in threats to fulfill their socio-economic needs through the oil palm plantation sector [19,20]. Therefore, the government needs to immediately anticipate this market demand by adjusting policies (both related to production, environment/conservation, and social). So, it can protect the interests of oil palm planters, on the one hand, without denying the flow of changes in sustainability requirements and traceability in palm products.

In the short term (three years), it is necessary to assess policies regarding sustainable palm oil management for smallholders. Primarily, with regard to the environment and conservation, so that space is still given to allow communities to clear areas using fire (even though certain conditions front it), protection and management of peat ecosystems, and opening areas with regard to the protection of areas with conservation value and high carbon stocks. The principles and criteria contained in the ISPO (Indonesian Sustainable Palm Oil) also need to be reviewed to ensure that in addition to the need for compliance with related regulations. Aspects of transparency and traceability (which have not been included in the regulation until now) need to be reviewed so that the international market can recognize the ISPO system. So, smallholders can follow the implementation of the ISPO system.

The method used will use the method of field survey analysis, field interviews, spatial analysis, and Focus Group Discussion (FGD). Retrieval of supporting data prior to decision-making is carried out by studying literature (on policies) and using field survey methods combined with in-depth interviews and spatial analysis. A study conducted by Schoneveld et al. (2019) classified smallholders in Kalimantan into six groups, based on their characteristics, namely subsistence farmers, early adopters, migrant laborers, migrant farmers, entrepreneurs, and local elites [21].

The same thing will be done in this brief policy research, which will take samples of smallholders in the Jambi area. The classification of the smallholders will be based on the survey results, which are based on the characteristics of the smallholders, such as the length of time operating the plantation, the area of the plantation, whether oil palm plantations are the main source of livelihood, and the way oil palm is operated. Based on this grouping, recommendations for regulations can be proposed to help all groups implement good agricultural practice (GAP) so that they can be ISPO certified.

Acknowledgments

Research Based Policy Grant Universitas Indonesia with contract Number NKB-3134/UN2.RST/HKP.05.00/2020.

References

[1] PASPI 2017 Mitos dan Fakta Industri Minyak Sawit Indonesia dalam Isu Sosial,
Ekonomi dan Lingkungan Global (Bogor, Indonesia: Palm Oil Agribusiness Strategic Policy Institute (PASPI))

[2] Bentivoglio D, Finco A and Bucci G 2018 Factors affecting the indonesian palm oil market in food and fuel industry: Evidence from a time series analysis Int. J. Energy Econ. Policy 8 49–57

[3] Moreno-Peñaranda R, Gasparatos A, Stromberg P, Suwa A, Pandyaswargo A H and Puppim de Oliveira J A 2015 Sustainable production and consumption of palm oil in Indonesia: What can stakeholder perceptions offer to the debate? Sustain. Prod. Consum. 4 16–35

[4] Azhar B, Saadun N, Prideaux M and Lindenmayer D B 2017 The global palm oil sector must change to save biodiversity and improve food security in the tropics J. Environ. Manage. 203 457–66

[5] Cazzolla Gatti R, Liang J, Velichevskaya A and Zhou M 2019 Sustainable palm oil may not be so sustainable Sci. Total Environ. 652 48–51

[6] Direktorat Jenderal Perkebunan 2020 Statistik Perkebunan Indonesia Komoditas Kelapa Sawit 2017-2019 (Jakarta)

[7] Euler M, Schwarze S, Siregar H and Qaim M 2016 Oil Palm Expansion among Smallholder Farmers in Sumatra, Indonesia J. Agric. Econ. 67 658–76

[8] Zen Z and Nibulan T R 2018 A Review of Government Interventions Promoting Smallholder Development in Indonesia Advances in Economics, Business and Management Research (AEBMR) vol 46 (Atlantis Press) pp 6–15

[9] Nesadurai H E S 2019 Transnational Private Governance as a Developmental Driver in Southeast Asia: The Case of Sustainable Palm Oil Standards in Indonesia and Malaysia J. Dev. Stud. 55 1892–908

[10] Pacheco P, Gnych S, Dermauwana H and Okarda B 2017 The palm oil global value chain: Implications for economic growth and social and environmental sustainability (Bogor, Indonesia)

[11] Dharmawan A H, Nasdian F T, Barus B, Kinseng R A, Indaryanti Y, Indriana H, Mardianingsih D I, Rahmadian F, Hidayati H N and Roslinawati A M 2019 Kesianan Petani Kelapa Sawit Swadaya dalam Implementasi ISPO: Persoalan Lingkungan Hidup, Legalitas dan Keberlanjutan J. Ilmu Lingkung. 17 304

[12] Hidayat N K, Offermans A and Glasbergen P 2018 Sustainable palm oil as a public responsibility? On the governance capacity of Indonesian Standard for Sustainable Palm Oil (ISPO) Agric. Human Values 35 223–42

[13] Efeca 2016 Comparison of the ISPO, MSPO and RSPO Standards Efeca

[14] Higgins V and Richards C 2019 Framing sustainability: Alternative standards schemes for sustainable palm oil and South–South trade J. Rural Stud. 65 126–34

[15] Jezeer R, Slingerland M, Laan C Van Der and Pasiecznik N 2019 Improving smallholder inclusiveness in palm oil production in palm oil production (Tropenbos International)

[16] Brandi C, Cabani T, Hosang C, Schirmbeck S, Westermann L and Wiese H 2015 Sustainability Standards for Palm Oil: Challenges for Smallholder Certification Under the RSPO J. Environ. Dev. 24 292–314

[17] Craw M 2019 Palm Oil Smallholders and Land-Use Change in Indonesia and Malaysia I Palm Oil Smallholders and Land-Use Change in Indonesia and Malaysia Implications for the draft EU delegated act of the recast Renewable Energy Directive (Norway)

[18] Saadun N, Lim E A L, Esa S M, Ngu F, Awang F, Gimin A, Johari I H, Firdaus M A,
Wagimin N I and Azhar B 2018 Socio-ecological perspectives of engaging smallholders in environmental-friendly palm oil certification schemes Land use policy 72 333–40

[19] Jelsma I, Schoneveld G C, Zoomers A and van Westen A C M 2017 Unpacking Indonesia’s independent oil palm smallholders: An actor-disaggregated approach to identifying environmental and social performance challenges land use policy 69 281–97

[20] Naylor R L, Higgins M M, Edwards R B and Falcon W P 2019 Decentralization and the environment: Assessing smallholder oil palm development in Indonesia Ambio 48 1195–208

[21] Schoneveld G C, van der Haar S, Ekowati D, Andrianto A, Komarudin H, Okarda B, Jelsma I and Pacheco P 2019 Certification, good agricultural practice and smallholder heterogeneity: Differentiated pathways for resolving compliance gaps in the Indonesian oil palm sector Glob. Environ. Chang. 57