



ENSURING LAND STATUS SECURITY TO ACCELERATE THE REJUVENATION OF SMALL-SCALE OIL PALM PLANTATIONS IN INDONESIA

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ARTICLE INFO

Keywords:

Land Security; Land Status; Palm Oil Rejuvenation; Smallholder Farmers; Legal Framework.

DOI:

10.26532/jh.v40i2.39387

ABSTRACT

This study examines the role of land status in accelerating the Small-scale Palm Oil Rejuvenation (*Peremajaan Sawit Rakyat* or PSR) program in Indonesia, particularly in light of the Job Creation Law and its derivative regulations. The research aims to evaluate the effectiveness of these legal provisions in addressing challenges within the palm oil sector, especially for small farmers, by ensuring land status certainty. A normative legal research approach, utilizing NVivo 12 Plus software for data analysis, was employed to analyze secondary data from regulations, journal articles, government reports, and online media. The study finds that resolving land status issues is crucial for the effective implementation of the PSR program, highlighting the need for improvements in geospatial data support, synchronization of statutory regulations, and coordination among ministries and local governments. The results emphasize the importance of continuous policy review and legal adjustments to overcome the complexities of land tenure in the palm oil industry. This research provides practical insights for stakeholders to reform land policies and enhance the implementation of the PSR program, ultimately contributing to the growth and sustainability of smallholder palm oil plantations in Indonesia.

1. Introduction

Hierarchically, palm oil is a superior product crucial to the economy, making Indonesia one of the largest palm oil industrial countries in Southeast Asia.¹

¹ Rino Afrino, Almasdi Syahza, and Meyzi Heriyanto., Analysis of Nuclear-Plasma Partnership Pattern for Sustainable Oil Palm Plantation in Riau Province, Indonesia, *International Journal of Sustainable Development & Planning*, Vol.18, no.1, 2023, page.95. See to, Rino Afrino and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, page.19. See to, Nina Yulsaini, Utang Suwaryo, Nandang A. Deliarnoor, and Dede Sri Kartini., Palm oil industry and investment development in Dumai City,

According to research by Gilroy et al., palm oil serves as an essential raw material for producing economically valuable products, which significantly contribute to a country's economic development.² Recognizing this potential, the Indonesian government has implemented various initiatives to strengthen the role of farmers in palm oil plantations, including the establishment of investment-based policies for sustainable governance of the palm oil industry.³

However, a shift in the investment paradigm occurred following the enactment of Law Number 6 of 2023 concerning Job Creation (Job Creation Law), which prioritizes the simplification of business licensing for investors aiming to engage in palm oil plantation enterprises in Indonesia. Before the issuance of this law, the government, through the Ministry of Agriculture, introduced Minister of Agriculture Decree Number 833/2019, which determined the total area of Indonesian palm oil plantations to be 16,381,959 hectares. This policy was formulated based on evaluations and monitoring of palm oil governance, aligning with the Presidential Instruction Number 6 of 2019 concerning the National Action Plan for Sustainable Palm Oil Plantations (2019–2024) and Presidential Instruction Number 8 of 2018 concerning the Suspension and Evaluation of Plantation Licensing and the Enhancement of Palm Oil Plantation Productivity.

The strategies behind various policies are rooted in international regulations established for the world's palm oil-exporting countries, including Indonesia.⁴ On its path to becoming the largest palm oil producer globally, Indonesia has worked to develop a robust system involving investment, cooperation, technology exchange, and alignment with international policies on sustainable palm oil management.⁵ Several ministries and government institutions have collaborated over time to achieve the goal of sustainable palm oil development. This effort has persisted and fluctuated across different administrations. However, Indonesia continues to face numerous unresolved palm oil-related issues on a national scale. These include

Indonesia: A focus on local economy development and sustainability, *Cogent Social Sciences*, Vol.9, no.1, 2023, page.2235780.

² James J. Gilroy, Graham W. Prescott, Johann S. Cardenas, Pamela González del Pliego Castañeda, Andrés Sánchez, Luis E. Rojas-Murcia, Claudia A. Medina Uribe, Torbjørn Haugaasen, and David P. Edwards., Minimizing the biodiversity impact of Neotropical oil palm development, *Global change biology*, Vol.21, no.4, 2015, page.1535.

³ Rino Afrino and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, page.13. See to, Sapta Raharja, Petir Papilo, M. Yusram Massijaya, Muhammad Asrol, and M. Arif Darmawan., Institutional strengthening model of oil palm independent smallholder in Riau and Jambi Provinces, Indonesia, *Heliyon*, Vol.6, no.5, 2020, page. e03875.

⁴ Rino Afrino, Almasdi Syahza, and Meyzi Heriyanto, Analysis of Nuclear-Plasma Partnership Pattern for Sustainable Oil Palm Plantation in Riau Province, Indonesia, *International Journal of Sustainable Development & Planning*, Vol.18, no.1, 2023, page.93. See to, Josi Khatarina., *Explaining the failure of palm oil licensing in Indonesia.*, *In Crime and Punishment in Indonesia*, New York, Routledge, 2020, page.349.

⁵ Rino Afrino and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, page.16. See to, Nina Yulsaini, Utang Suwaryo, Nandang A. Deliarnoor, and Dede Sri Kartini., Palm oil industry and investment development in Dumai City, Indonesia: A focus on local economy development and sustainability, *Cogent Social Sciences*, Vol.9, no.1, 2023, page.2235780. See to, Maria Vincenza Chiriaco, Matteo Bellotta, Jasmina Jusić, and Lucia Perugini., Palm oil's contribution to the United Nations sustainable development goals: outcomes of a review of socio-economic aspects, *Environmental Research Letters*, Vol.17, no.6, 2022, page.063007.

challenges surrounding land security and regulating palm oil businesses, particularly those operating in forested areas, both legally and illegally.⁶

It is undeniable that oil palm plantations contribute to improving the economic welfare of communities around their locations. The government has launched various programs to enhance the well-being of citizens, particularly by encouraging participation in the palm oil farming profession.⁷ Minister of Agriculture Regulation Number 98 of 2013 concerning the Granting of Business Licenses in the Agricultural Sector for the Context of Capital Investment defines small farmers as individuals engaged in plantation activities on land areas not exceeding 25 hectares. One of the key initiatives to support palm oil farmers is the Small-scale's Palm Oil Rejuvenation (*Peremajaan Sawit Rakyat* or PSR) program, which distributes funds to smallholders through the Palm Oil Plantation Fund Management Agency (*Badan Pengelola Dana Perkebunan Kelapa Sawit* or BPDPKS). This agency, established to collect and manage funds for oil palm plantations in Indonesia, represents a significant step toward achieving equitable development in regions with oil palm cultivation, which are often central hubs for the industry.⁸ The PSR program now aims not only to enhance participatory plantation production but also to encourage farmer-owned oil palm plantations to adopt principles that promote superior plantation ecosystems.⁹ Through the PSR program, it is expected that productivity on plantation land owned by smallholder oil palm farmers can be increased. Additionally, the program aims to

⁶ Rino Afrino, Almasdi Syahza, and Meyzi Heriyanto, Analysis of Nuclear-Plasma Partnership Pattern for Sustainable Oil Palm Plantation in Riau Province, Indonesia, *International Journal of Sustainable Development & Planning*, Vol.18, no.1, 2023, page.97. See to, Rino Afrino and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, page.18.

⁷ Nina Yulsaini, Utang Suwaryo, Nandang A. Deliarnoor, and Dede Sri Kartini., Palm oil industry and investment development in Dumai City, Indonesia: A focus on local economy development and sustainability, *Cogent Social Sciences*, Vol.9, no.1, 2023, page.2235780. See to, Gapki., The Recent Development of the Indonesian Palm Oil Industry, *gapki.id*, 23 April, 2020. See to, Neneng Sri Rahayu, Alih Aji Nugroho, and Rima Ranintya Yusuf, Exclusion of Smallholders in the Indonesia Palm Oil Industry, *KnE Social Sciences*, Vol.5, no.1, 2022, page.158. See to, Almasdi Syahza, D. Bakce, Besri Nasrul, and Riyadi Mustofa., Utilization of peatlands based on local wisdom and community welfare in Riau Province, Indonesia, *International Journal of Sustainable Development and Planning*, Vol.15, no. 7, 2020, page.1121.

⁸ To support the PSR program, various regulations have been enacted, starting with the issuance of Regulation of the Minister of Agriculture Number 18/Permentan/KB.330/5/2016 concerning Guidelines for the Rejuvenation of Palm Oil Plantations. This was followed by the Decree of the Directorate General of Plantations Number 29/2017, which provides general guidelines for plantation rejuvenation, human resource development, and infrastructure improvement. The national development agenda in the agricultural sector prioritizes strengthening economic growth resilience, with a focus on empowering smallholder oil palm plantations. This empowerment is implemented through coordination with BPDPKS, under the auspices of the Ministry of Finance, which allocates palm oil funds for activities such as human resource development, plantation infrastructure improvement, and the PSR program in collaboration with the Ministry of Agriculture. BPDPKS., *Potential Income Sources for Oil Palm Farmers During Replanting Seasons*, 27, April, 2020.

⁹ PSR is a program from the Ministry of Agriculture in the palm oil plantation sector. Through the Ministry of Agriculture with BPDPKS, the PSR program is aimed at oil palm farmers who focus on rejuvenating oil palms that are approximately 25 (twenty-five) years old in order to increase the productivity of oil palm fruit. See also, Ekon.go.id., *The Government Accelerates the Implementation of the People's Palm Oil Replanting Program by Implementing Good Agriculture Practice through Multi-stakeholder Strategic Cooperation*, 24 February, 2024.

create opportunities for economic growth and higher incomes, ultimately improving the welfare of smallholder oil palm farmers.¹⁰

Sustainable governance of smallholder oil palm plantations continues to face various challenges, including issues related to land legality, technical cultivation practices, productivity enhancement, institutional frameworks, and sustainable certification.¹¹ Efforts to address these issues have been underway since the issuance of the Decree of the Minister of Agriculture Number 325/Kpts/Um/5/1982 concerning Licensing Procedures for the Plantation Subsector. These regulations have undergone several updates, culminating in the Regulation of the Minister of Agriculture Number 21 of 2017 concerning Guidelines for Plantation Business Licensing, which provides governance frameworks for smallholder oil palm plantations. Further steps to resolve land-related issues for business actors in the oil palm sector have been implemented through Articles 110a and 110b of the Job Creation Law. These provisions were followed by derivative regulations, such as Government Regulation Number 24 of 2021 concerning Procedures for Imposing Administrative Sanctions and Procedures for Non-Tax State Revenue Derived from Administrative Fines in the Forestry Sector (referred to as Government Regulation 24/2022). This regulation establishes the requirements that palm oil business actors must meet to demonstrate that the areas they manage are outside designated forest areas, thus avoiding administrative fines or the termination of their plantation businesses. In cases where plantation areas lack proper permits and are identified as being within forest areas, resolution efforts under this regulation are essential.

However, it is important to emphasize that the initial purpose of these regulations was to address difficulties in obtaining land legality permits. Therefore, evaluating the implementation of these provisions following the enactment of the Job Creation Law is critical. The ultimate goal is to ensure that all stakeholders in the palm oil plantation industry can assess whether the Job Creation Law, its derivative regulations, government regulations, and ministerial directives effectively address the challenges faced by the sector. For small farmers, land status certainty is particularly crucial to enable their participation in government programs such as the

¹⁰ Rino Afrino and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, page.18. See to, Nina Yulsaini, Utang Suwaryo, Nandang A. Deliarnoor, and Dede Sri Kartini., Palm oil industry and investment development in Dumai City, Indonesia: A focus on local economy development and sustainability, *Cogent Social Sciences*, Vol.9, no.1, 2023, page.2235780.

¹¹ Sapta Raharja, Petir Papilo, M. Yusram Massijaya, Muhammad Asrol, and M. Arif Darmawan., Institutional strengthening model of oil palm independent smallholder in Riau and Jambi Provinces, Indonesia, *Heliyon*, Vol.6, no.5, 2020, page.e03875. See to, Diana Córdoba, Jesse Abrams, and Theresa Selfa., Achieving palm oil sustainability under contract: roundtable on sustainable palm oil and family farmers in the Brazilian Amazon, *Current Research in Environmental Sustainability*, Vol.4, 2022, page.100160. See to, Elena Degli Innocenti and Peter Oosterveer., Opportunities and bottlenecks for upstream learning within RSPO certified palm oil value chains: A comparative analysis between Indonesia and Thailand, *Journal of Rural Studies*, Vol.78, 2020, page.427. See to, Eka Intan Kumala Putri, Arya Hadi Dharmawan, Otto Hospes, Bayu Eka Yulian, Rizka Amalia, Dyah Ita Mardiyansih, Rilus A. Kinseng et al., The oil palm governance: challenges of sustainability policy in Indonesia, *Sustainability*, Vol.14, no.3, 2022, page.1820. See to, Elizabeth Oliphant and Adam C. Simon., The cost of sustainable palm oil: Should an Indonesian smallholder pursue RSPO-certification?, *World Development Perspectives*, Vol.26, 2022, page.100432.

Small-scale's Palm Oil Rejuvenation program.¹²

Thus, ensuring land status is crucial in efforts to accelerate the implementation of PSR program. This research is vital for identifying the various complexities that arise during program implementation and for outlining the legal measures necessary to optimize the program's execution. Accordingly, this study highlights the importance of resolving land status issues to address the challenges faced in implementing the PSR program effectively.

2. Methods

This study employs a normative legal research approach, specifically focusing on a black-letter law methodology, to examine the legal framework surrounding land status issues and the PSR program in Indonesia.¹³ The research analyzes key regulations and laws, including the Job Creation Law (Law Number 6 of 2023), Government Regulation Number 24 of 2021, and Minister of Agriculture Regulation Number 19 of 2023, which amends Minister of Agriculture Regulation Number 03 of 2022. These legal provisions are scrutinized to understand their implications for land tenure and smallholder participation in the PSR program.

The analysis is descriptive and qualitative in nature, aimed at providing a detailed, in-depth understanding of how legal frameworks influence land status and the PSR program's implementation. NVivo 12 Plus software was utilized to visualize and analyze secondary data, including legal texts, government regulations, journal articles, reports, books, electronic documents, and online news sources related to the acceleration of smallholder oil palm rejuvenation. The NVivo software, using its concept map feature, facilitated systematic data analysis by identifying patterns, themes, and key legal concepts within the dataset.¹⁴ This approach is particularly relevant to the topic, as it offers valuable insights into the complexities of land status and its impact on the PSR program, helping identify areas for legal reform and policy improvements to enhance smallholder participation in the program.

3. Result and Discussions

3.1. Securing Land Legality for Sustainable Palm Oil Management

As the global population grows and interest in palm oil management rises, the demand for palm oil continues to increase rapidly. This escalating demand necessitates proper production and management measures to be implemented

¹² Rini Astuti, Michelle Ann Miller, Andrew McGregor, M. Dedy Pratama Sukmara, Wiko Saputra, and David Taylor., Making illegality visible: The governance dilemmas created by visualising illegal palm oil plantations in Central Kalimantan, Indonesia, *Land Use Policy*, Vol.114, 2022, page.105942. See to, Ningum Natasya Sirait and Mahmud Siregar., Perspective of Competition Law on Partnership of Palm Oil Company and Nucleus Estate, In *Second International Conference on Public Policy, Social Computing and Development (ICOPOSDEV 2021)*, Amsterdam, Atlantis Press, 2022, page.197.

¹³ Pascale Cornut St-Pierre., Investigating legal consciousness through the technical work of elite lawyers: A case study on tax avoidance, *Law & Society Review*, Vol.53, no.2, 2019, page.323. See to, Jaakko Husa., Comparative law, literature and imagination: Transplanting law into works of fiction, *Maastricht Journal of European and Comparative Law*, Vol.28, no.3, 2021, page.371.

¹⁴ Nicholas H. Woolf and Christina Silver., *Qualitative Analysis Using NVivo: The Five-Level QDA® Method*, New York, Routledge, 2018, page.121. See to, Shalin Hai-Jew., NVivo 12 Plus's new qualitative cross-tab analysis function, *C2C Digital Magazine*, Vol.1, no.10, 2019, page.15.

promptly.¹⁵ However, challenges such as complexities in ensuring land legality and disparities in crop yields among farmers remain difficult to address in the palm oil management process.¹⁶ Small-scale farmers hold significant potential to contribute to sustainable palm oil management by enhancing productivity and minimizing environmental impacts. Nevertheless, they frequently lack the necessary information to implement appropriate practices and remain uncertain about the legal status of their land.¹⁷

The growth of the palm oil industry currently faces several complex challenges. First, issues surrounding land tenure rights between communities and private companies or between communities and the government, represented by PT Perkebunan Nusantara, often lead to various human rights violations and injustices.¹⁸ Second, there is a lack of understanding among palm oil industry stakeholders regarding the protection of primary natural forests and peatlands. This includes issues such as deforestation within concession areas, land conversion, and the practice of land burning to clear and prepare new areas for oil palm plantations.¹⁹ Third, numerous plantation businesses operate without proper legal documentation, such as location permits, plantation business permits, land rights in the form of Cultivation Rights (*Hak Guna Usaha/HGU*), and corporate legal entity status.²⁰

¹⁵ Peter Oosterveer., Promoting sustainable palm oil: viewed from a global networks and flows perspective, *Journal of Cleaner Production*, Vol.107, 2015, page.146. See to, Pablo Pacheco, George Schoneveld, Ahmad Dermawan, Heru Komarudin, and Marcel Djama., Governing sustainable palm oil supply: Disconnects, complementarities, and antagonisms between state regulations and private standards, *Regulation & Governance*, Vol.14, no.3, 2020, page.568.

¹⁶ Rini Astuti, Michelle Ann Miller, Andrew McGregor, M. Dedy Pratama Sukmara, Wiko Saputra, and David Taylor., Making illegality visible: The governance dilemmas created by visualising illegal palm oil plantations in Central Kalimantan, Indonesia, *Land Use Policy*, Vol.114, 2022, page.105942.

¹⁷ Elena Degli Innocenti and Peter Oosterveer., Opportunities and bottlenecks for upstream learning within RSPO certified palm oil value chains: A comparative analysis between Indonesia and Thailand, *Journal of Rural Studies*, Vol.78, 2020, page.426. See to, Eka Intan Kumala Putri, Arya Hadi Dharmawan, Otto Hospes, Bayu Eka Yulian, Rizka Amalia, Dyah Ita Mardiyansih, Rilus A. Kinseng et al., The oil palm governance: challenges of sustainability policy in Indonesia, *Sustainability*, Vol.14, no.3, 2022, page.1820. See to, Elizabeth Oliphant and Adam C. Simon., The cost of sustainable palm oil: Should an Indonesian smallholder pursue RSPO-certification?, *World Development Perspectives*, Vol.26, 2022, page.100432.

¹⁸ Rino Afrino, Almasdi Syahza, and Meyzi Heriyanto, Analysis of Nuclear-Plasma Partnership Pattern for Sustainable Oil Palm Plantation in Riau Province, Indonesia, *International Journal of Sustainable Development & Planning*, Vol.18, no.1, 2023, page.93. See to, Rino Afrino and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, page.17. See to, Herry Purnomo, Beni Okarda, Ade Ayu Dewayani, Made Ali, Ramadhani Achdiawan, Hariadi Kartodihardjo, Pablo Pacheco, and Kartika S. Juniwati., Reducing forest and land fires through good palm oil value chain governance, *Forest Policy and Economics*, Vol.91, 2018, page.101.

¹⁹ Frederico Brandão, George Schoneveld, Pablo Pacheco, Ima Vieira, Marc Piraux, and Dalva Mota., The challenge of reconciling conservation and development in the tropics: Lessons from Brazil's oil palm governance model, *World Development*, Vol.139, 2021, page.105268. See to, Pascale Cornut St-Pierre., Investigating legal consciousness through the technical work of elite lawyers: A case study on tax avoidance, *Law & Society Review*, Vol.53, no.2, 2019, page.323. See to, Elizabeth Linda Yuliani, W. T. De Groot, Luuk Knippenberg, and D. O. Bakara., Forest or oil palm plantation? Interpretation of local responses to the oil palm promises in Kalimantan, Indonesia, *Land Use Policy*, Vol.96, 2020, page.104616.

²⁰ Rino Afrino and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, page.16. See to, Arya Hadi Dharmawan, Dyah Ita Mardiyansih, Faris Rahmadian, Bayu Eka Yulian, Heru Komarudin, Pablo

The complexity of land status in the governance of the palm oil industry is evident in the numerous issues surrounding oil palm plantations that lack proper permits.²¹ This is a critical concern, as oil palm plantations are intrinsically linked to land, and land is connected to forests, which in turn are vital to the balance of human life.²² Therefore, oil palm plantations must be managed with an environmental perspective. The conversion of natural forests for oil palm plantation development is often a primary cause of natural disasters, such as floods, forest and land fires, and landslides.²³ Furthermore, the environmental impact is exacerbated by the fact that oil palm plantations are not only developed in conversion forest areas but also in production forests, protected forests, and even conservation areas with unique ecosystems and high levels of biodiversity.²⁴

Pacheco, Jaboury Ghazoul, and Rizka Amalia., The agrarian, structural and cultural constraints of smallholders' readiness for sustainability standards implementation: the case of Indonesian Sustainable Palm Oil in East Kalimantan, *Sustainability*, Vol.13, no.5, 2021, page.2611. See to, Edi Purwanto, Hery Santoso, Idsert Jelsma, Atiek Widayati, Hunggul YSH Nugroho, and Meine van Noordwijk., Agroforestry as policy option for forest-zone oil palm production in Indonesia, *Land*, Vol.9, no.12, 2020, page.531

²¹ Lila Juniyanti, Herry Purnomo, Hariadi Kartodihardjo, Lilik Budi Prasetyo, and Eko Pambudi., Powerful actors and their networks in land use contestation for oil palm and industrial tree plantations in Riau, *Forest Policy and Economics*, Vol.129, 2021, page.102512. See to, Pablo Pacheco, George Schoneveld, Ahmad Dermawan, Heru Komarudin, and Marcel Djama., Governing sustainable palm oil supply: Disconnects, complementarities, and antagonisms between state regulations and private standards, *Regulation & Governance*, Vol.14, no.3, 2020, page.568.

²² Lila Juniyanti, Herry Purnomo, Hariadi Kartodihardjo, Lilik Budi Prasetyo, and Eko Pambudi., Powerful actors and their networks in land use contestation for oil palm and industrial tree plantations in Riau, *Forest Policy and Economics*, Vol.129, 2021, page.102512. See to, Mulono Apriyanto, H. Mardesci, and Gunawan Syahrantau., The Role of Farmers Readiness in the Sustainable Palm Oil Industry, *Journal of Physics: Conference Series*, Vol.1764, no.1, 2021, page.012211. See to, Arya Hadi Dharmawan, Dyah Ita Mardiyansih, Heru Komarudin, Jaboury Ghazoul, Pablo Pacheco, and Faris Rahmadian., Dynamics of rural economy: a socio-economic understanding of oil palm expansion and landscape changes in East Kalimantan, Indonesia, *Land*, Vol.9, no.7, 2020, page.213. See to, Anastasia Hervas., Mapping oil palm-related land use change in Guatemala, 2003–2019: Implications for food security, *Land Use Policy*, Vol.109, 2021, page.105657. See to, Valentine Joy Reiss-Woolever, Sarah Helen Luke, Jake Stone, Gorm Eirik Shackelford, and Edgar Clive Turner., Systematic mapping shows the need for increased socio-ecological research on oil palm, *Environmental Research Letters*, Vol.16, no.6, 2021, page.063002. See to, Jajat Sudrajat, Adi Suyatno, and Shenny Oktoriana., Land-use changes and food insecurity around oil palm plantations: Evidence at the village level, *Forest and Society*, Vol.5, no.2, 2021, page.352-364. See to, Caroline Ward, Lindsay C. Stringer, Eleanor Warren-Thomas, Fahmuddin Agus, Merry Crowson, Keith Hamer, Bambang Hariyadi et al., Smallholder perceptions of land restoration activities: rewetting tropical peatland oil palm areas in Sumatra, Indonesia, *Regional Environmental Change*, Vol.21, 2021, page.11. See to, John D. Watts., Katryn Pasaribu, Silvia Irawan, Luca Tacconi, Heni Martanila, Cokorda Gde Wisnu Wiratama, Fauzan Kemal Musthofa, Bernadinus Steni Sugiarto, and Utami Putri Manvi., Challenges faced by smallholders in achieving sustainable palm oil certification in Indonesia, *World Development*, Vol.146, 2021, page.105565.

²³ Rini Astuti, Michelle Ann Miller, Andrew McGregor, M. Dedy Pratama Sukmara, Wiko Saputra, and David Taylor., Making illegality visible: The governance dilemmas created by visualising illegal palm oil plantations in Central Kalimantan, Indonesia, *Land Use Policy*, Vol.114, 2022, page.105942.

²⁴ Mexsasai Indra, Muhammad Rafi, and Tito Handoko., The Importance of Strengthening Land Law Enforcement in Regulation of Land Registration, *Journal of Governance and Regulation*, Vol.13, no.1, 2024, page.73-82. See to, Denis J. Murphy, Kirstie Goggin, and R. Russell M. Paterson., Oil palm in the 2020s and beyond: challenges and solutions, *CABI agriculture and bioscience*, Vol.2, 2021, page.10. See to, Herry Purnomo, Beni Okarda, Ahmad Dermawan, Qori Pebrial Ilham, Pablo Pacheco, Fitri Nurfatriani, and Endang Suhendang., Reconciling oil palm economic development

One of the prerequisites for farmers to formally participate in the palm oil supply chain is the legality of their land. Documents such as land certificates are necessary to access finance, fertilizers, and seeds for palm oil production. Farmers face challenges in obtaining markets and production inputs due to inadequate legal provisions, especially regarding land ownership certificates. Therefore, planters require counseling to understand the importance of legal considerations and must be assured that the status of their land will not be easily transferred. In this regard, the government must accelerate the processing of land certificates, as the sustainability of plantation projects will be supported when legal requirements for smallholder plantations are met.²⁵

Moreover, financing plays a major role in determining the effectiveness of oil palm rejuvenation programs.²⁶ This is because oil palm planters or farmers who meet land legality requirements can access these funds. Financial limitations have made it difficult to intensify smallholder plantations through oil palm rejuvenation programs, as the costs required for the revitalization process exceed the funds available to growers. However, planters can apply for loans through approved financial institutions to obtain funds from BPDPKS.²⁷ Complying with administrative procedures regarding the validity of land owned by planters is a challenge in Indonesia's smallholder oil palm rejuvenation program.²⁸ Ultimately, the weak legal status of farmers' land can hinder the increase in palm oil yields, as the continuity of the country's palm oil production is threatened by obstacles in the expansion and intensification of smallholder plantations.²⁹

and environmental conservation in Indonesia: A value chain dynamic approach, *Forest Policy and Economics*, Vol.111, 2020, page.102089.

²⁵ Ernawati Apriani, Yeon-Su Kim, Larry A. Fisher, and Himlal Baral., Non-state certification of smallholders for sustainable palm oil in Sumatra, Indonesia, *Land use policy*, Vol.99, 2020, page.105112. See to, Rosanne E. De Vos, Aritta Suwarno, Maja Slingerland, Peter J. Van Der Meer, and Jennifer M. Lucey., Pre-certification conditions of independent oil palm smallholders in Indonesia. Assessing prospects for RSPO certification, *Land use policy*, Vol.130, 2023, page.106660. See to, Ervin Nora Susanti, and Anto Ariyanto., Exploring Farmers' Decision in Utilizing Certified Palm Oil Seeds in Riau Province, *Jurnal Manajemen & Agribisnis*, Vol. 20, no.2, 2023, page.188.

²⁶ Arif Imam Suroso, Iyung Pahan, and Syti Sarah Maesaroh., New Plantation Moratorium Policy and Smallholders Palm Oil Rejuvenation for Increasing Productivity of Indonesian Palm Oil, *Jurnal Manajemen & Agribisnis*, Vol.17, no.2, 2020, page.138.

²⁷ Fitri Nurfatriani, Ramawati, Galih Kartika Sari, and Heru Komarudin., Optimization of crude palm oil fund to support smallholder oil palm replanting in reducing deforestation in Indonesia, *Sustainability*, Vol.11, no.18, 2019, page.4914. See to, Almasdi Syahza, Geovani Meiwanda, and Dahlan Tampubolon., Strengthening Riau Province's Oil Palm Policy Based on Strengthening Local Institutions in Riau Province Bengkalis, *KnE Social Sciences*, Vol.12, 2023, page. 447.

²⁸ Rino Afrino, Almasdi Syahza, and Meyzi Heriyanto, Analysis of Nuclear-Plasma Partnership Pattern for Sustainable Oil Palm Plantation in Riau Province, Indonesia, *International Journal of Sustainable Development & Planning*, Vol.18, no.1, 2023, page.91.

²⁹ Rini Astuti, Michelle Ann Miller, Andrew McGregor, M. Dedy Pratama Sukmara, Wiko Saputra, and David Taylor., Making illegality visible: The governance dilemmas created by visualising illegal palm oil plantations in Central Kalimantan, Indonesia, *Land Use Policy*, Vol.114, 2022, page.105942.

3.2. Challenges and Legal Complexities in Indonesia's Smallholder Oil Palm Rejuvenation Program

One of the key challenges in Indonesia's smallholder oil palm rejuvenation program is the legal acquisition of plantation land, which is essential to accelerating program implementation. Many oil palm farmers lack land certificates due to the high costs and complexities involved in securing them. Additionally, farmers must prove that the land they manage for oil palm plantations is not classified as a forest area. Moreover, land or other fixed assets are required as collateral for bank credit programs.³⁰ These factors represent some of the primary obstacles faced by small-scale independent farmers in the palm oil industry.

Indonesia continues to face various national-scale challenges in the palm oil sector, many of which remain unresolved due to difficulties in implementing international policy changes related to sustainable palm oil management.³¹ To address these challenges, the Ministry of Agriculture introduced sustainable palm oil certification regulations based on the seven principles of Indonesian Sustainable Palm Oil (ISPO), aligning with international standards demanded by the global community for Indonesia's palm oil production processes.³² Since 2017, regulations supporting the PSR program have been issued, with the latest being Minister of Agriculture Regulation Number 19 of 2023. This regulation addresses human resource development, research, rejuvenation, and infrastructure in palm oil plantations, including guidelines for fund distribution. Additionally, palm oil fund management is governed by the Regulation of the Main Director of BPD PKS Number 7 of 2021, which outlines the procedures for the distribution and use of funds from the Palm Oil Research Center (*Pusat Penelitian Kelapa Sawit* or PPKS). The principles for distributing PPKS funds are categorized into three groups: the Good Corporate Governance Principle, PSR via the Service route, and PSR under Minister of Agriculture Regulation Number 3 of 2022 in conjunction with Number 19 of 2023. These regulations establish three key conditions for the implementation of PSR for oil palm farmers, as illustrated in Table 1.

³⁰ Arif Imam Suroso, Iyung Pahan, and Syti Sarah Maesaroh., New Plantation Moratorium Policy and Smallholders Palm Oil Rejuvenation for Increasing Productivity of Indonesian Palm Oil, *Jurnal Manajemen & Agribisnis*, Vol.17, no.2, 2020, page.138. See to, Fitri Nurfatriani, Ramawati, Galih Kartika Sari, and Heru Komarudin., Optimization of crude palm oil fund to support smallholder oil palm replanting in reducing deforestation in Indonesia, *Sustainability*, Vol.11, no.18, 2019, page.4914.

³¹ Riyadi Mustofa, Almasdi Syahza, Gulat Mendali Emas Manurung, Besri Nasrul, Rino Afrino, and Eko Jaya Siallagan., Land tenure conflicts in forest areas: obstacles to rejuvenation of small-scale oil palm plantations in Indonesia, *International Journal of Law and Management*, Vol.12, 2024, page.198.

³² Lotte S. Woittiez., Maja Slingerland, Meine van Noordwijk, Abner J. Silalahi, Joost van Heerwaarden, and Ken E. Giller., People, Palms, and Productivity: Testing Better Management Practices in Indonesian Smallholder Oil Palm Plantations, *Agriculture*, Vol.14, no.9, 2024, page.1626. See to, Jajang Supriatna, Djumarno Djumarno, Ahmad Badawy Saluy, and Deden Kurniawan., Sustainability Analysis of Smallholder Oil Palm Plantations in Several Provinces in Indonesia, *Sustainability*, Vol.16, no.11, 2024, page.4383.

Table 1. Conditions for implementing the PSR program for oil palm farmers

Aspect	Requirement	Details
Land Legality	Farmers must provide legal documentation for their land, such as a Certificate of Ownership or Land Control Certificate.	If these are unavailable, alternative documentation showing physical control of the land or compliance with land-use laws is required. A Cultivation Registration Certificate is necessary to validate the legality of the cultivation business.
Plantation Land Status	The land must not be within forest areas designated by the Ministry of Environment and Forestry or Cultivation Rights (<i>Hak Guna Usaha</i> or HGU) areas managed by the land office.	The status ensures that the land is being used according to its designated function under forestry regulations and ecological system guidelines.
Legality of Farmer Institutions	Farmer institutions must be legally recognized to participate in the PSR program.	Institutions such as Farmers' Groups, Associations of Farmers' Groups, cooperatives, and organizations like the Indonesian Palm Oil Farmers Association play a vital role in representing farmers and submitting PSR proposals.

Table 1 highlights the key requirements for implementing PSR program, which include land legality, plantation land status, and the legality of farmer institutions. First, land legality is a critical requirement and involves various documents that oil palm farmers must possess, such as a Certificate of Ownership (*Sertifikat Hak Milik*/SHM) or Land Control Certificate (*Surat Keterangan Tanah*/SKT). These are typically validated through a letter proving physical control of the land plot or a legal basis for land control, as stipulated in agrarian and spatial planning laws. If a SHM is unavailable, alternative documentation is necessary to establish legal recognition. Additionally, a Cultivation Registration Certificate (*Surat Tanda Daftar Budidaya*/STDB) is required to validate the legality of the cultivation business on the farmer's oil palm plantation.

Second, plantation land status provides assurance that the land is being used appropriately in accordance with its designated function, including compliance with forestry regulations and ecological system standards. To support sustainable palm oil management under the Indonesian Sustainable Palm Oil (ISPO) policy, the government has introduced nine criteria for palm oil management.³³ The eighth criterion specifically addresses land control policies within forest areas. This ensures traceability (supply chain transparency) in sustainable palm oil plantation development. According to Ministry of Agriculture Regulation Number 19 of 2023, there are two conditions for oil palm plantation land status: (1) the land must not be within forest areas designated by the Ministry of Environment and Forestry, and (2) the land must not be within HGU areas managed by the land office.

Third, the legality of farmer institutions plays a vital role in achieving the PSR program's objectives. Stakeholders in the PSR program include the Ministry of

³³ Arya Hadi Dharmawan, Dyah Ita Mardiyarningsih, Faris Rahmadian, Bayu Eka Yulian, Heru Komarudin, Pablo Pacheco, Jaboury Ghazoul, and Rizka Amalia., The agrarian, structural and cultural constraints of smallholders' readiness for sustainability standards implementation: the case of Indonesian Sustainable Palm Oil in East Kalimantan, *Sustainability*, Vol.13, no.5, 2021, page.2611. See to, Pablo Pacheco, George Schoneveld, Ahmad Dermawan, Heru Komarudin, and Marcel Djama., Governing sustainable palm oil supply: Disconnects, complementarities, and antagonisms between state regulations and private standards, *Regulation & Governance*, Vol.14, no.3, 2020, page.576.

Agriculture, Ministry of Forestry, BPDPKS, provincial and regional plantation services, partnerships, and cooperatives/joint farming business organizations. Article 40 of the Ministry of Agriculture Regulation Number 19 of 2023 emphasizes the necessity of institutional legality for oil palm farmers. This provision is further supported by Minister of Agriculture Regulation Number 67 of 2016, which was designed to strengthen and advocate for farmers' interests. To participate in the PSR program, oil palm farmers must join registered organizations related to oil palm farmer associations. These organizations include Farmers' Groups (*Kelompok Tani/Poktan*), Associations of Farmers' Groups (*Gabungan Kelompok Tani/Gapoktan*), local cooperatives, and other institutions such as the Indonesian Palm Oil Farmers Association (*Asosiasi Petani Kelapa Sawit Indonesia/Apkasindo*), which specifically addresses the challenges and concerns of oil palm farmers in Indonesia. Farmer institutions are instrumental in the PSR program, as they are responsible for initiating the first stage of PSR proposals during the submission process.

The proposed PSR program emphasizes the need for support from regional leaders to assist oil palm farmers. A significant challenge lies in the limited technological skills of many farmers, particularly regarding online administrative tasks required for submitting PSR proposals. The program's success depends on regional leaders' active involvement, from proposal submission to monitoring the use of PSR funds. Farmers must also adapt to using the PSR Online application as part of the registration process, highlighting the importance of effective coordination between agricultural extension agents and regional governments before conducting outreach and training sessions. The PSR program, initiated by the Ministry of Agriculture and BPDPKS, aligns with the Job Creation Law, which seeks to optimize Indonesia's investment licensing climate. This law provides solutions for resolving plantation land conflicts, particularly in forest areas. Article 110b, Paragraph (2) of the Job Creation Law addresses the status of oil palm plantation land, allowing individuals who lack land permit documents but have resided in or around a forest area for at least five consecutive years on up to five hectares of land to regularize their status through forest area planning, provided this occurred before the law's enactment.

The follow-up to the Job Creation Law regulations, with the enactment of Government Regulation Number 24 of 2021 concerning Procedures for Imposing Administrative Sanctions and Procedures for Non-Tax State Revenues Derived from Administrative Fines in the Forestry Sector, is outlined in Article 26. This article confirms that after parties (such as palm oil farmers or companies) have paid the Forest Resources Provision (*Provisi Sumber Daya Hutan /PSDH*) along with the Reforestation Fund (*Dana Reboisasi/DR*), the government will issue an Approval for the Release of Forest Areas or an Approval to Continue Business Activities in forest areas, as stated in Article 26 of Government Regulation 24/2021. This regulation is intended to address the issue of ensuring that palm oil land is used for sustainable development and can be linked to the realization of the distribution of PSR program funds for palm oil farmers following the enactment of the Job Creation Law. However, data on the distribution of PSR funds from 2017 to 30 October 2023, as presented in Table 2, still reveals underlying complexities.

Table 2. Distribution of PSR funds (2017-October 2023)

Distribution Year	Year of Technical Recommendation	Realization of PSR Fund Distribution Per Year				
		Proposals	Planter (Person)	Area (Hectares)	Total Land Area (Hectares)	PSR Funds (Million IDR)
2016	2016	1	116	254	254	6,350
2017	2017	6	1,409	2,938	2,938	73,459,21
2018	2017	35	4,446	10,721	12,609	315,214,072
	2018	11	1,234	2,338		
2019	2018	164	14,263	32,281	90,491	2,262,279.735
	2019	321	25,731	58,211		
2020	2019	182	12,887	30,126	94,033	2,670,343.163
	2020	353	27,820	63,906		
2021	2020	149	11,669	27,441	42,212	1,266,360.684
	2021	74	6,109	14,771		
2022	2021	108	6,318	12,996	30,759	922,781.640
	2022	77	8,166	17,793		
2023	2023	204	14,602	33,190	33,190	995,708.901
Total		1,685	134,770	306,486	306,486	8,512,497.405

Source: Directorate general of treasury, ministry of finance of the republic of Indonesia³⁴

Based on the data in Table 2, it can be seen that the distribution of PSR funds realized over the five years from 2017 to 2023 reached 134,770 planters, covering a plantation area of 306,486 hectares. The state-funded amount totaled 8.512 trillion rupiahs (approximately 552 million USD). However, this still falls short of meeting the entire PSR funding target for oil palm farmers each year. With an annual target of 180,000 hectares, the total target for the five years should have been 540,000 hectares of oil palm land, which BPDPKS should have fulfilled.

Historically, farmers in developing countries have been recognized by society in general. However, legally and formally, there are still issues that need to be addressed in empowering oil palm farmers. Many oil palm farmers, as well as farmers in other plantation sectors, lack legal status for the land they cultivate, such as a Certificate of Ownership (SHM), a Certificate of Compensation (*Surat Keterangan Ganti Rugi*/SKGR), and a Certificate of Land (SKT). The complexity of land status in the implementation of the PSR program in Indonesia is further illustrated in the analysis results, presented through the concept map feature in Figure 1.

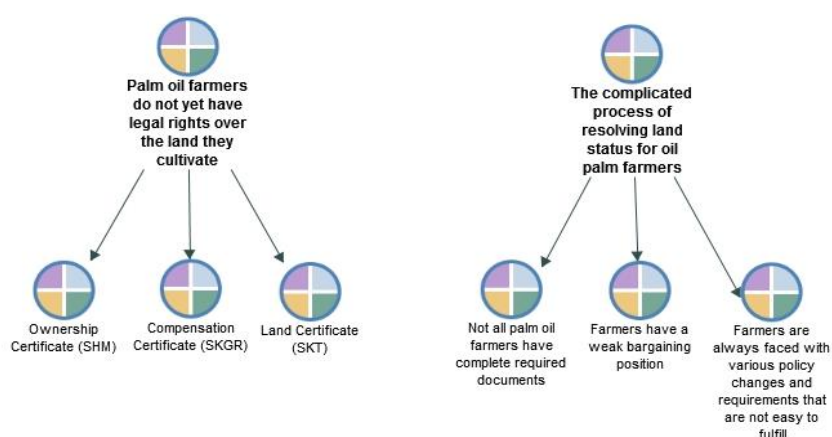


Figure 2. Concept map analysis on the complexity of land status in the PSR program in Indonesia

³⁴ Badan Pengelola Dana Perkebunan Kelapa Sawit (BPDPKS). *Strategi Akselerasi Pemanfaatan Dana Program Peremajaan Perkebunan Kelapa Sawit*. 11 Agustus 2023, page.19.

In Figure 1, it can be seen that the complexity of land status in implementing the PSR program includes several issues: First, oil palm farmers do not yet have legal rights to the land they cultivate, such as SHM, SKGR and SKT. Second, the process of resolving land status for oil palm farmers in Indonesia is complicated because not all farmers have completed the necessary documentation. In addition, farmers' weak bargaining position is another factor contributing to the persistence of land status issues, which hinder the acceleration of the PSR program. Farmers are constantly faced with various policy changes and requirements that are difficult to meet. These complexities highlight the numerous obstacles oil palm farmers face, one of which is meeting the requirements of the PSR program currently being pursued by the government. Minister of Agriculture Regulation Number 19 of 2023 not only requires the completion of land ownership documentation but also imposes additional provisions, such as ensuring that the land is not within forest areas and is free from them. This requirement presents another obstacle to fulfilling the PSR program that oil palm farmers deserve and is a root cause of the suboptimal use of oil palm plantation land in Indonesia.³⁵

3.3. Resolving Land Status Issues for Oil Palm Farmers in Indonesia

Resolving the issue of land security for oil palm farmers is a crucial matter, especially given field observations showing that not all oil palm farmers have completed the required documentation, with limited access to public services, particularly when the oil palm land they own is part of forest areas.³⁶ As a result, the formation of Government Regulation Number 24 of 2021 as a solution, which requires farmers to provide two documents (institutional and land legality), is difficult to fulfill.³⁷ Furthermore, Articles 27 and 28 of Government Regulation Number 24 of 2021 allow one cycle of either 15 or 25 years to return the land to the state after farmers have paid the PSDH and the reforestation fund. If this process continues, it will likely result in large-scale abandoned land, making it impossible to optimally utilize land from former oil palm plantations.

Since 2017, BDPKS has financed facilities and infrastructure for oil palm farmers to increase plantation productivity, including funding for fertilizers, seeds, pesticides, post-harvest equipment, processing facilities, agricultural machinery, and other necessary equipment. However, this still does not address all the constraints and obstacles, as it is hindered by the terms and conditions that oil palm farmers must meet to fulfill all the permit procedures for land legitimacy and the STDB that farmers

³⁵ Gita Mulyasari, Ira Nurhayati Djarot, Nugroho Adi Sasongko, and Agusta Samodra Putra., Social-life cycle assessment of oil palm plantation smallholders in Bengkulu province, Indonesia, *Heliyon*, Vol.9, no.8, 2023, Page.121.

³⁶ Riyadi Mustofa, Almasdi Syahza, Gulat Mendali Emas Manurung, Besri Nasrul, Rino Afrino, and Eko Jaya Siallagan., Land tenure conflicts in forest areas: obstacles to rejuvenation of small-scale oil palm plantations in Indonesia, *International Journal of Law and Management*, Vol.12, 2024, page.201.

³⁷ Nugra Irianta Denashurya, Nurliza, Eva Dolorosa, Dewi Kurniati, and Denah Suswati., Overcoming Barriers to ISPO Certification: Analyzing the Drivers of Sustainable Agricultural Adoption among Farmers, *Sustainability*, Vol.15, no.23, 2023, page.16507. See to, Lukas Rumboko Wibowo, Erdi Erdi, Sakti Hutabarat, Fitri Nur Nurfatriani, Marcellinus Utomo, Iman Kasiman Nawireja, Eusebius Pantja Pramudya et al., Accelerating Certification of Oil Palm Smallholders through Institutionalization of Various Incentives, *Forest and Society*, Vol.7, no.2, 2023, page.269.

must possess. If farmers lack the necessary documents, BDPKS cannot provide financial assistance. This issue has been further complicated by the creation of derivative regulations, such as Government Regulation Number 24 of 2021 concerning Procedures for Imposing Administrative Sanctions and Procedures for State Revenues from Administrative Fines in the Forestry Sector, and Minister of Agriculture Regulation Number 19 of 2023, which amends Minister of Agriculture Regulation Number 03 of 2022 concerning Human Resource Development, Research and Development, Rejuvenation, and Facilities and Infrastructure for Palm Oil Plantations. These regulations, stemming from Law Number 6 of 2023 concerning Job Creation, conclude that if the land falls within a forest area or overlaps with another HGU, oil palm farmers are unable to receive financial assistance from the PSR program.³⁸

In general, the Job Creation Law provides opportunities for palm oil business actors to resolve land legality issues through Articles 110a and 110b. However, when this regulation was translated into more technical rules by the relevant Ministries and Institutions, fulfilling the requirements proved challenging. As a result, the derivative regulations of the Job Creation Law cannot be considered an effective solution and have not yet succeeded in resolving land issues for palm oil farmers as a whole. Therefore, new rules and policies are needed—ones that oil palm farmers can meet, taking into account their financial capacities and limited access to fulfilling licensing requirements set by government agencies. This would allow the PSR program to be implemented according to the targets set by the government in Indonesia. Thus, the various complexities surrounding land status are hindering the acceleration of the PSR program and require systematic improvements. Table 3 is a proposed design to ensure land status as an effort to accelerate the PSR program in Indonesia.

Table 3. Design for securing land status to accelerate the PSR program

Alternative policy improvements	Policy improvement actions
Support for geospatial data preparation for oil palm farmers	To effectively plan and implement government programs for smallholder oil palm plantations, it is essential to collect and map geospatial data on smallholder plantations. The government should accelerate data collection and mapping with support from other stakeholders and allocate the necessary budget. The online PSR application should also provide complete data to help farmers meet legal requirements for the PSR program. A database system is needed to provide vital information about settlement patterns and land status for oil palm farmers.
Synchronization of statutory regulations (Law Number 6 of 2023 and Government Regulation Number 24 of 2021)	To accelerate the PSR program, it is crucial to synchronize regulations such as Law Number 6 of 2023 (Job Creation) and Government Regulation Number 24 of 2021. This synchronization should focus on resolving land status, land legality, and farmer institutions to meet PSR program requirements. Regional governments must facilitate public services to help farmers resolve land status by coordinating with relevant ministries, ensuring the regulations align to support farmers.
Facilitate studies with ministries and local governments based on Minister of Agriculture Regulation Number 19 of 2023	Minister of Agriculture Regulation Number 19 of 2023 does not adequately address land and forest area status issues. There is an urgent need to collaborate with relevant ministries to resolve these issues in line with the Job Creation Law. Additionally, local governments should support farmers with public services to conduct geolocation forest area research, aligning the policy with Government Regulation Number 24 of 2021 to help resolve land status issues in forest areas.

Table 3 illustrates that ensuring land status is crucial for accelerating the PSR program and should be considered as a key reference in addressing the complexities faced in implementing the program in Indonesia. Alternative policy improvements

³⁸ Ekayana Dewa, Supriatna Jatna, and Utomo Suyud., Optimizing Public Fund to Finance Smallholder Plantations for Sustainable Palm Oil in Indonesia, *Environment Asia*, Vol.16, no.1, 2023, Page.21.

should include support for preparing geospatial data for oil palm farmers, substantive synchronization of statutory regulations (Law Number 6 of 2023 and Government Regulation Number 24 of 2021), and facilitating joint reviews by ministries and regional governments based on Minister of Agriculture Regulation Number 19 of 2023, which amends Minister of Agriculture Regulation Number 03 of 2022 concerning Human Resource Development, Research and Development, Rejuvenation, and Facilities and Infrastructure for Palm Oil Plantations.³⁹

The results of this study reveal that resolving land security issues for oil palm farmers in Indonesia is crucial to ensuring their long-term productivity and sustainability. As indicated by previous studies,⁴⁰ many farmers still struggle with the formalization of land ownership, particularly in cases where their land overlaps with forest areas, making it difficult to meet legal and institutional requirements for land documentation. This situation is exacerbated by the administrative burdens introduced by Government Regulation Number 24 of 2021, which mandates farmers to provide both institutional and land legality documents to receive support. Furthermore, the regulation's provisions for land restitution after 15 to 25 years under specific conditions—such as the payment of Forest Resources Provision and the Reforestation Fund—may lead to the abandonment of land, as farmers find it challenging to comply with these terms. As discussed by Apriani et al.,⁴¹ the lack of accessible public services and the complex regulatory framework make it even harder for smallholders to transition toward formal, sustainable palm oil production, undermining efforts to integrate them into broader sustainability initiatives like the RSPO certification.⁴² The bureaucratic constraints placed on landholders prevent them from fully benefiting from government-backed initiatives, further complicating the situation. Moreover, despite efforts by BPDPKS to support oil palm farmers with funding for productivity improvements, such as fertilizers and machinery, the complex land legality issues remain a significant barrier. According to Purnomo et al.,⁴³ the lack of necessary permits or the presence of overlapping land claims with

³⁹ Kate Macdonald, Rachael Diprose, and Deborah Delgado Pugley., Scaling-up sustainable commodity governance through jurisdictional initiatives: Political pathways to sector transformation in the Indonesian palm oil sector?, *World Development*, Vol.176, 2024, page.106504. See to, Rino Afrino, Almasdi Syahza, Suwondo Suwondo, and Meyzi Heriyanto., Model of partnership in sustainable palm oil: efforts to increase partnerships in the palm oil business in Indonesia, *Journal of Science and Technology Policy Management*, Vol.23, 2024, Page.161.

⁴⁰ Edi Purwanto, Hery Santoso, Idsert Jelsma, Atiek Widayati, Hunggul YSH Nugroho, and Meine van Noordwijk., Agroforestry as policy option for forest-zone oil palm production in Indonesia, *Land*, Vol.9, no.12, 2020, page.531. See to, Eka Intan Kumala Putri, Arya Hadi Dharmawan, Otto Hospes, Bayu Eka Yulian, Rizka Amalia, Dyah Ita Mardiyarningsih, Rilus A. Kinseng et al., The oil palm governance: challenges of sustainability policy in Indonesia, *Sustainability*, Vol.14, no.3, 2022, page.1820. See to, Arya Hadi Dharmawan, Dyah Ita Mardiyarningsih, Heru Komarudin, Jaboury Ghazoul, Pablo Pacheco, and Faris Rahmadian., Dynamics of rural economy: a socio-economic understanding of oil palm expansion and landscape changes in East Kalimantan, Indonesia, *Land*, Vol.9, no.7, 2020, Page.54.

⁴¹ Ernawati Apriani, Yeon-Su Kim, Larry A. Fisher, and Himlal Baral., Non-state certification of smallholders for sustainable palm oil in Sumatra, Indonesia, *Land use policy*, Vol.99, 2020, page.105112.

⁴² Rosanne E. De Vos., Aritta Suwarno, Maja Slingerland, Peter J. Van Der Meer, and Jennifer M. Lucey., Pre-certification conditions of independent oil palm smallholders in Indonesia. Assessing prospects for RSPO certification, *Land use policy*, Vol.130, 2023, page.106660.

⁴³ Herry Purnomo, Beni Okarda, Ahmad Dermawan, Qori Pebrial Ilham, Pablo Pacheco, Fitri Nurfatriani, and Endang Suhendang., Reconciling oil palm economic development and

forest areas prevents farmers from accessing essential financial support under programs like the Palm Oil Smallholder Replanting Program. The introduction of derivative regulations, like Minister of Agriculture Regulation Number 19 of 2023, has not sufficiently addressed these challenges, leaving smallholders without the means to meet the certification requirements.⁴⁴ As indicated by Pacheco et al.,⁴⁵ the disconnect between state regulations and private sector standards for sustainability exacerbates this issue, further limiting the scope of effective solutions. To truly address these constraints, a more coherent and accessible policy framework is needed, one that harmonizes the regulatory environment and directly supports smallholder integration into sustainability programs.⁴⁶ The proposed design for securing land status and improving policy coordination, as outlined in Table 3, is critical in ensuring that land documentation and legal clarity are achieved, enabling the successful implementation of the PSR program in Indonesia.

4. Conclusion

This study underscores the critical importance of ensuring legal land status in efforts to accelerate the PSR program in Indonesia. The findings highlight significant challenges faced by oil palm farmers, particularly regarding the lack of formal land rights and the complex, often bureaucratic, process of resolving land tenure issues. These challenges hinder the effective participation of smallholders in sustainable palm oil initiatives, including the PSR program. To address these issues, policy improvements are needed, particularly in preparing geospatial data for oil palm farmers, harmonizing conflicting statutory regulations (such as Law Number 6 of 2023 and Government Regulation Number 24 of 2021), and facilitating better coordination between ministries and regional governments. Key to these reforms is the recent Minister of Agriculture Regulation Number 19 of 2023, which amends Regulation Number 03 of 2022, setting a clearer framework for human resource development, research, rejuvenation, and infrastructure in the palm oil sector.

The findings affirm the need for continued research in this area, as it provides valuable insights that can inform policy reforms and improve land management practices in Indonesia's palm oil industry. The study stresses the importance of adopting a comprehensive approach to policy development, one that integrates legal frameworks with practical support mechanisms for smallholders, including access to public services provided by local governments. The limitations of this study stem from its reliance on secondary data, which, while typical in legal research, may not

environmental conservation in Indonesia: A value chain dynamic approach, *Forest Policy and Economics*, Vol.111, 2020, page.21.

⁴⁴ Arya Hadi Dharmawan, Dyah Ita Mardiyarningsih, Faris Rahmadian, Bayu Eka Yulian, Heru Komarudin, Pablo Pacheco, Jaboury Ghazoul, and Rizka Amalia., The agrarian, structural and cultural constraints of smallholders' readiness for sustainability standards implementation: the case of Indonesian Sustainable Palm Oil in East Kalimantan, *Sustainability*, Vol.13, no.5, 2021, page.123.

⁴⁵ Pablo Pacheco, George Schoneveld, Ahmad Dermawan, Heru Komarudin, and Marcel Djama., Governing sustainable palm oil supply: Disconnects, complementarities, and antagonisms between state regulations and private standards, *Regulation & Governance*, Vol.14, no.3, 2020, page.98.

⁴⁶ Joni Jupesta, Anselmus Achmad Supriyanto, Goetz Martin, Junaidi Piliang, Susanto Yang, Agus Purnomo, Anita Neville, and Jean-Pierre Caliman., *Establishing multi-partnerships environmental governance in Indonesia: Case of desa makmur perduli api (Prosperous and fire free village) program*, Food Security and Land Use Change under Conditions of Climatic Variability: A Multidimensional Perspective, Vol. 4, no.1, 2020, page.76.

fully capture the practical complexities of land status issues in palm oil management. Future research should focus on in-depth case studies and empirical analyses of land tenure reform efforts, particularly examining the impact of regulatory changes on smallholder participation in sustainability programs such as the palm oil rejuvenation program.

References

Books:

Woolf, Nicholas H., and Christina Silver., 2018, *Qualitative Analysis Using NVivo: The Five-Level QDA® Method*, New York, Routledge;

Reports:

Badan Pengelola Dana Perkebunan Kelapa Sawit (BPDPKS). Strategi Akselerasi Pemanfaatan Dana Program Peremajaan Perkebunan Kelapa Sawit. Jakarta, 11 Agustus 2023;

BPDPKS., Potential Income Sources for Oil Palm Farmers During Replanting Seasons, 27, April, 2020. <https://www.bdpd.or.id/en/potential-income-sources-for-oil-palm-farmers-during-replanting-seasons>;

Ekon.go.id., *The Government Accelerates the Implementation of the People's Palm Oil Replanting Program by Implementing Good Agriculture Practice through Multi-stakeholder Strategic Cooperation*, 24 Februari, 2024, <https://ekon.go.id/publikasi/detail/4049/the-government-accelerates-the-implementation-of-the-peoples-palm-oil-replanting-program-by-implementing-good-agriculture-practice-through-multi-stakeholder-strategic-cooperation>;

Gapki., The Recent Development of the Indonesian Palm Oil Industry, *gapki.id*, 23 April, 2020. <https://gapki.id/en/news/18397/the-recent-development-of-the-indonesian-palm-oil-industry>;

Book Section:

Jupesta, Joni, Anselmus Achmad Supriyanto, Goetz Martin, Junaidi Piliang, Susanto Yang, Agus Purnomo, Anita Neville, and Jean-Pierre Caliman., *Establishing multi-partnerships environmental governance in Indonesia: Case of desa makmur perduli api (Prosperous and fire free village) program*, Food Security and Land Use Change under Conditions of Climatic Variability: A Multidimensional Perspective, Vol. 4, no.1, 2020, https://doi.org/10.1007/978-3-030-36762-6_10;

Khatarina, Josi., Explaining the failure of palm oil licensing in Indonesia., In *Crime and Punishment in Indonesia*, New York, Routledge, 2020;

Journals:

Afrino, Rino, Almasdi Syahza, Suwondo Suwondo, and Meyzi Heriyanto., Model of partnership in sustainable palm oil: efforts to increase partnerships in the

- palm oil business in Indonesia, *Journal of Science and Technology Policy Management*, Vol.23, 2024, <https://doi.org/10.1108/JSTPM-09-2023-0154>;
- Afrino, Rino, and Almasdi Syahza., What is the Existing Condition of Palm Oil Plantation Management in Riau Province, Indonesia?, *KnE Social Sciences*, Vol.3, no.3, 2023, <https://doi.org/10.18502/kss.v8i5.12985>;
- Apriani, Ernawati, Yeon-Su Kim, Larry A. Fisher, and Himlal Baral., Non-state certification of smallholders for sustainable palm oil in Sumatra, Indonesia, *Land Use Policy*, Vol.99, 2020, <https://doi.org/10.1016/j.landusepol.2020.105112>;
- Astuti, Rini, Michelle Ann Miller, Andrew McGregor, M. Dedy Pratama Sukmara, Wiko Saputra, and David Taylor., Making illegality visible: The governance dilemmas created by visualising illegal palm oil plantations in Central Kalimantan, Indonesia, *Land Use Policy*, Vol.114, 2022, <https://doi.org/10.1016/j.landusepol.2021.105942>;
- Brandão, Frederico, George Schoneveld, Pablo Pacheco, Ima Vieira, Marc Piraux, and Dalva Mota., The challenge of reconciling conservation and development in the tropics: Lessons from Brazil's oil palm governance model, *World Development*, Vol.139, 2021, <https://doi.org/10.1016/j.worlddev.2020.105268>;
- Chiriaco, Maria Vincenza, Matteo Bellotta, Jasmina Jusić, and Lucia Perugini., Palm oil's contribution to the United Nations sustainable development goals: outcomes of a review of socio-economic aspects, *Environmental Research Letters*, Vol.17, no.6, 2022, <https://doi.org/10.1088/1748-9326/ac6e77>;
- Córdoba, Diana, Jesse Abrams, and Theresa Selfa., Achieving palm oil sustainability under contract: roundtable on sustainable palm oil and family farmers in the Brazilian Amazon, *Current Research in Environmental Sustainability*, Vol.4, 2022, <https://doi.org/10.1016/j.crsust.2022.100160>;
- De Vos, Rosanne E., Aritta Suwarno, Maja Slingerland, Peter J. Van Der Meer, and Jennifer M. Lucey., Pre-certification conditions of independent oil palm smallholders in Indonesia. Assessing prospects for RSPO certification, *Land use policy*, Vol.130, 2023, <https://doi.org/10.1016/j.landusepol.2023.106660>;
- Degli Innocenti, Elena, and Peter Oosterveer., Opportunities and bottlenecks for upstream learning within RSPO certified palm oil value chains: A comparative analysis between Indonesia and Thailand, *Journal of Rural Studies*, Vol.78, 2020, <https://doi.org/10.1016/j.jrurstud.2020.07.004>;
- Denashurya, Nugra Irianta, Nurliza, Eva Dolorosa, Dewi Kurniati, and Denah Suswati., Overcoming Barriers to ISPO Certification: Analyzing the Drivers of Sustainable Agricultural Adoption among Farmers, *Sustainability*, Vol.15, no.23, 2023, <https://doi.org/10.3390/su152316507>;
- Dewa, Ekayana, Supriatna Jatna, and Utomo Suyud., Optimizing Public Fund to Finance Smallholder Plantations for Sustainable Palm Oil in Indonesia, *Environment Asia*, Vol.16, no.1, 2023, https://doi.nrct.go.th/ListDoi/listDetail?Resolve_Doi=10.14456/ea.2023.5;
- Dharmawan, Arya Hadi, Dyah Ita Mardiyansih, Faris Rahmadian, Bayu Eka Yulian, Heru Komarudin, Pablo Pacheco, Jaboury Ghazoul, and Rizka Amalia., The agrarian, structural and cultural constraints of smallholders' readiness for sustainability standards implementation: the case of Indonesian Sustainable

- Palm Oil in East Kalimantan, *Sustainability*, Vol.13, no.5, 2021, <https://doi.org/10.3390/su13052611>;
- Dharmawan, Arya Hadi, Dyah Ita Mardiyarningsih, Heru Komarudin, Jaboury Ghazoul, Pablo Pacheco, and Faris Rahmadian., Dynamics of rural economy: a socio-economic understanding of oil palm expansion and landscape changes in East Kalimantan, Indonesia, *Land*, Vol.9, no.7, 2020, <https://doi.org/10.3390/land9070213>;
- Gilroy, James J., Graham W. Prescott, Johann S. Cardenas, Pamela González del Pliego Castañeda, Andrés Sánchez, Luis E. Rojas-Murcia, Claudia A. Medina Uribe, Torbjørn Haugaasen, and David P. Edwards., Minimizing the biodiversity impact of Neotropical oil palm development, *Global change biology*, Vol.21, no.4, 2015, <https://doi.org/10.1111/gcb.12696>;
- Hai-Jew, Shalin., NVivo 12 Plus's new qualitative cross-tab analysis function, *C2C Digital Magazine*, Vol.1, no.10, 2019;
- Hervas, Anastasia., Mapping oil palm-related land use change in Guatemala, 2003–2019: Implications for food security, *Land Use Policy*, Vol.109, 2021, <https://doi.org/10.1016/j.landusepol.2021.105657>;
- Husa, Jaakko., Comparative law, literature and imagination: Transplanting law into works of fiction, *Maastricht Journal of European and Comparative Law*, Vol.28, no.3, 2021, <https://doi.org/10.1177/1023263X21995337>;
- Indra, Mexsasai, Muhammad Rafi, and Tito Handoko., The Importance of Strengthening Land Law Enforcement in Regulation of Land Registration, *Journal of Governance and Regulation*, Vol.13, no.1, 2024, <https://doi.org/10.22495/jgrv13i1art7>;
- Juniyanti, Lila, Herry Purnomo, Hariadi Kartodihardjo, Lilik Budi Prasetyo, and Eko Pambudi., Powerful actors and their networks in land use contestation for oil palm and industrial tree plantations in Riau, *Forest Policy and Economics*, Vol.129, 2021, <https://doi.org/10.1016/j.forpol.2021.102512>;
- Macdonald, Kate, Rachael Diprose, and Deborah Delgado Pugley., Scaling-up sustainable commodity governance through jurisdictional initiatives: Political pathways to sector transformation in the Indonesian palm oil sector?, *World Development*, Vol.176, 2024, <https://doi.org/10.1016/j.worlddev.2023.106504>;
- Mulyasari, Gita, Ira Nurhayati Djarot, Nugroho Adi Sasongko, and Agusta Samodra Putra., Social-life cycle assessment of oil palm plantation smallholders in Bengkulu province, Indonesia, *Heliyon*, Vol.9, no.8, 2023;
- Murphy, Denis J., Kirstie Goggin, and R. Russell M. Paterson., Oil palm in the 2020s and beyond: challenges and solutions, *CABI agriculture and bioscience*, Vol.2, 2021, <https://doi.org/10.1186/s43170-021-00058-3>;
- Mustofa, Riyadi, Almasdi Syahza, Gulat Mendali Emas Manurung, Besri Nasrul, Rino Afrino, and Eko Jaya Siallagan., Land tenure conflicts in forest areas: obstacles to rejuvenation of small-scale oil palm plantations in Indonesia, *International Journal of Law and Management*, Vol.12, 2024, <https://doi.org/10.1108/IJLMA-09-2023-0216>;
- Nurfatriani, Fitri, Ramawati, Galih Kartika Sari, and Heru Komarudin., Optimization of crude palm oil fund to support smallholder oil palm replanting in reducing deforestation in Indonesia, *Sustainability*, Vol.11, no.18, 2019, <https://doi.org/10.3390/su11184914>;

- Oliphant, Elizabeth, and Adam C. Simon., The cost of sustainable palm oil: Should an Indonesian smallholder pursue RSPO-certification?, *World Development Perspectives*, Vol.26, 2022, <https://doi.org/10.1016/j.wdp.2022.100432>;
- Oosterveer, Peter., Promoting sustainable palm oil: viewed from a global networks and flows perspective, *Journal of Cleaner Production*, Vol.107, 2015, <https://doi.org/10.1016/j.jclepro.2014.01.019>;
- Pacheco, Pablo, George Schoneveld, Ahmad Dermawan, Heru Komarudin, and Marcel Djama., Governing sustainable palm oil supply: Disconnects, complementarities, and antagonisms between state regulations and private standards, *Regulation & Governance*, Vol.14, no.3, 2020, <https://doi.org/10.1111/regg.12220>;
- Purnomo, Herry, Beni Okarda, Ade Ayu Dewayani, Made Ali, Ramadhani Achdiawan, Hariadi Kartodihardjo, Pablo Pacheco, and Kartika S. Juniwati., Reducing forest and land fires through good palm oil value chain governance, *Forest Policy and Economics*, Vol.91, 2018, <https://doi.org/10.1016/j.forpol.2017.12.014>;
- Purnomo, Herry, Beni Okarda, Ahmad Dermawan, Qori Pebrial Ilham, Pablo Pacheco, Fitri Nurfatriani, and Endang Suhendang., Reconciling oil palm economic development and environmental conservation in Indonesia: A value chain dynamic approach, *Forest Policy and Economics*, Vol.111, 2020, <https://doi.org/10.1016/j.forpol.2020.102089>;
- Purwanto, Edi, Hery Santoso, Idsert Jelsma, Atiek Widayati, Hunggul YSH Nugroho, and Meine van Noordwijk., Agroforestry as policy option for forest-zone oil palm production in Indonesia, *Land*, Vol.9, no.12, 2020, <https://doi.org/10.3390/land9120531>;
- Putri, Eka Intan Kumala, Arya Hadi Dharmawan, Otto Hospes, Bayu Eka Yulian, Rizka Amalia, Dyah Ita Mardiyarningsih, Rilus A. Kinseng et al., The oil palm governance: challenges of sustainability policy in Indonesia, *Sustainability*, Vol.14, no.3, 2022, <https://doi.org/10.3390/su14031820>;
- Raharja, Sapta, Petir Papilo, M. Yusram Massijaya, Muhammad Asrol, and M. Arif Darmawan., Institutional strengthening model of oil palm independent smallholder in Riau and Jambi Provinces, Indonesia, *Heliyon*, Vol.6, no.5, 2020, <https://doi.org/10.1016/j.heliyon.2020.e03875>;
- Rahayu, Neneng Sri, Alih Aji Nugroho, and Rima Ranintya Yusuf, Exclusion of Smallholders in the Indonesia Palm Oil Industry, *KnE Social Sciences*, Vol.5, no.1, 2022, <https://doi.org/10.18502/kss.v7i9.11010>;
- Reiss-Woolever, Valentine Joy, Sarah Helen Luke, Jake Stone, Gorm Eirik Shackelford, and Edgar Clive Turner., Systematic mapping shows the need for increased socio-ecological research on oil palm, *Environmental Research Letters*, Vol.16, no.6, 2021, <https://doi.org/10.1088/1748-9326/abfc77>;
- St-Pierre, Pascale Cornut., Investigating legal consciousness through the technical work of elite lawyers: A case study on tax avoidance, *Law & Society Review*, Vol.53, no.2, 2019, <https://doi.org/10.1111/lasr.12397>;
- Sudrajat, Jajat, Adi Suyatno, and Shenny Oktoriana., Land-use changes and food insecurity around oil palm plantations: Evidence at the village level, *Forest and Society*, Vol.5, no.2, 2021, <https://orcid.org/0000-0002-5970-8498>;
- Supriatna, Jajang, Djumarno Djumarno, Ahmad Badawy Saluy, and Deden Kurniawan., Sustainability Analysis of Smallholder Oil Palm Plantations in

- Several Provinces in Indonesia, *Sustainability*, Vol.16, no.11, 2024;
- Suroso, Arif Imam, Iyung Pahan, and Syti Sarah Maesaroh., New Plantation Moratorium Policy and Smallholders Palm Oil Rejuvenation for Increasing Productivity of Indonesian Palm Oil, *Jurnal Manajemen & Agribisnis*, Vol.17, no.2, 2020, <http://dx.doi.org/10.17358/jma.17.2.138>;
- Susanti, Ervin Nora, and Anto Ariyanto., Exploring Farmers' Decision in Utilizing Certified Palm Oil Seeds in Riau Province, *Jurnal Manajemen & Agribisnis*, Vol. 20, no.2, 2023, <http://dx.doi.org/10.17358/jma.20.2.188>;
- Syahza, Almasdi, D. Bakce, Besri Nasrul, and Riyadi Mustofa., Utilization of peatlands based on local wisdom and community welfare in Riau Province, Indonesia, *International Journal of Sustainable Development and Planning*, Vol.15, no. 7, 2020, <https://doi.org/10.18280/ijstdp.150716>;
- Syahza, Almasdi, Geovani Meiwanda, and Dahlan Tampubolon., Strengthening Riau Province's Oil Palm Policy Based on Strengthening Local Institutions in Riau Province Bengkalis, *KnE Social Sciences*, Vol.12, 2023, <https://doi.org/10.18502/kss.v8i5.13016>;
- Ward, Caroline, Lindsay C. Stringer, Eleanor Warren-Thomas, Fahmuddin Agus, Merry Crowson, Keith Hamer, Bambang Hariyadi et al., Smallholder perceptions of land restoration activities: rewetting tropical peatland oil palm areas in Sumatra, Indonesia, *Regional Environmental Change*, Vol.21, 2021, <https://doi.org/10.1007/s10113-020-01737-z>;
- Watts, John D., Kattryn Pasaribu, Silvia Irawan, Luca Tacconi, Heni Martanila, Cokorda Gde Wisnu Wiratama, Fauzan Kemal Musthofa, Bernadinus Steni Sugiarto, and Utami Putri Manvi., Challenges faced by smallholders in achieving sustainable palm oil certification in Indonesia, *World Development*, Vol.146, 2021, <https://doi.org/10.1016/j.worlddev.2021.105565>;
- Wibowo, Lukas Rumboko, Erdi Erdi, Sakti Hutabarat, Fitri Nur Nurfatriani, Marcellinus Utomo, Iman Kasiman Nawireja, Eusebius Pantja Pramudya et al., Accelerating Certification of Oil Palm Smallholders through Institutionalization of Various Incentives, *Forest and Society*, Vol.7, no.2, 2023, <https://doi.org/10.24259/fs.v7i2.24679>;
- Woittiez, Lotte S., Maja Slingerland, Meine van Noordwijk, Abner J. Silalahi, Joost van Heerwaarden, and Ken E. Giller., People, Palms, and Productivity: Testing Better Management Practices in Indonesian Smallholder Oil Palm Plantations, *Agriculture*, Vol.14, no.9, 2024, <https://doi.org/10.3390/agriculture14091626>;
- Yuliani, Elizabeth Linda, W. T. De Groot, Luuk Knippenberg, and D. O. Bakara., Forest or oil palm plantation? Interpretation of local responses to the oil palm promises in Kalimantan, Indonesia, *Land Use Policy*, Vol.96, 2020, <https://doi.org/10.1016/j.landusepol.2020.104616>;
- Yuslaini, Nina, Utang Suwaryo, Nandang A. Deliarnoor, and Dede Sri Kartini., Palm oil industry and investment development in Dumai City, Indonesia: A focus on Local Economy Development and Sustainability, *Cogent Social Sciences*, Vol.9, no.1, 2023, <https://doi.org/10.1080/23311886.2023.2235780>;

Conference Proceeding:

Apriyanto, Mulono, H. Mardesci, and Gunawan Syahrantau., The Role of Farmers Readiness in the Sustainable Palm Oil Industry, *Journal of Physics: Conference Series*, Vol.1764, no.1, 2021, <https://doi.org/10.1088/1742-6596/1764/1/012211>;

Sirait, Ningum Natasya, and Mahmud Siregar., Perspective of Competition Law on Partnership of Palm Oil Company and Nucleus Estate, In *Second International Conference on Public Policy, Social Computing and Development (ICOPOSDEV 2021)*, Amsterdam, Atlantis Press, 2022.